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HYDROGRAPHIE

Suitability assessment of sites N-3.7, N-3.8 und O-1.3*

Hamburg, 12 October 2020

* This report has been translated into English by Proverb OHG, Stuttgart. In case of any differences between the the German and the English version the German version is binding.

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Figure 2: Overview of the location of site N-3.8 (ETRS 89, UTM 32N) in the German EEZ in the North Sea (*the coordinates (according to WGS 84) are provided as an additional offer of information in the GeoSea portal (BSH web feature service); this representation is for information purposes; the designation in the FEP remains authoritative for defining the site.)* 3

Figure 3: Overview of the location of site O-1.3 (ETRS 89, UTM 33N) in the German EEZ in the Baltic Sea (*the coordinates (according to WGS 84) are provided as an additional offer of information in the GeoSea portal (BSH web feature service); this representation is for information purposes; the designation in the FEP remains authoritative for defining the site.)* 4

List of abbreviations

AIS data	Data from the Automatic Identification System in shipping
EEZ	Exclusive Economic Zone
BBergG	Federal Mining Act
BFO	Spatial Offshore Grid Plan
BGBl	Federal Law Gazette
BMVBS	Federal Ministry of Transport, Building and Urban Affairs
BMVI	Federal Ministry of Transport and Digital Infrastructure
BMWi	Federal Ministry for Economic Affairs and Energy
BNatSchG	Law on nature conservation and landscape management (Federal Nature Conservation Act)
BNetzA	Federal Network Agency for Electricity, Gas, Telecommunications, Post and Railways
BSH	Federal Maritime and Hydrographic Agency
EEG	Law on the expansion of renewable energies (Renewable Energy Sources Act)
EEV	Regulation for the implementation of the Renewable Energy Sources Act and the Offshore Wind Energy Act (Renewable Energy Sources Regulation)
FEP	Site Development Plan
GDWS	Directorate-General of Waterways and Shipping
GW	Gigawatt
ICPC	International Cable Protection Committee
COLREGS	Convention on the International Regulations for Preventing Collisions at Sea
LBEG	State Office for Mining, Energy and Geology
MSFD	Directive 2008/56/EC of the European Parliament and of the Council of 17 June 2008 establishing a framework for community action in the field of marine environmental policy (Marine Strategy Framework Directive)
MW	Megawatt
NfS	Notices to mariners
OSPAR	Oslo Convention (Convention for the Protection of the Marine Environment of the North-East Atlantic)
ROG	Spatial Planning Act
RPN	Risk Priority Number
SeeAnlV	Ordinance on offshore installations seawards of the limits of German coastal waters (Offshore Installations Ordinance)
SeeAufgG	Law on the Federal Government's maritime responsibilities (Federal Maritime Responsibilities Act)
nm	Nautical mile
UNCLOS	United Nations Convention on the Law of the Sea
SEA	Strategic Environmental Assessment
UVPG	Environmental Impact Assessment Act
TSS	Traffic Separation Scheme
VwVfG	Administrative Procedure Act
WindSeeG	Law concerning the development and promotion of offshore wind energy (Offshore Wind Energy Act)

1 Introduction

As of 2021, the Federal Network Agency (BNetzA in the following) will be determining the addressee and the subsidy level according to the Renewable Energies Act (EEG) pursuant to section 16 WindSeeG for offshore wind turbines that enter operation from 1 January 2026 onwards; this will be done by means of an invitation to tender based on a site that has been designated in the Site Development Plan dated 28.06.2019 (FEP 2019) and which has subsequently undergone a site investigation. As the basis for this invitation to tender, the suitability of the site and the capacity to be installed on it are approved by means of legislative decree pursuant to section 12(5)(1) WindSeeG. Pursuant to section 12(4) and (5), the suitability assessment forms the basis for determining suitability by means of legislative decree. Pursuant to section 10(2) WindSeeG, suitability is given if the construction and operation of offshore wind turbines at the site in question are not opposed by the criteria and concerns to be assessed in the context of preparing the FEP and planning approval for offshore wind turbines. Pursuant to section 12(4) in combination with section 10(3) WindSeeG, the basis for approving the capacity by means of a legislative decree is the prior determination of the capacity. Accordingly, this **suitability assessment** and **capacity determination** serve as the basis for approving the suitability and capacity by means of legislative decree of the three sites that are earmarked for the invitation to tender by the BNetzA in 2021 according to the specifications of the FEP 2019.

This involves sites N-3.7, N-3.8 and O-1.3.

1.1 Site N-3.7

Site N-3.7 is situated in the German EEZ in the North Sea in the eastern part of area N-3 (Figure 1) which is defined in the FEP 2019.

It is located between the traffic separation schemes 'German Bight Western Approach' and 'Terschelling German Bight'. The area in which the site is located is bordered to the east by the traffic separation scheme 'Jade Approach'. The water depths are 29 to 33 m (LAT). Directly to the west are the offshore wind farms 'Gode Wind 01' and 'Gode Wind 02', which are already in operation. The area for the 'Gode Wind III' project, for which planning has already been approved, is situated to the east. The distances from the nearest islands of Norderney, Juist, Baltrum and Langeoog, which are located to the south of the site, are around 30-40 km.

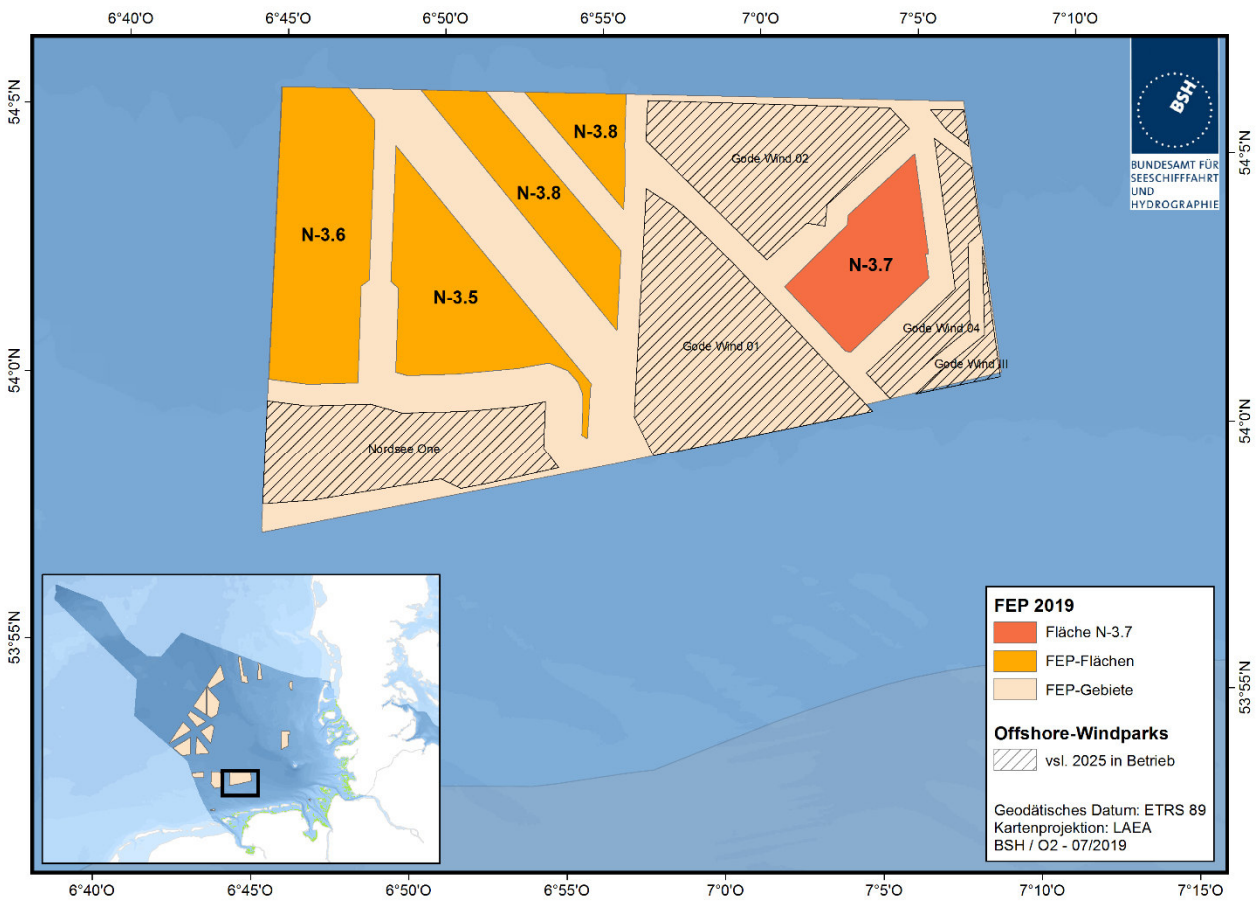

Figure 1: Overview of the location of site N-3.7 (ETRS 89, UTM 32N) in the German EEZ in the North Sea (*the coordinates (according to WGS 84) are provided as an additional offer of information in the GeoSea portal (BSH web feature service); this representation is for information purposes; the designation in the FEP remains authoritative for defining the site.)*

1.2 Site N-3.8

Site N-3.8 is located in the German EEZ in the North Sea in the western part of area N-3 (Figure 2) which is defined in the FEP 2019. The operational TAT 14 data cable runs through the site. The site is bordered to the northwest by the 'NorPipe' pipeline. Site N-3.8 is crossed by at least three decommissioned submarine cables.

It is bordered to the east by the offshore wind farms 'Gode Wind 01' and 'Gode Wind 02' which are already in operation. The traffic separation scheme 'German Bight Western Approach' runs along the northern border. The water depths lie in a range from 29 to 33 m (LAT).

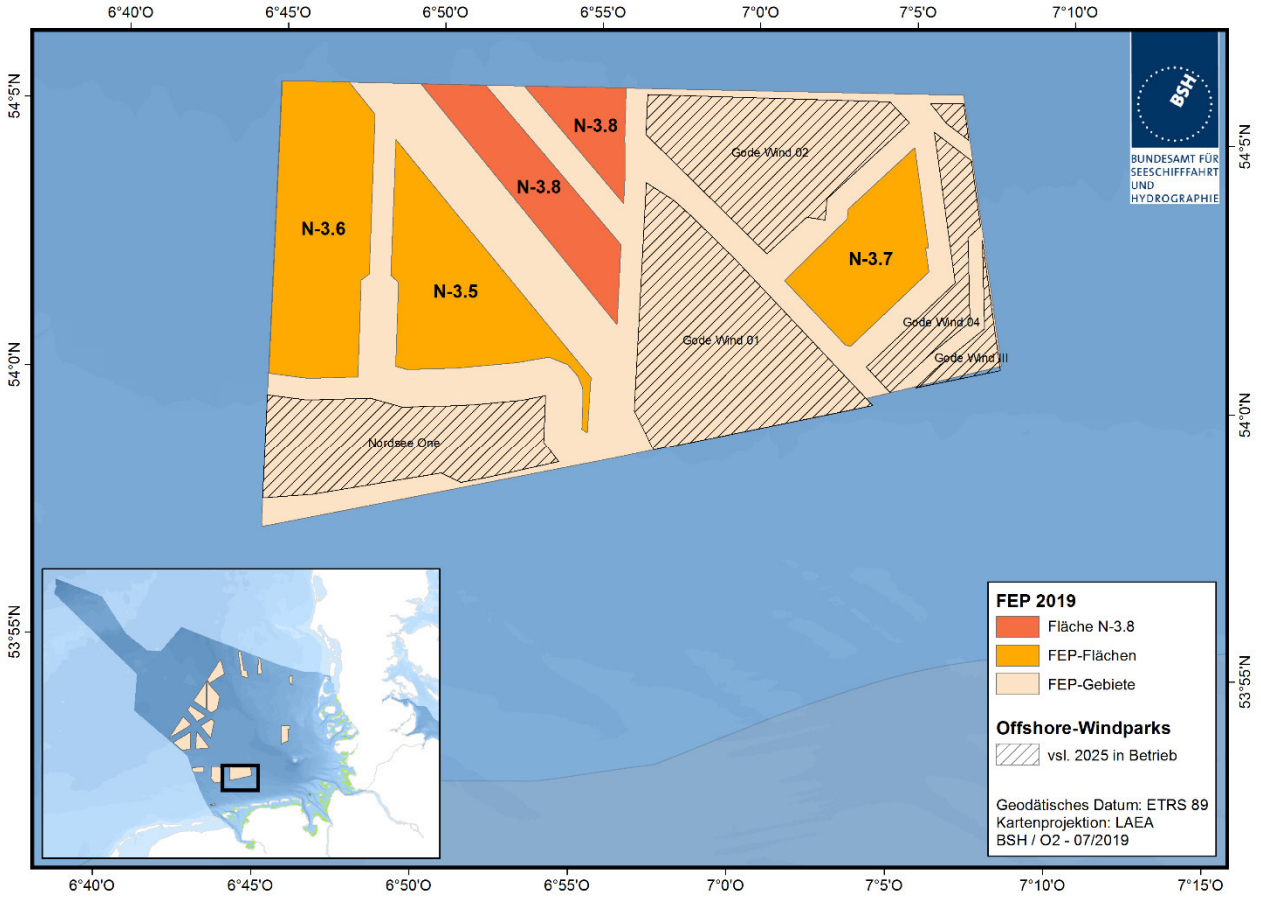

Figure 2: Overview of the location of site N-3.8 (ETRS 89, UTM 32N) in the German EEZ in the North Sea (*the coordinates (according to WGS 84) are provided as an additional offer of information in the GeoSea portal (BSH web feature service); this representation is for information purposes; the designation in the FEP remains authoritative for defining the site.)*

1.3 Site O-1.3

Site O-1.3 is situated in the German EEZ in the Baltic Sea in the northern part of area O-1 which is defined in the FEP 2019. The site is located around 38 km northeast of the island of Rügen (Jasmund). The nearest point of the mainland is situated approx. 82 km away in the southern area of the Greifswalder Bodden (community of Lubmin). The water depths are between 40 and 45 m (MSL).

The traffic separation scheme 'North of Rügen' runs to the north of the site and the shipping priority and reservation area designated as shipping route 20 in the Spatial Plan for the Baltic Sea is situated to the west. The operational offshore wind farms 'Wikinger' and 'Arkona Basin Southeast' border area O-1 directly to the south.

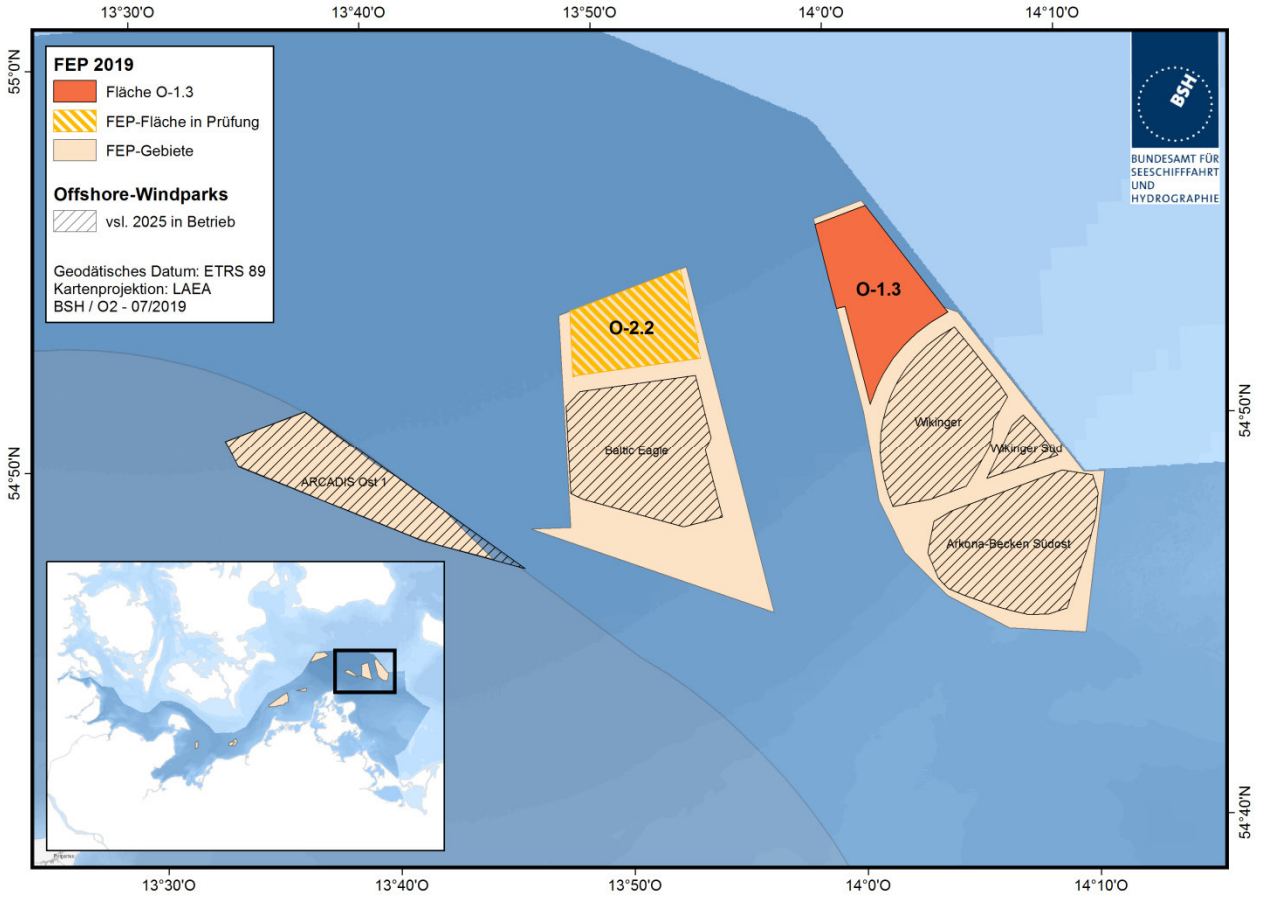

Figure 3: Overview of the location of site O-1.3 (ETRS 89, UTM 33N) in the German EEZ in the Baltic Sea (*the coordinates (according to WGS 84) are provided as an additional offer of information in the GeoSea portal (BSH web feature service); this representation is for information purposes; the designation in the FEP remains authoritative for defining the site.)*

2 Responsibility and procedure

2.1 Responsibility

Pursuant to section 12(4) WindSeeG, the body responsible for the site investigation assesses suitability pursuant to section 10(2) WindSeeG.

The body responsible for the **site investigation** is the Federal Network Agency. In individual cases or in similar cases, it has the site investigation conducted by the BSH subject to an administrative agreement in the case of sites in the EEZ, section 11(1) WindSeeG.

In the context of an administrative agreement completed in March 2017, the Federal Ministry of Transport and Digital Infrastructure and the BSH on one hand and the Federal Ministry for Economic Affairs and Energy and the BNetzA on the other hand determined that the BSH will undertake the tasks of the body responsible for the site investigation with reference to all sites under consideration in the EEZ within the meaning of the WindSeeG.

The BSH is therefore responsible for the site investigation including the **suitability assessment** for a site.

2.2 Procedure

The site was defined in the FEP on 28.06.2019.

The **introduction of the procedure** for the site investigation of sites N-3.7, N-3.8 and O-1.3 based on the preliminary draft of the FEP was announced on 19.05.2017 in the notices to mariners (NfS), on the BSH website and by means of a notice posted at the BSH offices in Hamburg and Rostock pursuant to section 12(1) WindSeeG. The BSH additionally published a participation document concerning the planned scope of the investigations and the intended procedure.

On 28.06.2017, a **hearing** was conducted to discuss the object and scope of the site investigations according to the specifications of section 12(2) WindSeeG: the announcement stated the location, time and object of the hearing and pointed out the option of issuing an opinion regarding the participation document within one month of publication. In a document dated 15.05.2017, the participation document was also submitted to the authorities whose areas of responsibility are affected, public-interest bodies and environmental associations recognised pursuant to section 3 of the Environmental Appeals Act, indicating the option of an opinion and issuing an invitation to the hearing. At the same time, the hearing was a meeting within the meaning of section 39(4)(2) of the Environmental Impact Assessment Act (UVPG).

Based on the results of the hearing, the **investigation framework** for the site investigation and the Strategic Environmental Assessment of the sites was defined pursuant to section 12(3) WindSeeG on 30.08.2019 and published on the BSH website. The safety and efficiency of traffic were defined as an additional investigation object, as a site would be unsuitable for constructing wind turbines if this aspect were to be jeopardised as a result. The resulting expert report represents a necessary document for planning approval and its provision as part of the site investigation can speed up the subsequent planning approval process.

As the body responsible for the suitability assessment, the BSH must carry out a **Strategic Environmental Assessment** in the context of the suitability assessment.

Pursuant to section 35(1)(1) UVPG, a Strategic Environmental Assessment has to be carried out in the case of plans and initiatives that are listed in Annex 5 No. 1.

Annex 5 of UVPG No. 1.18 lists 'The approval of the suitability of a site and the installable capacity at the site pursuant to section 12 A(5)

of the Offshore Wind Energy Act' as plans subject to a SEA.

Pursuant to section 33 UVPG, the Strategic Environmental Assessment (SEA) is a 'dependent part of official procedures for the preparation or amendment of plans and initiatives.'

Pursuant to section 12(5) WindSeeG, the result of the suitability assessment and the capacity to be installed are approved by means of legislative decree if the suitability assessment shows that the site to be put out to tender is suitable pursuant to Part 3 Section 2.

The legislative decree is thus the formal act for approving the plan. The actual preparation procedure is the suitability assessment, which includes assessing whether the marine environment is at risk. The SEA forms the basis for this assessment.

The environmental reports for sites N-3.7, N-3.8 and O-1.3, the draft determination of suitability and the suitability assessment were sent along with a document on 30.03.2020 to the authorities whose environmental and health-related areas of responsibility are affected by the plan or the initiative as well as to other authorities, indicating the opportunity to submit an opinion by 15.05.2020 and extending an invitation to a meeting to discuss these documents, section 41 UVPG.

The documents were also on public display for the period of one month from 27.03.2020 to 27.04.2020 at the BSH offices in Rostock and Hamburg. The display of the draft plan including the suitability assessment and the environmental reports was made publicly known on 27.03.2020 pursuant to the specifications of section 73 WindSeeG in the NfS, on the BSH homepage and by means of a notice posted at the BSH offices in Rostock and Hamburg. The announcement pointed out the hearing date, the option of issuing an opinion within one month following the end of the display period, in this case by 28.05.2020, and the exclusion of statements following the expiry of the period, section 42 UVPG.

On 15.05.2020, the BSH announced that the hearing would be carried out as an online conference on 17.06.2020. The display of further information of relevance to decision-making was also announced and the option of issuing an opinion up to 05.06.2020 was granted.

The hearing took place on 17.06.2020.

The display of further information of relevance to decision-making was announced on 07.08.2020 and the option of issuing an opinion by 21.08.2020 was pointed out.

The content and handling of the individual opinions will be dealt with under Point 3.

2.3 Bases of the assessment

Pursuant to section 12(4) WindSeeG, the body responsible for the site investigation assesses suitability pursuant to section 10(2) WindSeeG.

To determine that the site is suitable for being put out to tender pursuant to Part 3 Section 2, an assessment is carried out pursuant to section 10(2) WindSeeG to determine that the construction and operation of offshore wind turbines at this site are not opposed (1) by the criteria for the impermissibility of designating a site in the Site Development Plan pursuant to section 5(3), and (2) by concerns of significance to planning approval pursuant to section 48(4)(1) WindSeeG in the case of sites in the Exclusive Economic Zone insofar as these can be assessed independently of the subsequent elaboration of the project.

Pursuant to section 5(3) WindSeeG, the designation of a site is impermissible if it is opposed by overriding public or private concerns. Pursuant to sentence 2, designations are particularly impermissible if

- they fail to comply with the requirements of spatial planning pursuant to section 17(1) of the Spatial Planning Act,
- they jeopardise the marine environment,
- they impair the safety and efficiency of traffic,
- they impair the security of territorial and alliance defence,
- the site lies in a designated protected area pursuant to section 57 of the Federal Nature Conservation Act or
- if they lie outside of clusters 1 to 8 in the North Sea and clusters 1 to 3 in the Baltic Sea as defined by the Spatial Offshore Grid Plan pursuant to section 17a of the Energy Act.
- Pursuant to section 48(4)(1) of the Offshore Wind Energy Act, a plan for the construction and operation of an offshore wind farm may only be approved if
- the marine environment is not jeopardised; in particular, that
  - pollution of the marine environment within the meaning of Art. 1(1)(4) of the United Nations Convention on the Law of the Sea dated 10 December 1982 (BGBl. 1994 II p. 1799) is not a concern and
  - bird migration is not jeopardised, and that
- the safety and efficiency of traffic are not impaired,
- the security of territorial and alliance defence is not impaired,
- it is compatible with priority activities under mining law,
- it is compatible with existing and planned cables, offshore connections, pipelines and other lines,
- it is compatible with existing and planned locations of converter platforms or transformer stations,
- other requirements pursuant to the Offshore Wind Energy Act and other regulations under public law are adhered to and
- the obligation pursuant to section 66(2) has been effectively declared if the plan refers to offshore wind turbines.

Whether the declaration is effective pursuant to section 66(2) WindSeeG can only be assessed once the subsequent project sponsor is known and therefore remains reserved for the planning approval process.

In accordance with the intention of the regulation to bring forward partial aspects of planning approval, the suitability assessment refers prognostically to the **period of time** that would also be covered by the planning approval authority decision. The explanatory memorandum of section 10(2) WindSeeG states: 'Certain partial aspects that were previously assessed in the planning approval process are assessed and decided on in the suitability assessment. The early assessment of these aspects significantly increases the likelihood of successfully completing the planning approval process to be carried out following the invitation to tender. Generally speaking, this additionally ensures that offshore wind turbines may actually subsequently be built on the sites that are put out to tender. This reduces the risk for the bidders and therefore tends to lead to lower bids in the invitations to tender.'

The assessment cannot therefore be limited to the issue of whether the site would be suitable for the construction and operation of an offshore wind farm at the time of the invitation to tender, as the suitability assessment is intended to determine, according to the rationale for the invitation to tender, whether a planning approval process for the site is subsequently likely to prove successful and the site can be developed.

The period of time to be taken into consideration for a planning approval decision for wind turbines arises from the general nature of the planning approval pursuant to section 74 of the Administrative Procedure Act (VwVfG) and the general legal effects of the planning approval

pursuant to section 75 VwVfG. Pursuant to section 74(1) VwVfG, the authority approves the plan and, in this context, decides on any necessary protective measures; section 74(2) VwVfG reserves the right to order these if a final decision is not possible. Pursuant to section 75(1) VwVfG 'planning approval […] is used to ascertain the permissibility of the project including the necessary follow-on measures on other installations with regard to all public concerns affected by it'. The principle of problem-solving therefore applies to sovereign planning. The requirement of giving comprehensive consideration to the public or private concerns affected by a project includes the fact that significant problems caused in its spatial environment by the planned project have to be solved[1].

Accordingly, the basis of this consideration is a prognosis regarding the likely effects of the planned installation.[2] It follows from section 75(2)(2) VwVfG, which only permits the ordering of subsequent protective measures during the life of the project subject to additional conditions, that this prognosis must always refer to the entire planned period of time. Pursuant to section 45(1) in combination with section 44(1) WindSeeG, the construction and operation of offshore wind turbines including any required ancillary facilities necessitate planning approval. Pursuant to section 48(7) WindSeeG, the planning approval decision issued for offshore wind turbines is limited for 25 years, whereby this limitation should refer to the operation of the installation as per the explanatory memorandum. The following is stated in this regard in BT doc. 18/10668 dated 14.12.2016: 'The regulation gives consideration to the circumstance that offshore wind turbines are now routinely designed for an operating period of 25 years.'

In the context of a planning approval decision for wind turbines, the prognosis of the planning approval authority therefore always refers to the period of time from the construction of the installation to the expiry of the 25-year operating period.

At the same time, the positive completion of the suitability assessment provides no guarantee of the subsequent permissibility of the construction and operation of offshore wind turbines at this site; instead, the planning approval authority must always check, pursuant to section 48(5)(2) WindSeeG, whether updates, amendments or specifics are required.

The **content** of the assessment refers to the construction and operation of offshore wind turbines and the ancillary technical and structural facilities required to construct and operate the installations.

Here, the regulation of section 10(2) WindSeeG picks up on the distinction in the context of sections 44 et seq. WindSeeG in which additional provisions apply to the planning approval of offshore wind turbines and their ancillary facilities but not to the installations for transmitting electricity from offshore wind turbines, to which the planning approval regulations also apply. As these installations are also not the object of the site investigation pursuant to section 13 WindSeeG, the suitability assessment was therefore limited to the offshore wind turbines including the required ancillary facilities and thus to the construction and operation of an offshore wind farm.

If, following the assessment, impairments of the criteria and concerns to be taken into

[1] Judgements dated 23 January 1981 - Federal Administrative Court 4 C 68.78 - BVerwGE (Federal Administrative Court Decisions) 61, p. 307 and dated 1 July 1999 - Federal Administrative Court 4 A 27.98 - BVerwGE 109, 192.

[2] Stelkens/Bonk/Sachs, VwVfG section 75, recital 70.

consideration in the context of the preparation of the FEP and the planning approval procedure are to be feared, a further assessment must be performed to ascertain whether the possible impairment could be prevented or compensated by **specifications** pursuant to section 12(5)(2) WindSeeG:

'The determination of suitability can include specifications for the subsequent project, particularly concerning the nature and scope of the site's development and its position on the site if impairments of the criteria and concerns pursuant to section 10(2) WindSeeG are otherwise to be feared due to the construction and operation of offshore wind turbines at this site.'

The mention of the 'nature and scope of the site's development and its position on the site' is intended to make it clear that regulations which can already be adopted without knowledge of the specific project parameters can be adopted as specifications. This does not involve any limitation of the content of the power to issue instructions. Instead, it follows from section 48(4)(2) WindSeeG that all regulations which are already possible for avoiding impairments of the concerns of planning approval should already be put in place within the context of the suitability assessment. The concerns of relevance to the approval of the plan then only have to be assessed in the context of the subsequent planning approval procedure insofar as additional or other significant aspects are recognisable in comparison with the site investigation of the site or the assessment conducted during the site investigation has to be updated or detailed further, particularly due to the elaboration of the project at the site.

3 Suitability assessment

Pursuant to section 10(2) WindSeeG, the construction and operation of offshore wind turbines at the respective site may not be opposed by the criteria for the impermissibility of designating a site in the Site Development Plan pursuant to section 5(3) or by concerns of significance to planning approval pursuant to section 48(4)(1) WindSeeG in the case of sites in the Exclusive Economic Zone.

3.1 Compliance with the requirements of spatial planning

Pursuant to section 10(2)(1) in combination with section 5(3)(1) WindSeeG, a site is only suitable if the construction and operation of offshore wind turbines comply with the requirements of spatial planning.

Pursuant to section 3(1)(1) Spatial Planning Act (ROG), the requirements of spatial planning represent the generic term for the objectives, principles and other requirements of spatial planning. Pursuant to section 4(1)(1) ROG, the objectives of spatial planning must be observed and the principles and other requirements of spatial planning must be taken into consideration in decisions requiring the weighing of interests or discretionary decisions in the case of planning and measures of spatial significance. For the German Exclusive Economic Zone, the Federal Ministry of Transport and Digital Infrastructure establishes a Spatial Plan as a legislative decree pursuant to section 17(1)(1) ROG.

The Spatial Plans for the German EEZ in the North Sea and Baltic Sea[3] specify the objectives and principles of spatial planning for this area in terms of economic and scientific use, in terms of guaranteeing the safety and efficiency of maritime shipping and in terms of the protection and improvement of the marine environment. Guidelines for spatial development are formulated, and objectives and principles, particularly areas for uses and functions, are defined. The Spatial Plans establish coordinated designations for the individual uses and functions of shipping, raw material extraction, pipelines and submarine cables, scientific marine research, wind energy generation, fishing and mariculture, as well as the protection of the marine environment.

The designation of sites N-3.7, N-3.8 and O-1.3 by the FEP 2019 has already been assessed to determine whether it observes the objectives of spatial planning and gives consideration to the principles.

3.1.1 Site N-3.7

Site N-3.7 lies in area N-3 of the Site Development Plan, which is designated outside of the surrounding shipping priority and reservation areas. The 'Europipe 1' pipeline runs through the area in a north-easterly direction and is secured by means of corresponding pipeline priority and reservation areas. Site N-3.7 itself is completely encompassed by the 'Gode Wind 01', 'Gode Wind 02', 'Gode Wind III' and 'Gode Wind 04' wind farms that are already in operation or will likely be in operation in 2025. In this regard, the construction and operation of installations at the site comply with the requirements concerning the spatial designations of the spatial planning surrounding site N-3.7.

Pursuant to the objective of Number 3.5.1 (8) of the Spatial Plan for the German EEZ in the North Sea, the hub height of wind turbines that are installed within sight of the coast or the islands

[3] Annex volume for BGBl. I No. 61 dated 25 September 2009, annex to the Regulation on Spatial Planning in the German Exclusive Economic Zone in the North Sea; annex volume for BGBl. I No. 78 dated 18 December 2009, annex to the Regulation on Spatial Planning in the German Exclusive Economic Zone in the Baltic Sea.

may be a maximum of 125 metres above MSL. This objective is intended to minimise negative effects on the landscape as viewed from the mainland and on tourism as far as possible. The Spatial Plan provides for more detailed clarification in the approval procedure, whereby elevated tourist viewpoints such as promenades must be taken into consideration in determining the visual range. This objective and the comparative proximity of the location of site N-3.7 to the coast may therefore result in possible restrictions regarding the height of the installation in the planning approval process and possibly the necessity of proceedings to obtain permission to deviate from the planning objective pursuant to sections 19, 6 ROG.

The further specifications of the Spatial Plan for the German EEZ in the North Sea, e.g. concerning the consideration of cultural heritage sites, the avoidance of negative impacts on the marine environment in the specific design of the construction and operation of installations or the dismantling of these must be observed.

3.1.2 Site N-3.8

Site N-3.8 lies in area N-3 of the Site Development Plan, which is designated outside of the surrounding shipping priority and reservation areas. The site lies within the eastern sub-area of the priority area for wind energy 'North of Borkum' as defined by the Spatial Plan, which gives the generation of wind energy priority over other uses of spatial significance in this area.

Site N-3.8 is bounded to the northwest by the 'Europipe 1' pipeline, which is secured through corresponding pipeline priority and reservation areas. With this overlapping designation, the concerns of the priority area for pipelines must be given priority consideration over the priority area for wind energy (objective Number 3.3.1 (3) of the Spatial Plan). Insofar as the installations to be constructed on the site adhere to the distances from priority and reservation areas for shipping or pipelines as required according to the Spatial Plan for the German EEZ of the North Sea, they comply with the spatial requirements of spatial planning.

Pursuant to the objective Number 3.5.1 (8) of the Spatial Plan, the hub height of wind turbines that are installed within sight of the coast or the islands may be a maximum of 125 metres above MSL. This objective is intended to minimise potential negative effects on the landscape as viewed from the mainland and on tourism as far as possible. The Spatial Plan provides for more detailed clarification in the approval procedure, whereby elevated tourist viewpoints such as promenades must be taken into consideration in determining the visual range. This objective and the comparative proximity of the location of site N-3.8 to the coast may therefore result in possible restrictions regarding the height of the installation in the planning approval process and possibly the necessity of proceedings to obtain permission to deviate from the planning objective pursuant to sections 19, 6 ROG.

The further specifications of the Spatial Plan for the German EEZ in the North Sea, e.g. concerning the consideration of cultural heritage sites, the avoidance of negative impacts on the marine environment in the specific design of the construction and operation of installations or the dismantling of these must be observed.

3.1.3 Site O-1.3

Site O-1.3 lies in the northern part of area O-1 in the Site Development Plan. The site is bounded to the east by the EEZ border with Denmark, to the west and north by priority areas 20 and 19 for shipping and to the south by the 'Wikinger' wind farm.

Pursuant to the objective of Number 3.5.1 (7) of the Spatial Plan for the German EEZ in the Baltic Sea (EEZ Baltic Sea ROV (Spatial Planning Ordinance)), the hub height of wind turbines that are installed within sight of the coast or the islands may be a maximum of 125 metres above

MSL. This objective is intended to minimise negative effects on the landscape as viewed from the mainland and on tourism as far as possible. The Spatial Plan provides for more detailed clarification in the approval procedure, whereby elevated tourist viewpoints such as promenades must be taken into consideration in determining the visual range. This objective and the comparative proximity of the location of site O-1.3 to the coast may therefore result in possible restrictions regarding the height of the installation in the planning approval process and possibly the necessity of proceedings to obtain permission to deviate from the planning objective pursuant to sections 19, 6 ROG.

In a document dated 01.04.2020, the Thünen Institute of Fisheries Ecology issued a statement explaining that site O-1.3 lies in a research area used for monitoring environmental radioactivity pursuant to section 161 of the Radiation Protection Act and for other initiatives (area 'B10'). It stated that the fishing required to obtain samples of marine biota within the German EEZ is only possible in a few locations in this area. The southern part of the planned site O-1.3 directly intersects the trawling strips so far used for sampling and the long-term data series obtained in the initiatives would therefore no longer be usable. In a message dated 15.06.2020, the Thünen Institute of Fisheries Ecology additionally submitted a chart indicating the surroundings of area B10 and trawling strips used from 2013 to 2017. According to this, two trawling strips intersect the southern part of the site and another runs along the southern border. As far as is recognisable, one of these trawling strips has been used several times.

In its opinion dated 13.05.2020, the Thünen Institute of Baltic Sea Fisheries also states that site O-1.3 lies in an area in which various standardised fisheries research trips are routinely conducted for the annual international assessment of the status of fish stocks in the Baltic Sea. Limiting access to this site could therefore impact fisheries research and thus impair the assessment of the status of commercial fish stocks.

Number 3.4 of the EEZ Baltic Sea ROV regulates scientific marine research. As research reservation areas, the Spatial Plan designates areas in which widespread long-term research series, particularly for investigating fish stocks, are conducted and which could be jeopardised in terms of their continuation by incompatible uses, particularly due to structural installations. In these areas, research is given particular weight in comparison with other uses in order to ensure the continuation of research activities (No. 3.4.1 (1) of the EEZ Baltic Sea ROV). Area B10 does not involve an area secured by spatial planning for research but areas and boxes that are effectively used purely for research. The southern part of site O-1.3 lies in an area that has already been a priority area for wind energy since 2009 due to the EEZ Baltic Sea ROV and in which, pursuant to No. 3.5.1 (1) of the EEZ Baltic Sea ROV, other uses of spatial significance are ruled out insofar as they are not compatible with the generation of wind energy. Furthermore, the site was already designated as part of cluster 1 for use through wind energy in the Spatial Offshore Grid Plan for the EEZ in the Baltic Sea. Further uses and, insofar as this involves a priority area for wind energy, the construction of wind turbines were therefore to be anticipated on this site. Insofar as the site does not coincide with the priority area for wind energy, the interest of research must be weighed up against these uses.

Site O-1.3 does not lie within a reservation area designated for marine research in the spatial planning. At the same time, the majority of the EEZ in the Baltic Sea is permanently blocked for the development of wind turbines due to its spatial planning designation as a shipping route or as a nature conservation area, and currently remains unreservedly available for research activities. Conversely, the construction of wind

farms is limited to the few sites designated in the FEP, but research is not ruled out in advance even in these areas. While the site is closed to general shipping traffic with the establishment of a safety zone and corresponding navigation regulations, research activities can be permitted in exceptional cases in coordination with the project developers and the responsible authorities if there are no opposing concerns, particularly the impairment of the safety and efficiency of traffic and the integrity of the installations. This must be decided on in the specific individual case.

The further specifications of the EEZ Baltic Sea ROV, e.g. concerning the consideration of cultural heritage sites, the avoidance of negative impacts on the marine environment in the specific design of the construction and operation of installations or the dismantling of these are not initially affected by the approval of suitability but have to be observed further on in the procedure.

3.2 No endangerment of the marine environment

Pursuant to section 10(2) in combination with section 5(3)(2) and section 48(4)(1)(1) WindSeeG, a site is only suitable if the construction and operation of offshore wind turbines do not jeopardise the marine environment, particularly if there are no concerns regarding the pollution of the marine environment within the meaning of Art. 1(1)(4) of the United Nations Convention on the Law of the Sea dated 10 December 1982 and bird migration is not jeopardised.

Pursuant to section 35(1)(1) in combination with Annex 5 No. 1.18 UVPG, a Strategic Environmental Assessment must be performed as part of the procedure for determining the suitability of a site.

The likely material environmental impacts on implementing the plan for this site are determined, described and assessed in the context of the Strategic Environmental Assessment. The issue of materiality is closely linked to the issue of the subsequent influence on the decision regarding the acceptance of the plan or initiative pursuant to section 44 UVPG.[4] For the suitability assessment and the applicable section 10(2) in combination with sections 5(3), 48(4)(1) WindSeeG, the endangerment of the marine environment must be ruled out due to the designations of the plan or materiality would be given if the marine environment were to be jeopardised.

All protected objects are taken into consideration in the Strategic Environmental Assessment pursuant to section 2(1) UVPG:

- People, particularly human health
- Fauna, flora and biodiversity
- Land, soil, water, air, climate and landscape
- Cultural heritage and other material assets
- The interrelationships between the above mentioned protected objects

Adherence to the regulations of special species protection (section 44 Federal Nature Conservation Act, BNatSchG), of European habitat protection (section 34 BNatSchG) and statutory biotope protection (section 30 BNatSchG) is additionally assessed.

For each of the three sites, the Strategic Environmental Assessment has shown that the marine environment is not in danger subject to adherence to the specifications listed in the draft determination of suitability.

This arises from the environmental reports for sites N-3.7, N-3.8 and O-1.3. Reference is made

[4] Kment in Hoppe/Beckmann/Kment, UVPG - Gesetz über die Umweltverträglichkeitsprüfung Umwelt-Rechtsbehelfsgesetz, Kommentar, 5th edition, section 40, recital 54.

to these documents in addition to the following explanations.

3.2.1 No concern regarding the pollution of the marine environment

Pursuant to section 48(4)(1)(1)(a) WindSeeG, the marine environment would particularly be in danger if the 'pollution of the marine environment' within the meaning of Art. 1(1)(4) of the United Nations Convention on the Law of the Sea (UNCLOS) were a concern. Pursuant to Art. 1(1)(4) UNCLOS, pollution of the marine environment means the 'introduction by man, directly or indirectly, of substances or energy into the marine environment, including estuaries, which results or is likely to result in such deleterious effects as harm to living resources and marine life, hazards to human health, hindrance to marine activities, including fishing and other legitimate uses of the sea, impairment of quality for use of sea water and reduction of amenities.'

The term energy can be widely interpreted according to the purpose of the regulation and encompasses all non-substance effects, i.e. due to heat, light, electrical and electromagnetic effects, sound and shocks, that are emitted into the water during the construction and operation of the installations.[5]

The term substances encompasses all objects.[6] The installations themselves and the other constituents required for construction do not constitute substances within the meaning of Art. 1(4) UNCLOS during the period of their intended use.[7]

The yardstick for the point in time at which deleterious effects arise or can arise from the introduction of substances pursuant to UNCLOS depends directly on the measures to be implemented by the states pursuant to Art. 194 UNCLOS. It states here:

'(1) States shall take, individually or jointly as appropriate, all measures consistent with this Convention that are necessary to prevent, reduce and control pollution of the marine environment from any source, using for this purpose the best practicable means at their disposal and in accordance with their capabilities, and they shall endeavour to harmonize their policies in this connection.'

Pursuant to Art. 194(3) UNCLOS, these measures 'shall deal with all sources of pollution of the marine environment. These measures shall include, *inter alia*, those designed to minimize to the fullest possible extent:

a) the release of toxic, harmful or noxious substances, especially those which are persistent, from land-based sources, from or through the atmosphere or by dumping;

[…]

d) pollution from other installations and devices operating in the marine environment, in particular measures for preventing accidents and dealing with emergencies, ensuring the safety of operations at sea, and regulating the design, construction, equipment, operation and manning of such installations or devices.'

This regulation shows firstly that the precautionary principle is given high priority. This is aimed at preventing damage to the protected objects in the first place. This should primarily be undertaken by preventing the introduction/release of harmful substances and energy. If this is not possible, introduction should be minimised. Art. 194(1) UNCLOS additionally

[5] Spieth in Offshore-Windenergierecht, section 48 WindSeeG, recital 66.

[6] Brandt/Gaßner for the predecessor regulation in section 3 SeeAnlV, recital 49.

[7] Spieth in Offshore-Windenergierecht, section 48 WindSeeG, recital 65.

demands cooperation between states. Accordingly, the strategies/objectives agreed in the context of marine protection conventions must also be observed in the interpretation.

Pursuant to the Marine Strategy Framework Directive (MSFD), the EU Member States are obliged to achieve or maintain good environmental status in the marine environment by the year 2020 at the latest (Art. 1(1) MSFD) in order to maintain biodiversity and to create and maintain diverse and dynamic oceans and seas that are clean, healthy and productive.

The following environmental objectives have therefore been developed by applying an ecosystem approach to control human actions and according to the precautionary and polluter pays principles:

- Seas without impairments caused by anthropogenic eutrophication
- Seas without pollution caused by noxious substances
- Seas without impairments of marine species and habitats caused by the effects of human activities
- Seas with sustainably and ecologically used resources
- Seas without pollution caused by waste
- Seas without impairments caused by anthropogenic energy inputs
- Seas with natural hydromorphological characteristics (see Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) 2012).

One of the essential objectives of the OSPAR Convention for hazardous substances is to achieve concentrations of hazardous substances in the marine environment that are near to the background values for naturally occurring substances and close to zero for substances created by man; it strives to implement suitable steps to achieve the termination of hazardous substance introductions, emissions and losses by 2020.

To counter the concern of marine pollution, the introduction of deleterious substances/energy should therefore also be avoided as far as possible pursuant to the MSFD and the OSPAR Convention. Insofar as avoidance is not possible and introduction is not impermissible from the outset, these should be minimised.

Limitation to the extent possible according to the state of the art is reasonable for the polluter.

The same applies to the MARPOL Convention. Developed under the leadership of the International Maritime Organization, the convention for preventing marine pollution by ships from 1973 (International Convention for the Prevention of Marine Pollution from Ships from 1973 dated 23 December 1981, BGBl 1982 II p. 2., MARPOL Convention) represents the legal basis for environmental protection in maritime shipping. It is aimed primarily at ship owners to prohibit operationally-related introductions into the sea, but also applies to offshore platforms pursuant to Art. 2(4) MARPOL. The objectives of the regulations of Appendices IV and V for avoiding and reducing the introduction of waste water and ship waste are particularly relevant to the suitability assessment. These objectives are implemented in the specifications for avoiding and reducing substance emissions with regard to the permissibility of sewage systems and ship waste.

The avoidance and reduction requirements arising from the UNCLOS and further multilateral conventions on marine protection form the basis of the Strategic Environmental Assessments for the sites.

As a result of the Strategic Environmental Assessment, the concern of pollution of the marine environment can be countered by the specifications for the avoidance and reduction of emissions (sections 4 to 15) listed in the draft

determination of suitability in the above mentioned sense, and if these specifications are complied with, there is no concern regarding any endangerment of the marine environment due to marine pollution according to current knowledge:

Reference is made to the assessment in the environmental report for a more detailed assessment of the concern of marine environment pollution and the necessary specifications.

3.2.2 No endangerment of bird migration

So that the construction and operation of the offshore wind farm do not jeopardise the marine environment, bird migration, in particular, may not be jeopardised pursuant to section 48(4)(1)(1)(b) WindSeeG. The intention of this regulation, which was introduced in the Offshore Installations Ordinance in 2002 and subsequently adopted in the WindSeeG, is the improved protection of those bird species that use the EEZ as feeding, stop-off or transit areas.[8] Endangerment is to be assumed if the migratory birds are hindered or impeded in their migration between their winter and summer quarters due to the offshore wind farm, e.g. because the wind farm alone or in combination with other projects has a barrier or barring effect with the result that the animals are exposed to increased risks during their passage, e.g. due to collisions with the installations.[9] A danger to bird migration exists if sufficient findings justify the prognosis that the occurrence of such endangerment is likely.[10]

The Strategic Environmental Assessment for sites N-3.7 and N-3.8 arrives at the conclusion that the endangerment of bird migration can be ruled out according to current knowledge.

Endangerment can be avoided and the ban on killing pursuant to species protection legislation can be upheld for site O-1.3 by specifying extended monitoring to identify hazard situations and by implementing suitable measures based on this, particularly the temporary shut-off of installations to prevent collisions between birds and installations. Reference is made to the explanations in the environmental report on site O-1.3 in all other respects.

3.2.3 No other endangerment

There is no other endangerment of the marine environment. In the context of the fundamental fact of the endangerment of the marine environment, all of the effects of the installation and the effects on the protected objects of the marine environment that are related to the existence of the installation itself must be assessed insofar as they are not already covered with regard to pollution or concern bird migration.[11] This includes any more far-reaching regulations of national and international environmental law, particularly the specifications of BNatSchG on species, habitat and biotope protection (sections 34, 44 and 30 et seq. BNatSchG). This additionally includes any effects on the landscape or the protected object of cultural heritage.

The Strategic Environmental Assessment also arrives at the result that there is no endangerment of the marine environment in terms of species, habitat and biotope protection subject to adherence to the specifications listed in the draft determination of suitability, e.g.

- the specification for the project sponsor to monitor bird migration at site O-1.3 and to temporarily shut off installations if necessary (section 44),

[8] Brandt/Gaßner, SeeAnlV, section 3, recital 49.

[9] Spieth in Offshore-Windenergierecht, section 48 WindSeeG, recital 71

[10] Dahlke in NuR 2002, 472 (474).

[11] Brandt/Gaßner, SeeAnlV, section 3, recital 54.

- the specification of a limit value for the permissible pile-driving noise during construction (section 8),
- the specification for coordinating simultaneous pile-driving work (sections 37, 40 and 43) and
- the consideration of cultural monuments when planning and carrying out work (section 36).

Reference is made to the environmental reports for details of the assessment.

3.2.4 Location outside of nature conservation areas

A site is unsuitable pursuant to section 10(2)(1) in combination with section 5(3)(5) WindSeeG if it is located within a designated protected area pursuant to section 57 BNatSchG, whereby this is also likely to lead to the endangerment of the marine environment. No new nature conservation areas have been designated in the vicinity of sites N-3.7, N-3.8 or O-1.3 since the assessment during the preparation of the FEP; updating the assessment that was positively concluded in the context of preparing the FEP 2019 is therefore not necessary.[12]

3.3 Safety and efficiency of traffic

A site is only suitable pursuant to section 10(2)(1) and (2a) WindSeeG in combination with section 5(3)(3) WindSeeG and section 48(4)(1)(2) WindSeeG if the construction and operation of offshore wind farms at this site do not impair the safety and efficiency of traffic.

The impairment of the **safety of traffic** is to be anticipated if the construction or the operation of installations causes a hazard, i.e. a situation, which, if unhindered, is sufficiently likely to cause damage to legally protected objects such as physical integrity or third-party property within a foreseeable time.[13]

The **efficiency of traffic** is concerned with the flow of traffic and thus the fluid, smooth and unhindered movement of traffic.[14] The efficiency of traffic is initially impaired when there is the possibility that the project will affect the normal movement of traffic more than just insignificantly, and not only when traffic accidents occur.[15] The specific circumstances of the individual case must be observed; here, this particularly refers to the vast expanse typical of the offshore area and thus the easier option of bypassing and sailing/flying around obstacles.[16]

3.3.1 Shipping traffic

In particular, the **safety of shipping traffic** can be affected due to an increase in the risk of collision as a result of the construction of wind turbines in the traffic area; as an actual obstacle, these increase the risk of collision between a ship and the installation but also between ships.

A decision must be made regarding the point in time as of which the construction of wind turbines constitutes a specific danger within the meaning of the standard and, on the other hand, which risk is still classified as acceptable. To do this, the Federal Ministry of Transport developed generally binding guideline values for the maximum collision repetition rate and thus defined the danger threshold in 2004 in a working group comprising the Federal Ministry for the Environment, the BSH, the Northern and North-western Waterways and Shipping Directorates (now the Directorate-General of Waterways and Shipping) and the external experts Germanischer Lloyd and GAUSS.

[12] FEP 2019, p. 132

[13] Brandt/Gaßner, SeeAnlV, section 3, recital 14.

[14] Brandt/Gaßner, SeeAnlV, section 3, recital 15.

[15] BVerwGE 16, 116,130f.

[16] Brandt/Gaßner, SeeAnlV, section 3, recital 15.

According to this, a collision repetition rate (between a ship and an installation) within a bandwidth from 100 to 150 years essentially constitutes an acceptable residual risk for the concerns of the safety and efficiency of shipping traffic.[17] If the collision repetition rate is less than 100 years but greater than 50 years, the routine assumption of acceptance is not applicable. However, no reason for the rejection of suitability would exist if the undershooting of the guideline value is insignificant for shipping and the marine environment due to the special circumstances of the individual case or can be compensated by means of conditions and requirements.

Compatibility with the concerns of the safety and efficiency of shipping traffic and the marine environment is routinely established if the collision repetition rate lies within the bandwidth of 100 to 150 years due to additional risk-mitigating measures.[18]

A collision repetition rate of less than 50 years is not acceptable[19] and would essentially lead to the unsuitability of the site unless specific additional measures ensure that the collision repetition rate is over 50 years and the undershooting of the guideline value of 100 years is classified as insignificant to shipping and the marine environment due to the special circumstances of the individual case or if additional measures lead to adherence to the guideline value of 100 years.

With regard to the **efficiency of shipping traffic**, whether and the extent to which traffic participants are hindered in or prevented from using an existing shipping route is material. The volume of traffic in the specific area and the extent of the effects forecast for the planned project on the particular traffic conditions on site are also material.[20]

With regard to the issue of whether the safety and efficiency of shipping traffic are significantly impaired in this sense, the BSH commissioned a report on the suitability of sites in the EEZ in the North Sea and the Baltic Sea from the point of view of shipping traffic and maritime policing[21] in the context of the site investigation. As part of the analyses, the possible effects of developing the sites to be investigated with offshore wind turbines on the safety and efficiency of shipping traffic including the related risks were investigated and assessed. The risks were analysed both qualitatively and quantitatively in this process.

In the qualitative analysis for each site, a description of the relevant traffic area was followed by an analysis of current and forecast future shipping traffic. The next step was a qualitative assessment of the effects of site development both for the construction phase and for the phase after completion of the respective wind farm. Various traffic situations such as encounters, overtaking or intersecting courses were subsequently analysed and also qualitatively evaluated in terms of the possible effects. Finally, recommendations for risk-mitigating measures were derived.

A cumulative analysis with all of the developed wind farm sites in the respective traffic area was

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[17] 'Genehmigungsrelevante Richtwerte für Offshore-Windparks – Bericht einer Arbeitsgruppe' No. 3 i, Federal Ministry of Transport, Bonn 14.03.2005.

[18] 'Genehmigungsrelevante Richtwerte für Offshore-Windparks – Bericht einer Arbeitsgruppe' No. 3 iii, Federal Ministry of Transport, Bonn 14.03.2005.

[19] 'Genehmigungsrelevante Richtwerte für Offshore-Windparks – Bericht einer Arbeitsgruppe' No. 3 vi, Federal Ministry of Transport, Bonn 14.03.2005.

[20] Brandt/ Gaßner, SeeAnlV, section 3, recital 16.

[21] 'Gutachterliche Stellungnahme gemäß § 12 Abs.3 WindSeeG - Voruntersuchung zur verkehrlich-schifffahrtspolizeilichen Eignung von Flächen in der AWZ der Nord- und Ostsee', DNV-GL on behalf of the Federal Maritime and Hydrographic Agency, 06.12.2019 (Report No.: M-W-ADER 2019.137, Rev. 1.00)

undertaken to assess the effects of the additional development at the respective site in quantitative terms. The time sequence of the development of all of the analysed sites was established according to the FEP 2019. Key variables for the assessment of the suitability of a site were, firstly, the statistically expected time between two collisions and, secondly, the classification of the calculated risk in the risk matrix of the BSH standard 'Design of Offshore Wind Turbines' (Standard Design). Classification was based on a combination of the collision frequency and the expected quantity of pollutants to be released, expressed as the risk priority number (RPN). The calculation of the expected time between two collisions is based on the harmonised assumptions according to the results achieved by the two Federal Ministry of Transport, Building and Urban Affairs (now the BMVI) working groups in 2004/05 and 2008 concerning parameters and basic assumptions for the creation of technical risk analyses for offshore-wind farms.[22]

The results are analysed with and without the consideration of additional measures that mitigate the risk of collision. In the quantitative section of the investigation, the following risk-mitigating measures were taken into consideration:

- Fitting of the ships with AIS (Automatic Identification System)
- Traffic monitoring and maritime surveillance
- Emergency towing capacities

Traffic monitoring and maritime surveillance can affect both non-manoeuvrable and manoeuvrable vessels. Non-manoeuvrable vessels can be detected, identified and directly addressed by traffic monitoring. Furthermore, necessary rescue measures can be initiated. For manoeuvrable vessels, three variants of traffic monitoring/maritime surveillance were defined:

- Variant 1:
  Complete traffic monitoring/maritime surveillance. This includes all maritime traffic control measures, including permanent (manual) observation of maritime traffic by trained navigators using AIS and radar. This method has the comparatively highest level of effectiveness with a factor of 4.0.
- Variant 2:
  Automatic monitoring/surveillance with manual option. Here, continuous automated evaluation of AIS data is carried out with regular manual evaluations. The effectiveness of this variant is rated with a factor of 3.0.
- Variant 3:
  Automatic evaluation. Here, events are monitored and if necessary, measures are triggered according to automatically generated signals if the values fall below specified limit parameters. The effectiveness here is a factor of 2.5.

The emergency towing capacities only concern ships that are unable to manoeuvre. The relevant performance data of emergency towing capacities are standby position, speed and bollard pull.

The levels of effectiveness of the respective collision avoidance measures taken into account are based on the results of a study carried out by Germanischer Lloyd in 2008.

The quantitative study is based on model installation patterns of the sites to be developed in the future as well as the installation patterns of the existing wind farms. The sites under consideration each represent the cumulative

[22] 'Offshore Windparks - Parameter für Risikoanalysen im Genehmigungsverfahren und Wirksamkeit kollisionsverhindernder Maßnahmen - Bericht', Germanischer Lloyd on behalf of the Federal Maritime and Hydrographic Agency, 29.07.2010 (Report No. SO-ER 2010.095 Version 1.0/2010-07-29).

situation at the time of completed construction within a radius of 20 nautical miles (nm).

For all of the analysed sites, the report showed that the guideline value of 100 years is not undershot or that undershooting it can be compensated through specifications in the determination of suitability and that, as a result, there is no risk to the safety of shipping. Nor do the construction and operation of wind turbines at the sites lead to any significant impairment in the efficiency of traffic. In detail[23]:

3.3.1.1 Site N-3.7

Site N-3.7 is located between the traffic separation schemes 'Terschelling – German Bight' and 'German Bight Western Approach' at a minimum distance of 2 nm and has a minimum water depth of 29 m in relation to LAT.

The wind farms 'Gode Wind 01' and 'Gode Wind 02' lie directly to the west of site N-3.7. The sites of the planned 'Gode Wind 04' and 'Gode Wind III' projects lie directly to the east of this site; the 'Europipe 2' gas pipeline runs directly adjacent in a north-south direction.

Further east are the deep-water roadstead and the traffic separation scheme 'Jade Approach'.

As per the status quo, the main through-traffic runs in traffic separation schemes to the north and south (channelled by means of a one-way system in each case), so there is little shipping traffic within and in the immediate vicinity of site N-3.7.

Assuming that shipping traffic in the North Sea will increase by a total of approx. 5.9% by 2021 and by approx. 14.4% by 2026 on the basis of 2018, no significant increase would be expected for the immediate area of site N-3.7 itself according to the expert report. Transit traffic will continue to use the traffic separation schemes.

Quantitative risk analysis

In the context of the quantitative risk analysis, the collision repetition rate for a collision between a ship and an installation at the analysed site was determined. All wind farms to be constructed by 2026 in the investigated traffic area are included in the analysis.

Without risk-mitigating measures, the collision repetition rate is 37 years. This repetition rate would constitute an unacceptable risk according to the approval-relevant guideline values if it could not be compensated through mitigation measures. Under consideration of AIS, automatic traffic monitoring/maritime surveillance according to variant 1 and the available official emergency towing capacities, the collision frequency for manoeuvrable und non-manoeuvrable vessels results in a repetition rate of 113 years. The 'Nordic' was taken into consideration as the available official emergency towing capacity. On consideration of the above mentioned assumptions and mitigation measures, the guideline value of 100 years is therefore exceeded with the result that, according to the legal presumption of the approval-relevant guideline values, suitability with regard to shipping concerns can be affirmed according to current knowledge.

Classification of the calculated risk in the risk matrix of Annex 1 of the BSH standard 'Standard Design'

The preliminary classification in the risk matrix according to 'Standard Design' reveals no special circumstances of the individual case that could oppose the suitability of the site.

[23] The majority of the following findings are taken directly from the report 'Gutachterliche Stellungnahme gemäß § 12 Abs.3 WindSeeG - Voruntersuchung zur verkehrlich-schifffahrtspolizeilichen Eignung von Flächen in der AWZ der Nord- und Ostsee', DNV-GL on behalf of the Federal Maritime and Hydrographic Agency, 06.12.2019 (Report No.: M-W-ADER 2019.137, Rev. 1.00).

In addition to the environmental risk, the consequences of a collision between a ship and the wind turbine and the consequences for personal safety are analysed in the risk matrix according to 'Standard Design'. Due to a lack of knowledge of the specific project parameters, classification according to the specifications of 'Standard Design' was carried out based on the assumption that the foundations of the wind turbines are planned and implemented such that they damage a ship as little as possible in the event of a collision (so-called collision-friendly foundations). The use of collision-friendly foundations is therefore a prerequisite for determining suitability and was included as a specification. In the subsequent planning approval process, this will have to be verified as part of the collision analysis with respect to the specific type of foundation used and its specific design for the wind turbines and the substation and the following classification will have to be updated.

On use of collision-friendly foundations, damage to the outer shell of the ship is not to be anticipated in the event of collisions with drifting ships at a drift speed up to 2 m/s. Taking risk-mitigating measures into consideration, the probability of an oil spill from a ship can be classified as 'extremely rare'. The scenarios involving an oil spill from the ship can be classified in the consequence classes 'considerable' to 'serious' and therefore placed in the risk matrix with an acceptable risk priority number (RPN) of 2 to 3.

The following risk-mitigating measures were taken into consideration in the calculations:

- Installation of AIS devices at the wind farm installations
- Traffic monitoring/maritime surveillance according to variant 1
- Official emergency towing vessel 'Nordic' in standby position

According to the specifications of 'Standard Design', the RPN determined in the individual scenarios may not exceed RPN 4 for wind turbines and RPN 3 for ships, the environment and personal safety. According to the results of the report, a maximum RPN of 3 occurs; the preliminary classification in the risk matrix according to 'Standard Design' therefore does not oppose the shipping traffic and maritime policing suitability of the site.

Qualitative risk analysis

Nor did any special circumstances opposing the suitability of site N-3.7 arise in the context of the qualitative risk analysis.

According to the expert assessment, no significant effects on the surrounding shipping traffic which could not be compensated for by conditions and requirements are to be anticipated due to the establishment of the construction site for constructing a wind farm at site N-3.7. An increase in the feeder and works traffic required for the construction site is to be assumed according to the report. In particular, this traffic will cross the traffic separation scheme 'Terschelling – German Bight'. However, the expert does not regard this to be an unacceptable risk as, firstly, effective traffic regulations such as the collision avoidance regulations (COLREGS) are in place and a reduction in traffic related to the wind farm is to be expected once the construction work has been completed, with the result that the volume of traffic crossing the traffic separation scheme 'Terschelling - German Bight' will also decrease.

Taking maritime traffic control by the WSV into account and subject to the availability of official emergency towing vessels, the shipping traffic and maritime policing suitability of the site is assumed as the result of the qualitative risk analysis under the following conditions:

For the construction phase

- Establishment of a safety zone around the construction site

- Ban on entering the safety zone during the construction phase
- Cardinal buoyage at the construction site
- Collision-friendly design of the installations
- Temporary marking of the installations during the construction phase
- Mobile traffic control on site by guard vessel

For the operational phase

- Maintenance of the safety zone
- General definition by the Directorate-General of Waterways and Shipping (GDWS) of possible navigation regulations for vessels with a maximum hull length of 24 m
- Equipping the wind farm with AIS
- Marking of the installations as shipping obstacles
- Maritime surveillance by the wind farm operator

Result

The collision repetition rate determined for site N-3.7 under consideration of risk-mitigating measures is 113 years and is thus higher than the relevant guideline value defined as at least 100 years by the Federal Ministry of Transport's 'Approval-relevant guideline values' working group. As the value of 113 years is only marginally higher than the guideline value of 100 years, the project sponsor must submit an updated risk analysis in the planning approval process so that the statement can be assessed during the planning approval procedure and further mitigation measures such as the reservation of an additional private emergency towing vessel can be ordered if necessary.

The assessment in the context of the qualitative risk analysis and the classification of the scenarios in the risk matrix according to 'Standard Design' do not reveal any special circumstances of the individual case that could oppose the suitability of the site in terms of shipping traffic and maritime policing. Insofar as was possible without knowledge of the specific project parameters, the required measures determined in each case were adopted as specifications in the draft determination of suitability (sections 16 to 20 and section 38). Reference is therefore made to the rationales of the individual specifications with respect to the safety and efficiency of shipping traffic.

3.3.1.2 Site N-3.8

Site N-3.8 is located between the traffic separation schemes 'Terschelling – German Bight' and 'German Bight Western Approach' at a minimum distance of 2 nm and has a minimum water depth of 29 m in relation to LAT.

The wind farms 'Gode Wind 01' and 'Gode Wind 02' lie directly to the east of site N-3.8. South of this area is the wind farm 'Nordsee One'. Near the western border of this area, the gas pipeline 'Europipe 1' runs in a northwest-southeast direction.

Further east are the deep-water roadstead and the traffic separation scheme 'Jade Approach'.

The main through-traffic runs in traffic separation schemes to the north and south (channelled by means of a one-way system in each case), so there is extremely little shipping traffic within and in the immediate vicinity of site N-3.8.

Assuming that shipping traffic in the North Sea will increase by a total of approx. 5.9% by 2021 and by approx. 14.4% by 2026 on the basis of 2018, the expert shipping report arrives at the result that no significant increase would be expected for the immediate area of site N-3.8 itself. Transit traffic will continue to use the traffic separation schemes.

Quantitative risk analysis

The collision repetition rate for a collision between a ship and an installation at the analysed site is determined in the context of the quantitative risk analysis. All wind farms to be

constructed by 2026 in the investigated traffic area are included in the analysis.

Without risk-mitigating measures, the collision repetition rate is 33 years. This repetition rate would constitute an unacceptable risk according to the approval-relevant guideline values if it cannot be compensated through mitigation measures. The collision frequency for the cumulative listing of manoeuvrable and non-manoeuvrable vessels results in a repetition rate of 100 years, taking into account AIS, automatic traffic monitoring/maritime surveillance according to variant 1 and the official emergency towing capacities available. The 'Nordic' was taken into consideration as the available official emergency towing capacity. On consideration of the above mentioned assumptions and mitigation measures, the guideline value of 100 years is therefore just adhered to with the result that, according to the legal presumption of the approval-relevant guideline values, suitability with regard to shipping concerns can essentially be affirmed.

Classification of the calculated risk in the risk matrix of Annex 1 of the BSH standard 'Standard Design'

The preliminary classification in the risk matrix according to 'Standard Design' reveals no special circumstances of the individual case that could oppose the suitability of the site.

In addition to the environmental risk, the consequences of a collision between a ship and a wind turbine and the consequences for personal safety are analysed in the risk matrix according to 'Standard Design'. Due to a lack of knowledge of the subsequent project parameters, classification according to the specifications of 'Standard Design' is based on the assumption that the foundations of the wind turbines are planned and implemented such that they damage a ship as little as possible in the event of a collision (so-called collision-friendly foundations). In the subsequent planning approval process, this will have to be verified as part of the collision analysis with respect to the specific type of foundation used and its specific design for the wind turbines and the substation and the following classification will have to be updated.

If the use of collision-friendly foundations is assumed, damage to the outer shell of the ship is not to be anticipated in the event of collisions with drifting ships at a drift speed up to 2 m/s. Overall, the frequency of an oil spill from a ship can be classified as 'extremely rare', taking into account the risk-mitigating measures indicated in the risk analysis. The scenarios described involving an oil spill from the ship can be classified in the consequence classes 'considerable' to 'serious' and therefore classified in the risk matrix with an acceptable risk priority number (RPN) of 2 to 3.

The following risk-mitigating measures were taken into consideration in the calculations:

- Installation of AIS devices at the wind farm installations
- Traffic monitoring/maritime surveillance according to variant 1
- Official emergency towing vessel 'Nordic' in standby position

According to the specifications of 'Standard Design', the RPN determined in the individual scenarios may not exceed RPN 4 for wind turbines and RPN 3 for ships, the environment and personal safety. According to the results of the report, the maximum RPN is 3; the preliminary classification in the risk matrix according to 'Standard Design' therefore does not oppose the shipping traffic and maritime policing suitability of the site.

Qualitative risk analysis

Nor did any special circumstances opposing the suitability of site N-3.7 arise in the context of the qualitative risk analysis.

According to the expert, the establishment of the construction site is not expected to have any significant effects on the surrounding shipping traffic which cannot be compensated for by conditions and requirements. An increase in the feeder and works traffic required for the construction site is to be assumed. In particular, this will cross the traffic separation scheme 'Terschelling – German Bight' before subsequently passing between the 'North Sea One', 'Gode Wind 01' and 'Gode Wind 02' wind farms to reach site N-3.8. On completion of the construction work, a decrease in construction site traffic can be expected. Only the vessels required to operate and maintain the wind farm will navigate to the area. As a result, the amount of traffic crossing the traffic separation scheme 'Terschelling – German Bight' will decrease quantitatively.

However, the expert does not regard this to be an unacceptable risk:

The distance to the north and south traffic separation schemes is at least 2 nm. For this reason, it is not assumed that the safety and efficiency of shipping traffic in the traffic separation scheme (TSS) will be impaired due to the development of site N-3.8.

For the construction phase, an overall minor impairment of the safety and efficiency of shipping traffic is assumed. This applies in particular to the TSS 'Terschelling – German Bight' and the TSS 'Jade Approach', which construction traffic will be forced to cross. In view of the personal responsibility of the respective ship's command for acting in accordance with the regulations in conjunction with the specifications of the COLREGS and the maritime traffic control set up by the WSV, the increase in risk induced by crossing the one-way routes of the traffic separation scheme can be regarded as manageable without the need for further risk-mitigating measures.

On completion of the construction work, a decrease in construction site traffic can be expected. Only the vessels required to operate and maintain the wind farm will navigate to the area. As a result, the traffic crossing the above-mentioned traffic separation schemes will be reduced in quantity and will therefore only constitute a minor impairment of the safety and efficiency of shipping traffic as compared to the status quo for the operating phase; however, this can be compensated by means of the measures already mentioned above.

As a result of the development and the resulting new obstacles to shipping, an increased probability of collision between a ship and offshore wind turbines is to be anticipated but can be compensated by means of conditions.

Taking maritime traffic control by the WSV into account and subject to the availability of official emergency towing vessels, the shipping traffic and maritime policing suitability of the site is assumed as the result of the qualitative risk analysis under the following conditions:

For the construction phase

- Establishment of a safety zone around the construction site
- Ban on entering the safety zone during the construction phase
- Cardinal buoyage at the construction site
- Collision-friendly design of the installations
- Temporary marking of the installations during the construction phase
- Mobile traffic control on site by guard vessel

For the operational phase

- Maintenance of the safety zone
- General definition by the GDWS of possible navigation regulations for vessels with a maximum hull length of 24 m
- Wind farm equipped with AIS
- Marking of the installations as shipping obstacles

- Maritime surveillance by the wind farm operator

Result

Taking risk-mitigating measures into consideration, the collision repetition rate determined for site N-3.8 is 100 years and therefore corresponds to the relevant guideline value defined as at least 100 years by the Federal Ministry of Transport's 'Approval-relevant guideline values' working group.

The assessment in the context of the qualitative risk analysis and the classification of the scenarios in the risk matrix according to 'Standard Design' do not reveal any special circumstances of the individual case that could oppose the suitability of the site in terms of shipping traffic and maritime policing. As the guideline value of 100 years is just achieved here, a review of the result of the expert report on the collision repetition rate is required as part of the subsequent planning approval procedure to determine any additionally required mitigation measures such as the reservation of an additional private emergency towing vessel. Updating will be specified in the determination of suitability.

Insofar as is possible without knowledge of the specific project parameters, the further measures required according to the report will also be adopted as specifications in the draft determination of suitability (sections 16 to 19 and section 41). Reference is therefore made to the rationales of these specifications.

3.3.1.3 Site O-1.3

Area O-1 is located south of the traffic separation scheme 'North of Rügen', which is a continuation of the TSS 'Bornholmsgat' in the German EEZ and in which most of the transit traffic between the North Sea and the Baltic Sea runs. Site O-1.3 is located in the northern part of area O-1 and therefore within a route currently used by shipping passing south of Bornholm.

West of site O-1.3 there is a priority area for transit traffic between Sweden and Stettin (PL); designated shipping route 20 according to the Spatial Planning Act. In the southern part of area O-1, the wind farms 'Viking' and 'Arkona Basin Southeast' have already been erected; these shield site O-1.3 to the south.

The site itself has a minimum water depth of 40 m in relation to MSL. The transit traffic runs through site O-1.3 and past it to the west and north. According to traffic statistics, an average of thirteen vessels per day pass through or alongside the site on north-south or east-west routes.

Assuming that shipping traffic in the Baltic Sea will increase by a total of about 2.9% by 2021 on the basis of 2018, no significant change in shipping traffic would be expected in the immediate vicinity of site O-1.3.

Based on the further assumption that shipping traffic in the Baltic Sea will increase by about 7.9% in total by 2026 on the basis of 2018, a small increase would be expected for the immediate area of site O-1.3. Based on the traffic forecast, an average of fourteen vessels per day would then pass through or alongside site O-1.3.

Quantitative risk analysis

The collision repetition rate for a collision between a ship and an installation at the analysed site is determined in the context of the quantitative risk analysis. All wind farms to be constructed by 2026 in the investigated traffic area are included in the analysis.

Without risk-mitigating measures, the collision repetition rate is 58 years. This repetition rate would constitute an unacceptable risk according to the approval-relevant guideline values if it cannot be compensated through mitigation measures.

The collision frequency for the cumulative listing of manoeuvrable and non-manoeuvrable vessels results in a repetition rate of 155 years,

taking into account AIS, traffic monitoring/maritime surveillance according to variant 3 and the official emergency towing capacities available.

For the Baltic Sea area, the 'Scharhörn' and the 'Arkona', which are used as federally-owned multi-purpose vessels, and three additional private emergency towing vessels stationed in Kiel, Warnemünde und Saßnitz were taken into consideration as the available official emergency towing capacity.

Taking into account the stated assumptions and mitigation measures, with a collision repetition rate of 155 years, the guideline value of 100 years is therefore adhered to with the result that, according to the legal presumption of the approval-relevant guideline values, suitability with regard to shipping concerns can essentially be affirmed.

Classification of the calculated risk in the risk matrix of Annex 1 of the BSH standard 'Standard Design'

The preliminary classification in the risk matrix according to 'Standard Design' reveals no special circumstances of the individual case that could oppose the suitability of the site.

In addition to the environmental risk, the consequences of a collision between a ship and a wind turbine and the consequences for personal safety are analysed in the risk matrix according to 'Standard Design'. Due to a lack of knowledge of the subsequent project parameters, classification according to the specifications of 'Standard Design' is based on the assumption that the foundations of the wind turbines are planned and implemented such that they damage a ship as little as possible in the event of a collision (so-called collision-friendly foundations). In the subsequent planning approval process, this will have to be verified as part of the collision analysis with respect to the specific type of foundation used and its specific design for the wind turbines and the substation and the following classification will have to be updated.

If the use of collision-friendly foundations is assumed, damage to the outer shell of the ship is not to be anticipated in the event of collisions with drifting ships at a drift speed up to 2 m/s. Overall, the frequency of an oil spill from a ship can be classified as 'extremely rare', taking into account the risk-mitigating measures indicated in the risk analysis. The scenarios described involving an oil spill from the ship can be classified in the consequence classes 'considerable' to 'serious' and therefore classified in the risk matrix with an acceptable risk priority number (RPN) of 2 to 3.

The following risk-mitigating measures were taken into consideration in the calculations:

- Installation of AIS devices at the wind farm installations
- Traffic monitoring/maritime surveillance according to variant 3
- Three official towing vessels in standby position in Kiel, Warnemünde and Saßnitz, as well as two multi-purpose ships

According to the specifications of 'Standard Design', the RPN determined for the individual scenarios may not exceed RPN 4 for wind turbines and RPN 3 for ships, the environment and personal safety. According to the results of the report, the maximum RPN is 3; the preliminary classification in the risk matrix according to 'Standard Design' therefore does not oppose the shipping traffic and maritime policing suitability of the site.

Qualitative risk analysis

According to the expert, nor did any special circumstances opposing the suitability of site O-1.3 which represent an unacceptable risk for shipping arise in the context of the qualitative risk analysis:

“Site O-1.3 is located in a transit route used by shipping as per the status quo. The transit route

here denotes the shipping movements in the southern part of the transit corridor referred to as Gate 6 in the expert shipping report.[24] A more detailed evaluation of the data underlying the expert shipping report has revealed that this represents 1,475 shipping movements per year, whereby the majority, i.e. 672 shipping movements per year, or 1.8 shipping movements per day, are passenger transits, and 538 shipping movements per year, or 1.5 shipping movements per day, are attributed to cargo. These figures also appear plausible according to the evaluation of AIS data from 2019 by HELCOM. The expert shipping report also assumes that the realisation of this site will force the traffic heading east and west in particular to move further to the north.

"In this respect, an increase in the risk to the safety and efficiency of shipping can be assumed from the start of realisation, which will require stringent implementation of mobile traffic control on site by one or more guard vessels.

Overall, the traffic space available to shipping to date will be restricted, which will be particularly noticeable at the northern intersections of the shipping routes [in this case, the TSS 'North of Rügen' and shipping route 20]. With reference to the personal responsibility of the ships' commands for rule-conformant conduct in connection with the measures recommended below, this increase in risk is also considered to be manageable without the need for further risk-mitigating measures."

According to the expert's statement, on completion of the construction work, east-westbound shipping traffic will also have come to terms with the fact that the site is closed to it, with the result that a reduction of the risk can be assumed from then on at the latest.

According to the expert shipping report, a decrease in construction site traffic can be expected on completion of the construction work. Only the vessels required to operate and maintain the wind farm will navigate to the area. This only constitutes a minor impairment of the safety and efficiency of shipping traffic as compared to the status quo for the operating phase; however, this can be compensated for by means of mitigation measures.

The development itself and the resulting obstacles to shipping will likewise lead to an increased probability of collision between a vessel and offshore wind turbines; according to the report, these can in turn be compensated for by means of conditions.

Taking maritime traffic control by the WSV into account and subject to the availability of official emergency towing vessels, the shipping traffic and maritime policing suitability of the site is assumed in the expert shipping report as the result of the qualitative risk analysis under the following conditions:

For the construction phase

- Establishment of a safety zone around the construction site
- Ban on entering the safety zone during the construction phase
- Cardinal buoyage at the construction site
- Collision-friendly design of the installations
- Temporary marking of the installations during the construction phase
- Mobile traffic control on site by at least one guard vessel

For the operational phase

- Maintenance of the safety zone

[24] Figure 5.7 of 'Gutachterliche Stellungnahme gemäß § 12 Abs.3 WindSeeG - Voruntersuchung zur verkehrlich-schifffahrtspolizeilichen Eignung von Flächen in der AWZ der Nord- und Ostsee' 2019.

- General definition by the GDWS of possible navigation regulations for vessels with a maximum hull length of 24 m
- Wind farm equipped with AIS
- Marking of the installations as shipping obstacles
- Maritime surveillance by the wind farm operator

As part of the consultation, the representative of the GDWS issued *inter alia* a statement regarding this assessment in a document dated 15.05.2020. According to this, it has been emphasised within the context of previous wind farm plans and the preparation of the FEP that site O-1.3 is located in a particularly exposed location in terms of shipping traffic and – due to the location in the immediate vicinity of main international shipping routes in the Baltic Sea – it is not possible to rule out its being a danger to shipping. Development of the site would lead to a part of the transit traffic using the international body of water of the Baltic Sea being forced away from its original routes on a bypass to the north. For this reason, when assessing the suitability of site O-1.3, it is considered necessary to question whether and to what extent development would result in a hazard to shipping and cause potential consequential risks for the protected objects mentioned above – apart from any loss of time or routes caused by the bypass:

Under such boundary constraints, vessel-vessel hazard scenarios for encounters, crossing or overtaking situations could arise if there is insufficient manoeuvring or avoidance space remaining as a 'buffer zone' in the immediate vicinity of the site in order to effectively prevent the risk of a collision between vessels – or of vessels colliding with structural installations. Additional examinations of these should be conducted based on simulations of various manoeuvres.

Furthermore, the calculations of the quantitative risk analysis are based on the assumption of idealised shipping routes according to Fig. 7-4 (p. 54 DNV-GL) – which assumes a wider bypassing of the developed site.

This assumption ought to be questioned, since the shipping traffic would most likely pass the developed site within the smallest possible distance (i.e. along the edge of the 500-metre safety zone) in order to reduce the distance travelled, time and fuel. As the site lies on and not only adjacent to an actually navigated route, it is presumed that the probability of collision is greater than that calculated.

After coordination between the GDWS and the experts, an additional analysis of the quantitative risk analysis must in any case be conducted if the supplementary qualitative examination provides evidence that crossings, encounters or overtaking manoeuvres could lead to routes involving minimal distances from the site, in order to simultaneously ensure a maximum distance from the traffic separation scheme or shipping route 20.

In coordination with the GDWS, the following situations were simulated:

- Passing by the developed site
- Encounter manoeuvres between the various vessel types characteristic for this sea area (ferries, tankers, traffic control vessels) under various weather conditions
- Passing a non-manoeuvrable, drifting vessel
- Intersecting courses between the various vessel types characteristic for this sea area (ferries, tankers, traffic control vessels) under various weather conditions

The supplementary report[25] comes to the conclusion that "if the obligations of the ship's command to properly undertake voyage planning and regular completion of voyages pursuant to Chapter V Rule 34 of the Annex to the SOLAS Convention are carried out, and under consideration of the risk-mitigating measures described in the original expert shipping report, along with any necessary additional conditions and requirements to be specified in the planning approval decision pursuant to section 48 WindSeeG, the realisation of site O-1.3 is not anticipated to lead to a significant limitation of the safety and efficiency of shipping."[26] In all simulations, the manoeuvres were performed without entering the safety zone of site O-1.3.

The experts consider the results of the original report confirmed, but additionally recommend that the hazard buoyage be left in the sea area throughout the construction phase so that the vessels are able to identify the safety zone visually as well as by means of the radar and thus avoid entering theses zones as planned.

The obligation was accepted as a specification and extended to include the option of being omitted at a later time with evidence of the cessation of the hazard.

The simulations assumed that the vessels always pass site O-1.3 at a distance of 1 nautical mile from the safety zone. This distance was selected based on the IMO guidelines and a PAINC recommendation.[27] It states here: "The basic rule which should firstly be adopted by navigators around or within OffshoreWindFarm zones is: 'Navigate with caution and avoid these OffshoreWindFarm areas as much as possible'."[28] According to the recommendation, the minimum distance from a safety zone of an offshore wind farm should be six times the length of the vessel plus 0.3 nm.[29] For the vessels routinely passing the traffic area of site O-1.3, this gives a minimum distance of 0.9 nm.

In the light of this, a sensitivity analysis or supplementary quantitative risk analysis was not necessary.

Based on the report, the GDWS arrived at the assessment in its opinion submitted on 08.10.2020 that there are no fundamental concerns against the suitability of site O-1.3 with regard to the needs of shipping, although it does see the need for additional measures: 'The results of the simulation lead to the conclusion that safely bypassing an offshore wind farm planned in existing shipping routes is only possible if sufficient spatial safety margins for encounters, manoeuvring and avoidance manoeuvres are available and maintained accordingly on the peripheries. It is therefore necessary, under consideration of the specifications of the international law of the sea, to ensure that the safety distance identified in the simulations is actually adhered to.

The [...] recommended additional [...] measures to identify the developed site permanently as a 'general hazard area' by means of cardinal marks in conformance with the IALA Maritime Buoyage System can essentially be followed." Taking into consideration the results of the supplementary report, it is considered necessary that a regulation relating to site O-1.3 for the permanent provision of corresponding

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[25] 'Erweiterte Untersuchungen der verkehrlichen Auswirkungen einer Bebauuung der Fläche O-1.3 der Ostsee', DNV GL 2020.

[26] DNV GL 'Erweiterte Untersuchungen der verkehrlichen Auswirkungen einer Bebauuung der Fläche O-1.3 der Ostsee', page 46.

[27] PIANC: REPORT No. 161-2018: (Interaction between Offshore Wind Farms and Maritime Navigation, dated March 2018, Brussels (Belgium).

[28] PIANC: REPORT No. 161-2018, Chapter 7.2.3., Page 46.

[29] ibid.

navigation signs according to the specifications of WSA Stralsund (in future: WSA Baltic Sea) be included in the 1st WindSeeG. This was undertaken in section 45(2) 1st WindSeeG, and the GDWS gave its consent on 12.10.2020.

Adherence to the regulations of the UNCLOS

In addition, according to the opinion of the GDWS with regard to the assessment of the suitability of site O-1.3, the regulations of the UNCLOS should also be taken into consideration. Based on the free movement guaranteed by international maritime law of shipping in the EEZ pursuant to Art. 58(1) UNCLOS, it is necessary to review whether and, if so, the extent to which impairments to the shipping routes navigated by international shipping according to customary law in the EEZ (in this case, routes south of Bornholm) would be anticipated by a determination of suitability. Specifically, it would be necessary to review whether the defined site O-1.3 is consistent with Art. 60(7) UNCLOS.

Pursuant to Art. 60(7) UNCLOS, artificial islands, installations and structures and their surrounding safety zones may not be constructed where they could hinder the use of recognised shipping routes that are important for international shipping.

The use here of the term 'recognised shipping routes that are important for international shipping' is not limited to areas for which the IMO has adopted route plans. Rather, the recognition of sea routes that are important for international shipping assumes an element of international use, namely that the sea area in question is used frequently and to a considerable extent by vessels sailing under the flag of a range of states.[30]

Although area O-1.3 is routinely navigated, with an average of 3.5 to 4 shipping movements per day, the volume of traffic is considered low compared to the shipping routes specified in the Spatial Plan. Furthermore, 2 of the 4 daily shipping movements are undertaken by the ferry connection between Kiel and Klaipeda, and therefore the route across the site is only used routinely by a few states compared to other routes. Therefore, the route to the south of Bornholm is not a shipping route within the meaning of Art. 60(6) UNCLOS. The state of Lithuania is involved in the current updating of the Spatial Plans and is participating in the exchange of expertise on the topic of shipping in preparation for the updating process. In this context, Lithuania has made no objections to the designation of the area for use by wind energy.

There is also no impairment within the meaning of Art. 78(2) UNCLOS.

Pursuant to Art. 78(2) UNCLOS, the exercising of the rights of the coastal state over the continental shelf may not impair or hinder in any unjustified way the shipping or any other rights or freedoms of other states. The rights and freedoms of shipping for the EEZ are specified in Part V UNCLOS and for the high seas in Part VII UNCLOS.[31] According to this, in the present case, the regulations of Part V apply. As noted, use of site O-1.3 for wind energy turbines and the associated blocking of shipping is compatible with the local specifications, in particular with Art. 60(7) UNCLOS. *Cross-border participation*

In the context of cross-border participation, an opinion from the General Director for Environmental Protection with regard to the interests of shipping has been received with the following content:

The development of the site may not lead to the impairment of the shipping routes to Polish harbours nor to the extension of the shipping routes to Polish harbours (in particular with respect to the routes between Swinemünde and

[30] Proelss in UNCLOS, Art. 60, recital 32.

[31] Maggio in UNCLOS, Art. 78, recital 13.

Ystad and between the Danish Strait and Swinemünde) for vessels with a draught of up to 15 m. Collision prevention measures should be undertaken during construction.

The ferry route between Swinemünde and Ystad runs between areas O-1 and O-2 within the priority and reservation area for shipping designated in the Spatial Plan for the Baltic Sea and on shipping route 20. The development on site O-1.3 complies with the distances specified in the Spatial Plan and the development of the site will therefore not lead to the extension of the routes and will thus have no influence on the depth of the fairway. It was likewise not possible to identify an influence on other routes to Polish harbours or other routes recognised by international maritime law. Prevention and mitigation measures were ordered for the construction and operation phases. In particular, the retention of the cardinal buoyage for the route between Swinemünde and Ystad can have a positive effect.

Result

Taking risk-mitigating measures into consideration, the collision repetition rate determined for site O-1.3 is 155 years and therefore corresponds to the relevant guideline value for a socially acceptable risk defined as at least 100 years by the Federal Ministry of Transport's 'Approval-relevant guideline values' working group. The assessment in the context of the qualitative risk analysis and the classification of the scenarios in the risk matrix according to 'Standard Design' do not reveal any special circumstances of the individual case that could oppose the suitability of the site in terms of shipping traffic and maritime policing.

In particular there is no significant impairment of the efficiency of shipping traffic. Although the site is currently crossed by a north-south transit route, meaning that the development would make bypassing necessary, this circumstance alone does not constitute a relevant impairment to the efficiency of shipping traffic. Instead, the impairment would only become significant if considerable detours and time delays had to be taken into account or the narrowing of existing traffic routes were to lead to traffic backing up and thus to considerable disruptions to the smooth process.[32] This is not anticipated based on the results of the supplementary expert analysis[33] and the results of the assessment of compatibility with the UNCLOS. For one thing, this is not an international shipping route or one designated in the Spatial Plan for the Baltic Sea.

However, as this site which is currently routinely navigated by transit traffic will no longer be available to shipping in the future, the developed site will have to be permanently identified as a 'general hazard area' by means of cardinal marks in accordance with the IALA Maritime Buoyage System. The other measures deemed necessary by the expert report will, as far as possible without knowledge of the specific project parameters, likewise be adopted as specifications in the draft determination of suitability (sections 16 to 19 and section 45). Reference is therefore made to the rationales of the specifications.

3.3.2 Air traffic

The construction and operation of offshore wind farms at the sites to be assessed do not lead to any impairment of the safety and efficiency of air traffic that cannot be compensated by means of specifications.

[32] Brandt/Gaßner, SeeAnlV, section 3, recital 16.

[33] 'Erweiterte Untersuchungen der verkehrlichen Auswirkungen einer Bebauuung der Fläche O-1.3 der Ostsee', DNV GL 2020, xxx.

The construction and operation of offshore wind farms can affect air traffic in various areas. The wind turbines and other high-rise buildings represent obstacles to crossing traffic but also to air traffic from and to the wind farm installations and to the wind farm's own helicopter landing deck. An improperly equipped landing deck or an improperly designed and marked winch operating area can also pose a hazard to air traffic associated with the wind farm.

Wind turbines and other installations as air traffic obstacles

Pursuant to Article 58(1) in combination with Article 87(1)(b) of the United Nations Convention on the Law of the Sea, the same freedoms as on the high seas essentially apply to the EEZ, including the freedom of overflight. Pursuant to Article 12 of the ICAO Convention, the regulations issued on the basis of the ICAO Convention apply over the open sea. Pursuant to Chapter 4.6 (b) of Annex 2 of the ICAO Convention, a minimum altitude of 150 metres essentially applies to VFR flights. Conversely, the ICAO only explicitly provides for a minimum altitude of 300 metres above the highest obstacle for cities, towns or settlements and assemblies of persons (4.6 (a) Annex 2 ICAO Convention). EU Implementing Regulation No. 923/2012 of the Commission of 26 September 2012 laying down the common rules of the air and operational provisions regarding services and procedures in air navigation (EU Implementing Regulation 923/2012), Annex I, SERA.5005 (f) No. 2 specifies further that flights may not be flown at an altitude less than '150 m (500 ft) above the highest obstacle within a radius of 150 m (500 ft) from the aircraft'. At the same time, pursuant to Chapter 3.2 Annex 2 ICAO Convention, the responsible pilot is not relieved by any regulation within the Convention of his responsibility for implementing all measures suitable for collision avoidance. Irrespective of the question of whether EU Implementing Regulation 923/2012 is implemented directly in the EEZ, it follows that a minimum altitude of 150 m over obstacles is a suitable measure for collision avoidance.

This means that the mere installation of wind turbines does not constitute a specific danger to the **safety of air traffic** since, on the one hand, only minimum altitudes are specified, i.e. they do not require static adherence, but that the pilots are instead required according to the ICAO to avoid collisions with obstacles through suitable measures such as adjusting their altitude subject to personal responsibility.

At the same time, the wind farm and its installations must be recognisable to the pilot as obstacles. Otherwise, there would be a sufficient likelihood of a pilot choosing the minimum altitude of 150 m over water, which could consequently lead to a collision between the aircraft and the installation.

Suitable aeronautical identification of the installations can be implemented to counteract this danger, thus making the wind farm visible to the pilot so that he can take the necessary measures. The corresponding identification of the installations is therefore required to ensure suitability. Identification specifically for the area of the German EEZ is specified in Part 5 of 'Standard Offshore-Luftfahrt" (SOLF) dated 17.08.2020. Pursuant to the introductory decree dated 17.08.2020, this Part 5 of the SOLF must be applied by the planning approval authority for all future projects. However, it is only initially binding for the administration, which is why adherence to Part 5 of the SOLF is specified in the determination of suitability. Reference is additionally made to the rationale for the specific specifications.

There is therefore no influence on the **efficiency of air traffic**, i.e. the flow of traffic, in the sense of more than a merely insignificant disruption of the fluid, smooth and unhindered movement of traffic, in relation to the construction of offshore wind farms at the investigated sites, as there are

sufficient avoidance options for air traffic outside of the air space above the sites but also by means of overflying.

Helicopter landing deck

Helicopter landing decks are routinely required to enable the wind farms to be reached at short notice for repair and maintenance work as well as for necessary rescue measures and thus constitute an integral element of offshore wind farms. Safe landing and take-off on and from the own or the neighbouring helicopter landing deck must be guaranteed despite development to be able to unreservedly determine the suitability of the site for the construction of a wind farm. The landing decks are routinely located on the substations of the offshore wind farms, which are in turn routinely located centrally within the site due to reasons of efficiency, safety and environmental protection and are thus positioned between the installations. To nevertheless be able to approach the substation safely amidst all of these obstacles, dedicated, adequately dimensioned and marked approach and departure corridors must be available in a suitable flying direction and must be kept free of developments. The establishment of such flight corridors at the site and, if necessary, keeping free the flight corridors for the helicopter landing decks of neighbouring projects are the prerequisite for determining the suitability of the respective site and were therefore adopted as specifications in the 1st WindSeeV, sections 22, 39.

Safe flight to the helicopter landing decks additionally necessitates the proper marking of the helicopter landing deck itself. This is also specified (section 23 1st WindSeeV). Reference is additionally made to the explanations in the rationale for the specific specifications.

Winch operating areas

Similarly to the helicopter landing decks, the wind turbines themselves are routinely equipped with winch operating areas to enable them to be reached at short notice for repair and maintenance work or in emergencies. Winch operating manoeuvres are routinely demanding flight situations that involve a number of risks. At the same time, winch operating areas on wind turbines are required to guarantee a second rescue route and thus to avoid risks to the physical integrity of personnel; transfer by means of ship is also demanding in this regard. In turn, the suitable marking of the winch operating area is required to ensure safe helicopter winch operation, and is specified through the inclusion of the 'Gemeinsamen Grundsätze des Bundes und der Länder über Windenbetriebsflächen auf Windenergieanlagen' (general principles of the Federation and the Länder on winch operating areas on wind turbines) dated 18 January 2012 (Federal Gazette No. 16, p. 338).

Due to the risks of winch operating manoeuvres, the establishment of winch operating areas on offshore platforms for the purpose of routine access is not permissible. Insofar as the project sponsor wishes to additionally establish a winch operating area to prevent dangers to life and limb, it must be provided with suitable marking to minimise the risk to the aircraft crew. A corresponding specification was therefore included in section 20 1st WindSeeV.

3.3.3 Result

The construction of offshore wind farms at sites N-3.7, N-3.8 and O-1.3 will not significantly impair the safety and efficiency of traffic in such a way that one of the sites is unsuitable as a result. Instead, the impairments caused due to the construction of installations can be prevented or compensated through specifications.

3.4 Security of territorial and alliance defence

A site is only suitable pursuant to section 10(2) in combination with section 5(3)(4) and

section 48(4)(1)(3) WindSeeG if the construction and operation of offshore wind turbines do not impair the security of territorial and alliance defence.

The maintenance of the functional capability of the armed forces and the performance of alliance tasks in the context of collective security systems are additionally of constitutional status. In particular, the intactness of the military training areas present in the North Sea and Baltic Sea is crucial to this.[34] Whether the impairment of boundary areas of these training areas constitutes a significant impairment to the concerns of territorial and alliance defence is dependent on the circumstances of the respective individual case.

In addition, territorial and alliance defence exercises are not limited to military training areas but also take place beyond these. In particular, the structural installations are a potential source of collision risks for the submarines used in these exercises. To prevent this risk, structural installations must be marked with sonar transponders.

Various underwater measuring devices are used during the construction and operation of the installations, particularly to implement specifications for investigating the related environmental impacts. This can lead to the interception of information, some of which is classified as secret. To avoid this in the interests of the security of territorial and alliance defence, the use of such devices must be limited to the extent necessary and Navy Command must be notified in good time.

The measures intended to ensure the safety and efficiency of shipping and air traffic also benefit military traffic.

3.4.1 Site N-3.7

The site is located beneath training areas ED-D 100, 100 A and 101 A. These training areas are used as of an elevation of 5,000 ft; the concerns of territorial and alliance defence are therefore not affected despite the overlap.

Site N-3.7 is additionally located within a training area for submarines. The resulting limitations were already classified as acceptable over 15 years ago by the Federal Armed Forces in favour of the generation of renewable energies.

On adherence to the specifications, the construction and operation of wind turbines at site N-3.7 do not lead to the significant impairment of military training areas.

The suitability of site N-3.7 in terms of territorial and alliance defence can therefore be assumed provided that:

- the installations constructed at the site are marked with sonar transponders in suitable locations and
- Navy Command is notified in good time in advance regarding the use of acoustic, optical, optronic, magnetosensory, electrical, electronic, electromagnetic or seismic underwater measuring devices (section 26)

3.4.2 Site N-3.8

The site is located beneath training areas ED-D 100, 100 A and 101 A. These training areas are used as of an elevation of 5,000 ft; the concerns of territorial and alliance defence are therefore not affected despite the overlap.

The construction and operation of wind turbines at the site do not lead to the significant impairment of military training areas if:

[34] Schmälter in Danner/Theobald, Energierecht SeeAnlV section 5 recital 38

- the installations constructed at the site are marked with sonar transponders in suitable locations and
- Navy Command is notified in good time in advance regarding the use of acoustic, optical, optronic, magnetosensory, electrical, electronic, electromagnetic or seismic underwater measuring devices (section 26)

3.4.3 Site O-1.3

The site is located beneath training area ED-D 47 C. This training area is used as of an elevation of 5,000 ft; the concerns of territorial and alliance defence are therefore not affected despite the overlap. The construction and operation of wind turbines at the site therefore do not lead to the significant impairment of these military training areas.

The northernmost part of site O-1.3 is additionally overlapped by the Swedish training area ESD-140. This extends from the surface of the water (MSL) to an altitude of 50,000 ft. As this area is under Swedish control, reference is made to the assessment in 3.9.5 (International military concerns) in this regard.

The suitability of site O-1.3 in terms of territorial and alliance defence can therefore be assumed provided that:

- the installations constructed at the site are marked with sonar transponders in suitable locations and
- Navy Command is notified in good time in advance regarding the use of acoustic, optical, optronic, magnetosensory, electrical, electronic, electromagnetic or seismic underwater measuring devices (section 26)

3.5 Compatibility with priority activities under mining law

Pursuant to section 10(2)(2a) in combination with section 48(4)(1)(4) WindSeeG, a site is only suitable if the construction and operation of offshore wind turbines are compatible with priority activities under mining law.

According to the legal rationale for section 48(4)(1)(4) WindSeeG, activities under mining law usually only exist if a licence to extract raw materials in a specific location is actually in use. Conversely, the mere existence of extensive exploration permits or authorisations does not usually constitute a priority activity under mining law.[35]

According to the BSH's knowledge, no licences to extract raw materials exist in the area of the sites to be assessed, sites N-3.7 and N-3.8 in the North Sea and O-1.3 in the Baltic Sea. In this respect, the sites to be assessed are compatible with priority activities under mining law.

However, site N-3.8 lies within a claim assigned by the responsible State Office for Mining, Energy and Geology (LBEG). Reference is made to the assessment of the suitability of the site in terms of compatibility with the rights of the holder of this permit to explore for natural resources as a private interest in 3.9.6.1 (Other activities under mining law).

3.6 Compatibility with existing and planned cables, offshore connections, pipelines and other lines

Pursuant to section 10(2)(2a) in combination with section 48(4)(1)(5) WindSeeG, a site is only suitable if the construction and operation of offshore wind turbines at this site are compatible

[35] German Bundestag, document 17/8860, p. 311

with existing and planned cables, offshore connections, pipelines and other lines.

Numerous submarine cables and pipelines, whose routing can be seen on the latest official BSH nautical charts, run in the area of the German continental shelf. The actual positions of the cables can deviate from the information in the nautical charts. In cases of doubt, information on submarine telecommunications cables can be obtained from Deutsche Telekom's submarine cables department.

Routes or route corridors for offshore connecting cables (section 5(1)(7) WindSeeG) and cross-border power lines (section 5(1)(9) WindSeeG) are designated in the FEP. No higher-level specialist planning is carried out for the other cables and pipelines. The specifications of the Spatial Plans for the German EEZ in the North Sea and the Baltic Sea form the framework for this planning.

Both the FEP and the Spatial Plans implement specifications that are intended to ensure the compatibility of planning with existing and planned cables and pipelines. These particularly include specifications for distances to be maintained from existing or planned cables and pipelines, for the avoidance of intersections and for the design of unavoidable intersections.

To guarantee the suitability of the sites to be assessed, specifications are also required for planning and constructing the installations at the sites (section 32):

- When planning and carrying out work in the vicinity of existing third-party submarine cables and pipelines, their safety must be taken into consideration.
- If possible, internal farm cable intersections with third-party cables or pipelines must be avoided.
- Essentially, no influences whatsoever may be exerted on the sea floor in a protected area 500 m to either side of third-party cables or pipelines. Deviations must be agreed with the respective owner if necessary.

3.6.1 Site N-3.7

No operational cable or pipeline known to the BSH runs within site N-3.7. The FEP 2019 designates part of the route for the AC cables for connecting the 'GodeWind 02' wind farm to the converter platform parallel to the north-western edge of the site. The FEP 2019 designates a route along the south-eastern edge of the site for the AC cables for connecting the transformer platform of site N-3.7 to the converter platform. According to planning principle 4.4.1.6 of the FEP 2019 ('Consideration of all existing and approved uses'), a distance of 500 m from these submarine cables must routinely be adhered to unless the subsurface conditions necessitate greater distances.

Insofar as the specified measures are implemented, the construction and operation of offshore wind turbines at site N-3.7 appear to be compatible with existing and planned cables, offshore connections, pipelines and other lines.

3.6.1 Site N-3.8

According to the designation of the FEP 2019, site N-3.8 is bisected into two areas by the active data cable 'TAT 14N'. The site is bounded to the southwest by the 'Europipe 1' natural gas pipeline. The protected area of 500 metres around the data cable and the natural gas pipeline was already taken into consideration on designation of the site in the FEP 2019.

Within site N-3.8 and some way along the eastern edge of the site, the FEP 2019 designates a route corridor for connecting the transformer platform and the converter platform. According to planning principle 4.4.1.6 of the FEP 2019 ('Consideration of all existing and approved uses'), this must be kept clear of any development over a regular width of 500 m on both sides of the submarine cable unless the subsurface conditions necessitate greater

distances. No internal farm cabling may be routed within this route corridor, and the internal farm cabling may not intersect the route corridor.

However, the internal farm cabling will have to intersect the active data cable 'TAT 14N' to connect the north-eastern part of the site to the transformer platform location designated by the FEP in the south-western part of the site. Based on the authorisation of section 12(5)(2) WindSeeG, the owner of the data cable cannot be ordered to tolerate this intersection as part of the determination of suitability. The intersection must therefore be contractually agreed with the owner of the data cable by the project sponsor.

Intersection structures are routinely constructed in the context of offshore projects. The state of the art applicable to this is set down e.g. in the recommendations of the International Cable Protection Committee (ICPC). According to current knowledge, no limitation of the suitability of the north-eastern part of the site is therefore assumed.

The BSH is not aware of any other operational pipelines or other lines located within the site. The FEP 2019 designates part of the route for the AC cables for connecting the 'GodeWind 02' wind farm to the converter platform parallel to the north-western edge of the site. The FEP 2019 designates a route along the south-eastern edge of the site for the AC cables for connecting the transformer platform of site N-3.7 to the converter platform. According to planning principle 4.4.1.6 of the FEP 2019 ('Consideration of all existing and approved uses'), a distance of 500 m from these submarine cables must routinely be adhered to unless the subsurface conditions necessitate greater distances.

Insofar as the specified measures are implemented, the construction and operation of offshore wind turbines at site N-3.8 appear to be compatible with existing and planned cables, offshore connections, pipelines and other lines.

3.6.2 Site O-1.3

No operational cable or pipeline known to the BSH runs within site O-1.3. The FEP 2019 designates part of the route for the AC cables for connecting the grid operator's transformer platform to the onshore grid parallel to the western edge of the site. According to planning principle 4.4.1.6 of the FEP 2019 ('Consideration of all existing and approved uses'), a distance of 500 m from these submarine cables must routinely be adhered to unless the subsurface conditions necessitate greater distances.

Insofar as the specified measures are implemented, the construction and operation of offshore wind turbines at site O-1.3 appear to be compatible with existing and planned cables, offshore connections, pipelines and other lines.

3.7 Compatibility with existing and planned locations of converter platforms or transformer stations

Pursuant to section 10(2)(2a) in combination with section 48(4)(1)(6) WindSeeG, a site is only suitable if the construction and operation of offshore wind turbines at this site are compatible with existing and planned locations of converter platforms or transformer stations. Pursuant to section 5(1)(6) WindSeeG, the FEP specifies the locations of converter platforms and, if possible, transformer stations.

3.7.1 Site N-3.7

For site N-3.7, the FEP 2019 designates a location at the eastern edge of the site for the transformer station of the wind farm to be constructed on the site.

As the transformer station will be constructed by the sponsor of the wind farm project, there are no fundamental concerns regarding the compatibility of the construction and operation of

wind turbines at the site with this planned location for the transformer station.

3.7.2 Site N-3.8

For site N-3.8, the FEP 2019 designates a location within the western section of the site for the transformer station of the wind farm to be constructed on the site.

As the transformer station will be constructed by the sponsor of the wind farm project, there are no fundamental concerns regarding the compatibility of the construction and operation of wind turbines at the site with this planned location for the transformer station.

3.7.3 Site O-1.3

For site O-1.3, the FEP 2019 designates a location for the transformer station for connecting the wind farm to be constructed on the site to the grid by the responsible grid operator. This location lies approximately centrally at the western edge of the site.

According to planning principle 4.4.1.6 of the FEP 2019 ('Consideration of all existing and approved uses'), a distance of at least 500 m must be adhered to between the transformer platform and the nearest wind turbines. This distance is intended to ensure that there is sufficient space for routing the AC cables to the platform. The FEP principle additionally refers to the required close coordination between the grid operator and the sponsor of the wind farm project. If these measures are implemented, there are no fundamental concerns regarding the compatibility of the construction and operation of wind turbines at site O-1.3 with this planned location for the transformer station.

In the opinion dated 15.06.2020, no objections were raised to the determination of the suitability of site O-1.3.

3.8 Position of the site within a BFO cluster

The permissibility of the designation of sites N-3.7, N-3.8 and O-1.3, etc. was assessed and affirmed in the context of establishing the FEP 2019 with respect to the position in a Spatial Offshore Grid Plan cluster (FEP 2019). For areas N-3 and O-1, the FEP refers primarily to the assessment in the context of preparing the Spatial Offshore Grid Plan (BFO). In this process, it was determined that these areas were already Spatial Offshore Grid Plan clusters. The Spatial Offshore Grid Plans will no longer be updated but will instead be superseded by the Site Development Plan. Accordingly, the result of the assessment for preparing the FEP cannot change, and no update is required. The sites are accordingly all located in clusters of the Spatial Offshore Grid Plans for the North Sea and Baltic Sea.

3.9 No opposition of other requirements pursuant to this law, other regulations under public law or other overriding public or private concerns

Finally, there appear to be no regulations under public law, overriding public or private concerns or other requirements pursuant to WindSeeG that oppose the suitability of the sites.

Pursuant to the specification from section 10(2)(2a) in combination with section 48(4)(1)(8) WindSeeG and 10(2)(1) in combination with section 5(3)(1) WindSeeG, the balancing of interests with other public and private concerns must be undertaken in this context.

Other material concerns to be considered in this case are:

- Fishing and marine aquaculture;
- Nature conservation and species protection as well as cultural heritage insofar as these have not already been taken into

consideration in the context of assessing the endangerment of the marine environment;

- Military concerns, unless these have been taken into consideration in the context of assessing the security of territorial and alliance defence;
- Concerns of private third parties with regard to other uses (mining, cables, pipelines or other lines, neighbouring wind turbines, tourism), unless these have been taken into consideration in the context of assessing the exclusion criteria.

The specifications of the FEP 2019, the safety and health protection regulations and the civil protection regulations are also taken into consideration as other requirements pursuant to WindSeeG or other regulations under public law.

3.9.1 Site Development Plan

The FEP was first made public on 28.06.2019 (FEP 2019). It is binding for planning permission and approval procedures, including for permitting the construction and operation of offshore wind turbines at the sites assessed here.

The FEP 2019 firstly designates areas with sites and the chronological sequence in which the designated sites should be put out to tender, including the designation of the respective calendar years, section 5(1)(1) to (3) WindSeeG. These designations form the framework for the present assessment.

The capacity likely to be installed at the designated sites is also specified, section 5(1)(1) to (5) WindSeeG. This capacity likely to be installed must be detailed in the context of the site investigation and specified as the result of the suitability assessment.[36] Reference is made to Chapter 1 with regard to the assessment of the capacity to be installed. With reference to the capacity to be installed, WindSeeG provides for an assessment of the explicitly preliminary specifications of the FEP in the context of the suitability assessment. In this regard, no opposition due to the divergent value can arise from the deviation in the capacity to be installed at site N-3.8 intended as the result of the suitability assessment from the specification of the FEP 2019.

Other of the FEP's specifications concern routes for cabling systems and locations for platforms, section 5(1)(6) to (10) WindSeeG as well as standardised technical principles and planning principles. The layout of the sites in the FEP 2019 already gives consideration to the majority of the effects on the respective site arising from the spatial designations and above all the planning principles. For instance, the distances defined in the planning principles between routes or locations and installations of the wind farm to be constructed at the site have already been taken into consideration in their layout. However, this is not possible in each case or inaccuracies, which can only be conclusively clarified in the context of fine planning at the respective planning approval process level, arise due to the FEP 2019's planning scale of 1:400,000.

To therefore ensure that the requirements of the FEP 2019 do not oppose the suitability of the site, the following measures, which refer to FEP planning principles, are particularly required and are specified:

- Keeping the route corridor designated in the FEP 2019 free and no intersection of the internal farm cabling (site N-3.8);
- Distance from the grid operator's converter platform designated in the FEP (site O-1.3);
- Keeping flight corridors free;

[36] BT doc. 18/8860 dated 21 June 2016, draft legislation of the CDU/CSU and SPD fractions; draft of legislation to introduce invitations to tender for electricity from renewable energies and for further amendments to the renewable energies legislation, p. 283

- Consideration of a protected area of 500 m around third-party cables or pipelines;
- Avoidance of intersections with third-party cables or pipelines;
- Distance of at least five times the largest rotor diameter from wind turbines of neighbouring sites.

3.9.2 Safety and health protection/civil protection

Protecting the safety and health of persons involved in the construction and operation of offshore wind turbines is another overriding public concern within the meaning of section 10(2)(1) in combination with section 5(3)(1) WindSeeG; the occupational health and safety regulations are other regulations under public law within the meaning of section 10(2)(2a) in combination with section 48(4)(1)(8) WindSeeG. The suitability of the site for the construction and operation of an offshore wind farm is therefore only given if adherence to the requirements of occupational safety and health is guaranteed.

At sea, this is essentially guaranteed by the fact that the Occupational Safety Act (ArbSchG) also applies there to employers, section 1(1)(2) ArbSchG. However the project sponsor is not always simultaneously the employer of the persons working there during construction and operation. The specification of independent duties that have to come into effect during the planning and execution of the installations is therefore required for the project sponsor. Amongst others, such duties include:

- Adherence to the German regulations on occupational health and safety
- Implementation of the applicable requirements of structural, technical installation and organisational fire protection
- The reservation of sufficient escape routes

Corresponding specifications were included in the draft determination of suitability (sections 27 to 31).

3.9.3 Fishing and marine aquaculture

The construction and operation of installations of both wind turbines and platforms, as well as internal farm cabling at the sites will lead to limitations to the potential field of activity for certain types of fishing solely to protect the integrity of the installations. In addition, a safety zone is routinely established at the start of the construction phase for wind farm sites and is also maintained during operation. The use of fishing rods, bottom trawl nets, drift nets or similar equipment, as well as anchoring within the safety zone is therefore essentially prohibited. The GDWS issues navigation regulations for safety zones; these routinely limit navigating the safety zone to the passage of vessels with a maximum hull length of 24 m and rule out further navigation. This is likely to result in corresponding additional restrictions as regards the execution of fishing at the sites to be assessed. These restrictions could affect both fishing as a private concern and as a public concern in terms of the population's security of supply.

However, there is no reliable information indicating that this restriction of fishing due to the construction and operation of wind turbines at the site will ultimately significantly impair the population's security of supply as a public concern.

In the past, fisheries associations have also pointed out that the fishing restrictions caused by offshore wind turbines constitute an impairment to their economic and thus private interests. The precise extent to which fishing will be restricted at the respective sites cannot yet be evaluated in detail at this point in time and must be assessed in the context of the planning approval procedure. At the present point in time at least, it is not apparent that the impairment of private concerns in terms of fishing or marine aquaculture would place the suitability of sites N-3.7, N-3.8 or O-1.3 into question or that

respective measures would have to be set out in the context of determining suitability.

In this regard, the State Fisheries Department in Bremerhaven states in its opinion dated 13.05.2020 that the permanent designation of a safety zone, the navigation regulations and restrictions on fishing to protect the integrity of the installations will lead to significant restrictions since, as also determined in the environmental reports, sites N-3.7, N-3.8 and O-1.3 are all used for fishing at present. In summary, the following points should be assessed as regards the concerns of fishing in the planning approval process for sites N-3.7, N-3.8 and O-1.3:

- Fundamental avoidance of further restricted and protected areas for fishing;
- Review and, if necessary, abolishment of navigation bans and safety distances for fishing vessels within sites N-3.7, N-3.8 and O-1.3 and in their vicinity;
- Review of the permissibility of active/passive fishing methods as well as aquaculture/mariculture within sites N-3.7, N-3.8 and O-1.3;
- Coverage of submarine cables and review of the necessity of installation-related restricted zones/corridors for submarine cables within sites N-3.7, N-3.8 and O-1.3, particularly with respect to bottom-contact fishing;
- Review of whether new infrastructure measures/routes related to sites N-3.7, N-3.8 and O-1.3 are to be installed in bundled form along/in existing corridors/areas;
- Safeguarding the ecological bases (spawning and nursery grounds) of important commercial fish species in connection with planning approval for sites N-3.7, N-3.8 and O-1.3.

The suitability assessment does not issue any general preliminary specifications as regards the points listed here. While a safety zone generally has to be established around an offshore wind farm, this does not necessarily lead to the exclusion of all fishing at the site. The regulations of the Federal Compensation Ordinance, for instance, show that passive fishing with creels and cages in certain areas of safety zones is considered possible insofar as the integrity of the installations is not impaired as a result. The specific assessment of whether and, if necessary, as of when this is possible within the project at the sites can only be carried out when the specific project parameters are known, and thus in the planning approval process at the earliest. A certain coverage of the internal farm cabling is already specified to protect the marine environment (section 6 1st WindSeeV) and the bundled installation of cables is ordered by the FEP.

The routes for the connecting cables of offshore wind farms are not the object of the suitability assessment regulations but are already specified by the FEP pursuant to its principles.

The Thünen Institute of Baltic Sea Fisheries also recommended safeguarding spawning and nursery grounds in its opinion dated 13.05.2020, in which it additionally states that site O-1.3 is located amidst the main spawning ground for cod. It was stated that, as no scientific findings concerning the influence of the construction and commissioning of wind turbines on cod are available at present, the effects on Baltic cod reproduction cannot be assessed.

Insofar as the sites are spawning and nursery grounds for important fish species, safeguarding this function of the sites was taken into consideration in the Strategic Environmental Assessment.

Amongst other aspects, it was determined, for instance, that the Arkona Sea (ICES square 24), to which site O-1.3 also belongs, is one of the

main spawning grounds of Baltic cod, in which mature adult animals from surrounding sea areas can gather during the spawning season (Bleil & Oeberst 2012). With regard to the effects, it was discovered amongst other things that the sound pressures occurring during pile-driving for foundations can potentially injure or kill cod and other fish (DeBacker et al. 2016) but that the sound protection measures specified in 1st WindSeeV or routinely ordered in the context of the planning approval process guarantee adequate protection for the fish. The sound protection measures of particular importance to fish include what is called soft-start (slow increase of the pile-driving energy), limitation of the maximum pile-driving energy and the pile-driving duration and ultimately adherence to the limit values defined for pile-driving sound.

The Strategic Environmental Assessment therefore did not conclude any significant impairment of spawning and nursery areas due to the development of the sites.

3.9.4 Nature conservation/species protection as well as cultural heritage and tourism

The concerns of nature conservation and species protection, the concerns of cultural heritage and the concerns of tourism were already examined in the context of the Strategic Environmental Assessment. Significant impacts on these concerns were negated, partly subject to the prerequisite of adopting specifications. With respect to cultural heritage, there are no indications of wrecks or other cultural goods worthy of protection, for instance. If indications arise further on in the procedure, the planning approval authority can implement more specific regulations.

In terms of tourism, it was ascertained that the sites are already of no outstanding importance due to their distance from the coasts and islands and due to the impacts of pre-existing wind farms and that the use e.g. of the site in the Baltic Sea by sailors will not be significantly limited due to the construction. Conversely, specifications were adopted for the protection of avifauna and porpoises. Reference is made to the explanations in the environmental reports, in Chapter 3.2 and in the rationales for the protected object-related specifications.

3.9.5 International military concerns

International military concerns do not appear to be affected by sited N-3.7 and N-3.8.

However, the northernmost part of site O-1.3 is overlapped by the Swedish training area ESD-140. This extends from the surface of the water (MSL) to an altitude of 50,000 ft. Temporary restrictions for shipping and aviation have to be anticipated in such areas.

Only one area at the edge of site O-1.3 protrudes into the military training area.

Provided that the restrictions accompanying the use of this area as a military training area are taken into consideration in the planning, implementation and operation of the project at the site, international military concerns do not appear to be significantly impaired. The representatives of the Federal Armed Forces explained during the hearing that they have already informed the Swedish military administration about the planned use of the site for constructing and operating a wind farm. No feedback has been forthcoming; in particular, the Swedish military administration has not opposed the suitability of the site.

In the context of international authority involvement, the Ministry of Defence Facilities Management stated on behalf of the Danish Ministry of Defence that, according to its assessment of the location of offshore wind turbines of site O-1.3 in the German EEZ, shadowing or interference could affect the aerial warning radar (S-723) of the Ministry of Defence on Bornholm. The Danish side assumes that it “can demand the elimination or reduction of the

damaging effects, whereby the likely extent of the damaging effects must be specified based on previously compiled analyses. If it is not possible to eliminate or reduce the damaging effects to a sufficiently satisfactory level, a requirement can be made for either an adjustment to the offshore wind turbine project or compensation for the construction of mitigation measures." Furthermore, the Ministry of Defence Facilities Management requested that it be included as an advisory party in the construction of the offshore wind farm and continuously informed regarding the progress of the matter.

The radar located on Bornholm has a range of 500 km; the distance between site O-1.3 and the radar station is around 1/10 of this distance. It therefore appears that it is not possible to rule out an influence in the form of radar shadow caused by the wind energy turbines between the turbines and Bornholm as seen from Bornholm. According to the explanations provided in the issued opinion, effects on the aerial warning radar are essentially possible, but the Danish side suggests that as a consequence planning must be adjusted if necessary or mitigation measures undertaken. No facts which speak against the general suitability of the site were presented. Furthermore, it is currently not possible to adopt a specification due to a lack of concrete evidence with regard to any impairments. Therefore, according to the issued opinion, an analysis of whether specific effects on the installations of the armed forces are possible can only be carried out when specific plans for the project are available.

For this reason, the Danish Ministry of Defence Facilities Management requests that it already be included in the planning process for the subsequent specific project. This will be performed once by the planning approval authority as part of cross-border participation. Furthermore, the subsequent project developer should include the Danish side in its planning process early on – for example, in the context of early participation in accordance with section 25(3) VwVfG – in order to prevent the subsequent need for any adjustments to the wind farm plans.

3.9.6 No overriding opposing private concerns

No overriding private concerns that oppose the suitability of sites N-3.7, N 3.8 or O-1.3 are apparent.

Private rights that can generally be impaired by the construction and operation of wind turbines include the private ownership of the installed and routed installations or the right to the established and practised business operation.[37] Suitability would not have to be rejected in this case even if the concerns of private third parties were at all affected. Instead, the concerns must outweigh the interest of determining suitability, and therefore of the construction and operation of an offshore wind farm at the site.

3.9.6.1 Other activities under mining law

While only a licence to extract raw materials in a specific location that is actually in use is to be evaluated as a 'priority activity under mining law' according to Chapter 3.5, other activities ahead of this actual extraction can also be planned or permitted at a site, e.g. exploration permits or authorisations from the responsible authority. If corresponding activities or their planning exist, these must be assessed as private concerns according to section 10(2)(1) in combination with section 5(3)(1) WindSeeG to determine whether they oppose the suitability of the site.

No information concerning non-priority activities under mining law is available at present for site N-3.7 and site O-1.3. However, site N-3.8 is

[37] Schmälter in Danner/Theobald, section 5 SeeAnlV, recital 62.

situated within a claim pursuant to section 7 of the Federal Mining Act (BBergG).

Site N-3.8

Site N-3.8 is situated completely within an area for which the responsible LBEG has issued a permit (B 20 008/71) to explore for hydrocarbons (crude oil/natural gas) for commercial purposes pursuant to section 7 BBergG. The initial notification was issued on 08.05.2006. The permit is still currently running until 31.05.2021.[38]

A permit pursuant to section 8 BBergG is required to extract natural resources. No corresponding permit currently exists in the area of site N-3.8.

In view of the overall size of the claim and the rights issued to the holder by the permit, no overriding concerns that could oppose the suitability of the site in this respect are currently recognisable.

In other procedures, the LBEG has pointed out that the accessibility of a concessionary area is essential. Whether specific orders have to be issued in this regard will have to be assessed in the context of the planning approval procedure. The adoption of corresponding specifications as a prerequisite for the suitability of the site does not appear to be necessary.

In the context of public participation, the State Office for Mining, Energy and Geology (LBEG) stated in a document dated 11.05.2020 that there are no concerns regarding the results of this suitability assessment with reference to the interests represented by it.

3.9.6.2 Neighbouring offshore wind farm projects

Overriding concerns of the respective neighbouring offshore wind farms that oppose suitability are not apparent.

Any impairments of stability (which is more of a public concern) are prevented by specifying minimum distances from the wind turbines of neighbouring projects.

Nor are relevant reductions in revenue due to follow-on effects to be anticipated for the sites to be assessed; in addition, they would not constitute an infringement of the right to the established and practised business operation. The operation reference required for this only encompasses direct infringements aimed at the operation as such and which do not only affect rights or legal interests that can be easily divorced from the operation.[39] Pure financial losses would not be covered.

[38] LBEG: Lower Saxony soil information system NIBIS at https://nibis.lbeg.de/cardomap3/# regarding 'claim B 20 008/71', accessed on 20.02.2020

[39] Federal Court of Justice rulings in civil matters 29, 65, 74.

4 Determination of the capacity to be installed

For each site whose suitability assessment reveals that it is suitable for being put out to tender, the capacity to be installed at the site must be specified by legislative decree pursuant to section 12(5)(1) WindSeeG for the subsequent invitation to tender by the BNetzA.

To do this, an overall picture must be prepared and the capacity likely to be installed that is defined in the FEP must be specified as part of the assessment of the suitability of sites.[40] In particular, the determination of the capacity to be installed must give consideration to the capacity likely to be installed at the site according to the FEP as an essential element of expansion control. In addition, the interaction between the offshore connecting cable intended for connecting the site, the capacity to be installed or already installed at other sites (particularly those to be connected using the same joint grid connection) and the uniform expansion of the use of offshore wind energy must also be taken into consideration. The scientific and technical state of the art concerning the possible scope of the capacity installed at sites must be taken into consideration, whereby the construction projects actually implemented at the time of determining suitability are an essential indicator. At the same time, however, possible extensions due to the technical progress anticipated up to the time of construction must also be taken into account.

4.1 Site N-3.7

A potential capacity of around 280 megawatts (MW) was determined for site N-3.7 during the preparation of the Site Development Plan 2019. However, the connecting cable intended for connecting the site to the grid only permits a capacity of 225 MW. The Site Development Plan 2019 therefore reduces the capacity likely to be installed to this value. According to the rationale of the FEP 2019, the construction of an additional AC connecting cable to exploit the full potential of the site is not possible due to spatial restrictions.

In its opinion dated 14.05.2020, the BMU objects to the strict designation of 225 MW and states that this restriction should be critically assessed and the capacity increased further on in the offshore site investigation procedure and on revision of the Site Development Plan in 2020. It states that the option for doing this must be kept open by means of a corresponding formulation in the 1st WindSeeV.

Previously constructed offshore wind farms are located in area N-3 and around site N-3.7; these render the installation of additional AC connections according to the planning and technical principles of the FEP impossible. These principles have been introduced to prevent dangers to the marine environment, impairments of the safety and efficiency of traffic and impairments of territorial and alliance defence and to reduce them to such an extent that no impairment or endangerment occurs.

Furthermore, an additional AC connecting cable was not specified in the FEP 2019 because it would not be used efficiently or to capacity. This would contradict the purpose of the FEP pursuant to section 4(2)(3) WindSeeG, according to which it sets down specifications with the objective of guaranteeing the structured and efficient use and capacity utilisation of the offshore connecting cables.

At 900 MW, however, the capacity of the DC connecting cable which will already enter operation in the so-called transitional system

[40] BT doc. 18/8860 dated 21 June 2016, draft legislation of the CDU/CSU and SPD fractions; draft of legislation to introduce invitations to tender for electricity from renewable energies and for further amendments to the renewable energies legislation, p. 283

also represents a limitation. Accordingly, no additional site potential can be exploited even if the transmission capacity between the transformer platform of the wind farm and the converter platform is increased: the standard transmission capacity of 900 MW of the DC system (NOR-3-3) intended for connecting the site to the grid will already be used to its full capacity by the capacities likely to be installed and specified in the FEP 2019 (N-3.7 – 225 MW and N-3.8 – 433 MW) and the grid connection capacities that have already been assigned (Gode Wind III and Gode Wind 04 together 241.75 MW). Increasing the capacity of site N-3.7 would therefore necessitate a corresponding reduction of the capacity to be installed at site N-3.8 but not to an increase in the total capacity to be installed.

Ultimately, the value of the capacity to be installed can only be adjusted in the context of the suitability assessment to the extent to which it does not undermine the specifications of the FEP or anticipate such specifications. Pursuant to section 4(2)(3) WindSeeG, the planning of offshore connecting cables in parallel with the expansion of electricity generation is precisely the objective and an essential task of the FEP. Accordingly, adjustments that would necessitate additional connecting cables are ruled out in any case when specifying the capacity to be installed in the context of the suitability assessment.

In the context of the suitability assessment, no changes enabling or necessitating the adjustment of the capacity to be installed have therefore arisen for site N-3.7 in the overall picture in comparison with the FEP 2019. The capacity to be installed for site N-3.7 is determined as 225 MW.

4.2 Site N-3.8

A potential capacity of around 440 MW was determined for site N-3.8 during the preparation of the FEP 2019. To adhere to the total statutory expansion volume pursuant to section 5(5)(1) WindSeeG of 700 to 900 MW per annum for all of the sites to be put out to tender for the year 2021, the capacity likely to be installed at site N-3.8 was reduced to 375 MW.

According to the draft bill for the amendment of the Offshore Wind Energy Act and other regulations in the version dated 26.06.2020, the limitation to a maximum of 900 megawatts per year is omitted and the FEP can designate sites with a capacity of around 1 gigawatt likely to be installed for the invitation to tender in 2021 pursuant to section 5(5)(1) draft WindSeeG.

The transmission capacity of the grid connection system NOR-3-3 must also be taken into consideration as the boundary constraint in this case. For this grid connection, the FEP 2019 specifies the standard transmission capacity of 900 MW for DC systems. An available capacity of 433 MW remains after deducting the grid connection capacities already assigned (Gode Wind III and Gode Wind 04, together 241.75 MW) and the capacity to be installed at site N-3.7 (225 MW, see Chapter 4.1). To use the grid connection system to its fullest extent, the specific capacity to be installed at site N-3.8 is defined as this value. This adjustment is also possible and necessary according to the intention of the law. Pursuant to the above mentioned explanatory memorandum, the interaction between the offshore connecting cable intended for connecting the site, the capacity to be installed or already installed at other sites and the uniform expansion of the use of offshore wind energy must also particularly be taken into consideration in addition to the specification of the capacity likely to be installed by the FEP.

The corresponding reduction due to the limited total capacity of the grid connection system NOR-3-3 is carried out for site N-3.8, not for site N-3.7, as its capacity to be installed has already been reduced in comparison with the site potential determined in the FEP 2019 due to the restrictions of the AC connecting cable.

As already explained in 4.1, deviating from the standard transmission capacity no longer appears possible for the grid connection system NOR-3-3 due to the advanced status of implementation of the grid connection project.

In the context of the suitability assessment, changes necessitating the adjustment of the capacity to be installed have therefore arisen for site N-3.8 in the overall picture in comparison with the FEP 2019. The capacity to be installed for site N-3.8 is determined as 433 MW.

4.3 Site O-1.3

In the Site Development Plan 2019, the capacity likely to be installed at site O-1.3 was reduced from around 420 MW to 300 MW in comparison with the potential capacity determined for the site. The FEP 2019 specifies a standard capacity of 300 MW for the AC concepts in the Baltic Sea.

The construction of an additional connecting cable will be forgone pursuant to the rationale of the FEP 2019 due to the low capacity utilisation and, in view of this, the capacity likely to be installed for site O-1.3 is specified as 300 MW.

In a document dated 14.05.2020, the BMU issued an opinion on the specification of the capacity in the suitability assessment, in which it states that the explanations from the FEP (2019) that a 300 MW AC cable is planned here as standard and that only 300 MW should therefore be transmitted are not convincing in view of the agreed increase in offshore expansion to 20 GW. It stated that the FEP 2019 did not provide for any additional AC cable because it would not be used to full capacity. This is based on the expansion target of 15 GW. In view of the due adoption of 20 GW by 2030 in the Offshore Wind Energy Act and the corresponding adjustment of the FEP in 2020, the potential of O-1.3 should be fully exploited. This could be accomplished, for instance, by connecting 400 MW in an AC cable (see connection of the 'Baltic 2' wind farm, etc.). The BMU also considers it possible to plan for transmission via an additional 300 MW cable at another time. After 2030, this cable could connect further wind farms in the Baltic Sea and would therefore only be partly used temporarily. However, such partial utilisation is not unusual for connections in the North Sea. Ultimately, a significant reduction in potentials in the Baltic Sea must also be rejected with regard to balanced expansion between the North Sea and the Baltic Sea.

According to the draft of the revised FEP in 2020, an additional connecting cable will nevertheless not be specified due to its low utilisation of a maximum of 120 MW or 40% of the cable capacity on adoption of a 300 MW connecting cable. One of the bases for this assessment is that site O-2.2 will remain under assessment even the draft FEP 2020.

The specification of a second connecting cable would therefore contradict the purpose of the FEP pursuant to section 4(2)(3) WindSeeG, according to which the FEP sets out specifications with the objective of guaranteeing the structured and efficient use and capacity utilisation of the offshore connecting cables. The costs of an additional connecting cable, which would not be used efficiently or at its full capacity in this case, are pointed out.

The alternative implementation of OST-1-4 in DC current does not appear possible with commissioning in 2026, as, among other reasons, the overall implementation period for a DC grid connection system according to the opinion of the TSO dated 20 July 2020 is approx. 11 years. Accordingly, OST-1-4 could only be put into operation in 2030 if DC current were used. In addition, the standard transmission capacity for DC grid connection systems in the German EEZ in the North Sea is 900 MW for zones 1 and 2. Such a grid connection would not even be used to half of its capacity. This would also contradict the purpose of the FEP of setting out specifications guaranteeing the structured

and efficient use and capacity utilisation of the offshore connecting cables.

As the planning of connecting cables is originally the task of the FEP, no capacity that would necessitate the construction and operation of an additional connecting cable can be specified in the context of the suitability assessment.

In the context of the suitability assessment, no changes enabling or necessitating the adjustment of the capacity to be installed have therefore arisen for site O-1.3 in the overall picture in comparison with the FEP 2019. The capacity to be installed for site O-1.3 is therefore determined as 300 MW.

5 Overall result

On fulfilment of and adherence to the specifications listed in the draft determination of suitability, sites N-3.7, N-3.8 and O-1.3 are suitable for the construction and operation of offshore wind turbines and thus for the BNetzA invitation to tender in 2021 with the capacity to be installed that is specified in Chapter 4.

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