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Revised Draft of the Spatial Offshore Grid Plan for the German Exclusive Economic Zone of the Baltic Sea 2013

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1 The Spatial Offshore Grid Plan

1.1 Legal Basis

When Section 17 (2a) Clause 3 and 4 Federal Energy Act (EnWG)¹ entered into force in 2011, the Federal Maritime and Hydrographic Agency was given the task of elaborating an annual offshore grid plan ("Bundesfachplan Offshore" – BFO) for the exclusive economic zone (EEZ) of the Federal Republic of Germany, in consultation with the Federal Network Agency and in coordination with the Federal Agency for Nature Conservation and the coastal federal states.

When Article 1 of the Federal Energy Act² amended in December 2012 came into force, some fundamental changes arose regarding grid planning and its more detailed configuration, effective as of 28 December 2012.

The requirements of this plan are regulated in Section 17a EnWG. During the change to the law, the term "offshore grid plan" ("Offshore Netzplan" – ONP) was replaced by the term "Spatial Offshore Grid Plan". The rules apply to this sectoral plan.

According to the statutory assignment, the Offshore Grid Plan in the first place identifies the offshore wind farms which are suitable for collective grid connections. Along with the stipulation of the necessary cable routes and sites for the offshore wind farms' grid connections, the Offshore Grid plan contains the cable routes for interconnectors and descriptions of possible cross connections which can contribute to guaranteeing system security and are compatible with efficient grid expansion.

It is the goal of the Spatial Offshore Grid Plan to spatially coordinate the existing grid infrastructure and grid topology, particularly in view of the offshore wind farm grid connections in the EEZ, within the parameters given, and to define them in the interests of forward-looking and coordinated overall planning.

1.2 Planning Framework

With the Ordinance on Spatial Planning in the German Exclusive Economic Zone in the Baltic Sea (AWZ Ostsee-ROV)³ of 10th December 2009, there is a spatial plan available for the Baltic Sea (Annex on Section 1 AWZ Ostsee-ROV – hereinafter: Maritime Spatial Plan). According to Section 17a (1) Clause 2 No. 1 EnWG, compliance with the requirements of spatial planning in terms of Section 3 Federal Spatial Planning Act⁴ must be checked. According to Section 4 (1) Federal Spatial Planning Act, when the current plan is compiled, the spatial planning goals must be observed and the principles and other spatial planning requirements considered in decisions based on deliberations and discretion.

In principle, the current plan completes the framework set out by the Maritime Spatial Plan. The fundamental spatially-significant stipulations in this plan are in the identification of offshore wind farms which are related in a spatial context and suitable for collective grid connections and in the site, cable route and corridor planning for grid connection systems.

Proceeding from the conditions ascertained, the technical requirements and the priority areas for wind energy already determined in the Maritime Spatial Plan, the plan identifies clusters of offshore facilities for collective grid connections. The clusters, as far as they go beyond the

¹ Law of 7 July 2005, Federal Law Gazette I p. 1970, corr. p. 3621, last amended by Art. 1, 2 of the third Federal Energy Act amended 20.12.2012, Federal Law Gazette I p. 2730.

² Federal Law Gazette I p. 2730.

³ Federal Law Gazette I p. 3861.

⁴ Law of 22 December 2008, Federal Law Gazette I p. 2986, last amended by Article 9 of the law of 31 July 2009 Federal Law Gazette I p. 2585.

priority areas stipulated for wind energy thus far, create the conditions for the ordered further development of the grid connection systems which were only sketched out as suggestions in the Maritime Spatial Plan. This corresponds in particular to the existing Federal Spatial Planning Act principle of an economic use of space.

In view of the stipulation of cable routes for cables transmitting electricity towards shore, the sectoral plan continues to develop the stipulation of target corridors to the territorial sea in the Maritime Spatial Plan. This is done taking into account the progressing technical experience and on the basis of the identified clusters and the requirements of spatial planning.

A large part of the plan's remaining stipulations, in particular regarding standardised technical specifications and planning principles, generally derive from the existing Maritime Spatial Plan or they implement it. Due to the degree of detail, a range of further technical stipulations do not find any equivalent in the Maritime Spatial Plan; instead, they express the sectoral, in this respect independent, planning carried out.

1.3 Scope of Application, Legal Nature

The plan's scope of application comprises the spatial identification of offshore wind farms which are suitable for collective grid connections and the spatial stipulation of cable routes for subsea cable systems and sites for transformer substation platforms in the German Baltic Sea EEZ. The grid topology is spatially defined and stipulated within the Baltic Sea EEZ. In addition, the Offshore Grid Plan contains standardised technical specifications and planning principles necessary to determine the spatial requirements and for overall coordination. With these specifications, it is intended that a reliable planning basis is created without preventing technical progress. The plan therefore corresponds to the nature of sectoral planning.

According to the currently applicable legal situation, the grid plan will become legally binding through an update of the Maritime Spatial Plan for the EEZ of the Baltic Sea. The Federal Ministry of Transport, Building and Urban Development is the responsible body for updating this regulation pursuant to Section 17 (3) Clause 1 Federal Spatial Planning Act. In late 2012, the Federal Maritime and Hydrographic Agency submitted an evaluation report which states the need to update the spatial planning in the EEZ in relation to the sectoral grid planning.

During the EnWG amendment, it was expressly ruled that the stipulations of the Spatial Offshore Grid Plan are legally binding for planning approval procedures in accordance with the provisions of the Marine Facilities Ordinance.

From a spatial perspective, the plan's scope of application extends to the German EEZ, according to the statutory allocation of powers in Section 17a (1) Clause 1 EnWG. Therefore, there is no stipulation of cable routes going beyond the borders of the German EEZ. The circumstance that particularly the cable routes for subsea cable systems stipulated spatially in the EEZ must be added to an overall system consistent up to the grid connection points onshore is accommodated in the consultation and coordination requirement with the Federal Network Agency, the Federal Agency for Nature Conservation and the coastal federal states for the Baltic Sea region Mecklenburg-Vorpommern and Schleswig-Holstein. In this respect, close consultation is carried out.

1.4 Other Instruments

Scenario Framework

Pursuant to Section 12a EnWG, the transmission system operators must draw up a common scenario framework annually. This contains various energy management development paths for energy generation and use in the form of scenarios A, B and C, with scenario B representing the central scenario. The scenario framework is the basis for the compilation of the Grid Development Plan pursuant to Section 12b EnWG and the Offshore Grid Development Plan pursuant to Section 17b EnWG and will be approved by the Federal Network Agency in compliance with Section 12a (3) EnWG.

Offshore Grid Development Plan and Grid Development Plan

According to Section 17b EnWG, the transmission system operators must submit to the Federal Network Agency an Offshore Grid Development Plan ("Offshore-Netzentwicklungsplan – O-NEP) for the EEZ and the territorial sea up to and including the grid connection points onshore for confirmation every year by 3rd March, for the first time on 3rd March 2013. The O-NEP must contain all effective measures for the needs-based optimisation, reinforcement and expansion of the offshore grid connections which are necessary for a step-by-step, needs-based and cost-effective expansion in the next ten years and a secure and reliable operation of offshore grid connections along with a timescale. The O-NEP therefore specifies the specific chronological order of implementation of the grid connection systems for the next ten years with an additional outlook for the next 20 years.

Since 2012, the transmission system operators have to annually submit a Grid Development Plan (NEP) according to Section 12b (1) EnWG, which must include, amongst other things, all effective measures for the needs-based optimisation, reinforcement and expansion of the grid which are necessary for secure and reliable grid operation over the next ten years.

Stipulation Proceedings

In addition to the task of confirming the O-NEP, the Federal Network Agency also has decision-making authority according to Section 17d (5) EnWG, which states that more detailed provisions regarding content and procedure in the creation of the O-NEP, its implementation and chronology as well as regarding the procedure allocating and transferring connection capacities may be stipulated. Stipulations regarding the procedure for allocating and transferring capacities of grid connections for offshore wind farms will take place in consultation with the Federal Maritime and Hydrographic Agency.

This regulation meets the during the so-called system change of grid connections for offshore wind farms frequently demanded specific chronological order of implementation of the grid connection systems and the allocation of their correspondingly available capacities to the offshore wind farms.

The offshore wind farm operator's former claim to grid connection pursuant to Section 17 (2) EnWG (old version) was thus superseded by the new system described.

Ten Year Network Development Plan

According to Article 8 (3 (b)) of Regulation (EC) No. 714/2009, the European Network of Transmission System Operators for Electricity (ENTSO-E) will adopt a non-binding Community-wide decennial network development plan ("Community-wide network development plan") including a European generation adequacy outlook, every two years. In this context, the European transmission system operators published a so-called Ten Year Network Development Plan in its final and consulted version on 5 July 2012 (TYNDP 2012). This plan contains trans-regional and international expansion measures which are significant for transboundary European energy transmission. The results developed at national level in the NEP and O-NEP will be included in future TYNDP.

Spatial Offshore Grid Plan

The Spatial Offshore Grid Plan stipulates the cable routes, corridors for cable routes or sites for the O-NEP measures to be confirmed based on standardised technical specifications and planning principles. This plan for the Baltic Sea comprises the technical and spatial stipulations for the German Baltic Sea EEZ.

The corresponding plan for the North Sea EEZ is being compiled in a separate procedure. The final version of the Spatial Offshore Grid Plan for the North Sea EEZ for the year 2012 was published on 22nd February 2013.

2 Draft Procedure

Summarised Overview of the Fundamental Procedural Steps

Elaboration of scoping documents (scope of preliminary environmental investigation and first draft of the plan)
Scoping Meeting on 23 April 2013
Compilation of the plan and implementation of strategic environmental assessment (SEA)
Public Hearing Meeting on 10 September 2013
Deadline for responding to draft documents 14 October 2013
Revision of grid plan and SEA report
Coordination and consultation process
Publication of Spatial Offshore Grid Plan
Update (annual)

3 Introduction

The development of a strategically planned grid topology for the transmission of energy is of enormous significance for the power supply using renewable energy sources. A systematic and efficient grid expansion is an essential requirement, above all for the accelerated expansion of offshore wind energy.

In order to legally stipulate the cable routes and sites necessary for the grid topology in the Spatial Offshore Grid Plan, the Federal Maritime and Hydrographic Agency was given the task of spatially planning the grid connection systems in the EEZ within the sense of a coordinated, overall system.

The following chapters will illustrate in more detail the individual subject matters of Section 17a (1) Clause 2 No. 1 to 7 EnWG. The structure is following the statutory specifications.

According to this, the plan contains stipulations regarding:

1. Offshore facilities (offshore wind farms) in spatial context and suitable for collective grid connections (Chapter 3).
2. Cable routes and corridors for cable routes for grid connections for offshore facilities (offshore wind farms) (Chapter 5),
3. Locations where the grid connections for offshore wind farms cross the border between the Exclusive Economic Zone and the territorial sea (gates),
4. Sites for converter or transformer substation platforms (Chapters 4 and 6),
5. Cable routes or corridors for cable routes for interconnectors (Chapter 7) and
6. Cable routes or corridors for cable routes for possible cross connections between the facilities and cable routes mentioned in 1, 2, 4 and 5 (Chapter 8)
7. Standardised technical specifications and planning principles.

The standardised technical specifications and planning principles form the basis of the plan's spatial stipulations. The standardised technical specifications and planning principles proposed in this draft shall be put up for discussion as the draft process progresses so that they can be checked, added to and evaluated in their significance in relation to one another.

When creating the Spatial Offshore Grid Plan for the Baltic Sea, the Federal Maritime and Hydrographic Agency will examine whether the stipulations are obstructed by any predominant public or private concerns. The following will be examined in particular:

- compliance with spatial planning requirements
- coordination with other spatially significant planning and measures
- alternatives to cable routes, corridors for cable routes or sites to be given serious consideration.

4 Identification of Offshore Wind Farms for Collective Grid Connections

4.1 Planning Horizon

4.1.1 Objectives of the Federal Government

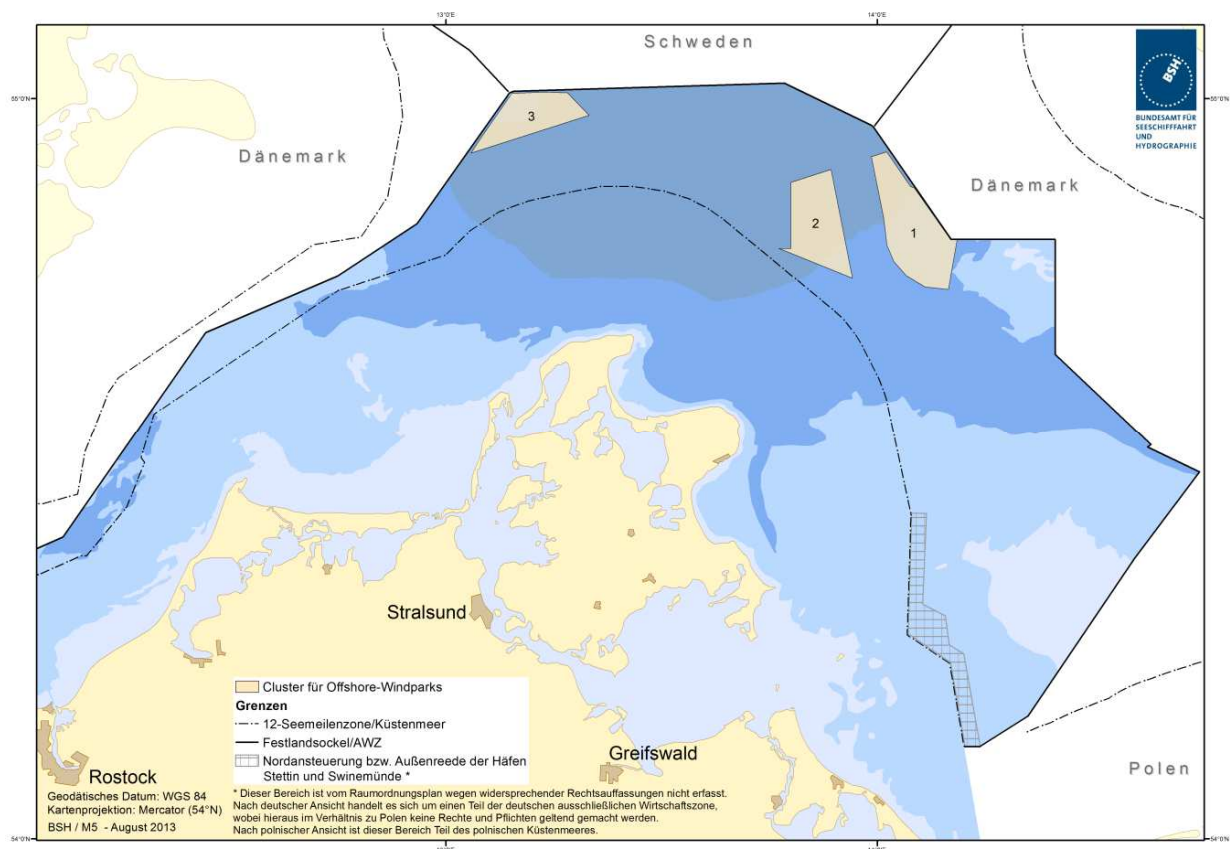
4.1.2 Scenario framework and Offshore Grid Development Plan

4.2 Spatial Definition of Clusters

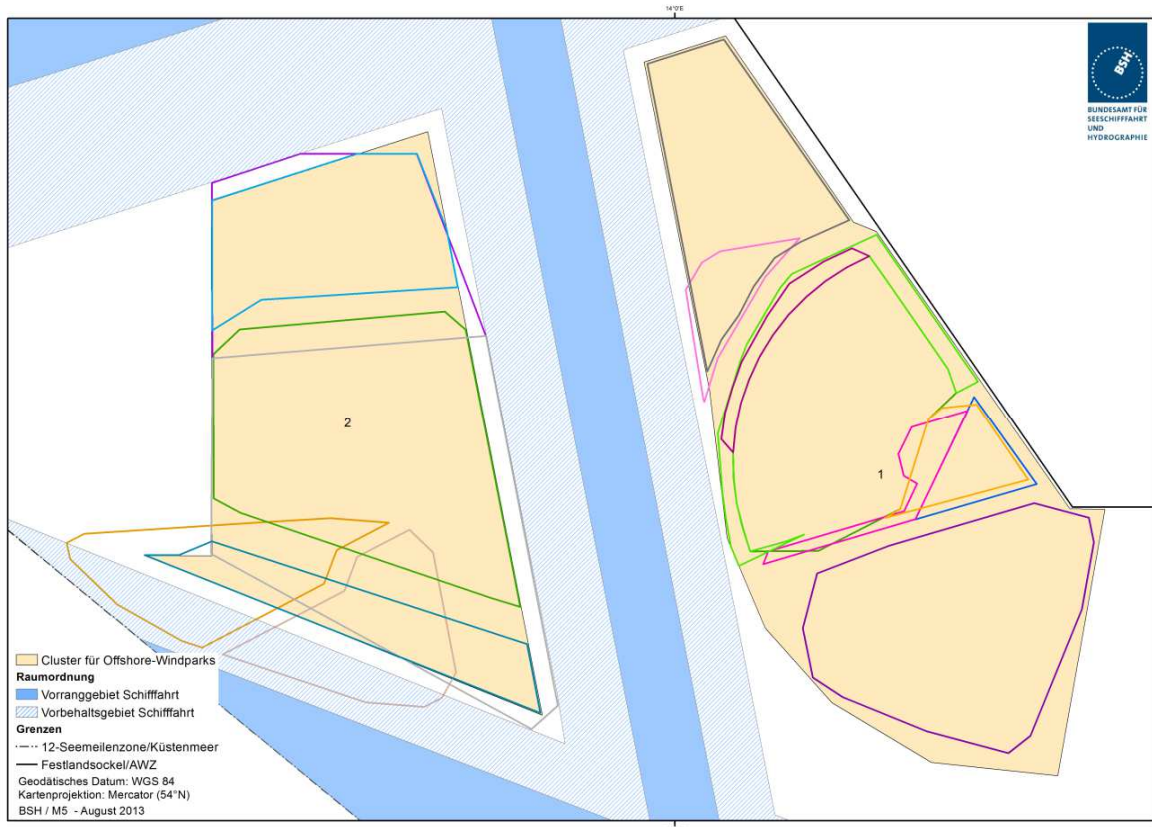
4.2.1 Clusters included

4.2.2 Assessment of projects and framework conditions

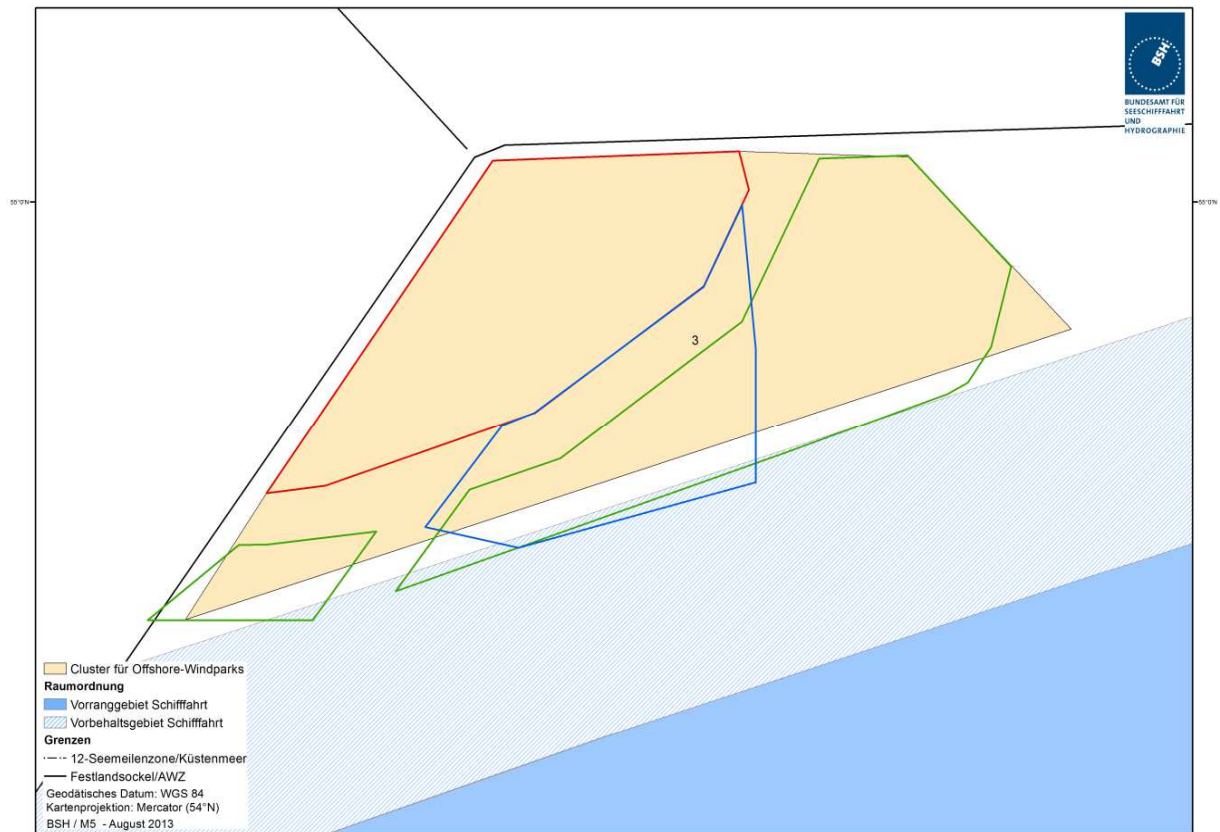
4.2.3 Cartographic representation of clusters included



Map 1: Clusters for offshore wind farms in the Baltic Sea EEZ



Map 2: Offshore wind farm projects in the area of Clusters 1 and 2



Map 3: Offshore wind farm projects in the area of Cluster 3

4.3 Determination of the Expected Offshore Wind Farm Capacity

4.3.1 Calculation Method for determining the capacity

The following table shows the calculation of the expected offshore wind farm capacity for the individual clusters.

Wind farm cluster	Approved wind farm capacity [MW]	Area [km ²]	Turbine capacity [MW]	Turbines/area [No./km ²]	Area approach capacity [MW]	Cluster capacity [MW]
Cluster 1	880	55	7	2.0	770	1650
Cluster 2	0	92	7	2.0	1288	1288
Cluster 3	288	31	7	2.0	434	722

4.3.2 Cluster capacity planning horizon 2030

Wind farm clusters	Approx. MW/ cluster	Approved wind farm capacity [MW]	Number of cable systems [maximum]	Transmission capacity [MW]
Cluster 1	1650	400	8	250
				250
		480		250
				250
				250
				250
				250
				250
Cluster 2	1288		7	250
				250
				250
				250
				250
				250
				250
Cluster 3	722	288	4	200
				200
				250
				250
Σ	3660			4650
Baltic Sea territorial sea (for information only)	Potential of 1,6 up to 8 GW			

4.3.3 Cluster capacity planning horizon 2023

Wind farm clusters	Under construction/ approved (MW)	Total (MW)
Cluster 1 (priority area)	880	880
Cluster 3	288	288
Σ		1168

5 Grid Connections for Offshore Wind Farms

According to Section 17d (1) Clause 1 EnWG, the responsible transmission system operator (TSO) must secure the grid connection of offshore wind farms or, according to the specifications of the O-NiEP confirmed by the Federal Network Agency, construct and operate it. It is the task of this plan to spatially determine the necessary cable routes and sites for the entire grid topology in the Baltic Sea EEZ up to the border of the 12 nm zone within the framework of the existing parameters.

The spatial planning is developed on the basis of standardised technical specifications and planning principles. The stipulation of the technical concept for grid connections, which forms the basis for the definition of the individual principles, is central for determining and securing of the areas required for the grid connection of offshore wind farms. Based on this, standardised technical specifications and planning principles will be stipulated individually for the regular components of the grid connections. The necessary spatial requirements will be determined on the basis of the standardised technical specifications and planning principles, cartographically represented and stipulated.

5.1 Technical Concept for grid connections

5.1.1 Standardised technical specifications

Summary

- Use of three-phase alternating current (AC) technology
- Standard transmission voltage 220 kV

5.1.1.1 Use of three-phase alternating current (AC) technology

Grid connections for offshore wind farms will be set up using AC technology.

5.1.1.2 Standard transmission voltage 220 kV

The AC system for the grid connections will be implemented with a standard transmission voltage of 220 kV.

5.2 Sites for Transformer Substation Platforms

The transformer substation platform is the platform on which the electricity generated by the offshore wind farm is bundled and transformed to the transmission voltage for conducting the energy towards land. Pursuant to Section 17a (1) Clause 2 No. 4 and 7 EnWG, the grid plan contains stipulations regarding sites for transformer substation platforms and standardised technical specifications and planning principles.

5.2.1 Standardised technical specifications

Summary

- Use of AC technology
- Standard transmission voltage 220 kV
- Use of the offshore wind farm's transformer substation platform by the grid operator
- Standardisation of grid components on the transformer substation platform
- Creation of the conditions for cross connections between grid infrastructures

5.2.1.1 Use of AC technology

The grid connection on the transformer substation platform will be implemented using AC technology.

5.2.1.2 Standard transmission voltage 220 kV

The grid connection system on the transformer substation platform will be implemented with a standard transmission voltage of 220 kV.

5.2.1.3 Use of the offshore wind farm's transformer substation platform by the transmission system operator

The offshore wind farm's transformer substation platform will be jointly used by the transmission system operator, close cooperation with regards to construction and operation is therefore necessary.

5.2.1.4 Standardisation of grid components on the transformer substation platform

Standardisation of all grid components to be installed on the transformer substation platform is aimed for.

5.2.1.5 Preparation of the conditions for cross connections

When transformer substation platforms are being planned and constructed, allowances must be made for future cross connections between grid infrastructures.

5.2.2 Planning Principles

Summary

- Selection of a site from which the total length of the cable route to the grid connection point is as small as possible and below 100 km
- Space requirement of 100 x 100 m and additional room for manoeuvring
- Secure accessibility
- Traffic safety may not be compromised (500 m distance from priority and reservation areas for shipping)
- Consideration of all existing and approved uses, distance 500 m
- Construction in Natura2000 areas/protected biotopes not permitted, beyond this only with noise mitigation measures
- Consideration of cultural assets and sites where munitions have been discovered
- Obligation to remove

5.2.2.1 Selection of a site from which the total length of the cable route to the grid connection point is as small as possible and below 100 km

The site for the transformer substation platform should be as close to the edge of the wind farm as possible so that the AC subsea cable system is as short as possible and the total length of the cable route between the grid connection point and site of the transformer substation platform is, where possible, less than 100 km.

5.2.2.2 Space requirement 100 m x 100 m

For a transformer substation platform, an area of 100 m x 100 m must be secured.

5.2.2.3 Secure accessibility

The determination of the site and the planning of the transformer substation platforms must ensure their accessibility.

5.2.2.4 No impairment of traffic

Traffic safety may not be impaired by the construction and operation of transformer substation platforms.

5.2.2.5 Consideration of all existing and approved uses

All existing and approved pipelines and subsea cables as well as those that are being stipulated in this plan, offshore wind farms and other superstructures have to be taken into consideration by keeping a regular distance of 500 m.

5.2.2.6 Construction in Natura2000 areas not permitted; Construction outside protected biotopes

The construction of transformer substation platforms in Natura2000 areas is not permitted. Adverse effects on the marine environment, in particular on the natural functions and their eco-systematic importance for the marine environment should be avoided during construction and operation of the platform. Areas known as protected biotope types according to Section 30 Federal Nature Conservation Act or corresponding structures have to be avoided as far as possible. Possible effects of the transformer substation platforms on the marine environment should be investigated and demonstrated in a project-related monitoring concept according to the specifications of the approval authority.

5.2.2.7 Noise reduction

Noise-mitigation measures and, where necessary, suitable noise reduction systems must be deployed for the construction of the transformer substation platform. The noise reduction system must be integrated into the design of the foundation construction early on in proceedings.

5.2.2.8 Consideration of cultural assets

Known sites where cultural assets have been discovered must be taken into consideration during the site selection. If unknown cultural assets located on the seabed should be found during the planning or construction of the transformer substation platforms, the appropriate measures to secure the cultural assets must be taken.

This stipulation is derived from the Spatial Planning principle 3.5.1 (12), where known cultural assets must be considered during the site selection for offshore wind farms and suitable measures taken to secure the cultural assets. This also applies to previously unknown cultural assets discovered on the seabed during the planning or construction of offshore wind energy farms.

5.2.2.9 Consideration of sites where munitions have been discovered

Known sites where munitions have been found must be avoided during the site selection. If unknown munitions-contaminated sites should be found during the planning or construction of the transformer substation platforms, then appropriate protective measures must be taken.

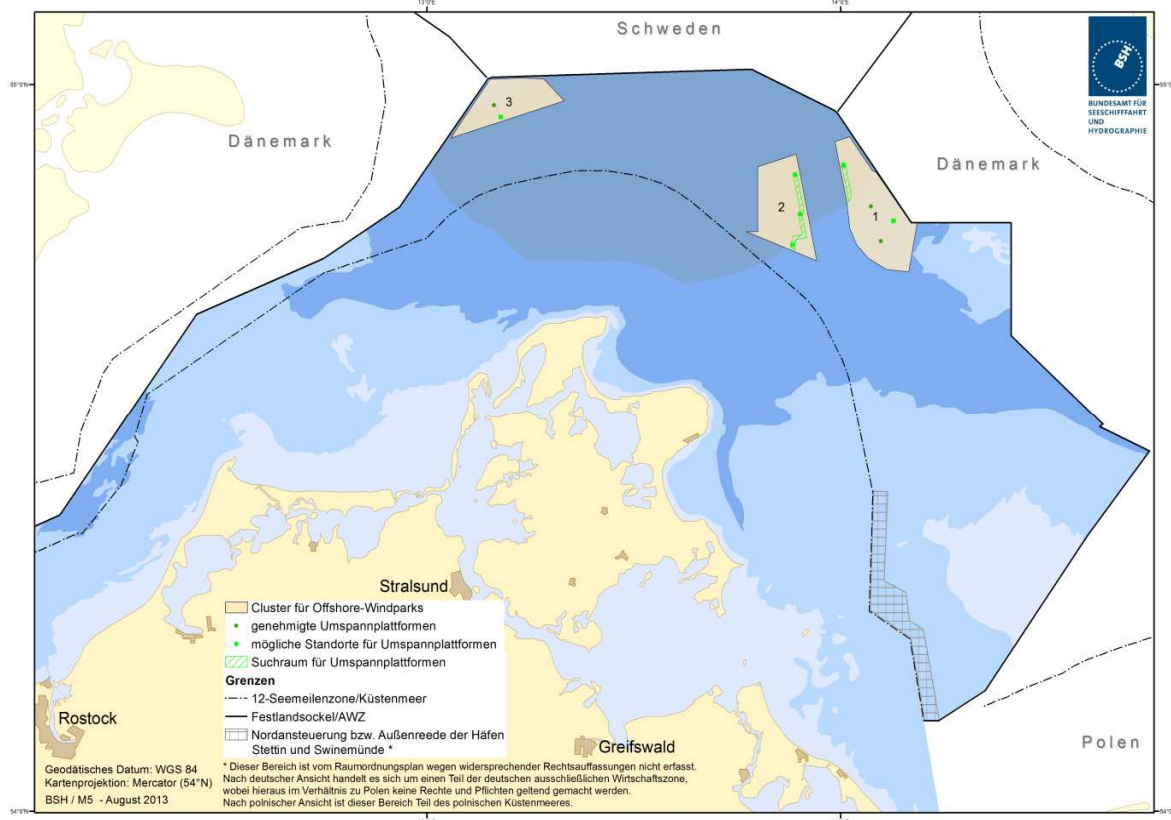
5.2.2.10 Obligation to remove

After the transformer substation platforms are no longer being used, they must be removed.

This stipulation implements the aim of the Spatial Planning 3.5.1 (4), where the offshore wind energy structures must be dismantled after they are no longer used.

5.2.3 Spatial stipulations

5.2.4 Cartographic representation



Map 4: Possible sites and search areas for transformer substation platforms

5.3 Corridors for Cable Routes for AC Subsea Cable Systems

5.3.1 Standardised technical specifications

Summary

- Use of AC technology
- Standard transmission voltage 220 kV

5.3.1.1 Use of AC technology

The grid connection on the transformer substation platform will be implemented using AC technology.

5.3.1.2 Standard transmission voltage 220 kV

The grid connection system on the transformer substation platform will be implemented with a standard transmission voltage of 220 kV.

5.3.2 Planning Principles

The Maritime Spatial Plan for the German Baltic Sea EEZ has defined the targets and principles of the Spatial Planning with regards to grid connections under 3.3.1. These concern the laying, operation and removal of subsea cables. The following planning principles refer to the respective statements of the Maritime Spatial Plan. The target of consideration of existing uses/ rights of use will be implemented through the stipulations and the following planning principles. Further principles will be implemented as far as is possible.

Summary

- Maximum bundling possible by parallel routing
- Distances in case of parallel routing: 100 m; 200 m after every second cable system depending on the geological site conditions
- Routing through gates I and III
- Crossing of priority and reservation areas for shipping as right-angled as possible
- Consideration of all existing and approved uses (construction with distance of 500 m, shipping routes 300 m distance)
- Avoiding of cable crossings and, if they are absolutely necessary, then crossing as right-angled as possible; distance between turning points 250 m
- Burial depth 1.5 m outside of the traffic separation schemes unless the site conditions demand different installation depths
- Routing as far outside of the Natura2000 areas/protected biotopes as possible
- Environmentally-friendly installation procedure
- Coordinated timing of the overall installation works
- Consideration of cultural assets and sites where munitions have been discovered
- Obligation to remove

5.3.2.1 Bundling

Concerning AC subsea cables routing, the maximum degree of bundling possible in terms of parallel routing should be implemented as well as routing parallel existing structures.

5.3.2.2 Distances in case of parallel routing

When AC subsea cable systems are routed parallel, a distance of 100 m between the individual systems is required. After every second cable system, a distance of 200 m should be met. The specific geological site conditions must be taken into account.

5.3.2.3 Routing through gates

On the border of the EEZ and the 12 nm zone AC subsea cable systems must, be routed through gates I and III, respectively.

5.3.2.4 Crossings of priority and reservation areas for shipping

AC subsea cable systems must cross the priority and reservation areas stipulated for shipping in the Baltic Sea EEZ Maritime Spatial Plan by the shortest route possible if they cannot be routed parallel existing structures.

5.3.2.5 Consideration of existing and approved uses

When the routing of AC subsea cable systems is selected, consideration should be given to existing and approved uses and rights of use as well as to the concerns of shipping and fisheries. There must be appropriate consideration for already existing piping and subsea cables when the routing for new subsea cable systems is selected; a distance of 500 m must be observed insofar as the geological site conditions do not require greater distances.

5.3.2.6 Crossings

Crossings of AC subsea cable systems should be avoided as far as possible between one another and with other existing pipelines and existing subsea cables or those which have been stipulated within the framework of this plan. If crossings cannot be avoided, they must be implemented as right-angled as possible according to the respective state of the technology.

If crossing other infrastructure cannot be implemented at a right angle, the crossing angle should not fall short of 45°, and a distance of at least 250 m should be provided between the turning points which become necessary.

5.3.2.7 Burial depth

When the burial depth of AC subsea cable systems is determined, the concerns of shipping and fisheries, the protection of the marine environment and system security should be considered in particular. An installation depth of 1.5 m outside of the traffic separation schemes must be implemented during installation unless the geological site conditions demand different installation depths.

5.3.2.8 Installation outside of Natura2000 areas and protected biotopes

When the AC cable systems are installed, possible impairments to the marine environment should be minimised. For that to happen, the AC cable systems should be installed outside of Natura2000 areas if possible. Known areas of protected biotope types according to Section 30 Federal Nature Conservation Act or corresponding structures have to be avoided as far as possible.

The specifications in Section 45 Water Management Act must be observed; best environmental practice pursuant to the Helsinki Convention and the applicable state of technology should be considered and specified in the individual licensing procedure.

5.3.2.9 Environmentally-friendly installation procedures

In order to protect the marine environment, burial procedures for AC subsea cable systems should be selected being as environmentally-friendly as possible.

5.3.2.10 Coordinated timing of the overall installation works

In order to avoid or reduce cumulative effects, the AC subsea cable system burial and trenching campaigns should be coordinated.

5.3.2.11 Consideration of cultural assets

Known sites where cultural assets have been discovered must be taken into consideration during the cable route selection. If unknown cultural assets located on the seabed should be found during the planning or installation of AC subsea cable systems, the appropriate measures to secure the cultural assets must be taken.

5.3.2.12 Consideration of sites where munitions have been discovered

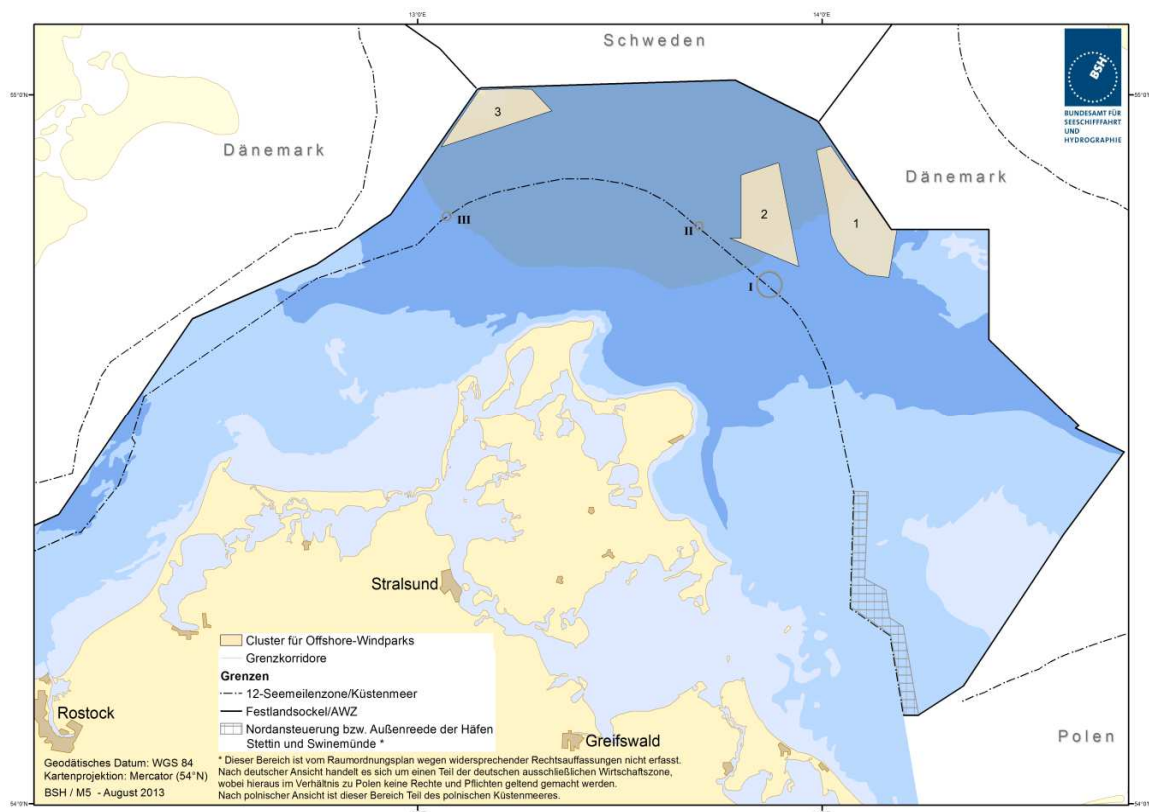
Known sites where munitions have been found must be avoided during the selection of the routes. If unknown munitions-contaminated sites should be found during the planning or the laying of the AC subsea cable systems, then appropriate protective measures must be taken.

5.3.2.13 Obligation to remove

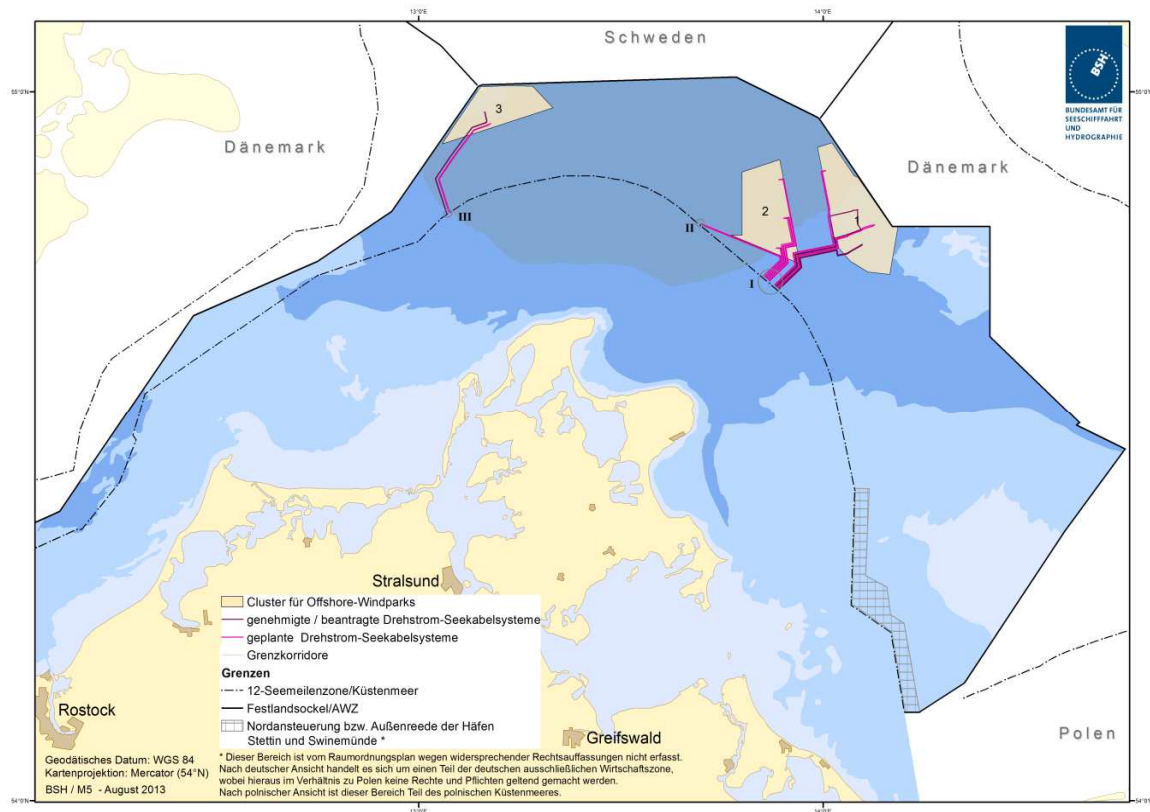
AC subsea cable systems must be removed after they are no longer used. If the removal causes greater adverse effects than leaving them there, the removal must be completely or partly abandoned unless it is necessary for reasons of traffic safety and ease. If they are left there, suitable monitoring measures should be arranged regarding possible future risks.

5.3.3 Spatial stipulations

5.3.4 Cartographic representation



Map 5: Gates I to III for Grid Connections



Map 6: Corridors for Cable Routes for AC Subsea Cable Systems

5.4 Technical Option for Platforms with Bundling Function

A **bundling platform** is a platform which has the sole function of bundling the power arriving from several offshore wind farms on a standard voltage type and level.

The TSO's technical concept proposes the connection of the wind farms via AC systems. It is however not foreseeable at the moment that the wind farm output can be adapted to the cable capacities. Therefore, the wind farm cable systems are to be "collected" on the bundling platform in order to possibly reduce the number of systems leading towards the shore.

5.4.1 Standardised technical specifications

Summary

- Use of AC technology
- Standard transmission voltage 220 kV

5.4.1.1 Use of AC technology

The grid connection on the transformer substation platform will be implemented using AC technology.

5.4.1.2 Standard transmission voltage 220 kV

The grid connection system on the transformer substation platform will be implemented with a standard transmission voltage of 220 kV.

5.4.2 Planning Principles

Summary

- set back as much as possible to the margins of the cluster, considering the system relevance of the platform with bundling function in site selection
- Accessible by helicopter and ship
- Space requirement of 100 x 200 m and additional room for manoeuvring
- Maximum length of AC cable systems for connecting the transformer substation platforms 20 km
- Traffic safety may not be compromised (500 m distance from priority and reservation areas for shipping)
- Consideration of all existing and approved uses, distance 500 m
- Construction in Natura2000 areas/protected biotopes not permitted, beyond this only with noise mitigation measures
- Consideration of cultural assets and sites where munitions have been discovered
- Obligation to remove

5.4.2.1 Position of bundling platforms

Bundling platforms must be constructed on the edge of the cluster where possible.

5.4.2.2 Accessibility by helicopter and ship

Bundling platforms must be planned in such a way that they can be accessed reliably by helicopter and ship.

5.4.2.3 Space requirement 100 m x 200 m

For a bundling platform, an area of 100 m x 200 m must be provided. For platforms arranged next to one another, additional room for manoeuvre must be secured.

5.4.2.4 No impairment of traffic

Traffic safety may not be impaired by the construction and operation of bundling platforms.

5.4.2.5 Consideration of all existing and approved uses

All existing and approved pipelines and subsea cables as well as those that are being stipulated in this plan, offshore wind farms and other superstructures have to be taken into consideration by keeping a regular distance of 500 m.

5.4.2.6 Construction in Natura2000 areas not permitted; Construction outside protected biotopes

The construction of bundling platforms in Natura2000 areas is not permitted. Adverse effects on the marine environment, in particular on the natural functions and their eco-systematic importance for the marine environment, should be avoided during construction and operation of the platform. Areas known as protected biotope types according to Section 30 Federal Nature Conservation Act or corresponding structures have to be avoided as far as possible. Possible effects of the bundling platforms on the marine environment should be investigated and demonstrated in a project-related monitoring concept according to the specifications of the approval authority.

5.4.2.7 Noise reduction

Noise-mitigation measures and, where necessary, suitable noise reduction systems must be deployed for the construction of the bundling platforms. The noise reduction system must be integrated into the design of the foundation construction early on in proceedings.

5.4.2.8 Consideration of cultural assets

Known sites where cultural assets have been discovered must be taken into consideration during the site selection. If unknown cultural assets located on the seabed should be found during the planning or construction of the bundling platforms, the appropriate measures to secure the cultural assets must be taken.

5.4.2.9 Consideration of sites where munitions have been discovered

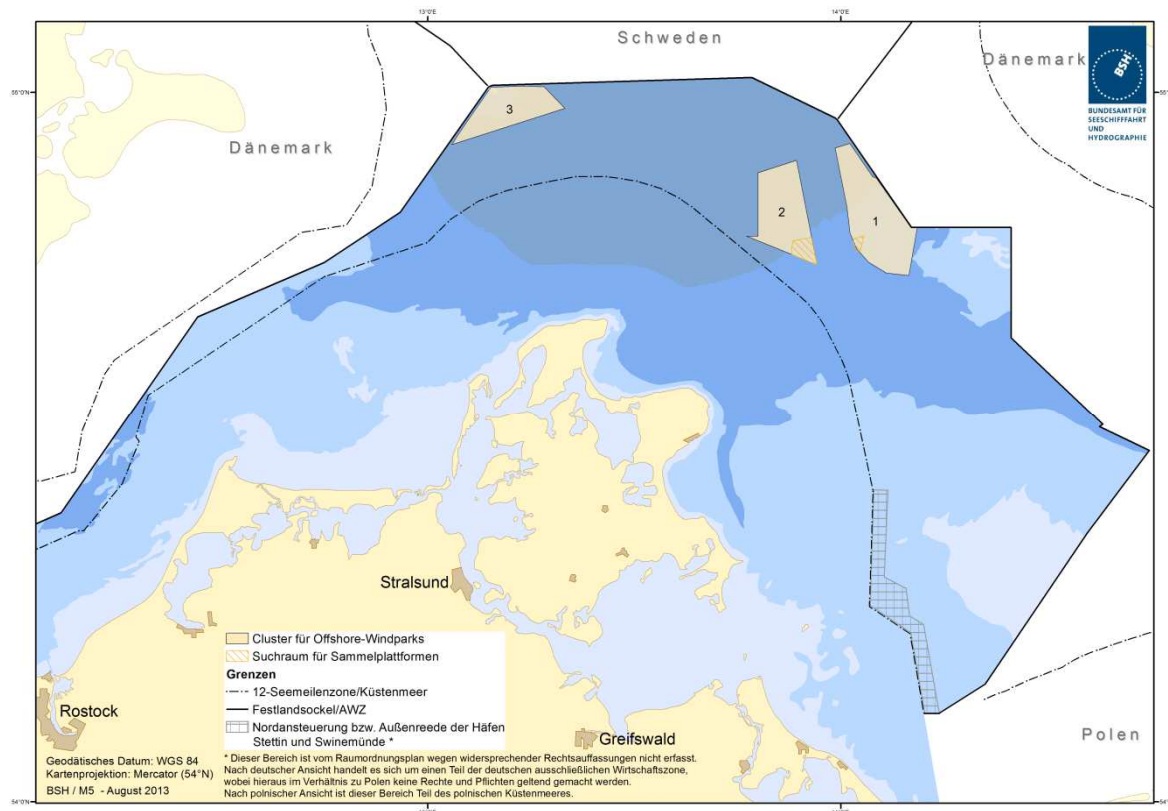
Known sites where munitions have been found must be avoided during the site selection. If unknown munitions-contaminated sites should be found during the planning or construction of the bundling platforms, then appropriate protective measures must be taken.

5.4.2.10 Obligation to remove

After the bundling platforms are no longer being used, they must be removed.

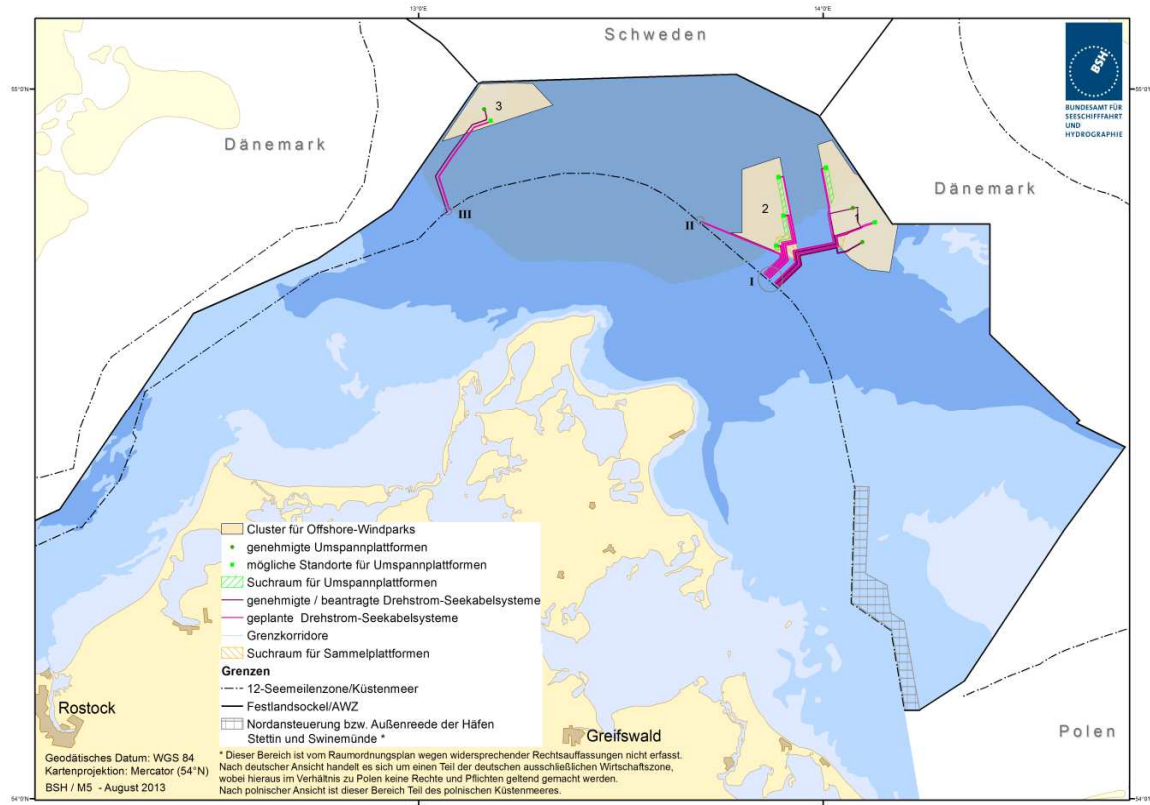
5.4.3 Spatial stipulations

5.4.4 Cartographic representation

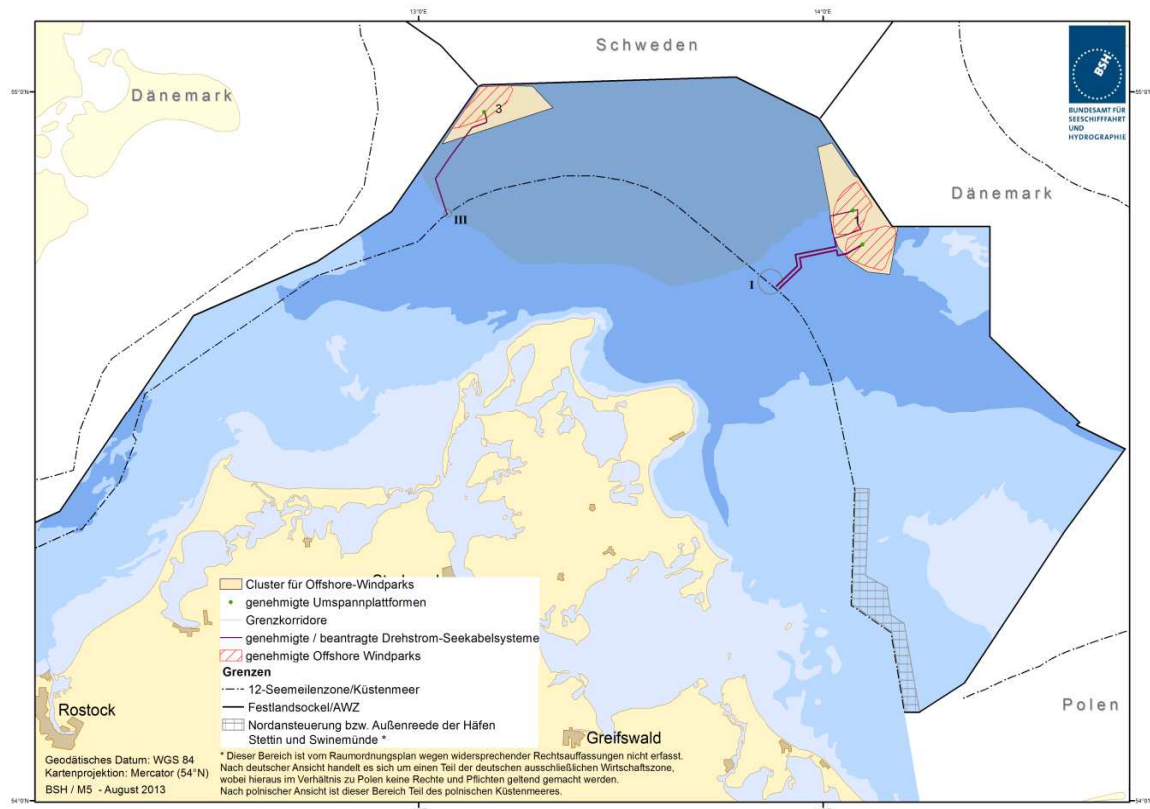


Map 7: Search areas for bundling platforms

5.5 Cartographic Representation of Grid Connections



Map 8: Summarising representation of grid connection for offshore wind farms (2030)



Map 9: Summarising representation of grid connection for offshore wind farms (2023)

6 Corridors for Crossborder Subsea Cable Systems (Interconnectors)

Pursuant to Section 17a (1) Clause 2 No. 5 EnWG, the Spatial Offshore Grid Plan contains stipulations regarding cable routes or corridors for cable routes for crossborder subsea cable systems (interconnectors) and standardised technical specifications and planning principles.

Interconnectors in terms of this plan should be understood as **subsea cable systems which run through at least two countries bordering on the Baltic Sea.**

This plan should ensure that cable routes for possible interconnectors are spatially secured in order to ensure that they are spatially fitted into a coordinated overall system, in particular with regard to the grid connection systems for offshore wind farms.

The so-called "Combined Grid Solution", the planned crossborder subsea cable system currently known to the Federal Maritime and Hydrographic Agency, is spatially depicted in the plan in addition to the currently operating interconnectors "Kontek" and "Baltic Cable". The "Combined Grid Solution" (CGS) is a transboundary project for the connection between Germany and Denmark. This project was already listed as a priority requirement measure in the grid development plan for power 2012 and approved last year by the Federal Network Agency. In the German Network Development Plan, which entered into force on 27.07.2013, the project is proposed as Project No. 29, in which the energy economical need and priority requirement is set out. The project is also included in the Annex of the TYNDP 2012 for the Baltic Sea area without referring to special aspects. The grid plan now stipulates the specific corridors or cable routes for the project in the EEZ.

Based on the NEP 2012 approved by the Federal Network Agency, and the first draft of the NEP 2013, commissioning of the interconnector CGS project is aimed at between 2020 and 2022.

In order to create the spatial conditions for a transnational Baltic Sea grid, gates through which future interconnectors are to be routed when entering the German EEZ will be stipulated over and above the existing specific planning, complying with the following standardised technical specifications and planning principles.

6.1 Standardised Technical Specifications

Summary

- Implementation as direct current (DC) subsea cable system with bundled supply and return conductor
- Consideration of and incorporation in grid planning

6.1.1 Implementation as direct current (DC) subsea cable system

Interconnectors are usually implemented as DC cable systems with a supply conductor and return conductor as a bundled cable system.

6.1.2 Consideration of overall system

The planning interconnectors should take into consideration the stipulations of the spatial offshore grid plan and be fitted into the overall system.

6.2 Planning Principles

Summary

- Maximum bundling possible by parallel routing
- Distances in case of parallel routing: 100 m; 200 m after every second cable system depending on the geological site conditions
- Routing through gates
- Crossing of priority and reservation areas for shipping as right-angled as possible
- Consideration of all existing and approved uses (construction with distance of 500 m, shipping routes 300 m distance)
- Avoiding of cable crossings and, if they are absolutely necessary, then crossing as right-angled as possible; distance between turning points 250 m
- Burial depth 1.5 m outside of the traffic separation schemes unless the site conditions demand different installation depths
- Routing as far outside of the Natura2000 areas/protected biotopes as possible
- Environmentally-friendly installation procedure
- Coordinated timing of the overall installation works
- Consideration of cultural assets and sites where munitions have been discovered
- Obligation to remove

6.2.1 Bundling

Concerning interconnectors routing, the maximum degree of bundling possible in terms of parallel routing should be implemented as well as routing parallel existing structures.

6.2.2 Distances in case of parallel routing

When interconnectors are routed parallel, a distance of 100 m between the individual systems is required. After every second cable system, a distance of 200 m should be met. The specific geological site conditions must be taken into account.

6.2.3 Routing through gates

Interconnectors must be routed through the gates specified on the outside border of the German EEZ and at the border of the EEZ and the 12 nm zone.

6.2.4 Crossing of priority and reservation areas for shipping

For the priority and reservation areas stipulated for shipping in the Baltic Sea EEZ Maritime Spatial Plan, the interconnectors have to cross via the shortest possible route as far as parallel routing to existing structures is not possible.

6.2.5 Consideration of existing and approved uses

When the routing of interconnectors is selected, consideration should be given to existing and approved uses and rights of use as well as to the concerns of shipping and fisheries. There must be appropriate consideration for already existing pipelines and subsea cables when the routing for new interconnectors is selected; a distance of 500 m must be observed insofar as the geological site conditions do not require greater distances.

6.2.6 Crossings

Crossings of between interconnectors should be avoided as far as possible between one another and with other existing pipelines and existing subsea cables or those which are being stipulated within the framework of this plan. If crossings cannot be avoided, they must be implemented as right-angled as possible according to the respective state of the technology.

If crossing other infrastructure cannot be implemented at a right angle, the crossing angle should not fall short of 45° and a distance of at least 250 m should be provided between the turning points which become necessary.

6.2.7 Burial depth

When the burial depth of interconnectors is determined, the concerns of shipping and fisheries, the protection of the marine environment and system security should be considered in particular. An installation depth of 1.5 m outside of the traffic separation schemes must therefore be implemented during installation unless the geological site conditions demand different installation depths.

6.2.8 Installation outside of Natura2000 areas and protected biotopes

When the interconnectors are installed, possible impairments to the marine environment should be minimised. For that to happen, the interconnectors should be installed outside of the Natura2000 areas if possible. Known areas of protected biotope types according to Section 30 Federal Nature Conservation Act or corresponding structures must be avoided as far as possible.

The specifications in Section 45 Water Management Act must be observed; best environmental practice pursuant to the Helsinki Convention and the applicable state of technology should be considered and specified in the individual procedure.

6.2.9 Environmentally-friendly installation procedure

In order to protect the marine environment, an installation procedure for the interconnectors which is as environmentally-friendly as possible should be selected.

6.2.10 Coordinated timing of the overall installation works

In order to avoid or reduce cumulative effects, the cables burial and trenching campaigns should be coordinated.

6.2.11 Consideration of cultural assets

Known sites where cultural assets have been discovered must be taken into consideration during the selection of cable routes. If unknown cultural assets located on the seabed should be found during the planning or installation of interconnectors, the appropriate measures to secure the cultural assets must be taken.

6.2.12 Consideration of sites where munitions have been discovered

Known sites where munitions have been found must be avoided during the routing. If unknown munitions-contaminated sites should be found during the planning or construction of the interconnectors, then appropriate protective measures must be taken.

6.2.13 Obligation to remove

Interconnectors must be removed after they are no longer used. If the removal causes greater adverse effects than leaving them there, the removal must be completely or partly abandoned unless it is necessary for reasons of traffic safety and ease. If they are left there, suitable monitoring measures should be arranged regarding possible future risks.

6.3 Spatial stipulations

The gates I and II specified for the cable systems of the grid connections crossing the borders between the EEZ and territorial sea must also be used by the interconnectors. However, additional gates for interconnectors to cross the border to the territorial sea as well as on the outer limits of the German EEZ and neighbouring EEZ will be specified. Consultation with the Baltic Sea littoral states regarding these gates for interconnectors will take place as far as possible within the framework of this plan. The grid plan should consider the known planning of interconnectors as well as enable future projects.

The so-called "Combined Grid Solution" (CGS) is known to the Federal Maritime and Hydrographic Agency as a specific plan for crossborder subsea cable systems in the Baltic Sea EEZ area. So far, no application has been made with regards to this project for the laying and operation of the proposed cable. Therefore, TSO planning data have been drawn upon in the draft procedure. According to the TSO and based on the description of the project in the grid development plan, the CGS is planned as a connection between Germany and Denmark. The current plan is to lay two AC cable systems between the transformer substation platform of the offshore wind farm "EnBW Windpark Baltic 2", currently under construction, and the converter platform of the neighbouring wind farm "Kriegers Flak 3" located in the Danish EEZ and connected to the Danish grid via direct current. Gate VI is proposed in the grid plan for the routing of this cable route, which lies primarily in the safety zone of the wind farm "EnBW Windpark Baltic 2". The possibility of an additional connection via DC cable from the Danish converter platform to the German coast and/or to Sweden is also being investigated according to the TSO and the NEP. To enable this planning in future, cable route corridors will be safeguarded for these connections and the gates VII and VIII proposed. The secured route for a possible DC cable system from the Danish converter platform runs through Cluster 3 and then parallel to the cable route corridor proposed for the connection of the offshore wind farms up to gate III. The corridor for connecting up to three cable systems to Sweden runs towards the East through Cluster 3 to gate VIII. Gate VIII is stipulated to enable an alternative connection of the offshore wind farm projects in the Kriegers Flak area. These routes to Denmark and Sweden cross the "Falster-Roenne" data cable (status unknown), "SE-D 4" (not operational) and "Baltica Segment 3" (operational).

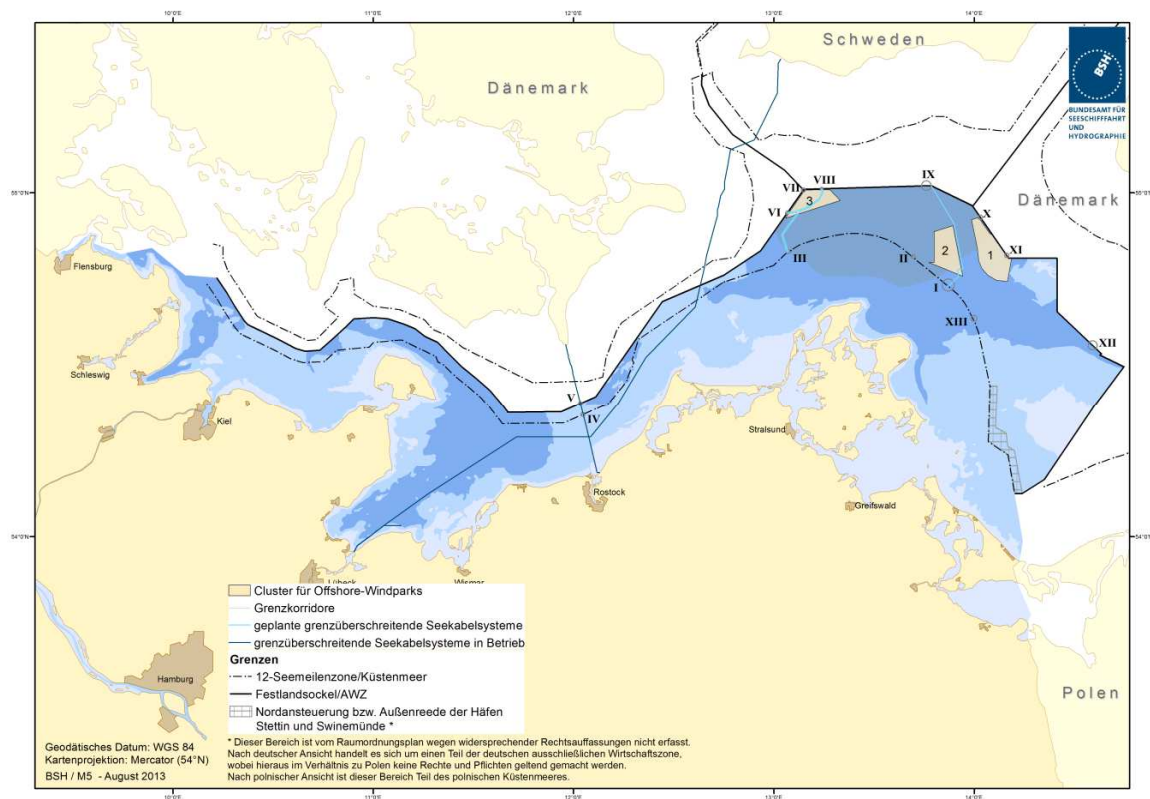
Another interconnector project, the so-called "Baltic Energy Bridge", intended to connect Germany in the Rostock area with Denmark, is depicted as Cluster 6 in the TSO grid development planning in the drafted O-NEP 2013 in addition to the "Combined Grid Solution". The Federal Maritime and Hydrographic Agency has no information about this project. Consequently, it is currently only represented by the stipulation of gates IV and V in this plan.

Additionally to the described existing planning, it is proposed, to provide a route in the area of Cluster 2 for a future interconnector to Sweden. Otherwise a connection to Sweden would be significantly hindered due to the existing offshore wind energy planning and other uses. A cable route from gate I over the eastern edge of Cluster 2 to the gate IX is proposed. In the area of Cluster 2, this route is planned without any distance to the shipping reservation area No. 20 in order to interfere as little as possible with the planned wind farm in Cluster 2 because of this still very abstract stage of planning. Within the German EEZ, this route crosses the data cables "Falster-Roenne" (status unknown) and "Baltica Segment 3" (operational).

The gate proposed in the first draft of the Spatial Offshore Grid Plan (status February 2013) for the area of the Fehmarnbelt fixed link will not be implemented for nature and species conservation reasons in accordance with the statement given in the first consultation round by Schleswig-Holstein.

The other gates IX to XIII proposed for the outer edge of the EEZ will serve to route possible interconnectors, which have not yet been named as specific cable routings, in or through the German EEZ bundled and in parallel to existing or planned structures.

6.4 Cartographic Representation



Map 10: Representation of interconnectors

7 Corridors for Cable Routes for Cross Connections

Pursuant to Section 17a (1) Clause 2 No. 6 EnWG, the Spatial Offshore Grid Plan should also include stipulations regarding cross connections between routes or corridors for cable routes to or for possible connections of offshore facilities, cable routes for grid connections and interconnectors, as well as sites for converter platforms or transformer substation platforms.

Cross connections are subsea cable systems which can, i.e. in the case of the AC connection concept in the Baltic Sea EEZ, connect the grid infrastructure, the transformer substation platforms and the cable systems and therefore the offshore wind farms to one another and which contribute to guaranteeing system security, increase feeding-in security using (partial) redundancy in order to reduce breakdown damage and increase system security and are compatible with efficient grid expansion. The grid plan sets out the spatial requirements for these cross connections. The decision as to “whether” and “when” a cross connection will be implemented is subject to the offshore grid development plan (O-NEP) to be confirmed by the Federal Network Agency. The O-NEP 2013 draft presented by the TSO already proposes connecting two transformer substation platforms of offshore wind farms.

7.1 Standardised Technical Specifications

Summary

- Use of AC technology
- Standard transmission voltage 220 kV

7.1.1 Use of AC technology

Cross connections will be implemented using AC technology.

7.1.2 Standard transmission voltage 220 kV

Cross connections will be implemented with a uniform transmission voltage of 220 kV.

7.2 Planning Principles

Summary

- Maximum bundling possible by parallel routing
- Distances in case of parallel routing: 100 m; 200 m after every second cable system depending on the geological site conditions
- Routing through gates
- Crossing of priority and reservation areas for shipping as right-angled as possible
- Consideration of all existing and approved uses (construction with distance of 500 m, shipping routes 300 m distance)
- Avoiding of cable crossings and, if they are absolutely necessary, then crossing as right-angled as possible; distance between turning points 250 m
- Burial depth 1.5 m outside of the traffic separation schemes unless the site conditions demand different installation depths
- Routing as far outside of the Natura2000 areas/protected biotopes as possible
- Environmentally-friendly installation procedure
- Coordinated timing of the overall installation works
- Consideration of cultural assets and sites where munitions have been discovered
- Obligation to remove

7.2.1 Bundling

Concerning cross connections the maximum degree of bundling possible in terms of parallel routing should be implemented as well as routing parallel to existing structures.

7.2.2 Distances in case of parallel routing

When subsea cable systems for cross connections are routed parallel, a distance of 100 m between the individual systems is required. After every second cable system, a distance of 200 m should be met. The specific geological site conditions must be taken into account.

7.2.3 Routing through gates

Subsea cable systems for cross connections must be routed through the gates specified on the border to the EEZ and the 12 nm zone in the case that a transboundary cross connection of offshore wind farms is planned.

7.2.4 Crossing of priority and reservation areas for shipping

For the priority and reservation areas stipulated for shipping in the Baltic Sea EEZ Maritime Spatial Plan, the cross connections must cross via the shortest possible route as far as parallel routing to existing physical structures is not possible.

7.2.5 Consideration of existing and approved uses

When the routing of cross connections is selected, consideration should be given to existing and approved uses and rights of use as well as to the concerns of shipping and fisheries. There must be appropriate consideration for already existing pipelines and subsea cables when the routing for new subsea cable systems is selected; a distance of 500 m must be observed insofar as the geological site conditions do not require greater distances.

7.2.6 Crossings

Crossings of cross connections should be avoided as far as possible between one another and with other existing pipelines and subsea cables or those which are being stipulated within the framework of this plan. If crossings cannot be avoided, they must be implemented as right-angled as possible according to the respective state of the technology.

In the event that the unavoidable structure for crossing cables cannot be implemented at a right angle, the crossing angle should not fall short of 45° and a distance of at least 250 m should be provided between the turning points which become necessary.

7.2.7 Burial depth

When the burial depth of cross connections is determined, the concerns of shipping and fisheries, the protection of the marine environment and system security should be considered in particular. A burial depth of 1.5 m outside of the traffic separation schemes must therefore be implemented during installation unless the geological site conditions demand different installation depths.

7.2.8 Installation outside of Natura2000 areas and protected biotopes

When cross connections are installed, possible impairments to the marine environment should be minimised. For that to happen, the cross connections should be installed outside of the Natura2000 areas if possible. Known areas of protected biotope types according to Section 30 Federal Nature Conservation Act or corresponding structures must be avoided as far as possible.

The specifications in Section 45 Water Management Act must be observed; best environmental practice pursuant to the Helsinki Convention and the applicable state of technology should be considered and specified in the individual procedure.

7.2.9 Environmentally-friendly installation procedure

In order to protect the marine environment, an installation procedure for installing the cross connections which is as environmentally-friendly as possible should be selected.

7.2.10 Coordinated timing of the overall installation works

In order to avoid or reduce cumulative effects, the cable burial and trenching campaigns should be coordinated.

7.2.11 Consideration of cultural assets

Known sites where cultural assets have been discovered must be taken into consideration during the selection of cable routes. If unknown cultural assets located on the seabed should be found during the planning or installation of cross connections, then appropriate measures to secure the cultural assets must be taken.

7.2.12 Consideration of sites where munitions have been discovered

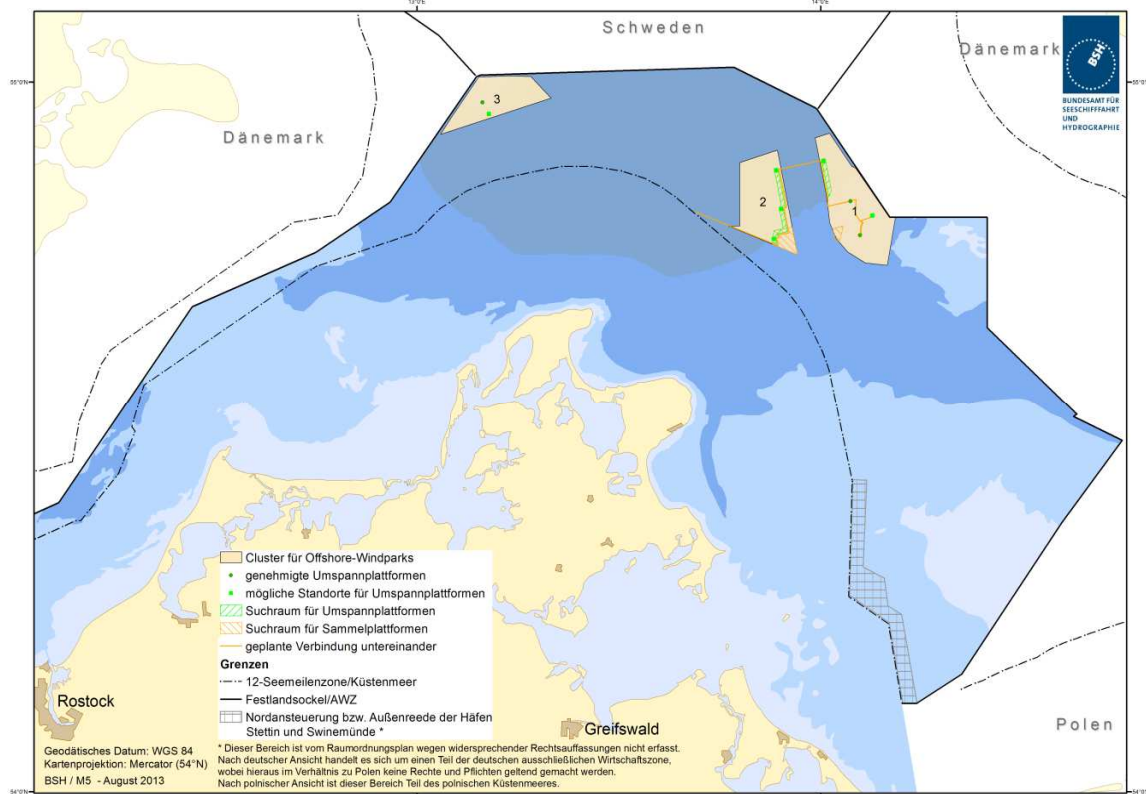
Known sites where munitions have been found must be avoided during the routing. If unknown munitions-contaminated sites should be found during the planning or construction of the cross connections, then appropriate protective measures must be taken.

7.2.13 Obligation to remove

Cross connections must be removed after they are no longer used. If the removal causes greater adverse effects than leaving them there, the removal must be completely or partly abandoned unless it is necessary for reasons of traffic security and ease. If they are left there, suitable monitoring measures should be arranged regarding possible future risks.

7.3 Spatial Stipulations

7.4 Cartographic Representation



Map 11: Representation of cross connections

8 Examining Public and Private Concerns – Summarised assessment

Predominant public and private concerns which create an obstacle to any stipulation must be examined, in particular the compliance of the stipulation with the requirements of spatial planning, coordination with other spatially significant types of planning and measures as well as any alternatives to cable routes, corridors for cable routes or sites to be given serious consideration.

This chapter will be developed after the consultation has been carried out completely.

9 Provisional Summary Environmental Statement

9.1 Provisional Summary Environmental Statement in Accordance with Section 14I Environmental Impact Assessment Act

A strategic environmental assessment (SEA) was carried out in terms of the Environmental Impact Assessment Act during the preparation of this Spatial Offshore Grid Plan as an accompaniment and integrated into proceedings. According to Article 1 of the SEA Directive, the SEA aims at providing for a “high level of environmental protection and contributing to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development by ensuring that, in accordance with this Directive, an environmental assessment is carried out of certain plans and programmes which are likely to have significant effects on the environment.”

The extent and level of detail of the SEA report were discussed on 23 April 2013 during a scoping meeting with representatives from the authorities, associations and private interests.

On the basis of the results of the scoping meeting and the relevant comments submitted, a SEA report has been prepared following the criteria of Annex I of the SEA Directive. The planning area was diversified into further subspaces as far as possible, in accordance with the situation regarding natural environment and geology. The focus of the SEA report draft is especially on the description and evaluation of the significant effects on the marine environment expected from the implementation of the Spatial Offshore Grid Plan, with the description and estimate of the state of the marine environment serving as a foundation. According to Section 14f (2) Clause 2 Environmental Impact Assessment Act, the SEA report shall contain the information which may be ascertained with reasonable effort and shall take into consideration the current state of knowledge and generally recognised testing methods.

At the same time, measures are outlined which prevent, reduce and as fully as possible offset any significant, adverse effects on the marine environment resulting from the implementation of the grid plan. Along with the brief outline of reasons for selecting the examined alternatives, the planned measures to monitor the significant effects on the marine environment arising from the implementation of the grid plan are named and the results of the Habitats Directive impact assessment as well as of the assessment of species conservation are outlined.

The draft plan is the result of this earlier, comprehensive environmental assessment. Environmental concerns and the information gained during the preparation of the SEA report influenced the preparation of the plan's stipulations. Therefore, the results ascertained in the SEA in view of the significance of individual spatial sub-areas for biological nature conservation interests were consulted as a decision-making basis when the sites for transformer substation platforms and subsea cable routes were stipulated. At the same time, the plan stipulations were checked and adjusted continuously regarding their possible environmental effects during the preparation of the draft plan.

The likely significant, adverse effects of the transformer substation platforms and subsea cable systems discussed in the SEA report draft led to general and source-based stipulations in the plan to prevent and mitigate these effects. In addition to the consideration of the relevance of individual, spatial sub-areas for biological nature conservation interests, these planning principles to prevent and reduce significant, negative effects ensure that no significant impairments are caused by the implementation of the grid plan, but instead that negative effects are avoided or reduced – compared with the outlined development of the marine environment if the grid plan were not to be implemented. This concerns, amongst other things, a planning principle for noise reduction and the stipulation to avoid the use of Natura2000 areas and known areas of strictly protected biotope types according to Section 30 Federal Nature Conservation Act. The grid plan only stipulates areas which, according to the impact assessment in the draft SEA report, have no significant effects on the protection and conservation objectives of Natura2000 sites and give no reason to expect prohibitions regarding species conservation pursuant to Section 44 Federal Nature Conservation Act.

The draft SEA report, together with the responses submitted so far from the participating authorities and the public, has been taken into account during the preparation of the plan according to Section 14k Environmental Impact Assessment Act.

During the consultation procedure, the draft Spatial Offshore Grid Plan and the draft SEA report is sent to the states bordering on the Baltic Sea and to the German authorities and the public with the opportunity to respond. The national hearing meeting took place on 10 September 2013.

In summary, it may be said that the implementation of the grid plan is not expected to have any significant effects on the marine environment, in particular on account of the general and source-based stipulations to prevent and reduce effects on the basis of information currently available and on the abstract level of sectoral planning. The potential effects are small-scale

and largely short-term as they are limited to the construction phase. With regard to the assessment of the effects on individual nature conservation interests, such as the cumulative consideration of bird and bat migration, there is currently still a lack of sufficient scientific knowledge and standard evaluation methods. In addition, sufficient information for technical implementation (installation procedure, construction procedure) is lacking for individual areas, particularly those outside the priority areas that evidence high levels of mud, as proven state of the art is not available here. The assessment of the effects depends primarily however on the procedures used. These effects cannot therefore be conclusively evaluated within the framework of the existing SEA and are fraught with uncertainties. A more in-depth investigation must be carried out within the framework of the individual licensing procedure and the update to the Spatial Offshore Grid Plan.

Based on the current status according to the Habitats Directive impact assessment of the areas stipulated by the plan for transformer substation platforms and subsea cable systems, no significant effects on the protection and conservation objectives of Natura2000 areas can be determined, either in the German EEZ, the EEZ of neighbouring states or in the territorial sea. During the Habitats Directive impact assessment, only the possible long-distance effects of the transformer and bundling platforms and subsea cable routes planned within the EEZ are explicitly investigated. These usually lie sufficiently distant from the protected areas in the territorial sea and the EEZ of the neighbouring states so that no significant effects on these protected areas are expected. However, this consideration is not made in relation to the gates planned in the grid plan and the cable routing in the territorial sea necessarily connecting to them. This is the object of the O-NEP or the respective administrative procedures.

The overall conclusion can be made that no significant effects are to be expected on the nature conservation interests through the coordinating and concentrating effects of the plan's stipulations. Negative effects will instead be prevented or reduced in comparison to the event of non-implementation of the plan.

9.2 Monitoring Programmes in Accordance with Section 14m Environmental Impact Assessment Act

The potential significant effects on the environment arising from the implementation of the grid plan must be monitored pursuant to Section 14m (1) Environmental Impact Assessment Act. This is intended to ascertain unforeseen, negative effects so that suitable corrective actions can be taken. The monitoring also serves to examine the gaps in knowledge described in the draft SEA report or the uncertain forecasts. According to Section 14m (4) Environmental Impact Assessment Act, the monitoring results must be considered when the plan is updated. The actual monitoring of potential effects on the marine environment can only begin when the stipulations of the plan are realised. Therefore, the project-related monitoring of the effects of transformer substation platforms and subsea cables is assigned great significance.

The main objective of the monitoring is to combine and assess the findings from the various monitoring programmes. In summary, the planned monitoring measures can be outlined as follows: Combination and assessment of project-related effect monitoring carried out on a project level (according to the Standards for Environmental Impact Assessments, StUK) and any accompanying research, assessment of national and international monitoring programmes in the Baltic Sea, including the Federal and State Government Monitoring Programme, the marine environmental monitoring network of the Federal Maritime and Hydrographic Agency, "MARNET", HELCOM and ICES-based monitoring programmes, the Federal Agency for Nature Conservation's monitoring programme for Natura2000 reporting in the North Sea and Baltic Sea EEZ and measures based on the Marine Strategy Framework Directive and the Water Management Act.

9.2.1 Monitoring of the potential effects of transformer substation platforms

The study of the potential environmental effects of transformer substation platforms must take place on project level, based on the standard “Investigation of the Impacts of Offshore Wind Turbines (StUK 3)” and in consultation with the approval authority. The update of the StUK 3 is currently in progress. The results from the studies of neighbouring offshore wind farm projects must be used as a basis for the assessment of sites in relation to biological nature conservation interests. Monitoring during the construction phase of transformer substation platforms with deep foundations includes measurements of underwater sound and acoustic recordings of the effects of the pile-driving noise on marine mammals using porpoise click detectors. During the operational phase, no special monitoring is necessary. The transformer substation platform as an individual construction and as part of the wind farm must only be appropriately monitored on an ecological basis insofar as the corresponding programmes with monitoring for projects which are being connected to transformer substation platforms are coordinated and, if possible, contained therein. In accordance with current licensing practice, a registration of birds and bats found dead on the transformer substation platform must also be carried out and documented (on every maintenance and repair visit) with the aid of digital images.

The Federal Maritime and Hydrographic Agency has also recently commissioned a research and development study on assessment approaches for underwater sound monitoring in connection with offshore approval procedures, spatial planning and the Marine Strategy Framework Directive. The goal of the project is the joint evaluation of approval-related information from sound monitoring offshore wind farms in the EEZ and the development of suitable evaluation tools. The results are intended to contribute to designing the impact study effectively and to assessing the efficiency of the noise-mitigation measures and, where necessary, to be able to adapt the measures and draft coordination plans. The project serves the continuous further development of a uniform and quality-tested basis of marine environment information to assess the possible effects of offshore wind energy facilities. The results can also be transferred to a great extent to transformer substation platforms.

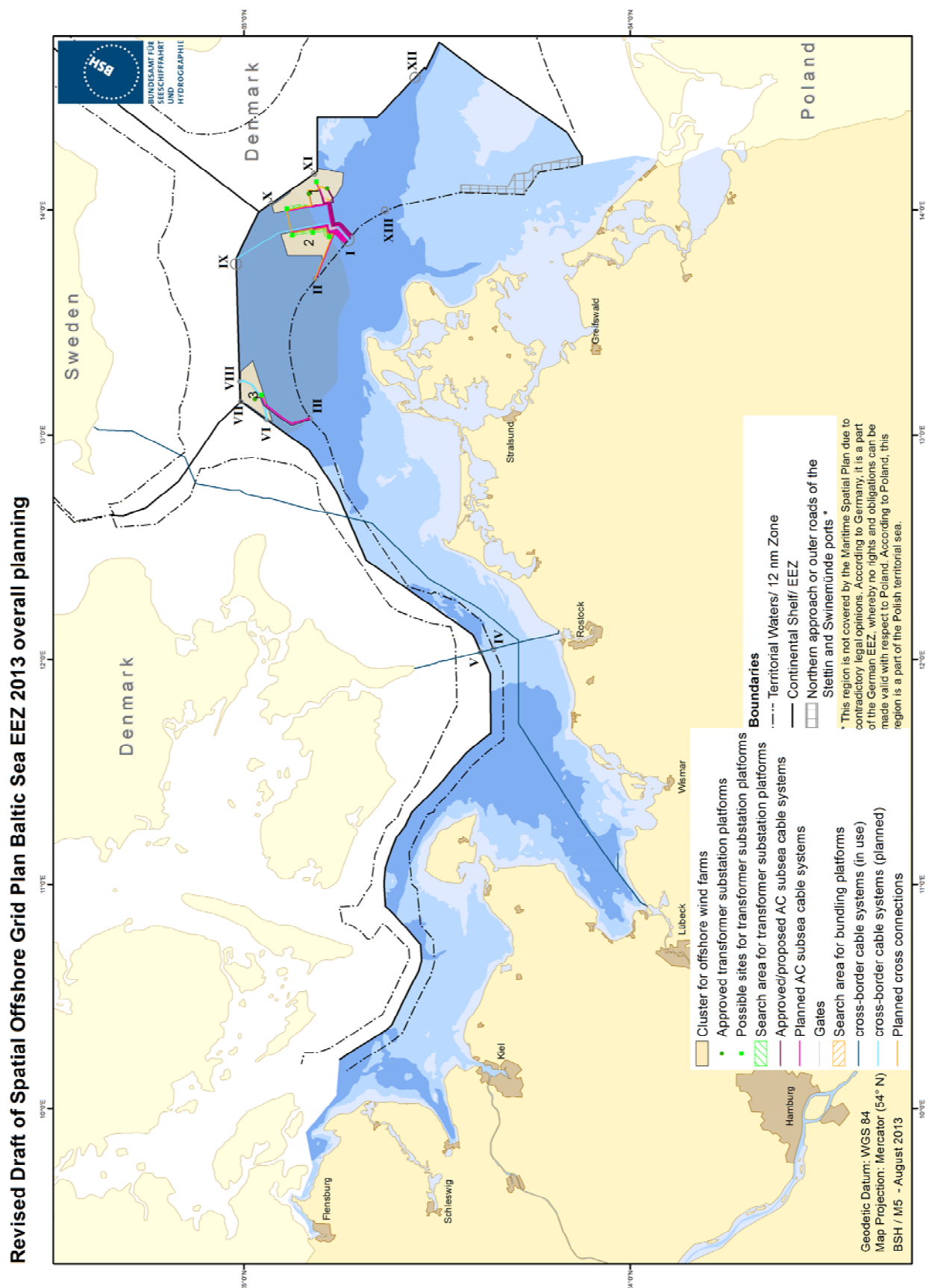
The same monitoring measures can be applied to the optionally planned bundling platforms.

9.2.2 Monitoring of the potential environmental effects of subsea cable systems

The same applies for subsea cable systems; it is only possible to examine their potential effects on the marine environment in the specific project. Therefore, after the cables have been installed, their burial depth must be checked via operational monitoring measures. According to the current licensing practice, the depth position of the cable must be verified to the approval authority annually in the first five years of operation by at least one survey of the depth position. The number of surveys in the following years is stipulated by the approval depending on the individual case.

The studies into the marine environment must be carried out in coordination with the approval authority and in a way specific to the project. The study methods must be outlined as much as possible as described in the “Investigation of the Impacts of Offshore Wind Turbines on the Marine Environment (StUK 3)”. One year after the subsea cable systems are commissioned, studies into the benthic communities must be carried out on the same transects as in the baseline survey.

10 Annex



Map 12: Spatial Offshore Grid Plan-EEZ Baltic Sea 2013 overall planning

English translation of map legends

German	English Translation
all maps	
Grenzen	Boundaries
12-Seemeilenzone/ Küstenmeer	Territorial Waters/ 12 nm Zone
Festlandssockel/ AWZ	Continental Shelf/ EEZ
Nordansteuerung bzw. Außenreede der Häfen Stettin und Swinemünde	Northern approach or outer roads of the Stettin and Swinemünde ports
Dieser Bereich ist vom Raumordnungsplan wegen widersprechender Rechtsauffassung nicht erfasst. Nach deutscher Ansicht handelt es sich um einen Teil der deutschen ausschließlichen Wirtschaftszone, wobei hieraus im Verhältnis zu Polen keine Rechte und Pflichten geltend gemacht werden. Nach polnischer Ansicht ist dieser Bereich Teil des polnischen Küstenmeeres.	This region is not covered by the Maritime Spatial Plan due to contradictory legal opinions. According to Germany, it is a part of the German EEZ, whereby no rights and obligations can be made valid with respect to Poland. According to Poland, this region is a part of the Polish territorial sea.
Geodätisches Datum: WGS 84	Geodetic Datum: WGS 84
Kartenprojektion: Mercator (54 ° N)	Map Projection: Mercator (54 ° N)
August 2013	August 2013
Map 1	
Cluster für Offshore-Windparks	Cluster for offshore wind farms
Map 2 + 3	
Raumordnung	Spatial Planning
Vorranggebiet Schifffahrt	Priority Area Shipping
Vorbehaltsgebiet Schifffahrt	Reservation Area Shipping
Map 4 + 8	
genehmigte Umspannplattformen	Approved transformer substation platforms
mögliche Standorte für Umspannplattformen	Possible sites for transformer substation platforms
Suchraum für Umspannplattformen	Search area for transformer substation platforms
Map 5 + 8	
Grenzkorridore	Gates
Map 6 + 8	
genehmigte/ beantragte Drehstrom-Seekabelsysteme	Approved/proposed AC subsea cable systems
geplante Drehstrom-Seekabelsysteme	Planned AC subsea cable systems
Map 7 + 8	
Suchraum für Sammelplattformen	Search area for bundling platforms
Map 9	
genehmigte Offshore-Windparks	Approved offshore wind farms
Map 10	
grenzüberschreitende Seekabelsysteme in Betrieb	cross-border cable systems (in use)
geplante grenzüberschreitende Seekabelsysteme	cross-border cable systems (planned)
Map 11	
geplante Verbindung untereinander	Planned cross connections