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Hamburg, 15 December 2020

First Ordinance on the Implementation of the Offshore Wind Energy Act

(First Offshore Wind Energy Ordinance – 1. WindSeeV)

of 15 December 2020

The Federal Maritime and Hydrographic Agency decrees on the basis of Sec. 15 of the Renewable Energy Sources Ordinance of 17 February 2015 (Federal Law Gazette I p. 146), which was inserted by article 3(2) of the Act of 25 May 2020 (Federal Law Gazette I p. 1070), in conjunction with Sec. 11(2) of the Offshore Wind Energy Act of 13 October 2016 (Federal Law Gazette I pp. 2258, 2310) in agreement with the Directorate-General of Waterways and Shipping:

Table of contents

Part 1

General provisions

- Sec. 1 Scope
- Sec. 2 Definitions

Part 2

Determination of suitability

Chapter 1

Determination of suitability

- Sec. 3 Determination of suitability

Chapter 2

Specifications for the subsequent project

Division 1

General

Subdivision 1

Impacts of the project on the marine environment

- Sec. 4 Monitoring
- Sec. 5 Laying and dimensioning of internal wind farm submarine cables
- Sec. 6 Avoidance or reduction of emissions
- Sec. 7 Avoidance of noise emissions during the foundation, installation and operation of installations
- Sec. 8 Waste
- Sec. 9 Corrosion protection
- Sec. 10 Installation cooling
- Sec. 11 Waste water
- Sec. 12 Drainage system
- Sec. 13 Diesel generators
- Sec. 14 Scour and cable protection

Subdivision 2

General regulations pertaining to the safety and efficiency of shipping and air traffic

Sec. 15 Identification

Subdivision 3

Special regulations pertaining to the safety and efficiency of shipping traffic

Sec. 16 Maritime surveillance

Sec. 17 Design

Sec. 18 Traffic control during the construction phase

Sec. 19 Requirements for vehicles and equipment

Subdivision 4

Special regulations pertaining to the safety and efficiency of air traffic

Sec. 20 Helicopter winch operation

Sec. 21 Helicopter landing deck

Sec. 22 Flight corridors

Sec. 23 Tower illumination

Sec. 24 Identification of air traffic obstacles

Subdivision 5

Security of national and alliance defence

Sec. 25 Specifications for ensuring the security of territorial and alliance defence

Subdivision 6

Health and safety

Sec. 26 Principle

Sec. 27 Fire and explosion protection

Sec. 28 Intervention into the subsoil

Sec. 29 Monitoring of adherence to the health and safety regulations

Sec. 30 Other obligations

Subdivision 7

Compatibility with existing and planned cables, pipelines and facilities

Sec. 31 Compatibility with existing and planned submarine cables, pipelines and facilities

Sec. 32 Distance from wind turbines of neighbouring sites

Sec. 33 Infeed at the grid connection point

Subdivision 8

Other obligations of the project developer

Sec. 34 Design

Sec. 35 Determination, documentation and reporting of objects and erected installations

Division 2

Special specifications for site N-3.7

Sec. 36 Special provisions for protecting the marine environment

Sec. 37 Special provisions pertaining to the safety and efficiency of shipping traffic

Sec. 38 Special provisions pertaining to the safety and efficiency of air traffic

D i v i s i o n 3

S p e c i a l s p e c i f i c a t i o n s f o r s i t e N - 3 . 8

Sec. 39 Special provisions for protecting the marine environment

Sec. 40 Special provisions pertaining to the safety and efficiency of shipping traffic

Sec. 41 Special provisions pertaining to compatibility with the cable route defined in the Site Development Plan

D i v i s i o n 4

S p e c i a l s p e c i f i c a t i o n s f o r s i t e O - 1 . 3

Sec. 42 Special provisions pertaining to the protection of marine mammals

Sec. 43 Special provisions pertaining to the protection of avifauna

Sec. 44 Special provisions pertaining to the safety and efficiency of shipping traffic

Sec. 45 Special international military provisions

Sec. 46 Special provisions pertaining to compatibility with existing and planned locations of transformer platforms

P a r t 3

D e t e r m i n a t i o n o f t h e c a p a c i t y t o b e i n s t a l l e d

Sec. 47 Determination of the capacity to be installed

P a r t 4

C o n c l u d i n g p r o v i s i o n s

Sec. 48 Coming into force

P a r t 1

G e n e r a l p r o v i s i o n s

S e c . 1

S c o p e

For sites N-3.7 and N-3.8 in the German Exclusive Economic Zone in the North Sea and O-1.3 in the German Exclusive Economic Zone in the Baltic sea, as defined in the Site Development Plan of 28 June 2019, this ordinance determines

1. their suitability pursuant to Sec. 12 para. 5 sentence 1 of the Offshore Wind Energy Act of 13 October 2016 (Federal Law Gazette I p. 2258, 2310), last amended by article 2 of the law of 3 December 2020 (Federal Law Gazette I p. 2682),
2. the specifications for the subsequent project pursuant to Sec. 12 para. 5 sentence 2 of the Offshore Wind Energy Act, particularly concerning the nature and scope of the site development and the location of the development at the sites and
3. the capacity to be installed at the sites pursuant to Sec. 12 para. 5 sentence 1 in combination with Sec. 10 para. 3 of the Offshore Wind Energy Act.

Sec. 2
Definitions

Within the meaning of this ordinance:

1. ‚Waste‘ is waste within the meaning of Sec. 3 para. 1 of the Circular Economy Act of 24 February 2021 (Federal Law Gazette I p. 212), last amended on 23 October 2020 (Federal Law Gazette I p. 2232),
2. ‚Installation‘ is an installation within the meaning of Sec. 44 para. 1 of the Offshore Wind Energy Act with the exception of converter platforms and offshore connecting cables,
3. ‚Baseline survey‘ means the investigations underlying the environmental impact assessment for the planning approval process for the construction and operation of an offshore wind farm pursuant to the ‚Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment‘ standard¹,
4. ‚Third year of the investigation‘ means the updating of the baseline survey insofar as no more than five years lie between the completion of the baseline survey investigations and the start of construction,
5. ‚Emissions‘ are the direct or indirect introduction of substances or energy such as heat, sound, shock, light, electrical or electromagnetic radiation into the marine environment,
6. ‚FATO‘ means the defined final approach and take-off area above which the final approach procedure for hovering or landing an aircraft is completed and from which the take-off procedure of an aircraft is begun,
7. ‚Flight corridor‘ is the airspace area used by helicopters to approach and take off from offshore platforms,
8. ‚Ammunition findings‘ is unexploded ammunition in the sense of Sec. 3 para. 1 sentence 16 Explosives Act 10 September 2002 (Federal Law Gazette I S. 3518), last amended by article 232 of the ordinance of 19 June 2020 (Federal Law Gazette I S. 1328).
9. ‚MARPOL‘ is the International Convention for the Prevention of Marine Pollution from Ships with its six Annexes (Federal Law Gazette II 1977, p. 1492.),
10. ‚Offshore platform‘ is an installation within the meaning of no. 2 that is not a wind turbine; instead, it is an artificial platform in the sea with all of the necessary infrastructure components and safety equipment, irrespective of its design and type of use,
11. ‚TLOF‘ is the defined touch-down and take-off area on which a helicopter can touch down or take off; on a helicopter landing deck, FATO and TLOF are identical,
12. ‚Project developer‘ is
 - a) is the natural person or legal entity that submits the winning bid in the Federal Network Agency's invitation to tender pursuant to Sec. 23 of the Offshore Wind Energy Act and thus obtains the right to implement a planning approval process at the respective site pursuant to Sec. 24 of the Offshore Wind Energy Act,

1. ¹ Official note: published by and available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany, and archived in the German National Library.

- b) is the addressee of the planning approval decision or planning permission within the meaning of Sec. 56 para. 1 sentence 1 of the Offshore Wind Energy Act, or
- c) the legal successor of the natural person or legal entity according to a or b.

Part 2
Determination of suitability

Chapter 1
Determination of suitability

Sec. 3
Determination of suitability

Sites N-3.7 and N-3.8 in the German Exclusive Economic Zone in the North Sea and O-1.3 in the German Exclusive Economic Zone in the Baltic sea, as defined in the Site Development Plan of 28 June 2019, are suitable in accordance with the result of the preliminary investigation of these sites pursuant to part 2 Sec. 2 of the Offshore Wind Energy Act pertaining to the invitation to tender for sites which have undergone a preliminary investigation of sites in accordance with part 3 Sec. 2 of the Offshore Wind Energy Act.

Chapter 2
Specifications for the subsequent project

Division 1
General

Subdivision 1
Impacts of the project on the marine environment

Sec. 4
Monitoring

- (1) The project developer shall monitor the construction-related and operation-related impacts of the installations during the construction phase and at least during the first three years of operation of the installations as the basis for any measures to protect the marine environment to be ordered by the planning approval authority or the Federal Maritime and Hydrographic Agency as the responsible supervisory authority pursuant to Sec. 48 para. 4 sentence 3 of the Offshore Wind Energy Act or pursuant to Sec. 57 para. 2 sentence 3 or 5 of the Offshore Wind Energy Act.
- (2) As a basis for monitoring, the result of the baseline survey shall be updated based on the results of a third survey year to be carried out before the start of construction if there are no more than five years between the end of the baseline survey and the start of construction. If more than five years lie between the end of the baseline survey and the start of construction, the baseline survey shall be completely repeated prior to the start of construction.

- (3) The marine environment investigations shall be carried out according to the scientific and technical state of the art. Adherence to the scientific and technical state of the art is assumed if the investigations are carried out subject to observance of the 'Standard – Untersuchung der Auswirkungen von Offshore-Windenergieanlagen auf die Meeresumwelt' (Standard for the Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment).

Sec. 5

Installation and dimension of internal wind farm submarine cables

- (1) The project developer shall observe the planning principle of the Site Development Plan for sediment warming when dimensioning and laying the internal windfarm submarine cables.
- (2) The method for installing the internal wind farm submarine cables shall be selected so that the coverage required to adhere to the maximum sediment heating in accordance with para. 1 is achieved with the minimum possible impact on the environment.

Sec. 6

Avoidance or reduction of emissions

- (1) The project developer shall avoid emissions or reduce them if they are unavoidable.
- (2) For this purpose, the project developer shall in particular:
- a) plan and implement the installations such that emissions that are avoidable in accordance with the state of the art are not caused or, if causing such emissions is unavoidable due to the actions that are mandatory to meet the safety requirements of shipping and air traffic, that the impairments to the marine environment are minimised as far as possible,
 - b) use environmentally-compatible operating materials wherever possible to operate the installation and shall give preference to biologically degradable operating materials, if available,
 - c) secure all technical facilities used on the installation by means of state-of-the-art structural safety systems and measures and monitor them such that accidents involving pollutants and introduction into the environment are avoided and that it is ensured in the event of damage that the project developer can intervene immediately at any time and
 - d) implement organisational and technical precautionary measures for changing operating materials and for refuelling measures in order to avoid accidents involving pollutants and introduction into the environment.

Sec. 7

Avoidance of noise emissions during the foundation, installation and operation of installations

- (1) During the foundation and installation of an installation, the project developer shall use the state-of-the-art working method that produces as little noise as possible in accordance with the given circumstances.
- (2) The noise emissions caused by pile driving shall not exceed a sound pressure value of 160 decibels and a peak sound pressure level value of 190 decibels, each with

reference to micropascals per second, at a distance of 750 metres.

- (3) During pile driving work, the duration of the pile driving process including repelling shall be minimised.
- (4) The project developer shall select the installation design that produces as little operating noise as possible in accordance with the state of the art.
- (5) All blasting is prohibited.

Sec. 8

Waste

The introduction and discharge of waste into the marine environment are prohibited, unless they are permissible in accordance with the regulations of this ordinance.

Sec. 9

Corrosion protection

- (1) The corrosion protection used for the installation by the project developer shall be as free of pollutants and low in emissions as possible.
- (2) If possible, external current systems shall be used as cathodic corrosion protection on foundation structures.
- (3) If the use of galvanic anodes is unavoidable, it is only permissible in combination with coatings on the foundation structures. The content of minor constituents of the anode alloys, particularly cadmium, lead, copper and mercury, shall be reduced as far as possible. The use of zinc anodes is prohibited.
- (4) The use of biocides to protect the technical surfaces against the undesired colonisation of organisms is prohibited.
- (5) The project developer shall provide the installation with an oil-repellent coating in the area of the splash water zone.

Sec. 10

Installation cooling

A closed-loop cooling system, in which no cooling water or other material discharges into the marine environment occur, should be used to cool the installation.

Sec. 11

Waste water

- (1) Subject to para. 3, the project developer shall collect waste water from sanitation facilities, medical facilities, kitchens and laundries, transport it ashore and dispose of it there in accordance with the applicable statutory waste regulations.
- (2) The installation and operation of a waste water treatment plant on an offshore platform is not permissible.
- (3) Contrary to para. 2, a waste water treatment plant is permissible in individual cases on a permanently manned offshore platform, in particular if the negative impacts on the

marine environment associated with transporting the waste water ashore exceed the impacts associated with the discharge of the treated waste water. Proof that an individual case in accordance with sentence 1 exists shall be furnished by the project developer in the context of the planning approval process. The waste water treatment plant shall correspond to the technical state of the art.

- (4) In the case of waste water treatment plants that are permissible in accordance with para. 3, the project developer shall
- (5) treat all waste water from sanitation facilities, medical facilities, kitchens and laundries,
- (6) plan suitable sampling points at the infeed and discharge and
- (7) regularly sample and analyse the waste water.
- (8) The chlorination of waste water is not permissible.

Sec. 12

Drainage system

- (1) When using a light liquid separator, drainage water that is incurred shall not exceed an oil content of 5 milligrams per litre.
- (2) The oil content of the drainage water shall be continuously monitored at the discharge by the project developer by means of sensors. The current values measured with the sensors shall be remotely readable by the project developer.
- (3) Through automatic valves, the project developer shall ensure that the drainage water is not discharged into the marine environment in the event that the limit value in accordance with para. 1 is exceeded.
- (4) Extinguishing foam that is incurred on activation of the fire-fighting system shall not be discharged into the marine environment via the drainage system. To avoid this, drainage systems connected to helicopter landing decks shall be equipped with bypass systems to ensure that the extinguishing foam that is incurred is automatically discharged into a collection tank, bypassing the light liquid separators.

Sec. 13

Diesel generators

- (1) Diesel generators used on offshore platforms shall be certified in accordance with MARPOL Annex VI Tier III in terms of their emission values or in accordance with emissions standards that are verifiably at least equivalent.
- (2) The installation of permanent diesel generators on wind turbines is not permissible.
- (3) Low-sulphur fuel shall be used to operate diesel generators if possible.

Sec. 14

Scour and cable protection

- (1) If scour and cable protection measures are implemented, the project developer shall limit the introduction of hard substrate to the minimum level required to establish protection for the respective installation.
- (2) Only fillings consisting of natural stone or inert and natural materials shall be used as scour protection. The use of plastic or materials similar to plastic is not permissible.

- (3) Fillings consisting of natural stone or inert and natural materials shall always be used as cable protection. The use of cable protection systems containing plastic is only permissible in exceptional cases and shall be minimised.

Subdivision 2

General regulations pertaining to the safety and efficiency of shipping and air traffic

Sec. 15

Identification

- (1) Until they are removed from the sea area, the project developer shall equip the installations with facilities that guarantee the safety of shipping and air traffic in accordance with the applicable Federal Waterways and Shipping Administration regulations and the technical state of the art. Adherence to the technical state of the art is assumed if the following regulations are adhered to during the planning, implementation and normal operation of the visual and radio identification of the offshore wind farm facilities:
1. ‚Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs‘ (Directive on offshore installations to ensure the safety and efficiency of shipping), version 3.0 of 1 July 2019²,
 2. ‚WSV-Rahmenvorgaben Kennzeichnung Off-shore-Anlagen‘ (WSV framework specifications for marking offshore installations), version 3.0 of 1 July 2019³ and
 3. ‚IALA Recommendation O-139 on The Marking of Man-Made Offshore Structures‘, edition 2 of 13 December 2013 and ‚IALA Recommendation A-126 On The Use of the Automatic Identification System (AIS) in Marine Aids to Navigation Services‘, edition 1.5 of 24 June 2011 of the International Association of Marine Aids to Navigation and Lighthouse Authorities⁴.
- (2) On construction of further offshore wind farms immediately adjacent to the site, the project developer shall adapt the identification for securing shipping and air traffic according to the overall development situation in the traffic area in accordance with para. 1 in coordination with the developers of the adjacent projects.

Subdivision 3

Special regulations pertaining to the safety and efficiency of shipping traffic

Sec. 16

Maritime surveillance

The project developer shall carry out maritime surveillance for the site according to the state of the art and shall implement the measures required for avoiding collisions. Adherence to the state of the art is assumed if the specifications of the implementing directive ‚Maritime

² Official note: published by and available from the Directorate-General of Waterways and Shipping, Am PropsthoF 51, 53121 Bonn, Germany.

³ Official note: published by and available from the Directorate-General of Waterways and Shipping, Am PropsthoF 51, 53121 Bonn, Germany

⁴ Official note: published by and available from: International Association of Marine Aids to Navigation and Lighthouse Authorities, IALA-AISM HEADQUARTERS, 10 rue des Gaudines, 78100, St Germain en Laye, France.

Surveillance – Offshore Wind Parks' issued by the Federal Ministry of Transport and Digital Infrastructure, status April 2014⁵, are adhered to.

Sec. 17

Design

- (1) The project developer shall design and construct the installation in such a way that a ship's hull is damaged as little as possible in the event of a collision. The requirements of the ,Standard Design – Minimum requirements concerning the constructive design of offshore structures within the Exclusive Economic Zone (EEZ)'⁶ shall be taken into consideration.
- (2) The site should be developed coherently. The installations to be constructed should be integrated into the development situation of the area in which the site is located.

Sec. 18

Traffic control during the construction phase

- (1) To secure the area surrounding the construction site and to avoid collisions with ships, the project developer shall deploy a traffic control vehicle in the area of the construction site throughout the entire construction phase as of the start of installation or, if necessary, as of the start of required construction preparation measures. This vehicle shall implement traffic control measures as required. The traffic control vehicle shall be used exclusively for this purpose. The requirements of number 6.2.1 of ,Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs', version 3.0 of 1 July 2019⁷, shall be adhered to.
- (2) Until the regular identification enters operation, the installations shall be provisionally identified visually and by radio by the project developer pursuant to numbers 6.2.2 and 6.2.4 of ,Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs', version 3.0 of 1 July 2019.
- (3) The construction site shall be identified as a general hazard area pursuant to number 6.2.3 of ,Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs', version 3.0 of 1 July 2019, by laying lighted cardinal buoys.

Sec. 19

Requirements for vehicles and equipment

All vehicles and equipment that are used, including the traffic control vehicle, shall

1. comply with the Ordinance on the 1972 International Regulations for Preventing Collisions at Sea of 13 June 1977 (Federal Law Gazette I p. 813), last amended by article 22 of the law of 13 October 2016 (Federal Law Gazette I p. 2258), in terms of their identification and traffic behaviour.

⁵ Official note: published by and available from the Federal Ministry of Transport and Digital Infrastructure, Invalidenstraße 44, 10115 Berlin, Germany.

⁶ Official note: published by and available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany, and archived in the German National Library.

⁷ Official note: published by and available from the Directorate-General of Waterways and Shipping, Am Propsthof 51, 53121 Bonn, Germany.

2. comply with the standard of safety required for the federal flag or a verifiably equivalent standard of safety in terms of their equipment and crew.

Subdivision 4

Special regulations pertaining to the safety and efficiency of air traffic

Sec. 20

Helicopter winch operation

- (1) A winch operating area can be set up on an offshore platform for emergencies (rescue area). Its use is essentially limited to the prevention of danger to the life and limb of persons (emergency) or to necessary official measures.

Exceptional use of the rescue area is permissible if a technical incident has the potential to subsequently lead to an emergency and the following conditions are fulfilled in parallel:

1. intervention from land is not possible or countermeasures initiated have remained unsuccessful,
2. the hazard potential has to be reduced within a short period of time to prevent the occurrence of an emergency,
3. there are temporarily no more suitable options available for accessing the offshore platform.

Routine access to the offshore platform by persons by means of helicopter winch operation is not permitted.

- (2) The winch operating area on a wind turbine shall be designed, identified and operated by the project developer in accordance with the regulations of the 'Gemeinsamen Grundsätze des Bundes und der Länder über Windenbetriebsflächen auf Windenergieanlagen' (General principles of the Federation and the Länder relating to winch operating areas on wind turbines) of 18 January 2012 (Federal Gazette No. 16, p. 338) or in accordance with the successor regulations for the German Exclusive Economic Zone.

Sec. 21

Helicopter landing deck

- (1) If a helicopter landing deck is established on an offshore platform of the offshore wind farm, the regulations of Annex 14 Volume II to the Convention on International Civil Aviation of 7 December 1944 (Federal Law Gazette 1956 II p. 412), last amended by the Protocol of 6 October 2016 (Federal Law Gazette 2018 II pp. 306, 307) are to be complied with, or the provisions of the successor regulations for the German Exclusive Economic Zone.
- (2) The project developer shall ensure the safe operation of the helicopter landing deck through structural and operational measures.

Sec. 22

Flight corridors

- (1) The project developer shall provide at least two flight corridors, each consisting of an inner corridor and two flanking outer corridors, for the establishment of which the following regulations or, after its entry into force, the provisions of the 'Standard

Offshore-Luffahrt für die deutsche ausschließliche Wirtschaftszone' (Offshore aviation standard for the EEZ)⁸⁾, shall be compiled with. The flight corridors shall always be kept free of any development above the surface of the water. In justified exceptional cases, the construction of obstacles in the flight corridor or the establishment of a flight corridor despite the presence of obstacles can be approved by the Federal Maritime and Hydrographic Agency with the consent of the Federal Ministry of Transport and Digital Infrastructure. By submitting a risk assessment prepared by an aviation expert, the project developer shall verify to the Federal Maritime and Hydrographic Agency that the obstacles pose no hazard to the safe operation of the helicopter landing deck. Flight corridors shall not be established beyond the boundaries of the German Exclusive Economic Zone.

- (2) When planning a flight corridor to or from an offshore platform, the respective corridor axis shall be aligned such that arrivals or departures with tailwind can be avoided, crosswind conditions can be minimised and safe take-off is possible. A flight corridor shall be planned in linear form along its entire length; overlaps with adjacent flight corridors are not permissible. The respective corridor axis begins at the centre point of the FATO.
- (3) The length of the flight corridor shall be determined along the respective corridor axis at the level of the FATO. This distance starts at the inner edge according to para. 4 no. 1 and ends at the point at which a straight line, which also starts at this point and ascends with a constant slope of 4.5 percent, reveals one of the following vertical distances from the corridor axis; the higher of the two following elevation values applies in this case:
 1. An elevation of 152 metres or
 2. An elevation corresponding to the sum of the highest obstacle in the area relevant to approach or departure and a safety margin of at least 61 metres.
- (4) The boundaries of the inner corridor consist of
 1. a horizontal inner edge with the width of the FATO, starting at the outer edge of the FATO and running perpendicular to the corridor axis,
 2. two side edges that diverge with a divergence of 15 percent up to a width of 200 metres,
 3. a horizontal outer edge that is perpendicular to the corridor axis at a fixed height relative to the FATO.
- (5) The width of each outer corridor is at least 200 metres. If the obstacle backdrop along the flight corridors consists of wind turbines, the width of both outer corridors is three times the rotor radii of the largest wind turbines adjacent to the flight corridor, but at least 200 metres.
- (6) The landing and take-off baselines correspond to the course of the respective corridor axis.

⁸⁾ Official note: Available after publication from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany.

Sec. 23

Tower illumination

- (1) If the helicopter landing deck is to be operated at night, the project developer shall equip its own wind turbines along the flight corridors with tower illumination pursuant to the ,WSV- Rahmenvorgaben Kennzeichnung Offshore- Anlagen⁹. Provisions shall be implemented to ensure the activation and deactivation of the tower illumination together with the other aero-nautical lighting of the helicopter landing deck.
- (2) Insofar as third-party flight corridors of third parties are located in the site or directly adjacent to it, the project developer shall tolerate the installation of tower illumination on the wind turbines concerned and shall enable remote access for the purpose of controlling the tower illumination. As the operator of the tower illumination, the third party shall be granted access to the wind turbines concerned for the purpose of regular operation, maintenance during the normal hours of operation and business and for fault rectification unless other agreements concerning maintenance and operation, including fault rectification, have been reached. The costs incurred for installation, operation, fault rectification and maintenance of the tower illumination shall be borne exclusively by the third party as the operator of these systems. The specification concerning the freedom of flight corridors from obstacles applies accordingly to the flight corridors of neighbouring projects at the site.

Sec. 24

Identification of air traffic obstacles

The project developer shall identify the installations as air traffic obstacles as well as other obstacles in the vicinity of the helicopter landing deck according to the specifications of the ,Standard Offshore-Luft- fahrt, Teil 5: Kennzeichnung von Luftfahrthindernissen in der AWZ' (Offshore aviation standard, Part 5: Identification of air traffic obstacles in the EEZ) of 17 August 2020¹⁰ or the successor regulation for the German Exclusive Economic Zone.

Subdivision 5

Security of territorial and alliance defence

Sec. 25

Security of territorial and alliance defence

- (1) The erected installations shall be identified with sonar transponders in suitable corner positions. Sec. 15 para. 2 shall apply mutatis mutandis.
- (2) The use of acoustic, optical, optronic, magnetic, electrical, electronic, electromagnetic or seismic sensors in measuring devices on unmanned underwater vehicles or on station-

⁹ Official note: published by and available from the Directorate-General of Waterways and Shipping, Am PropsthoF 51, 53121 Bonn, Germany.

¹⁰ Official note: published by and available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-StraÙe 78, 20359 Hamburg, Germany, and archived in the German National Library.

nary underwater measuring facilities shall be limited to the necessary extent, and Navy Command shall be notified of this in good time but at least 20 working days in advance.

Subdivision 6
Health and safety

Sec. 26
Principle

The project developer shall ensure that the German regulations on health and safety at work can be adhered to during the planning, construction, operation and dismantling of each installation.

Sec. 27
Fire and explosion protection

- (1) Implementation of the specifications for and the requirements of structural, technical installation and organisational fire and explosion protection and the escape concept shall be coordinated such that escaping in good time is possible.
- (2) The project developer shall verify that it was provided with expert advice in designing the implementation of the requirements in accordance with para. 1. The requirements of art. 3 para. 3 Work place ordinance of 12 August 2004 (Federal Law Gazette I p. 1328), last amended on 19 June 2020 apply accordingly.
- (3) At least two redundant access and exit options that are suitable for the purposes of escape and rescue, and which are to be used by different transport systems, shall be planned for an offshore platform.

Sec. 28
Intervention into the subsoil

Prior to the execution of work requiring intervention into the subsoil, the project developer shall ensure that possible hazards to employees due to explosive ordnance are determined and any necessary occupational safety measures are implemented. Sentence 1 shall also be applied if previously unknown explosive ordnance is found during the planning or construction of the wind turbines, the offshore platforms or the internal wind farm cabling.

Sec. 29
Monitoring of adherence to the health and safety regulations

To monitor the obligations arising from Sec.s 26 to 28, the project developer shall provide the responsible authority and its officers with the information required for monitoring and shall submit the necessary documents. In order to undertake monitoring tasks, officers of the responsible authorities may enter premises, installations and facilities during the normal hours of operation and business. The transport of the officers of the responsible authorities to the offshore installations or the costs of transporting them shall be borne by the project developer.

Sec. 30

Other obligations

The obligations of the project developer to ensure health and safety at work in its capacity as an employer remain unaffected.

Subdivision 7

Compatibility with existing and planned cables, pipelines and wind turbines

Sec. 31

Compatibility with existing and planned submarine cables and pipelines

- (1) When planning and carrying out work in the vicinity of existing third-party submarine cables or pipelines, the safety of these submarine cables and pipelines shall be taken into consideration. The internal wind farm submarine cables' intersecting with third-party submarine cables or pipelines shall be avoided if possible.
- (2) Essentially, no influences whatsoever shall be exerted on the seafloor in a protected area of 500 metres to either side of third-party submarine cables or pipelines. Deviations from sentence 1 shall be agreed with the owner of the cable or pipeline.

Sec. 32

Distance from wind turbines of neighbouring sites

The wind turbines to be installed at the site shall adhere to a distance of at least five times the respectively larger rotor diameter from the wind turbines of neighbouring sites.

Sec. 33

Infeed at the grid connection point

No more than the awarded bid quantity shall be fed in at the grid connection point.

Subdivision 8

Other obligations of the project developer

Sec. 34

Design

- (1) The planning, construction, operation and dismantling as well as the design and equipment of the installations shall correspond to the technical state of the art or alternatively the scientific and technical state of the art. This is assumed for the areas regulated there if the following standards are adhered to:
 1. ,Standard Design – Minimum requirements concerning the constructive design of offshore structures within the Exclusive Economic Zone (EEZ)¹¹,
 2. ,Mindestanforderungen an die Baugrund- erkundung und -untersuchung für

¹¹ Official note: published by and available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany, and archived in the German National Library.

Offshore-Windenergieanlagen, Offshore-Stationen und Stromkabel' standard (Minimum requirements for the subsoil survey and investigation for offshore wind turbines, off- shore stations and electricity cables)¹²,

3. VGB/BAW standard: 'Korrosionsschutz von Offshore-Bauwerken zur Nutzung der Windenergie' (Corrosion protection of off- shore structures for using wind energy) Parts 1 to 3¹³.

- (2) The project developer shall, as a minimum, design the systems whose failure or malfunction may jeopardise the integrity of the installations, the safety of traffic or the marine environment in such a way that, in the event of failure or malfunction, both monitoring and full access are also possible from shore.

Sec. 35

Determination, documentation and reporting of objects and erected installations

- (1) Prior to the start of installation planning and implementation, the project developer shall determine all cables, pipelines, wrecks, unexploded ordnance, cultural and material assets as well as other objects existing at the site and shall implement all resulting protective measures if necessary. The discovery of objects shall be immediately documented and reported to the planning approval authority. If unexploded ordnance is found during installation planning or construction, the project developer shall implement corresponding protective measures. Explosive ordnance and its further handling shall be reported to the Maritime Safety and Security Centre in Cuxhaven. Any locations in which objects have been found shall be taken into consideration when selecting sites or routes.
- (2) The precise positions of all installations that have actually been built shall be measured by the project developer within six months after the completion of construction and submitted to the Federal Maritime and Hydrographic Agency.

Division 2

Special specifications for site N-3.7

Sec. 36

Special provisions pertaining to the protection of the marine environment

- (1) The developer of the project at site N-3.7 shall coordinate in advance the time at which pile driving work is carried out with the project developers of offshore wind farms to be completed at the same time in the Exclusive Economic Zone in the North Sea.
- (2) The planning approval authority may issue the project developer with time specifications concerning the execution of pile driving work insofar as is necessary, despite prior coordination, to adhere to the noise protection concept values.

Sec. 37

Special provisions pertaining to the safety and efficiency of shipping traffic

¹² Official note: published by and available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany, and archived in the German National Library.

¹³ Official note: published by and available from VGB Powertech, Deilbachtal 175, 45257 Essen und Bundesanstalt für Wasserbau, Kußmaulstraße 17, 76187 Karlsruhe.

Along with the planning documents, the project developer shall submit a report, which checks the site-related quantitative risk analysis underlying the determination of suitability in this ordinance on the basis of current shipping traffic figures, to the planning approval authority as a basis for the approval decision. The planning approval authority may order any additional corrective and reduction measures then required, such as the provision of additional towing capacity by the project developer. This shall have no bearing on other obligations to update expert opinions pursuant to Sec. 48 para. 4 sentence 3 or pursuant to Sec. 57 para. 2 to 5 of the Offshore Wind Energy Act.

Sec. 38

Special provisions pertaining to the safety and efficiency of air traffic

The developer of the project at site N-3.7 shall keep the flight corridors of the following neighbouring projects free of developments:

- (1) Gode Wind 01, defined by the site established through a 352 metre wide strip on both sides of the route between WGS-84 coordinates N54.024821° E007.008792° and N54.057500° E007.060667°,
- (2) Gode Wind 02, defined by the site established through a 352 metre wide strip on both sides of the route between WGS-84 coordinates N54.055717° E007.038377° and N54.087197° E007.092050°, and
- (3) Gode Wind 03, in the form in which planning approval is issued.

Division 3

Special specifications for site N-3.8

Sec. 39

Special provisions for protecting the marine environment

- (1) The developer of the project at site N-3.8 shall coordinate in advance the time at which pile driving work is carried out with the project developers of offshore wind farms to be completed at the same time in the Exclusive Economic Zone in the North Sea.
- (2) The planning approval authority may issue the project developer with time specifications concerning the execution of pile driving work insofar as is necessary, despite prior coordination, to adhere to the noise protection concept values.

Sec. 40

Special provisions pertaining to the safety and efficiency of shipping traffic

Along with the planning documents, the project developer shall submit a report, which checks the site-related quantitative risk analysis underlying the determination of suitability in this ordinance on the basis of current shipping traffic figures, to the planning approval authority as a basis for the approval decision. The planning approval authority may order any additional corrective and reduction measures then required, such as the provision of additional towing capacity by the project developer. This shall have no bearing on other obligations to update expert opinions pursuant to Sec. 48 para. 3 sentence 3 or pursuant to Sec. 57 para. 2 to 5 of the Offshore Wind Energy Act.

Sec. 41

Special provisions pertaining to compatibility with the cable route defined in the Site Development Plan

The route corridor defined in the Site Development Plan 2019¹⁴ for connecting the transformer platform and the converter platform shall be kept free of any development. No internal farm submarine cables may be routed within this route corridor. The internal farm submarine cables may not intersect the route corridor.

Division 4

Special specifications for site O-1.3

Sec. 42

Special provisions pertaining to the protection of marine mammals

- (1) The developer of the project at site O-1.3 shall coordinate in advance the time at which pile driving work is carried out with the project developers of offshore wind farms to be completed at the same time in the Exclusive Economic Zone in the Baltic Sea.
- (2) The planning approval authority may issue the project developer with time specifications concerning the execution of pile driving work insofar as is necessary, despite prior coordination, to adhere to the noise protection concept values.

Sec. 43

Special provisions pertaining to the protection of avifauna

- (1) In the context of risk management, as of the commissioning of wind turbines, the project developer shall continuously record at least the following data in a suitable manner during migration in the autumn and spring for the European bird species that migrate over the site and for which there is a significantly increased risk of collision with wind turbines:
 1. Migration rates and migration intensities,
 2. The vertical distribution of migration and
 3. The weather conditions and visibilities.
- (2) With reference to cranes, a significantly increased risk of collision due to the wind turbines is to be assumed during events involving very high migration intensities over site O-1.3. Data collection pursuant to para. 1 shall be combined with surveillance of the resting places in southern Sweden for autumn migration, in the Rügen-Bock region and on the Darss for spring migration in order to obtain information regarding the start of migration.
- (3) Particularly for predatory birds, geese, wading birds and songbirds, a significantly increased risk of collision due to the wind turbines is to be assumed during events involving very high migration intensities over site O-1.3 under the following circumstances:
 1. During the night or
 2. During the day with visibilities of less than 500 metres.

¹⁴ Official note: available from the Federal Maritime and Hydrographic Agency, Bernhard-Nocht-Straße 78, 20359 Hamburg, Germany, and archived in the German National Library.

- (4) The wind turbines shall be equipped with suitable devices that also enable the real-time recording of migration intensities under the above-mentioned circumstances.
- (5) The wind turbines shall be shut off and turned away from the wind as long as it is recognisable due to the data collection in accordance with para. 1 that the risk of collision for the bird species listed in para. 2 and 3 is significantly increased. Shut-off can be forgone insofar as other equally suitable reduction measures are implemented.
- (6) Together with the application for plan approval, the project developer shall submit to the planning approval authority a concrete concept for data collection pursuant to para. 1 as well as for the implementation and success monitoring of the shut-off or other suitable measures pursuant to para. 4.

Sec. 44

Special provisions pertaining to the safety and efficiency of shipping traffic

- (1) Along with the planning documents, the project developer shall submit a report, which checks the site-related quantitative risk analysis underlying the determination of suitability in this ordinance on the basis of current shipping traffic figures, to the planning approval authority as a basis for the approval decision. The planning approval authority may order any additional corrective and reduction measures then required, such as the provision of additional towing capacity by the project developer. This shall have no bearing on other obligations to update expert opinions pursuant to Sec. 48 para. 4 sentence 3 or pursuant to Sec. 57 para. 2 to 5 of the Offshore Wind Energy Act.
- (2) The site's safety zone shall be identified as a general hazard area pursuant to number 6.2.3 of 'Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs', version 3.0 of 1 July 2019, by laying lighted cardinal buoys.

Sec. 45

Special international military provisions

The airspace structure located over the project area shall be taken into consideration.

Sec. 46

Special provisions pertaining to compatibility with existing and planned locations of transformer platforms

The wind turbines to be installed at the site shall adhere to a distance of at least 500 metres from the location defined in the Site Development Plan 2019 for the grid operator's converter platform.

Part 3

Determination of the capacity to be installed

Sec. 47

Determination of the capacity to be installed

- (1) The capacity to be installed at site N-3.7 is 225 megawatts.

- (2) The capacity to be installed at site N-3.8 is 433 megawatts.
- (3) The capacity to be installed at site O-1.3 is 300 megawatts.

Part 4
Concluding provisions

Sec. 48
Entering into force

This ordinance enters into force on the day following its announcement.

Justification

Re part 1 (General provisions)

Re Sec. 1 (Scope)

This Sec. defines the scope of the ordinance. This ordinance applies to sites N-3.7, N-3.8 in the German Exclusive Economic Zone of the North Sea and site O-1.3 in the German Exclusive Economic Zone of the Baltic Sea as defined in the Site Development Plan (hereinafter FEP) of 28 June 2019, the site allocations of which remain unchanged in the 2020 update of the FEP. For these sites, suitability is determined, specifications are defined and the capacity to be installed is established.

Re Sec. 2 (Definitions)

Sec. 2 contains definitions for this legislative decree. Unless otherwise regulated herein, the definitions of the WindSeeG (Offshore Wind Energy Act) shall apply.

Re part 2 (Determination of suitability)

Re chapter 1 (Determination of suitability)

Re Sec. 3 (Determination of suitability)

The legal basis for this suitability determination is Sec. 12(5) WindSeeG. Accordingly, the suitability of the sites is determined if the suitability assessment pursuant to Sec. 12(4) WindSeeG shows that the sites are suitable for tendering pursuant to part 3 Sec. 2 WindSeeG. The suitability assessment was completed positively on 12 October 2020.

Pursuant to Sec. 12 para. 4 WindSeeG, the body responsible for the preliminary investigation of sites assesses suitability pursuant to Sec. 10 para. 2 WindSeeG. The body responsible for the preliminary investigation of sites is the Federal Network Agency. In individual cases or in similar cases, as in this instance, it has the preliminary investigation of sites conducted by the BSH subject to an administrative agreement in the case of sites in the EEZ, Sec. 11 para. 1 no. 1 WindSeeG. Based on corresponding agreements, the Federal Maritime and Hydrographic Agency has assessed the suitability of sites N-3.7 and N-3.8 in the German EEZ of the North Sea and site O-1.3 in the German EEZ of the Baltic Sea, which were first identified in the Site Development Plan of 28 June 2019. This suitability assessment has shown that these sites are suitable for the installation and operation of offshore wind turbines.

Reference is made to the findings in the report on the suitability assessment and this assessment is not repeated within this ordinance due to the fundamentally different responsibilities pursuant to the WindSeeG – the BMWi is fundamentally responsible for determining suitability.

The report on the suitability assessment, together with the environmental reports on the Strategic Environmental Assessments for the sites, was made publicly available from 27 March 2020 to 27 April 2020, and public notice was given on 27 March 2020 to indicate that it had been made available. In connection with the Strategic Environmental Assessment, further reports and documents were made publicly available with the opportunity to comment. The public notice in the NfS (Notices to Mariners) of 15 May 2020 and 07 August 2020 at the beginning of the public notice period drew attention to the publication.

Re chapter 2 (Requirements for the subsequent project)

Chapter 2 regulates specifications for subsequent projects at the sites. These were included in order to counteract impairments of the criteria and concerns pursuant to Sec. 10 para. 2 WindSeeG. The specifications in Sec. 1 are to be applied to subsequent projects at all three sites. Sec. 2 to 4 regulate specifications for the specific individual sites which additionally apply to the respective site.

Re Division 1 (General)

Re Subdivision 1 (Impacts of the project on the marine environment)

Re Sec. 4 (Monitoring)

Re para. 1

Sec. 4 para. 1 contains the obligation to carry out monitoring.

A site is only suitable if the development and operation of an offshore wind farm at the site will not endanger the marine environment. The decision on suitability is to be made by way of a forecast based on the current state of facts and knowledge. The forecast must refer to the entire period of construction and operation, i.e. the usual operating period of an offshore wind farm of 25 years as of commissioning

The forecast on which the suitability assessment is based is naturally subject to scientific uncertainties, which are to be countered by the monitoring of effects as ordered. The Federal Administrative Court has ruled that monitoring as part of risk management is appropriate, among other things, in the case of scientific uncertainty as to the effectiveness of protection and compensation measures, in order to gain further knowledge of the impairments and to control the implementation of the project accordingly (see BVerwG, judgement of 17.01.2007, file reference 9 A 20.05 – cited in Juris),

The purpose of the ordered monitoring of effects is to monitor the effectiveness of the specifications of part 2, chapter 2, division 1, subdivision 1 and sections 36, 39, 42, 43 ordered during construction or operation for the protection of the marine environment in order to be able to take corrective action if necessary. On the basis of the monitoring results, the planning approval authority may, if necessary, order supplementary or updating regulations for these specifications in the planning approval decision as a result of an assessment or issue subsequent orders pursuant to Sec. 57 WindSeeG after completion of the planning approval procedure.

Re para. 2

Pursuant to para. 2, the two-year baseline survey must be updated as a basis for construction and operation monitoring in accordance with the standard 'Untersuchung der Auswirkungen von Offshore-Windenergieanlagen auf die Meeresumwelt' published by the BSH, with the addition of a further survey year, the so-called third survey year, or – if five years or more elapse between the end of the baseline survey and the start of construction – by two further survey years. Changes in the natural environment that have occurred in the meantime, such as changes in species composition and any resulting need to update or specify the regulations for the protection of the marine environment, can only be determined on the basis of current investigations. The up-to-dateness of the baseline survey is necessary as a basis for the monitoring of effects ordered to compensate for scientific uncertainties during construction and operation, and is thus a mandatory suitability requirement.

Re para. 3

This para. regulates how the investigations for repeating the baseline survey and for the monitoring of effects are to be carried out and at the same time establishes the assumption that the investigations correspond to the state of the art in science and technology if they are carried out according to the specifications of the respectively current 'Standard - Untersuchung

der Auswirkungen von Offshore-Windenergieanlagen auf die Meeresumwelt' (Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment (Standard Investigation Concept – StUK)).

The StUK, published by the BSH, specifies the scope, appropriate structure, implementation and timing/period of investigations for the baseline survey and monitoring of effects for the individual protected objects. It was compiled by a working group consisting of staff from research institutes, experts from the environmental field, other technical experts for the individual marine protected objects and staff from the authorities involved (in particular BfN, UBA and BSH), was published after consultation and is regularly updated based on new findings and experience.

Re Sec. 5 (Laying and dimensioning of internal wind farm submarine cables)

Re para. 1

The FEP establishes a planning principle (Planning Principle 4.4.4.8 of the FEP 2019) according to which potential adverse effects on the marine environment arising from cable-induced sediment warming are to be reduced as far as possible when laying submarine cables. As a precautionary value for nature conservation, the so-called '2 K criterion' must be observed; this specifies a maximum tolerable sediment temperature increase of 2 degrees (Kelvin) at a sediment depth of 20 cm.

The standard clarifies that this principle must also be observed with regard to the cabling within the wind farm as well as in the dimensioning and planning. This consideration was taken into account in the Strategic Environmental Assessment. Proof of the expected maximum sediment warming or compliance with the 2 K criterion must be provided as part of the individual approval procedure.

With regard to shipping concerns, other submarine cables are subject to more extensive regulations than those set out in this ordinance.

Re para. 2

The specification of choosing the most environmentally sound laying method to achieve the covering required pursuant to para. 1 is necessary to reduce the impact on the marine environment. This aspect is taken into account in the Strategic Environmental Assessment. The laying method should also be chosen with a view to the consequences of Sec. 15 BNatSchG (Federal Nature Conservation Act) in such a way that environmental impacts such as turbidity plumes and the encroachment width of the laying equipment are minimised as far as possible.

Re Sec. 6 (Avoidance or reduction of emissions)

Re para. 1

The avoidance and reduction requirement imposed by para. 1 ensures that the construction and operation of wind turbines at the sites do not lead to pollution of the marine environment within the meaning of article 1(1)(4) of the Convention on the Law of the Sea and thus constitute a threat to the marine environment pursuant to Sec. 48 para. 4 sentence 1 no. 1 a) WindSeeG. It is thus a mandatory prerequisite for the suitability of the site.

Re para. 2

Para. 2 specifies the avoidance and reduction requirement of para. 1:

In order to prevent pollution and hazards to the marine environment, no substances may therefore be discharged into the sea during construction, operation, maintenance and dismantling of the installations.

Should the generation of such installation-specific emissions into the marine environment be unavoidable for technical reasons, e.g. due to safety-relevant shipping or air traffic specifications, this shall be presented and justified to the planning approval authority as part of the planning approval procedure, together with an environmental assessment. Installation-specific alternative tests must be carried out and documented.

The minimisation requirement for material discharges applies. This also applies to the vehicles used during construction, operation and dismantling. The specifications of the Ordinance on Environmentally Sound Practices in Maritime Shipping must be complied with.

During the operation of the installations, lighting that is as compatible with the natural environment as possible must be provided to reduce lure effects as far as possible, taking into account the requirements of safe shipping and air traffic and occupational safety. This includes, for example, switching obstacle lighting on and off as needed, selecting suitable light intensities and spectra or lighting intervals.

The obligation to choose the most environmentally compatible operating materials possible is based on the avoidance and reduction principle and obliges the project developer to use the most environmentally compatible material in each case, the use of which likewise continues to guarantee the proper functioning of the operating part or ensures the proper functioning of the operating material itself. The project developer must provide evidence of this based on comprehensive alternative assessments.

In order to prevent pollutant accidents and environmental discharges, all technical installations used on the facilities must be safeguarded by state-of-the-art structural safety systems and measures such as enclosures, double walls, room/door coamings, catch basins, drainage systems, collection tanks, leakage and remote monitoring and must be monitored by the project developer. This applies in particular to installations that contain or carry large quantities of operating materials and/or substances hazardous to water, such as diesel tanks and pipelines. In the event of damage, it must be ensured that immediate intervention is also possible from shore in accordance with Sec. 6 para. 2 no. 3.

In the offshore sector, operating material changes and refuelling operations have an increased potential for polluting the marine environment. Therefore, special organisational and technical precautions, such as the preparation of so-called 'method statements', the implementation of precautionary measures during crane work and the use of self-sealing tear-off couplings (emergency breakaway couplings), dry couplings, double-walled hoses, catch basins, overflow protection devices and so-called 'spill kits', must be taken for these activities in order to avoid pollutant accidents and environmental discharges.

Re Sec. 7 (Avoidance of noise emissions during the foundation, installation and operation of installations)

Re para. 1

The specifications serve to avoid hazards to the marine environment from sound emissions.

The project developer must choose the working method with the lowest noise level or that working method that is otherwise the most environmentally compatible according to the given circumstances based on the ambient conditions.

If necessary, this specification is set out in further detail within the framework of the specific planning approval procedure. The following noise-reducing and environmental protection measures are regularly ordered as part of the planning approval procedure:

- Preparation of a sound prognosis under consideration of the site-specific and installation-specific characteristics (basic design) before the start of construction,
- Selection of the construction method that produces the least noise according to the state of the art and the given circumstances,
- Preparation of a detailed noise control concept, coordinated to the selected foundation structures and construction processes, for carrying out the pile driving work, always required two years before the start of construction, but before the conclusion of contracts concerning components relating to noise at the latest,
- Use of accompanying noise-reducing measures, individually or in combination, pile-remote (bubble curtain system) and, if necessary, pile-linked noise-reducing systems in accordance with the scientific and technological state of the art,
- Consideration of the characteristics of the hammer and the possibilities of controlling the pile driving process in the noise control concept,
- Concept for averting the animals from the endangered area (at least within a radius of 750 m around the pile driving site),
- Concept for checking the effectiveness of the aversive and noise-reducing measures,
- State-of-the-art installation design to reduce operational noise.

Re para. 2

Should pile driving or any other sound-intensive construction method have to be chosen, the stated sound limits of 160 decibels (dB re 1 $\mu\text{Pa}^2 \text{ s}$) for sound pressure (SEL05) and 190 decibels (dB re 1 μPa) for peak sound pressure level at a distance of 750 m must not be exceeded. These specifications are necessary for compliance with the prohibition of killing and injuring species and the prohibition of disturbance under species protection law, Sec. 44 para. 1 no.1 and 2 BNatSchG. Reference is made to the statements under 7.2 of the BMU noise control concept for the North Sea EEZ, BMU 2013.

Re para. 3

The limitation of the duration of individual pile driving operations is intended to minimise intervention and serves to avoid a violation of the prohibition of injuring species and the prohibition of disturbance under species protection law, Sec. 44 para. 1 no. 1 and 2 BNatSchG. For example, the Strategic Environmental Assessment has shown that, in addition to the absolute volume, the duration of the signal also determines the impacts on the exposure limit of marine mammals. The exposure limit decreases as the duration of the signal increases, i.e. if exposure is prolonged, damage to the animals' hearing can occur even at lower volumes. This is to be prevented by limiting the duration, whereby the effectiveness can be checked via the monitoring pursuant to Sec. 4.

For the various foundation types (monopile, jacket, etc.) and dimensions, there are certain maximum required pile driving periods that must be determined specifically for each project based on the subsoil found and the foundation used. The guideline values for maximum pile driving duration are 180 minutes for monopiles and 140 minutes for jacket piles. A specification is issued by the planning approval authority based on this requirement to effectively avert a threat to the marine environment.

Re para. 4

According to the result of the SEA, sound-intensive operating noise from the installations can disturb harbour porpoises. In order to ensure with sufficient certainty that the offence of disturbance pursuant to Sec. 44 (1)(2) BNatSchG is not realised, a state-of-the-art installation design that reduces operating noise must be selected.

Re para. 5

Due to the harmful sound pressures and because of the lack of necessity, blasting is generally to be forgone.

Re Sec. 8 (Waste)

The prohibition of discharging or introducing waste into the marine environment ensures that the construction and operation of wind turbines at the sites does not lead to pollution of the marine environment within the meaning of article 1(1)(4) of the Convention on the Law of the Sea and thus does not constitute a threat to the marine environment pursuant to Sec. 48 para. 4 sentence 1 no. 1 a) WindSeeG. It is thus a mandatory prerequisite for the suitability of the site.

Exceptions to this prohibition under this ordinance may be, for example, the introduction of treated waste water permitted in individual cases pursuant to Sec. 11 no. 3 or the discharge of drainage water with a maximum oil content of 5 milligrams per litre pursuant to Sec. 12 para. 1.

Re Sec. 9 (Corrosion protection)

Re para. 1

The protection of structural installations from corrosion involves permanent emissions into the marine environment. At the same time, corrosion protection is indispensable for the structural integrity of the installations. In order to rule out any risk to the marine environment from pollution as far as possible in the context of the suitability assessment, specifications for corrosion protection are required for the subsequent project. For example, the corrosion protection of the installations must be as pollutant-free and low-emission as possible. At the same time, it must be ensured that the corrosion protection meets the technical requirements for the protection of the installation. In this regard, reference is also made to Sec. 34 para. 1, according to which the minimum requirements of the Standard Design (here: corrosion Protection) must be complied with and the VGB/BAW corrosion protection standard must be taken into account.

Re para. 2

When galvanic anodes ('sacrificial anodes') made, for example, of aluminium-zinc-indium alloys, are used as cathodic corrosion protection in the underwater area of the installations, their components are released into the marine environment. Conversely, external current systems are inert by design and thus involve very low emissions into the marine environment. Consequently, external current systems are to be preferred.

If necessary, external current systems should also be used as cathodic corrosion protection in the interior areas of the foundation structures.

Re para. 3

If the use of galvanic anodes is absolutely necessary, it is only permissible in combination with a coating suitable for use with cathodic corrosion protection in order to minimise emissions from the anodes. The cathodic corrosion protection systems must be dimensioned

in the design phase in such a way that the use of galvanic anodes is limited to a necessary minimum.

When selecting galvanic anodes, only alloys may be used whose production-related contents of particularly environmentally critical minor components are reduced to a minimum. The zinc content of the usually aluminium-based anodes which is required for the function must also be limited to a technically necessary minimum.

The use of zinc anodes with zinc as the main component of the anodes is prohibited.

Re para. 4

Due to their ecotoxicological effects, the use of biocides to protect technical surfaces from the undesirable settlement of organisms (antifouling agents) is prohibited. The use of biocides to prevent fouling of the foundation structures is not necessary according to the state of the art, for example with regard to the stability of the installations.

Re para. 5

The use of oil-repellent coatings in the area accessible to seawater ensures that oil drifting into the area of the project does not adhere to the components; consequently, it cannot be absorbed during the response to pollution spills and is then continuously washed into the water over a long period of time.

Re Sec. 10 (Installation cooling)

This specification is used to prevent the introduction of substances associated with open-loop seawater cooling systems, for example through biocides, during regular operation. According to experience acquired from offshore wind farms that have already been implemented, the cooling capacity usually required on the transformer platforms of offshore wind farms can be achieved with closed-loop cooling systems. Therefore, closed-loop cooling systems must be used to avoid emissions.

Exceptions are only permitted in atypical individual cases, for example if the cooling capacity can demonstrably not be achieved with closed-loop systems or system variants and no suitable alternative systems are available. A deviation variant must be applied for on approval of planning for the project.

Re Sec. 11 (Waste water)

Re para. 1

The waste water referred to in para. 1 must not be discharged into the sea in untreated form. The designated waste water to be treated complies with MARPOL Annex IV Regulation 1.3 and MEPC.227(64) number 2.7 for grey water. Since the introduction of treated waste water still involves material introductions to a certain extent, the waste water must always be collected properly, transported ashore and disposed of there in accordance with the applicable waste management regulations.

Re para. 2

The use of waste water treatment plants on offshore platforms is generally not permitted.

Waste water is only generated for a limited period of time on unmanned offshore platforms or those manned only during maintenance work. However, waste water treatment plants are

only effective to a limited extent in discontinuous operation, so inadequately treated waste water can lead to emissions into the marine environment that exceed avoidable levels. On unmanned platforms or platforms that are only manned during maintenance work, it is therefore necessary to resort to solutions that do not lead to introduction. For example, appropriately dimensioned collection tanks must be provided for the proper collection of waste water, and the limited quantities of waste water that are produced must be transported ashore or other solutions must be used (e.g. 'incineration toilets').

Re para. 3

Even on permanently manned offshore platforms, waste water treatment plants are only permitted in exceptional cases. Proof that the operation of a waste water treatment plant on a permanently manned platform may be necessary must be provided by the project developer as part of the planning approval procedure. The justification for this could be, in particular, that the negative impacts on the marine environment involved transferring the incurred volume of waste water – for example due to the required number of ship journeys – exceed the impacts involved discharging the treated waste water.

If a state-of-the-art waste water treatment plant, including the reduction of nitrogen and phosphorus compounds (at least in accordance with MARPOL MEPC.227(64)), is available for the volume of waste water expected to be incurred in each case, only this is permissible.

Re para. 4

Para. 4 sets out the specifications for waste water treatment plants permitted in accordance with para. 3. These must be used to treat all of the waste water referred to in para. 1 produced on the offshore platform.

The chlorination of waste water is not permitted, as chlorination processes produce halogenated secondary compounds that are harmful to the environment. Other techniques that are demonstrably more environmentally friendly (such as UV systems) must therefore be used.

In order to ensure proper operation and to monitor purification performance and discharge values in the operating phase, the waste water must be sampled regularly. Suitable sampling points must be provided at the inlet and outlet of waste water treatment plants for this purpose. This is intended to enable the sampling and subsequent analysis of the waste water.

Re Sec. 12 (Drainage system)

Re para. 1

This specification serves to prevent pollution of the marine environment and to reduce the introduction of oil contained in drainage water into the marine environment. Insofar as a light liquid separator is used instead of a closed-loop system for collecting the drainage water and subsequent disposal on land, the maximum oil content may not exceed 5 milligrams per litre. The setting of the maximum oil content at 5 milligrams per litre is based on the current status of implementation at existing offshore wind farms and the technical availability of these systems (DIN EN 858-1).

Re para. 2

To be able to monitor compliance with the maximum oil content in the event of introduction into the marine environment as specified in para. 1 and to initiate measures in the event that it is exceeded, the oil content in the drainage water must be continuously monitored by means of sensors after it has passed the light liquid separator.

Re para. 3

If the maximum value specified in para. 1 is exceeded, the use of appropriate valves must automatically ensure that the drainage water is not introduced into the marine environment, e.g. via collection tanks or a recirculation system.

Re para. 4

The perfluorinated and polyfluorinated substances still contained in some fire-extinguishing foams must not be released into the marine environment if possible due to their expected ecotoxicological effects. If the use of AFFF fire-extinguishing foams should also no longer be permitted, the introduction of fire-extinguishing foams and any resulting pollution of the marine environment must be avoided. When activating the fire-fighting system on the helicopter landing deck, it must therefore be ensured that the environmentally hazardous fire-extinguishing foam does not enter the marine environment via the drainage system. For this purpose, drainage systems connected to helicopter landing decks must be equipped with bypass systems and valve circuits. In this case, it must be ensured that the fire-extinguishing foam incurred is automatically drained into a collection tank via the drainage system.

Re Sec. 13 (Diesel generators)

Re para. 1

Emissions of nitrogen oxides must be reduced to a minimum. If diesel generators are used on offshore platforms, e.g. to ensure the supply of emergency power, they must be certified according to at least MARPOL Annex VI, Tier III in terms of their emission values. Diesel generators certified according to alternative emissions standards may be used if these standards impose at least equivalent requirements on the emission values of the installations. Corresponding proof must be provided.

Re para. 2

The installation of permanently installed diesel generators on wind turbines is not permitted. The permanent placement of non-stationary diesel generators on the wind turbines is also considered to be a permanent installation. Extensive refuelling operations are required to operate these installations, which can result in environmental hazards due to oil spills. Therefore, other systems must be used to temporarily supply the wind turbines within the framework of ensuring general operational safety, such as the diesel generators (emergency power systems) of the respective transformer platform.

Re para. 3

In order to reduce sulphur dioxide emissions to a minimum, the fuel with the lowest possible sulphur content must be used (such as low-sulphur heating oil according to DIN 51603-1 or diesel according to DIN EN 590 (so-called 'land diesel'), taking into account the storage capability of the respective product. The suitability of the intended diesel generators for the use of corresponding fuel types must be ensured.

Re Sec. 14 (Scour and cable protection)

Re para. 1

To ensure the permanent stability or secure positioning of structures on the seabed, measures for preventing scouring are required in certain areas. InterSec. structures that may become necessary – e.g. when intersecting third-party cables – also require the use of hard substrate to protect cables. In all cases, the placement of hard substrate must be limited to the minimum degree necessary to protect the respective installation in order to limit the intervention into the marine environment caused by the placement of off-site hard substrate.

Re para. 2

Scour protection can be suitably constructed using fillings consisting of natural stones or inert and natural materials. Only these may therefore be used. The use of plastic or plastic-like materials, for example in the form of geotextile sand containers, (recycled) plastic nets filled with natural stones or concrete mats covered with plastic, is not permitted due to the introduction of plastic into the marine environment caused by these through material abrasion.

Re para. 3

Fillings consisting of natural stones or inert and natural materials must also be primarily used to protect cables. In individual cases, however, it may be necessary to protect cables with other materials, e.g. when drawing in cables or in the case of interSec. structures. Use must be limited to these areas and the scope must be minimised as far as possible.

Re subSec. 2 (General regulations pertaining to the safety and efficiency of shipping and air traffic)

Re Sec. 15 (Identification)

Re para. 1

The identification of an offshore wind farm serves to make it visible and therefore avoid collisions. The identification obligation is intended to ensure the safety of both shipping and air traffic. At the same time, the identification used to avoid hazards to air traffic must not itself pose a hazard to shipping traffic and vice versa.

The regulations referred to represent the current state of the art for the identification of offshore structures for safe navigation and in doing so also partially address air traffic identification. These regulations must therefore also be observed when implementing air traffic identification (subSec. 4). Insofar as the standards are updated, the planning approval authority checks whether the more up-to-date standards are to be prescribed in accordance with Sec. 48 para. 4 no. 3 WindSeeG and prescribes them if necessary. In connection with the implementation of the planning approval decision, an identification concept for the construction phase and normal operation at the nautical-functional level will have to be submitted to determine all offshore wind farm identification required for the project.

Re para. 2

Adaptation of the identification is necessary in the event of the subsequent development of neighbouring sites, as the original identification could otherwise pose a danger to shipping, for example because it suggests a possible passage that subsequently no longer exists due to additionally constructed installations. This adaptation must be carried out in coordination with neighbouring projects in the sense of an overall concept.

Re subSec. 3 (Special regulations pertaining to the safety and efficiency of air traffic)

The specifications ensure the suitability of the sites in question with regard to the safety and efficiency of shipping traffic.

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 in the context of the preliminary investigation of sites (expert shipping report).

According to the expert shipping report, the decisive criteria for assessing the suitability of a site with regard to the safety of shipping traffic are, on the one hand, the statistically expected time between two collisions, which must lie within the framework of the acceptance values of the 'Approval-relevant guideline values' working group. Secondly, the calculated risk is classified in the risk matrix of the BSH standard 'Design of Offshore Wind Turbines' and a qualitative risk analysis is additionally carried out. The result of the expert shipping report is that the sites can in principle be regarded as suitable for the installation of wind turbines providing the specifications set out in Subdivision 3 and in Sec. 37, 40 and 44 to avoid endangering the safety and efficiency of shipping traffic are complied with.

Reference is made to the explanations in the suitability assessment.

Re Sec. 16 (Maritime surveillance)

The expert shipping report comes to the conclusion that maritime surveillance must be carried out in order to reduce the risks posed by the installations to shipping and to protect the installations themselves. All of the sites are only suitable if maritime surveillance is specified. The collision risk only lies within the time periods set by the 'Approval--relevant guideline values' working group if this mitigation measure is implemented.

In the expert shipping report, the risk of a collision between a wind turbine and a ship was considered with and without taking into account additional measures to reduce the risk of collision. In the quantitative Sec. 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-maneuvrable and manoeuvrable vessels. Non-maneuvrable vessels can be detected, identified and directly addressed by traffic monitoring and/or maritime surveillance. Furthermore, necessary rescue measures can be initiated.

The implementing directive of the Federal Ministry of Transport and Digital Infrastructure (BMVI) specifies on a location-specific basis how and by whom maritime surveillance must be carried out in order to achieve sufficient effectiveness.

Re Sec. 17 (Design)

Re para. 1

This specification is a prerequisite for confirming the suitability of the site.

In addition to the statistically expected time between two collisions and the quantitative risk analysis, the decisive criterion in the expert shipping report for the assessment of the suitability of a site from the point of view of safety is the classification of the calculated risk in the risk matrix of the BSH standard 'Design of Offshore Wind Turbines' (Standard Design). According to this, risk priority numbers (RPN) are determined from the combination of collision frequency and expected escaping pollutant quantity; these may not exceed a certain level in order to constitute a still permissible risk.

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 the Standard Design. Due to a lack of knowledge of the subsequent, specific project parameters, classification in the risk matrix according to the specifications of the 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 classification will have to be updated if necessary.

The further requirements for the foundation types and for the collision analysis to be submitted are derived from the Standard Design (Annex 1).

Re para. 2

When assessing the collision risk in the context of the above-mentioned risk analysis, homogeneous and contiguous development of the sites – without large gaps and without exposed installations – was assumed.

It can be assumed that the risk to shipping traffic may be increased by individually positioned installations or development gaps suggesting an entrance. This risk can be countered by setting up a closed safety zone, which restricts the permissible traffic at the site. Pursuant to Sec. 53 WindSeeG, the planning approval authority may establish safety zones insofar as this is necessary to ensure the safety of shipping or facilities. Since the sites are located in the direct vicinity of highly frequented shipping routes, it can be assumed that a safety zone will have to be established, which was also the assumption made by the experts who compiled the expert shipping report. The width of the safety zones is always 500 metres around the peripheral turbines of an offshore wind farm. A safety zone only contributes to ensuring the safety of shipping traffic if it can be established in a contiguous manner and with as uniform a navigation regime as possible; gaps suggesting a possibility of entry or opposing the establishment of a closed safety zone that covers all projects must be avoided as far as possible and sufficient distances from the priority and reserved areas for shipping pursuant to the Spatial Planning Ordinance for the North Sea EEZ and the Spatial Planning Ordinance for the Baltic Sea must be maintained. This specification is intended to ensure that these aspects are included in planning the project.

Re Sec. 18 (Traffic control during the construction phase)

Re para. 1

By using the traffic control vehicle, the construction site and the surrounding shipping traffic are secured in a mobile manner by constantly monitoring the traffic in the vicinity of the construction site and implementing traffic control measures if necessary. The special requirements of a traffic control vehicle are specified in number 6.2.1 of the 'Richtlinie Offshore-Anlagen zur Gewährleistung der Sicherheit und Leichtigkeit des Schiffsverkehrs', version 3.0

of 1 July 2019 issued by the GDWS and result from the characteristics and complexity of control tasks at sea. This includes, in particular, the large-scale monitoring of shipping traffic around the construction site, the timely identification of dangerous approaches and the implementation of effective hazard avoidance measures. The proximity to the highly frequented shipping lanes in the vicinity of the project area requires short response times to be able to react as quickly and concisely as possible to potentially hazardous traffic, to head towards it or follow it if necessary, or to otherwise direct the immediate attention of the ships' officers to the construction site. The nautical-technical requirements of a traffic control vessel depend in this respect on the traffic and framework conditions in the maritime area as well as on the type and scope of the traffic control tasks.

Re para. 2 and para. 3

Traffic control at offshore construction sites by means of hazard buoyage and temporary markings is a common international standard and has proven effective for decades to protect shipping, the marine environment, construction vessels and people working at construction sites. Buoyage and temporary markings serve in particular to ensure that a hazard area or construction site is recognised in good time by shipping and to indicate to the skipper the necessary traffic response.

Re Sec. 19(Requirements for vehicles and equipment)

The specifications prevent impairments of the criteria to be examined (here, among other things, the safety of shipping, the marine environment and occupational health and safety) by the shipping traffic arising from construction as a result of abandoning compliance with the applicable regulations.

Re subSec. 4 (Special regulations pertaining to the safety and efficiency of air traffic)

The regulations serve to avoid hazards that arise for air traffic during the construction of an offshore wind farm or that result from the additional air traffic caused by it.

Re Sec. 20 (Helicopter winch operation)

Re para. 1

Helicopter winch operation should only be used in exceptional cases for the transport or conveyance of persons, when alternatives are not available, due to the potential hazards involved on offshore platforms. Since adequate access facilities such as ship moorings and helicopter landing decks must always be set up on offshore platforms and, in addition, corresponding technical precautions must be taken to maintain safe operating conditions during unmanned operation, access by means of helicopter winch operation is only envisaged at this point for preventing risks to the life and limb of persons and for the performance of official tasks. For this reason, the use of a rescue area or any other helicopter winch operation is likewise not permitted during normal operation; this also includes technical incidents, except for the specified exception. The use of the rescue area is possible in the context of a technical incident if the incident has the potential to develop into an emergency, i.e. it may lead to a danger to life and limb, this is likely to happen in the foreseeable future, intervention from ashore is not possible in the specific case and the alternative access options are not available.

Re para. 2

The rule-compliant installation and marking of wind turbine operating areas on wind turbines as well as their proper operation are essential to safe helicopter winch operation.

Re Sec. 21 (Helicopter landing deck)

Re para. 1

Annex 14 Volume II of the Convention on International Civil Aviation, opened for signing in Chicago on 7 December 1944 (ICAO Convention) describes the requirements for the design and operation of an airstrip and is applicable to the German EEZ based on article 58(1), article 87 of the Convention on the Law of the Sea in conjunction with article 12 of the ICAO Convention. The regulation applies including the documents referenced in Annex 14 to the ICAO Convention. For the German EEZ, the regulations will in future be integrated into a standard for offshore aviation to be issued by the BMVI, which will have to be observed as a successor regulation in accordance with the transitional provisions contained therein.

Re para. 2

Due to the obstacle backdrop created by the wind turbines, safe operation is only ensured if there are at least obstacle-restricted, or preferably obstacle-free, approach and take-off areas to and from the offshore station and this condition is maintained throughout the entire operating period of the station. The regulation is based on the operator obligations arising from Sec. 53 para. 1 in conjunction with Sec. 45 para. 1 of the German Air Traffic Licensing Regulations (LuftVZO) of 28 November 1968 (Federal Law Gazette I p. 1263) (including preservation and maintenance obligation). Accordingly, the project developer is obliged to maintain the helicopter landing deck in such a way that flight operations can be carried out safely at all times (Sec. 45 LuftVZO in 'Frankfurter Kommentar zum Luftverkehrsrecht, Volume 2 Luftverkehrsordnungen, Luchterhand, 09/2018'). To this end, the airstrip operator must take appropriate operational measures, i.e. organisational measures (e.g. periodic inspections, regular checks for foreign bodies on the helicopter landing deck; measures to remove contamination such as bird droppings; ensuring fire protection, which also includes training and exercises for the appropriate personnel). It also includes communicating with neighbouring projects to maintain flight safety so that, if necessary (especially at night), planned flights can be coordinated with the other landing site operators so that any collision risks can be minimised.

Re Sec. 22 (Flight corridors)

Re para. 1

In accordance with Chapter 4 of Annex 14 to the Convention on International Civil Aviation (ICAO Convention), an airspace to be kept free of obstructions must be established around a helicopter landing pad. This measure is intended to prevent it from becoming unusable due to the installation and/or increase in obstacles in its vicinity. Among other things, obstacle limitation areas that mark the heights up to which objects may project into the airspace must be set up for this purpose. Certain areas must also be kept free of obstructions in the case of an offshore wind farm. However, due to the surrounding wind turbines, the horizontal extension of the obstacle-free sector (OFS) which is to be provided on helicopter landing decks (cf. numbers 4.1.22 to 4.1.24 as well as 4.2.12 to 4.2.14 Annex 14 ICAO Convention) cannot be fully complied with. Nevertheless, the wake vortices generated by wind turbines, for example, can pose a risk to a helicopter.

For this reason, appropriately dimensioned and obstacle-free areas (flight corridors) are required along the main approach/take-off directions of a helicopter landing deck in addition to the obstacle-free sector (OFS). The offshore platform on which the helicopter landing deck is located and other platforms connected to it by appropriate systems (e.g. bridges) are excluded from this. This is possible because the resulting obstacle backdrop is to be taken into account in the context of determining the obstacle-free sector for the helicopter landing deck.

Further obstacles in flight corridors above the water surface are essentially ruled out. The Federal Maritime and Hydrographic Agency is authorised, with the consent of the Federal

Ministry of Transport and Digital Infrastructure, to permit further obstacles by way of exception. The granting of this power to order administrative measures, curtailing a comprehensive prohibition, constitutes a requirement within the meaning of Sec. 12(5)(2) WindSeeG. Any exceptional approval of obstacles – depending on their distance from the helicopter landing deck as well as their number, total height and hazard potential – is only permissible if these are safe for the landing and taking-off air traffic. In particular, the landing/take-off area to be used with a slope of 4.5 per cent must ensure safe superelevation above the obstacle(s) – also in the event of an emergency; the obstacle(s) must be adequately marked for the intended flight operation (day and, if applicable, night); the distance of the obstacle(s) from the helicopter landing deck must be such that No. 4.1.24 Annex 14 ICAO Convention is ensured in full within the relevant corridor for all helicopter types regularly operating there.

For wind turbines, the most detrimental position of the rotor blade tips with the rotor rotating, i.e. with the longitudinal axis of the nacelle aligned parallel to the flight corridor axis, must be taken into account to determine the obstacle effect on the flight corridors.

As part of the operational measures, it must be ensured that the wind farm's own shipping traffic does not enter the 180-degree sector during flight operations on the helicopter landing deck (cf. also No. 4.2.14 Annex 14 ICAO Convention).

Re para. 2

The alignment of the corridors, preferably along the anticipated main wind direction, is intended to ensure that approaching and departing helicopters are predominantly faced with favourable air flow conditions and that larger, detrimental crosswind components are avoided. Safe take-off is only guaranteed if the direction of approach and departure do not deviate from each other as far as possible, as changes of direction during the manoeuvre are minimised or prevented in this way. A minimum distance of 150 degrees should not be undershot.

Straight-line planning is necessary for operating a helicopter landing deck at night as well as with regard to an emergency situation with a helicopter taking off, in order to avoid turning within an obstacle backdrop during take-off.

The avoidance of interSec.s is necessary because along the corridors the flight path is predetermined according to their alignment and for the most part there are only limited possibilities for adequate airspace observation.

Here, it is of secondary importance that flights are carried out according to visual flight rules (principle: 'see and avoid') and that the traffic density is to some extent lower than at comparable landing sites on land. The mere fact that two or more corridors intersect constitutes a potential collision risk per se.

Re para. 3

To determine the corridor length, the slope profile category 'A' from Table 4-1 ICAO14 is used for the slope of the landing or take-off area. This also enables safe, i.e. sufficiently long, obstacle-free take-off for less powerful helicopters, e.g. in the event that the engine on one side fails, since there is sufficient superelevation for turning after leaving the obstacle backdrop or the respective corridor (cf. CAT.POL.H.210 EU Regulation No. 965/2012). In addition, a shallow approach angle can be selected, which is particularly advantageous at night in an area with difficult weather conditions and little contrast. Furthermore, such an approach is also necessary because the height above the FATO level of 152 metres considered in Table 4-1 ICAO14 is usually insufficiently dimensioned in relation to the actual heights of the wind turbines.

Re para. 4

The delimitation of the inner corridor is based on the parameters for night operations pursuant to numbers 4.1.1 to 4.1.3 and 4.1.13 to 4.1.15 in conjunction with Figures 4-1 and 4-2 of Annex

14, Volume II to the Convention on International Civil Aviation of 7 December 1944. This is to take into account the fact that the corridors are essential for safe operation, especially at night. The aim is to also allow for the specific environmental conditions.

A safety area within the meaning of the regulations of ICAO Annex 14 Volume II is not specified since such areas are not intended for helicopter landing decks.

The specifications for the width of the inner corridor are based on ten times the main rotor diameter of the largest SAR helicopter currently in use in the German EEZ (Sikorsky Mk.41 'Sea King'), whereby the main rotor diameter was rounded up to 20 metres in order to also take into account future and potentially larger models.

Re para. 5

The outer corridors serve as an additional safety clearance from the wind turbines flanking the respective flight corridor. On the one hand, this is necessary because it is more difficult to correctly estimate the distance from the turbines when the rotors are turning. On the other hand, this measure is intended to minimise the influence of any wake vortices. The dimensioning of the outer corridors is designed in such a way that the symmetry of the overall corridor with regard to its respective axis is maintained – even if there are obstacles of different heights on its flanks, as there is a risk of misinterpreting the position of the inner corridor in the case of outer corridors of different widths.

Re para. 6

The respective approach or departure baseline in a corridor must be identical to its axis alignment in order to ensure the greatest possible obstacle clearance along its entire length.

Re Sec. 23 (Tower illumination)

Re para. 1

Tower illumination is necessary to increase the visibility of the wind turbines along a flight corridor at night so the approach to the obstacles, i.e. the wind turbines, can be better assessed by the helicopter crew and to facilitate their orientation or give them a better spatial impression of the surroundings.

Re para. 2

The specification is necessary for the suitability of the site in view of the expected interactions with later projects at other sites in the Site Development Plan.

The creation of flight corridors requires overall consideration, i.e. a consideration that encompasses the entire area within the meaning of Sec. 3 para. 3 WindSeeG. Only in this way can it be ensured that obstacle protection concerns of all helicopter landing decks to be constructed in an area are sufficiently accounted for. The primary objective is to ensure that the installation of obstacles such as wind turbines does not render one of the designated helicopter landing decks unusable.

In this respect, these are 'specifications for the later project' at the sites, which are necessary in order to achieve overall suitability of the sites in question based on 'interactions' with later projects at the other sites of the Site Development Plan. This is because the spatial proximity of the offshore wind farms in an area in relation to each other on the one hand and the manoeuvring requirements of a helicopter on the other hand require a cross-site analysis within the area in order to avoid restrictions to the suitability of sites to be assessed in the future.

It cannot be ruled out that third-party corridor areas may also extend into a particular offshore wind farm. Insofar as existing projects are concerned or the neighbouring project is already established under planning law, these are to be taken into account when drawing up the

specific wind farm layout, and the identification of own wind turbines with tower illumination along this corridor is to be permitted in order to avoid hazards to air traffic. In order to ensure proper operation of the tower illumination, the third party, as the operator of the tower illumination, must have access to the project developer's installations in order to be able to carry out necessary maintenance or repairs. For work that can be planned, access is only required during normal operating and business hours. In the event of malfunctions, however, immediate access to the tower illumination by the third party is necessary in order to avoid or at least reduce risks to the safety of air traffic. The parties are free to make other arrangements provided that proper operation of the tower illumination is ensured.

Re Sec. 24 (Identification of air traffic obstacles)

Wind turbines are obstacles for air traffic. In order to reduce the danger they pose, they must be adequately identified. Other turbines or superstructures on these turbines may also pose a hazard to air traffic at the offshore wind farm and are to be identified. The obligation to identify obstacles in the vicinity of a helicopter landing deck results from No. 5.3.12 of Annex 14 to the ICAO Convention. Obstacles include, in particular, exposed partial structures (e.g. masts, cranes, lightning rods or other structures) if they are located on surfaces in the immediate vicinity of or at a distance from the helicopter landing deck relevant to flight operations and/or they can be swung into the area of the helicopter landing deck and/or they can pose a hazard to air traffic due to their shape and height.

The regulations on the identification of air traffic obstacles for the area of the German EEZ were transferred from the 'Allgemeine Verwaltungsvorschrift zur Kennzeichnung von Luftfahrthindernissen' (General administrative regulation on the identification of aviation obstacles) to a 'Standard Offshore-Luftfahrt' (Offshore aviation standard), and this will be published in an appropriate manner after the conclusion of a consultation phase. However, according to the BMVI's instructions to the planning approval authority, part 5 of this standard is to be applied from 17 August 2020 in connection with approval and planning approval procedures and was published on the BSH's website on 31 August 2020. If changes result from the consultation phase, these must be taken into account.

Re Subdivision 5 (Security of territorial and alliance defence)

Re Sec. 25 (Security of territorial and alliance defence)

Re para. 1

The installations erected at the site must be marked in suitable locations with sonar transponders for the emergency navigation of naval vessels. During exercises for the purpose of territorial and alliance defence, the installation of the sonar transponders is intended to prevent the risk of submarines colliding with structural installations by means of acoustic signals.

The arrangement set out in the planning approval procedure, the determination of the deployment sites and the technical specification of the sonar transponders are carried out in accordance with the requirements of the Federal Office for Infrastructure, Environmental Protection and Services of the German Armed Forces (BAIUDBw)/Naval Command.

If further projects are built directly adjacent to the site in question, the identification may also have to be adapted to the new development situation after the realisation of the project at the site.

Re para. 2

The use of the measuring devices referred to in para. 2 may result in the collection 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, currently located at Kopernikusstrasse 1, 18057 Rostock, Germany, must be notified in good time.

Re Subdivision 6 (Safety and health protection)

Re Sec. 26 (Principle)

The safety and health of all persons working at the future offshore wind farm are another overriding public interest within the meaning of Sec. 10 para. 2 no. 1 in conjunction with Sec. 5 para. 3 no. 1 WindSeeG; the regulations on occupational health and safety are other provisions under public law within the meaning of Sec. 10 para. 2 no. 2a) in conjunction with Sec. 48(4)(1)(8) WindSeeG. For the implementation of the project, it must therefore be ensured that the health and safety requirements can be met.

The regulation ensures that the regulations on occupational health and safety are taken into account at an early stage by the project developer in the planning and implementation phase. The German Occupational Health and Safety Act (ArbSchG) must also be applied by employers in the EEZ, see Sec. 1(1)(2) ArbSchG. However, the project developer is not always the employer at the same time. Separate obligations are therefore established for the project developer; for its obligations as an employer, see Sec. 30.

The regulations for occupational health and safety include in particular ArbSchG and the ordinances based on it as well as the accident prevention regulations of the accident insurers. The occupational health and safety regulations specify technical and occupational health rules. DGUV information leaflets contains notes and recommendations to facilitate the practical application of occupational health and safety law.

DGUV information leaflet FBHM-098 'Offshore-Plattformen - Empfehlungen zur Umsetzung der Arbeitsstättenverordnung' (Offshore platforms – Recommendations for the implementation of the workplace ordinance), for example, contains information for platforms which, if taken into account, will contribute to safer working conditions. The publication of recommendations relating to wind turbines is planned. The DGUV information leaflet 'Erste Hilfe in Offshore-Windparks' (First aid at offshore wind farms) contains, among other things, information on requirements relating to the necessary equipment of offshore wind farms and their ancillary facilities as well as the training required. The offshore wind energy safety framework concept has implications for the facilities to be provided. Offshore diving work also places increased demands on the personnel carrying out the work, which is why the 'Offshore Diving Guideline' was developed to supplement DGUV Regulation 40 'Taucherarbeiten' (Diving Work). Orientation towards the specifications provided here serves the purpose of preventive health protection.

Re Sec. 27 (Fire and explosion protection)

Re para. 1

In particular, preventive fire and explosion protection offshore is essential for preventive health protection. The relevant regulations affect the possible construction methods of the wind turbines and platforms and can thus have a financial impact. The DGUV information leaflet FBHM-098 'Offshore-Plattformen - Empfehlungen zur Umsetzung der Arbeitsstättenverordnung' contains information on how to implement the applicable standards of the German Workplace Ordinance relating to escape routes, which contributes to safer working conditions. In this context, the escape concept must be coordinated with the fire protection concept in such a way that escape must be possible in time before an installation

can no longer withstand a fire. The specifications to be observed for fire protection are currently defined in various regulations but are to be summarised in a single regulation in the future. The specific time period available for escape depends, among other things, on the fire protection classes of the walls used and the fire protection systems, which must also be selected on this premise.

Re para. 2

According to Sec. 3(2) of the German Workplace Ordinance of 12 August 2004 (Federal Law Gazette I p. 2179), last amended by article 226 of the ordinance of 19 June 2020 (Federal Law Gazette I p. 1328) and Sec. 3(3) of the German Industrial Safety Ordinance of 3 February 2015 (Federal Law Gazette I p. 49), last amended by article 1 of the ordinance of 30 April 2019 (Federal Law Gazette I p. 554), an employer must ensure that risk assessments, which in turn form the basis for the construction and operation of the workplace and the safe use of work equipment, are carried out competently. In case of a lack of knowledge, professional advice must be sought. This obligation is extended to the project developer. It is always at the discretion of the competent authorities whether to obtain evidence of the consultation. Since offshore workplaces also differ from other workplaces in terms of accessibility and preventive fire protection is of great importance, the project developer is required to submit evidence of consultation in this case. Subsequent changes can be ruled out by means of expert advice, not least because the requirements under para. 1 often impact on the design of the building, which can no longer be adapted during operation or only at considerable financial expense.

Re para. 3

Due to the specification contained in Sec. 4(4) of the German Workplace Ordinance, at least two regular access points are to be provided for the platforms depending on the escape concept. For this purpose, a helicopter landing deck is regularly set up in addition to normal access by ship. Two different transport systems are to be used so that, for example, if access by ship is restricted due to weather conditions, the helicopter landing deck is available as an alternative access option.

When setting up the helicopter landing deck, Sec. 4(4) of the German Workplace Ordinance must also be observed and sufficient access and exit routes must be provided.

Re Sec. 28 (Intervention into the subsoil)

The site survey does not include the targeted inspection of the site for any unexploded ordnance. This task remains the responsibility of the subsequent offshore wind farm operator as a duty to avert danger as part of the general duty of ensuring safety. Sec. 28 specifies the duty of the project developer arising from Sec. 26. Information on measures that the project developer must take into account to ensure occupational health and safety are described in DGUV information leaflet 201-027 'Handlungsanleitung zur Gefährdungsbeurteilung und Festlegung von Schutzmaßnahmen bei Kampfmittelräumung' (Guidance on risk assessment and definition of protective measures for explosive ordnance disposal).

Re Sec. 29 (Monitoring of adherence to the health and safety regulations)

This regulation grants the competent authorities the right to enter the project facilities for previously announced and, to a reasonable extent, also unannounced inspections during normal operating and business hours.

This regulation is necessary to ensure the aforementioned requirements. During the implementation of offshore wind farm projects, it has become apparent that the above-mentioned specifications have not been adequately implemented in some cases – among

other things due to the regulations applicable to different areas (e.g. fire protection, as well as accommodation fittings, etc.) being laid down in various rules and regulations, resulting in uncertainties with regard to which specifications apply. However, adequate implementation is particularly important because of the special requirements at sea, such as workers working offshore for up to 21 days and the extended rescue periods.

The regulation covers inspections of the installations, which can take place in the shipyard, as well as inspections after the installation and commissioning of all systems (e.g. fire protection systems or similar) at sea.

The staff of the competent authorities are to be enabled to travel to and from the offshore project. The project developer can choose to ensure this by providing transport for the persons or by assuming the costs of such transport.

Re Sec. 30 (Other obligations)

Sec.s 26 to 29 contain special obligations for the project developer concerning occupational health and safety. The project developer may also be an employer at the same time. In view of this, Sec. 30 clarifies by way of declaration that the employer's obligations under the provisions on occupational health and safety apply to the project developer in its capacity as an employer; see also Sec. 1(1)(2) ArbSchG.

SubSec. 6 (Compatibility with existing and planned cables, pipelines and wind turbines)

Re Sec. 31 (Compatibility with existing and planned cables and pipelines)

Re para. 1

This specification is intended to prevent damage to third-party submarine cables and pipelines as well as other third-party facilities that have already been laid or approved or for which planning permission has been granted. InterSec.s of submarine cables should be avoided as far as possible. When building interSec.s, hard substrate is integrated into the soil. Under the aspects of mitigating intervention into the marine environment, interSec.s should be avoided as far as possible.

Re para. 2

In accordance with planning principle 4.4.1.6 of the Site Development Plan ('Consideration of all existing and approved uses'), 500 metres must be kept clear of development on both sides of these installations to protect third-party cables or pipelines unless the subsoil conditions require greater distances.

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

According to the determination in the Site Development Plan 2019, which remains unchanged in the update, site N-3.8 is divided 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 determination of the site.

No further information is available on operational submarine cables or pipelines within or immediately adjacent to the sites in question. However, it cannot be completely ruled out that other active submarine cables or pipelines run within the sites.

Re Sec. 32 (Distance from wind turbines of neighbouring sites)

In order to limit shadowing effects and to ensure stability, a minimum distance of five times the rotor diameter of the wind turbines from wind turbines on neighbouring sites must be

maintained in accordance with planning principle 4.4.2.3 of the Site Development Plan. The minimum distance applies between the centres of the respective wind turbines, whereby the larger rotor diameter is to be taken as a basis.

The minimum distance specifications only apply to wind turbines at neighbouring sites, not between wind turbines at the same offshore wind farm.

If two adjacent areas are put out to tender by the Federal Network Agency in the same year with the result that planning of the offshore wind farms takes place in parallel, close coordination between the project developers is required at an early stage in good faith with regard to the installation locations and distances, taking rotor diameters into account. Existing installations or projects in the planning approval procedure must be taken into account.

Re Sec. 33 (Infeed at the grid connection point)

According to Sec. 24(1)(3) WindSeeG, the entitlement to connection and grid connection capacity is limited to the bid quantity awarded. The Site Development Plan additionally establishes a planning principle (4.4.2.4) for the deviation of the actual from the allocated grid connection capacity, which is specified in Sec. 33. According to this, infeed in excess of the allocated grid connection capacity is not permitted at any time. Infeed in excess of the allocated grid connection capacity may restrict the infeed of other offshore wind farms connected via the same grid connection or jeopardise the functionality of the grid connection as a whole. This regulation does not cover so-called overplanting. The construction of more wind turbines than would be required to achieve the bid quantity awarded may be possible under certain conditions, such as an appropriate technical design of the grid connection system and adherence to nature conservation specifications.

Re Subdivision 7 (Other obligations of the project developer)

Re Sec. 34 (Design)

Re para. 1

This specification requires the planning, construction, operation, dismantling, design and equipment of the offshore installations to correspond to the technical state of the art or alternatively the scientific and technical state of the art. This is assumed to be the case if the above standards are met for the areas covered therein.

The specification of adherence to the quality standard, the state of the art in accordance with the standards for subsoil investigation and design as well as the VGB/BAW standard for corrosion protection ensures the structural safety of the installation. The type of documents and evidence to be submitted – including the requirements regarding testing and certification – and the time of submission (submission for 1st, 2nd, 3rd or operational approval, for cable approval or dismantling approval as well as applications for approvals in individual cases) result in detail from the respectively valid versions of the 'Standard Baugrunderkundung' (Subsoil investigation standard) and the Standard Design.

The VGB/BAW standard was developed in 2016 as a supplement to established corrosion protection standards and introduced by the BSH in 2018 as a binding regulation. The standard deals exclusively with the requirements for corrosion protection and its application to offshore structures for the use of wind energy. The mandatory scope covers the primary steelwork of the supporting structures and regulates specific requirements going beyond DIN EN ISO 12944 to ensure the suitability of the corrosion protection over a lifetime of more than 25 years.

The application of the VGB/BAW standard is not binding for the design of the corrosion protection of wind turbine towers. For the towers, the minimum requirements of the Standard Design and the regulations specified therein apply as the state of the art. However, the

VGB/BAW standard can also be applied to towers as an alternative to the regulations defined in the Standard Design.

Re para. 2

Technical faults in the installations essentially cannot be ruled out during operation. Furthermore, platforms are also frequently not permanently manned. Permanent access (24/7) to an offshore installation cannot be assumed, for example due to the weather. Moreover, the installation can only ever be reached from the shore with a delay due to the travel required. Therefore, the control and monitoring capabilities of the installations must be adapted to these circumstances at sea. The project developer must ensure that it is also possible to respond to relevant incidents at the offshore installations via remote access. Full access must therefore be possible from the control room to such systems whose failure or malfunction could jeopardise the integrity of the offshore platform, the safety of traffic or the marine environment.

Re Sec. 35 (Determination, documentation and reporting of objects and erected installations)

Re para. 1

The surveys carried out as part of the preliminary investigation of sites, the documents of which are made available as part of the notice of the call for tenders, can be evaluated with regard to existing cables, lines, obstacles, wrecks, unexploded ordnance, cultural and material assets and other objects, and may provide initial indications. The sites of the above-mentioned objects must be taken into account when planning the locations and routes of the installations.

During the preliminary investigation of sites, various objects which could not be specified in more detail, were detected by means of hydrographic surveys at the sites.

In accordance with the specifications of the BfN mapping guidelines for biotopes legally protected according to Sec. 30 BNatSchG, supplementary video surveys of the objects were carried out at prominent positions, and various anthropogenic objects and small stones were found. It was not possible to identify any legally protected biotope. For site O-1.3, further assessments beyond the mapping guidelines were carried out, the results of which reveal further prominent objects. These must be taken into account when planning routes and locations. If, contrary to the results of the previous video surveys, marine erratic boulders or stone fields are found, these would have to be buffered according to the specifications of the mapping guidelines and the areas would have to be excluded from development.

The seabed may contain cultural assets of archaeological value, such as soil monuments, settlement remains or historic shipwrecks. According to article 149 of the Convention on the Law of the Sea, objects of an archaeological or historical nature that are found must be preserved or used for the benefit of all mankind. In the event of the discovery of any cultural and material assets, the planning approval authority normally orders the project developer to take appropriate measures, with the involvement of monument protection and heritage authorities, to ensure that scientific investigations and documentation of the assets can be carried out before the start of construction work and that objects of an archaeological or historical nature can be preserved and conserved either on site, which is the priority, or by salvage. The procedure is to be agreed on in detail with the planning approval authority (with the involvement of monument protection and heritage authorities). The preservation of cultural heritage, in particular underwater archaeological heritage, is in the public interest within the meaning of Sec. 48 para. 4 sentence 1 no. 8 WindSeeG.

By searching the BSH's database of underwater obstacles including the German Maritime Museum's database of cultural objects in the EEZ, it is possible to retrieve known information from these bodies. During the preliminary investigation of sites, no unexploded ordnance surveys were conducted, nor were the results of the subsoil investigations evaluated in this

respect. Accordingly, the determination of suitability does not include an assessment with regard to the possible presence of unexploded ordnance at the site.

The explicit mention of explosive ordnance follows from DIN 4020, according to which the developer is responsible for ensuring freedom from explosive ordnance. This task remains with the responsibility of the subsequent offshore wind farm operator as a duty to avert danger as part of the general duty of ensuring safety. The operator must take measures to protect its employees.

In 2011, a Federal-*Länder* working group published a basic report on the munitions contamination of German marine waters, which is updated annually. According to current knowledge, the German Baltic Sea is estimated to be contaminated with up to 0.3 million tonnes, and the German North Sea with up to 1.3 million tonnes, of unexploded ordnance. On the whole there is a lack of data, so it can be assumed that unexploded ordnance is also to be expected in the area of the German EEZ (e.g. remnants of mine barriers and combat operations). The location of the known munitions dump sites can be found on the official nautical charts and in the 2011 report (which also includes suspected sites of munitions contamination). The reports of the Federal-*Länder* working group are available at www.munition-im-meer.de.

It is recommended that detailed historical research on the possible presence of unexploded ordnance be carried out as part of the specific project planning.

The respective project developer is responsible both for the identification and investigation of unexploded ordnance and for all resulting protective measures. Discovery must be documented immediately and reported to the planning approval authority. In the event that unexploded ordnance is discovered, the developer is also responsible for its recovery or disposal. Munitions finds and their further handling must be reported to the Maritime Safety and Security Centre in Cuxhaven (Joint Control Centre of the Maritime Police of the Coastal States, Central Reporting Centre for Munitions in the Sea). Blasting is to be avoided as a matter of principle as specified in Sec. 8. If blasting for the removal of munitions (munitions that cannot be transported) is unavoidable, a noise control concept must be submitted to the planning approval authority in good time beforehand.

Transportable unexploded ordnance must not be dumped again after recovery but must be disposed of properly on land in consultation with the responsible unexploded ordnance disposal services of the *Länder*. The relevant details of any protective measures that may become necessary will be regulated in the planning approval procedure.

Re para. 2

The order ensures that the exact positions of the installations erected are surveyed in good time and are also made known and accessible via the BSH nautical charts and the CONTIS specialist information service.

The requirements of the positional accuracy to be measured as well as the documentation are determined by the competent authority in the planning approval procedure.

Re Sec. 2 (Special specifications for site N-3.7)

Re Sec. 36 (Special provisions for protecting the marine environment)

Re para. 1

To avoid disturbing the harbour porpoise as a protected species within the meaning of Sec. 44 para. 1 no. 2 BNatSchG, pile driving work is to be coordinated with that of projects to be completed in parallel. This is to be done in accordance with the concept for the protection of harbour porpoises from noise pollution during the construction of offshore wind farms in the German North Sea (Schallschutzkonzept (noise control concept), BMU, 2013). In the noise control concept, the BMU states that, according to current knowledge, sound-induced

disturbance of harbour porpoises in the form of escape and avoidance behaviour can occur even if the noise protection values are complied with:

Chapter 7.3.1 of the noise control concept states: 'To rule out significant population-relevant disturbances in the German North Sea now and in the future, sufficient areas must be available for harbour porpoises that are not exposed to pile driving noise. It is assumed that these are always sufficiently available if no more than 10 per cent of the area of the EEZ of the German North Sea are located within the disturbance radii of the OWFs under construction and the limit value arising from the prohibition of killing and injury for pulsed sound (broadband sound exposure level (SEL) of 160 dB re 1 $\mu\text{Pa}^2 \text{ s}$ or peak sound pressure level (SPL_{peak-peak}) of 190 dB re 1 μPa at a distance of 750 m from the point of sound generation) is complied with. The position of the individual sound sources is not taken into account. In this case, a significant disturbance of the local harbour porpoise population can be ruled out.'

In addition, a significant impairment within the meaning of Sec. 34 para. 1 BNatSchG exists if at least 10 per cent of the nearest nature conservation area 'Borkum Riffgrund' are affected by disturbance-triggering sound inputs.

The aim of the obligation to coordinate scheduling is to counteract this.

Re para. 2

This specification is also based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction of the offshore wind farm may have adverse effects on the marine environment.

In order to adhere to the specifications arising from the BMU noise control concept, coordination is required between the projects with regard to the construction phases, where the pile driving times may overlap even if the specified WindSeeG timeframes are adhered to. Insofar as this is necessary to adhere to the values of the noise control concept despite prior coordination, the planning approval authority must be able to issue orders for the coordination of construction activities.

Re Sec. 37 (Special provisions pertaining to the safety and efficiency of shipping traffic)

This specification is based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction and operation of the offshore wind farm at the site may have adverse effects on the safety and efficiency of shipping traffic.

This determination of suitability is based on an expert report which determined the collision repetition rate for the sites based on current traffic figures by means of quantitative risk analysis. For site N-3.7, the statistical collision frequency is 113 years.

The expert report points out that the results may change in the event of increased traffic volumes or in the event of changes in other framework conditions relevant to the risk assessment. This may result in an increased collision repetition rate, which would mean that further risk-mitigating measures would have to be ordered to counteract any hazard to shipping. In principle, the suitability assessment should cover the period from the start of construction to the end of operation of an offshore wind farm. Since the result of the risk analysis for site N-3.7 is only slightly above the acceptance value of 100 years and the development of the volume of shipping traffic in the EEZ only appears to be predictable to a limited extent according to the experts, the specification is necessary to ensure suitability in this case.

In view of the anticipated operating time of the OWFs – and the associated risks to shipping that will continue to have an effect at least into the 2050s – the GDWS also regards it as probable that the calculation of official emergency towing capacities in the planning approval criteria would no longer be sufficient to comply with the acceptance thresholds of the 'Approval-relevant guideline values' working group even in the event of a minor change in traffic conditions, a further increase in the degree of development or other changes in the framework

conditions. As a consequence, the future project developers would be obliged to implement further risk-mitigating measures at their own responsibility. According to the 'Approval-relevant reference values' working group, this explicitly includes the provision of private towing capacity.

As a basis for the approval decision, the planning approval authority requires a current statement on adherence to the social acceptance limit values from the BMVI's 'Approval-relevant guideline values' working group and on the mitigation measures required for this to enable these to be imposed if necessary. This is the purpose of updating the risk analysis.

Whether and in what form additional mitigation measures are ordered is decided by the planning approval authority in agreement with the GDWS based on the results of the updated expert report.

In addition, an update of the expert report may be necessary at any time at a later point in time or due to other changes in the situation, which may be required by the planning approval authority or later during enforcement pursuant to Sec. 57 WindSeeG by the authority responsible for enforcement monitoring.

Re Sec. 38 (Special provisions pertaining to the safety of air traffic)

This specification details the general regulation on also ensuring that neighbouring flight corridors are kept free of obstacles by specifying the specific areas to be kept free. The regulation is necessary to maintain the safety and efficiency of air traffic and also indirectly for occupational health and safety considerations to maintain existing access and exit points to the facilities of the neighbouring projects.

The corridor areas of neighbouring projects listed here extend into site N-3.7. Since the offshore wind farms Gode Wind 01 and Gode Wind 02 are already existing projects, they are to be taken into account when drawing up the wind farm layout, i.e. they are to be kept free of developments and the identification of own wind turbines with tower illumination along these corridors is to be permitted to avoid hazards to air traffic. Furthermore, the operation and maintenance of the facilities must be guaranteed.

The Gode Wind 3 project (originally Gode Wind III and parts of the former Gode Wind 04 project) is currently in the planning approval process, so the specific corridor planning has not yet been approved.

Because of the existing development, the corridor will probably have to protrude into site N-3.7 and must be taken into account when planning the development of site N-3.7.

Re Sec. 3 (Special specifications for site N-3.8)

Re Sec. 39 (Special provisions for protecting the marine environment)

Re para. 1

To avoid disturbing the harbour porpoise as a protected species within the meaning of Sec. 44(1)(2) BNatSchG, the pile driving activities are to be coordinated with those of projects to be completed in parallel in accordance with the concept for the protection of harbour porpoises from noise pollution during the construction of offshore wind farms in the German North Sea ('Schallschutzkonzept', BMU, 2013). In the noise control concept, the BMU states that, according to current knowledge, sound-induced disturbance of harbour porpoises in the form of escape and avoidance behaviour can occur even if the noise protection values are complied with:

Chapter 7.3.1 of the noise control concept states: 'To rule out significant population-relevant disturbances in the German North Sea now and in the future, sufficient areas must be available for harbour porpoises that are not exposed to pile driving noise. It is assumed that these are always sufficiently available if no more than 10 per cent of the area of the EEZ of

the German North Sea are located within the disturbance radii of the OWFs under construction and the limit value arising from the prohibition of killing and injury for pulsed sound (broadband sound exposure level (SEL) of 160 dB re 1 $\mu\text{Pa}^2 \text{ s}$ or peak sound pressure level (SPL_{peak-peak}) of 190 dB re 1 μPa at a distance of 750 m from the point of sound generation) is complied with. The position of the individual sound sources is not taken into account. In this case, a significant disturbance of the local harbour porpoise population can be ruled out.'

In addition, a significant impairment within the meaning of Sec. 34 para. 1 BNatSchG exists if at least 10 per cent of the nearest nature conservation area 'Borkum Riffgrund' are affected by disturbance-triggering sound inputs.

Re para. 2

This specification is also based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction of the offshore wind farm may have adverse effects on the marine environment.

In order to adhere to the specifications arising from the BMU noise control concept, coordination is required between the projects with regard to the construction phases, where the pile driving times may overlap even if the specified WindSeeG timeframes are adhered to. Insofar as is necessary to comply with the values of the noise control concept despite prior coordination, the planning approval authority can issue orders for the coordination of construction activities.

Re Sec. 40 (Special provisions pertaining to the safety and efficiency of shipping traffic)

This specification is based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction and operation of the offshore wind farm at the site may have adverse effects on the safety and efficiency of shipping traffic.

This determination of suitability is based on an expert report which determined the collision repetition rate for the sites based on current traffic figures by means of quantitative risk analysis. For site N-3.8, the statistical collision frequency is 100 years.

The expert report points out that the results may change in the event of increased traffic volumes or in the event of changes in other framework conditions relevant to the risk assessment. This may result in an increased collision repetition rate, which would mean that further risk-mitigating measures would have to be ordered to counteract any hazard to shipping. In principle, the suitability assessment should cover the period from the start of construction to the end of operation of an offshore wind farm. Since the result of the risk analysis for site N-3.8 corresponds exactly to the acceptance value of 100 years and the development of the volume of shipping traffic in the EEZ only appears to be predictable to a limited extent according to the experts, the specification is necessary to ensure suitability in this case.

In view of the anticipated operating time of the OWFs – and the associated risks to shipping that will continue to have an effect at least into the 2050s – the GDWS also regards it as probable that the calculation of official emergency towing capacities in the planning approval criteria would no longer be sufficient to comply with the acceptance thresholds of the 'Approval-relevant guideline values' working group even in the event of a minor change in traffic conditions, a further increase in the degree of development or other changes in the framework conditions. As a consequence, the future project developers would be obliged to implement

further risk-mitigating measures at their own responsibility. According to the 'Approval-relevant reference values' working group, this explicitly includes the provision of private towing capacity. As a basis for the approval decision, the planning approval authority requires a current statement on adherence to the social acceptance limit values from the BMVI's 'Approval-relevant guideline values' working group and on the mitigation measures required for this to enable these to be imposed if necessary. This is the purpose of updating the risk analysis.

Whether and in what form additional mitigation measures are ordered is decided by the planning approval authority in agreement with the GDWS based on the results of the updated expert report.

In addition, an update of the expert report may be necessary at any time later on or due to other changes in the situation, which may be required by the planning approval authority or later during enforcement pursuant to Sec. 57 WindSeeG by the authority responsible for enforcement monitoring.

Re Sec. 41 (Special provisions pertaining to compatibility with the cable route defined in the Site Development Plan)

The Site Development Plan 2019 identifies a route corridor for the routing of the transmission grid operator's AC cable systems, including spacing corridor, connecting the transformer platform site to the converter platform. This route corridor – which remains unchanged after the 2020 update of the FEP – runs within site N-3.8 as defined by the Site Development Plan and is to be kept free of development. This also applies to the installation of the internal wind farm cabling. The latter must not intersect the corridor.

This specification serves to ensure the compatibility of the construction and operation of wind turbines at the site with the grid operator's existing or planned offshore connection lines. It ensures the safe laying and, if necessary, repair of these cable systems and therefore also serves to ensure that the offshore wind farm is reliably connected to the grid at the site in question.

To construct a cable interSec., at least rock fills are normally required to protect the upper (intersecting) cable. The prohibition of intersecting the cable corridor with the internal wind farm cabling therefore rules out corresponding intervention into the marine environment resulting from the introduction of hard substrate.

Re Sec. 4 (Special specifications for site O-1.3)

Re Sec. 42 (Special provisions pertaining to the protection of marine mammals)

Re para. 1

Based on the current state of knowledge, the Federal Ministry of the Environment assumes that even if the noise protection levels are complied with by each individual project, sound-induced disturbance of harbour porpoises in the form of escape and avoidance behaviour may occur. As can be seen from the basic assumptions of the BMU noise control concept for the EEZ in the North Sea, this can be countered by providing sufficient areas for harbour porpoises where they are not exposed to pile driving noise. This, in turn, can be achieved by agreements between the projects with regard to the construction phases.

Re para. 2

This specification is also based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction of the offshore wind farm may have adverse effects on the marine environment.

Insofar as is necessary despite prior coordination between project developers, the planning approval authority can issue orders for the coordination of construction activities.

Re Sec. 43 (Special provisions pertaining to the protection of avifauna)

These specifications serve to avoid realisation of the prohibition of killing and injuring under species protection law pursuant to Sec. 44 para. 1 no. 1 BNatSchG.

In accordance with Sec. 44 para. 1 (1) in conjunction with Sec. 7 para. 2 (13) BNatSchG, it is prohibited to kill or injure specimens of European birds species.

However, in the case of impairments that are unavoidable in accordance with Sec. 15 (1) BNatSchG as a result of officially authorised interventions into nature and the landscape, the prohibition of killing and injury in accordance with Sec. 44(1)(1) BNatSchG is not violated if the impairment caused by the intervention does not significantly increase the risk of killing and injuring specimens of the species concerned and this impairment cannot be avoided by applying the required, professionally recognised protective measures (Sec. 44 para. 5 (1)(2)(1) BNatSchG). Under the above-mentioned conditions, Sec. 44 para. 5 (2)(1) BNatSchG restricts the elements of Sec. 44 para. 1 (1) in accordance with the case law referring specifically to risks related to operations, but also to construction and installations (e.g. animal collisions in road traffic or with wind turbines, clearing of construction sites) (Federal Administrative Court Decisions 134, 166, recital 42; Federal Administrative Court, judgement of 13.05.2009, 9 A 73/07, recital 86; Federal Administrative Court, judgement of 08 January 2014, 9 A 4/13, recital 99) to the effect that the unavoidable loss of individual specimens due to a project does not automatically and always constitute a violation of the prohibition of killing. Rather, a violation requires that the project significantly increases the risk of killing individuals of the species concerned. According to the case law, the meaning of 'significant' is also equated with the term 'clear' in some rulings (explanatory memorandum to Sec. 44 para. 5 (2)(1) BNatSchG, German Bundestag Document 18/11939)

Circumstances that are relevant to the assessment of significance are, for example, those relating to the construction of the installations, the topographical conditions or the biology of the species concerned as well as, in particular, the effectiveness of planned protective measures. Sec. 43 regulates such a protective measure.

According to current knowledge, a significantly increased risk cannot be ruled out for certain bird species crossing the project area, especially under certain weather conditions:

The Baltic Sea is crossed by migratory routes of species that are sensitive to wind turbines or at risk of collision, in particular cranes, birds of prey, geese and waders as well as migratory songbirds, which also cross site O-1.3 in large numbers. According to the results of the species protection assessment as part of the SEA, cranes, birds of prey, geese, waders and migratory songbirds generally have an increased risk of colliding with wind turbines in certain situations, in particular during events involving very high migration intensities, which can occur on approx. 5 – 10% of all days of the main migration periods after the dissolution of a migration back-up. If these events take place in uncertain weather or visibility conditions, there is an increased risk of the birds colliding with the wind turbines, e.g. due to lure effects or orientation difficulties. This risk is to be countered by means of the specified measures.

Re para. 1

As part of risk management, monitoring must be carried out during the spring migration period from March to May and the autumn migration period from mid-July to November. As part of this monitoring, at least the above-mentioned and, if necessary, other relevant parameters are to be determined in a suitable manner in order to detect situations where there is a significantly increased collision risk and be able to respond to these in good time.

According to the explanatory memorandum to BNatSchG, 'project- and species-related criteria as well as other nature conservation parameters' (German Bundestag Document 18/11939, p. 17) are to be used to assess whether there is a significantly increased collision risk for certain bird species. Circumstances that are relevant to the assessment of significance are, in particular, species-specific behaviour, frequent use of the intersected space and the effectiveness of intended protective measures as well as, where appropriate, other criteria relating to the biology of the species.

Re para. 2

Based on the results of the site surveys carried out, the findings of research projects and the literature, the BSH and the BfN as the competent federal authority came to the conclusion in the Strategic Environmental Assessment that there may be a significantly increased risk of collision for certain species and species groups migrating over site O-1.3 due to the operation of wind turbines during events involving very high migration intensities.

According to the current state of knowledge, a significantly increased risk of collision with wind turbines can be assumed for crane migration during events involving very high migration volumes due to species-specific behaviour, irrespective of weather and visibility conditions. As part of the preliminary investigation of sites, the BSH commissioned the study 'Vogelzug über der deutschen AWZ der Ostsee – Methodenkombination zur Einschätzung des Meideverhaltens und Kollisionsrisikos windkraftsensibler Arten mit Offshore-Windenergieanlagen' (Bird migration over the German EEZ in the Baltic Sea – combined methods for assessing the avoidance behaviour and collision risk of species sensitive to wind turbines with offshore wind turbines) (Kulik et al. 2020). In the investigations on which this study is based, observations of the start of migration at the resting places used by the cranes prior to the start of migration across the Baltic Sea showed that the actual migration times can be limited to a few days during the migration periods and the time at which an area is crossed can be predicted more specifically, enabling mitigation measures to be implemented in time.

For birds of prey, geese, waders and songbirds, the BfN has come to the conclusion in the context of the assessment under species conservation law that there is a significantly increased risk during events involving very high migration intensities at night and during the day where there is the additional factor of uncertain weather. 'Night' is defined as the period from civil dusk to civil dawn.

For these birds, real-time detection by devices on the wind turbines constitutes the scientific and technical state of the art for predicting events involving very high migration intensities. In the approvals for offshore wind farm projects in the coastal waters, real-time detection at wind turbines using devices such as radar and thermal imaging cameras is already established as an ancillary provision. No certain type of detection or certain types of equipment are set down within the suitability determination since the concrete system

parameters such as height and type as well as the installation patterns of the systems are not yet known and will only be specified within the planning approval.

Re para. 3

The measure specified in para. 2 serves to avoid collisions of migratory birds with wind turbines. The fact that the temporary shut-off of wind turbines is in principle a suitable and scientifically recognised avoidance measure has already been established by the courts. For example, Koblenz Higher Administrative Court (OVG) states in its decision of 2007: 'Significant adverse effects of wind turbines on crane migration can be ruled out effectively, i.e. with a high degree of certainty, by applying technically suitable avoidance measures, in particular through criteria-based monitoring and the temporary shut-off of wind turbines in connection with the alignment of the rotors parallel to the main direction of migration' (OVG Koblenz, judgement of 20.12.2007 – 1 A 10937/06.OVG, BeckRS 2007, 146483, recital 30.

The specification of a threshold value for an event involving very high migration intensities is reserved for the planning approval procedure. In this way, findings from the implementation of neighbouring projects and ongoing research projects can be taken into account.

According to the results of the study 'Ermittlung artbezogener Erheblichkeitsschwellen von Zugvögeln für das Seegebiet der südwestlichen Ostsee bezüglich der Gefährdung des Vogelzuges im Zusammenhang mit dem Kollisionsrisiko an Windenergieanlagen. Abschlussbericht. Forschungsvorhaben des BMU (FKZ 0329948).' (Determination of species-related significance thresholds of migratory birds near the area of the southwestern Baltic Sea as regards the endangerment of bird migration in connection with the risk of collision with wind turbines. Final report. BMU research project (FKZ 0329948).) (BELLEBAUM J, GRIEGER C, KLEIN R, KÖPPEN U, KUBE J, NEUMANN R, SCHULZ A, SORDYL H & WENDELN H (2008)), crane migration, for example, is concentrated on a few days in both autumn and spring, since cranes make the start of migration dependent on favourable weather conditions and wait for tailwind situations if possible.

A study by Knust et al. (2003) also showed that bird migration is generally concentrated on 5 to 10 per cent of all days during the main migration periods, i.e. migration intensity peaks occur.

In its statement, the Federal Agency for Nature Conservation expressly pointed out that a conservative worst case scenario, according to which the wind turbines must always be shut down on an hourly basis as of an $MTR \geq 250$ (signals*km⁻¹*h⁻¹), has to be taken into account to calculate a bid for the BNetzA invitation to tender for site O-1.3.

Re para. 4

Clause 4 requires the project developer to specify the recording methods pursuant to para. 1 and the implementation of avoidance measures pursuant to para. 2 within the planning application.

In addition to the above-mentioned information and the relevant literature, the results of the following study must be taken into account when preparing the concept: 'Vogelzug über der deutschen AWZ der Ostsee – Methodenkombination zur Einschätzung des Meideverhaltens und Kollisionsrisikos windkraftsensibler Arten mit Offshore-Windenergieanlagen' (study commissioned by the BSH 9/2019-2/2020, Kulik et al. 2020), which was commissioned as part of the preliminary investigation of site.

The concept should also describe success monitoring as well as possible adjustments to the measures in the course of operation and is to be submitted with the application for planning approval.

The project developer may also include other suitable measures in the concept that are less burdensome for it than the temporary shut-off of the installations.

Re Sec. 44 (Special provisions pertaining to the safety and efficiency of shipping traffic)

Re para. 1

This specification is based on Sec. 12 para. 5 (2) and (3) WindSeeG and is necessary as otherwise the construction and operation of the offshore wind farm at the site may have adverse effects on the safety and efficiency of shipping traffic.

This determination of suitability is based on an expert report which determined the collision repetition rate for the sites based on current traffic figures by means of quantitative risk analysis. For site O-1.3, the statistical collision frequency is 155 years.

The expert report points out that the results may change in the event of increased traffic volumes or in the event of changes in other framework conditions relevant to the risk assessment. This may result in an increased collision repetition rate, which would mean that further risk-mitigating measures would have to be ordered to counteract any hazard to shipping.

In view of the anticipated operating time of the OWFs – and the risks involved for shipping that will continue to have an effect until at least the 2050s – the GDWS considers the collision repetition rate now determined in the expert report for site O-1.3 to be in a borderline range. The GDWS regards it as probable that the calculation of official emergency towing capacities in the planning approval criteria would no longer be sufficient to adhere to the acceptance limit values of the 'Approval-relevant guideline values' working group even in the event of a minor change in traffic conditions, a further increase in the degree of development or other changes in the framework conditions. As a consequence, the future project developers would be obliged to implement further risk-mitigating measures at their own responsibility. According to the 'Approval-relevant reference values' working group, this explicitly includes the provision of private towing capacity.

As a basis for the approval decision, the planning approval authority requires a current statement on adherence to the social acceptance limit values from the BMVI's 'Approval-relevant guideline values' working group and on the mitigation measures required for this to enable these to be imposed if necessary. This is the purpose of updating the risk analysis.

Whether and in what form additional mitigation measures are ordered is decided by the planning approval authority in agreement with the GDWS based on the results of the updated expert report.

In addition, an update of the expert report may be necessary at any time later on or due to other changes in the situation, which may be required by the planning approval authority or later during enforcement pursuant to Sec. 57 WindSeeG by the authority responsible for enforcement monitoring.

Re para. 2

Site O-1.3 is currently passed directly by up to 4 ships daily. An assessment was also carried out as to whether the future development poses a risk to these and other ships passing close by the site. In the supplementary expert report on the 'Erweiterte[n] Untersuchungen der verkehrlichen Auswirkungen einer Bebauung der Fläche O-1.3 der Ostsee' (Extended investigation[s] into the impact of traffic of a development at site O-1.3 in the Baltic Sea'), DNV GL 2020, the experts come to the conclusion that, with reference to the risk-mitigating measures recommended in principle in the expert report DNV-GL 2019 for site O-1.3, in

recognition of the simulations carried out, it is considered reasonable to retain the cardinal buoyage of the safety zone (see Sec.19) beyond the planning and construction phase. Maintaining it would allow passing shipping to reliably identify the safety zone both visually and on radar and to systematically avoid entering it. However, it seems possible that the initially new shipping routes will have become established after a certain time and the danger of accidentally entering the safety zone will no longer exist. If the project developer proves this, for example by submitting a corresponding evaluation of the passing traffic, the obligation may be waived.

This is determined on application by the planning approval authority in agreement with the GDWS.

Re Sec. 45 (Special international military provisions)

The northernmost part of site O-1.3 is overlapped by the Swedish hazard area ES-D140. This extends from the surface of the water (MSL) to an altitude of 50,000 ft.

In the procedure for drawing up the Site Development Plan 2019, the German Federal Armed Forces as an authority and Sweden were involved on a cross-border basis in the Strategic Environmental Assessment. No comments were received expressing reservations about designating the part overlapping the aforementioned hazard area as a site in the Site Development Plan. The German Federal Armed Forces also passed on these facts to the Swedish military authorities as part of the consultation process. The latter did not respond to the communication, and in particular did not speak out against the suitability of the site.

Nevertheless, temporary restrictions for shipping and air traffic are to be expected in such areas. This must be taken into account when planning the project at the site.

Re Sec. 46 (Special provisions pertaining to compatibility with existing and planned locations of transformer platforms)

The Site Development Plan 2019 specifies a location for the grid operator's transformer platform on the western edge of site O-1.3, which remains unchanged in the update. To ensure the safe installation and reliable operation of the platform, the wind turbines to be erected at the site must adhere to a distance of 500 metres from the location of the transformer platform. Maintaining this clearance around the site ensures that there is sufficient space next to the platform during construction or repair for jack-up or other construction vessels and that the internal wind farm cabling can be brought up to the platform.

Re part 3 (Determination of the capacity to be installed)

Re Sec. 47 (Determination of the capacity to be installed)

The legal basis for determining the capacity to be installed is Sec. 12 para. 5 (1) in conjunction with Sec. 10 para. 3 WindSeeG.

Re para. 1

The capacity to be installed for site N-3.7 is determined as 225 megawatts (MW). This corresponds to the expected capacity to be installed as set out in the Site Development Plan 2019, which also remains unchanged in the update.

A potential capacity of approximately 280 MW was determined for site N-3.7 during 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 therefore reduces the capacity expected to be installed to this value. According to the

rationale of the Site Development Plan, the installation of an additional AC connecting cable to exploit the full potential of the site is not possible due to spatial restrictions.

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 because it would not be used efficiently or to capacity. This would contradict the purpose of the FEP pursuant to Sec. 4 para. 2 no. 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 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 Site Development Plan 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 would not lead 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 Sec. 4 para. 2 no. 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 terms of the overall picture in comparison with the Site Development Plan 2019 or its update in 2020.

Re para. 2

The capacity to be installed for site N-3.8 is determined as 433 MW. This deviates from the expected capacity to be installed as set out in the Site Development Plan 2019 but is in line with the value envisaged for determination in the update.

A potential capacity of approximately 440 MW was determined for site N-3.8 during preparation of the Site Development Plan 2019. To adhere to the total statutory expansion volume pursuant to Sec. 5 para. 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.

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 Site Development Plan 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 para. 1).

The corresponding reduction due to the limited total capacity of the grid connection system NOR-3-3 is applied to site N-3.8, not to site N-3.7, as the latter's capacity to be installed has already been reduced in comparison with the site potential determined in the Site Development Plan 2019 due to the restrictions of the AC connecting cable.

Deviation from the standard transmission capacity for the NOR-3-3 grid connection system no longer appears possible due to the advanced stage of implementation of the grid connection project, which has already been awarded by the responsible grid operator and for which planning approval procedures are already underway.

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.

Pursuant to the explanatory memorandum to Sec. 10 para. 3 WindSeeG, 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.

With the amendment of WindSeeG, the expansion volume was increased from the original 15 MW to 20 GW of installed capacity by 2030 (see Sec. 1(2) WindSeeG). Accordingly, the limitation to a maximum of 900 MW per year (formerly Sec. 5 para. 5 (1) WindSeeG) now no longer applies and, pursuant to Sec. 5 para. 5 sentence 1 WindSeeG in the new version, the FEP can now designate sites with an expected capacity to be installed of approximately 1 gigawatt for the invitation to tender in 2021. Accordingly, the update of the FEP 2020 also provides for an expected installed capacity of 440 MW for site N-3.8.

As a result, a capacity of 433 MW is determined for site N-3.8.

Re para. 3

The capacity to be installed for site O-1.3 is determined as 300 MW. This corresponds to the expected capacity to be installed as specified in the Site Development Plan.

In the Site Development Plan 2019, the capacity likely to be installed at site O-1.3 was reduced from approximately 420 MW in comparison with the potential capacity determined for the site. The Site Development Plan 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 Site Development Plan 2019 due to the low capacity utilisation and, in view of this, the capacity likely to be installed for site O-1.3 is determined as 300 MW.

The 2020 update of the FEP also contains no plans to establish a further connecting cable, as this would only be utilised to a maximum of 120 MW or 40% of the line capacity assuming

a 300 MW connection line. This assessment is based on the fact that even after the update of the FEP in 2020, site O-2.2 will remain under consideration and no further sites to be connected will therefore be determined with certainty.

The specification of a second connecting cable would therefore contradict the purpose of the FEP pursuant to Sec. 4 para. 2 no. 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 approximately 11 years. Accordingly, OST-1-4 could only be put into operation after 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 installation and operation of an additional connecting cable can be specified in the context of the suitability assessment.

As part 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 Site Development Plan.