ROUTEING MEASURES AND MANDATORY SHIP REPORTING SYSTEMS

General overview of proposals for new and amended routeing measures
Off the Netherlands-Belgian Coast
between West Hinder, North Hinder and Maas West traffic separation schemes

Submitted by Belgium and the Netherlands

SUMMARY

Executive summary: This document provides a general introduction, and outlines the overall intent, of a joint Belgian and Dutch proposal to amend existing and to establish new routeing measures in the sea area between the existing traffic separation schemes West Hinder, North Hinder and Maas West off the Dutch and Belgian coast. Due to the strong interrelation of the different routeing measures the proposed routeing system is being considered as a whole and designated as "Approaches to the Schelde estuary". This general introduction is to be used in conjunction with the four separate relevant proposals submitted to NCSR 3 and explains the aim, objectives and interrelation of the proposed measures.

Strategic direction: 5.2
High-level action: 5.2.4
Planned output: 5.2.4.1
Action to be taken: Paragraph 38
Related documents: Resolution A.572(14), as amended; MSC.1/Circ.1060, as amended; NCSR 3/3/2 to NCSR 3/3/5, together with NCSR 3/INF.3; IMO Ships’ Routeing, part B, pages II/7 and II/10, part C, page II/3, part E, pages 9-1, 9-2 and 10-1 to 10-3

Introduction

1 The aim of this document is to outline the overall intent of a joint proposal by Belgium and the Netherlands to amend existing and to establish new routeing measures at different
locations in the sea area between the traffic separation schemes of West Hinder, North Hinder and Maas West off the Dutch and Belgian coast. The resulting new routeing system is assigned as "Approaches to the Schelde estuary". This general introduction is to be used in conjunction with four separate relevant submissions and explains both the interrelation between the separate proposals and their correlation with this introduction.

2 Details of the proposed ships' routeing system are provided as follows:

.1 a general description of the systems is provided in paragraph 16 and graphically displayed in annex 3;

.2 the names, numbers, editions and geodetic datums of the reference charts (paper and/or electronic) used to delineate the routeing systems are taken from Chart BA 323 (INT 1564, 2013 edition, Dover Strait Eastern Part), Chart NL 1630 (INT 1416, 2013 edition, North Sea; West Hinder and Outer Gabbard to Vlissingen and Scheveningen) and Flemish Hydrography Charts BE 101 (INT 1474, 2015 edition, Noordzee Belg.-Ned. Kust) and 102 (INT 1480, 2015 edition, Noordzee Fr.-Belg. Kust), all based on WGS84 datum; and

.3 the geographical coordinates that define the ships' routeing systems are provided in WGS84 datum in associated documents NCSR 3/3/2 to NCSR 3/3/5.

Summary

3 The general objectives for submitting the proposed routeing system are to improve safety of navigation and to reduce the risk of marine environmental pollution off the Belgian and Netherlands' coast. In the area freedom of movement for shipping is inhibited by restricted sea room and the existence of obstructions to navigation, such as present and planned developments of large scale renewable energy (largely wind).

4 The need for the proposed measures is demonstrated through the following arguments:

.1 In recent years both countries made progress in the planning and development of wind farm sites in this area. Whilst the sites for wind farm development have been geographically described and adopted in legislation, the designated areas will no longer be available for commercial shipping when the wind farm sites are realized. This will result in a concentration of shipping in the sea area around the designated wind farm sites.

.2 Environmental considerations:

.1 the area is surrounded by significant and busy ports such as Rotterdam, Antwerpen, Vlissingen, Terneuzen/Gent and Zeebrugge. It can be challenging and difficult to navigate taking into account the intensity of both commercial and recreational shipping;

.2 the area contains several anchoring areas, pilot stations, shallow waters and other dangers to navigation;
the area becomes more challenging and difficult to navigate taking into account currents up to 4 knots, ground waves occurring with certain winds and the specific contours of the seabed; and

both the Belgian and Netherlands coast contain areas assigned to nature preservation (European legislation Natura 2000 areas).

Within a geographically defined area the available sea room for navigation is expected to decrease in time with the expected world-wide growth in both ship movements and dimensions in the sector of sea transportation, which entails an increased risk of damage to marine environmentally sensitive areas in the near future. These risks are especially expected in and near the pilot embarkation areas. A clear recommended routeing system will assist ships in their ability to anticipate on movements of other ships in the remaining navigable sea room.

Bridge Resource Management (BRM) has gained significant importance in the shipping sector over the recent years and has demonstrated its contribution to navigational safety. Situational awareness is one of the important elements of BRM. While currently the Schelde estuary lacks a formal adoption of ships’ routeing measures as the only significant eastern North Sea coast approach area between France and Germany, a comprehensive and well thought routeing in this area will contribute to the situational awareness of any navigation officer, whilst contributing to an integrated and complete routeing system on the eastern North Sea. Ultimately this will improve the safety of navigation in the area and also reduce the risk of marine environmental pollution.

Adoption of the proposed routeing measures will secure sea room for shipping. Routeing measures will be transposed into national legislation whereby the assigned areas are not likely to be claimed for other use in the future. For example, an extension of the renewable energy sites will not be possible due to the assigned function of the area for shipping. This will secure safe navigation for the future. Up to now this area lacks a formal adoption of ships’ routeing and with the given development of large scale wind farm sites, shipping will be concentrated in a smaller navigable area as a direct consequence. In view of the arguments mentioned above, Belgium and the Netherlands have jointly designed proposed routeing measures in the indicated area for the benefit of safety of navigation in this converging area and to reduce the risk of marine environmental pollution.

The arguments for the proposed system are described in paragraph 4. If no provisions are made, the area will be left uncoordinated without routeing measures, with dense shipping manoeuvring in different directions under challenging navigational conditions in a confined area. Moreover the navigable sea room would potentially decrease in size in the near future with the ongoing development of wind farm sites and spatial claims of other users.

The entire area in question is controlled by three nautical authorities; the Belgian Coastguard, the Netherlands Coastguard and the Common Nautical Management for the Schelde estuary. These authorities have provided their most recent history of incidents from 2011-2014:
The Netherlands coastguard reports 499, 478, 404 and 430 incidents. These numbers cover both route bound and non-route bound traffic and as described in the entire Dutch North Sea area.

The Belgian Coastguard reports 442, 380, 391 and 418 incidents. These numbers cover both route bound and non-route bound traffic and as described in the entire Belgian North sea area.

The Common Nautical Management Westerschelde reports between 70 and 90 incidents per year. These numbers focus more on the confined waters on the Schelde river instead of the approaches to the estuary. They also include incidents with and between inland barges on the Schelde river. The number of incidents with seagoing ships within the responsible area lies around 30 per year.

Both VTS–operators and pilots have reported multiple examples of near misses, groundings and ships in trouble under severe weather conditions spread over the entire area.

The proposals consider the establishment of new routeing measures and amendments to existing routeing measures off the Dutch/Belgian coast. The proposals have been outlined in paragraph 16.

The proposed measures generally apply to all ships, except for the area to be avoided in the corridor in the Dutch wind farm site; this one is applicable to certain categories of ships: ships up to 45 meters in length and not carrying dangerous cargo or dangerous goods are allowed to use the shipping corridor.

The expected impact of the proposed routeing measures on shipping has been researched and described. The Netherlands and Belgium together performed a full Formal Safety Assessment (FSA) from which it was concluded that the proposed routeing measures improve safety of navigation and protection of the marine environment in the area. A summary of the outcomes of the FSA study has been submitted as document NCSR 3/INF.3.

Description of the area

The location of the existing routeing measures in the proposed area, the number, edition, and geodetic datum of the reference charts used to delineate the routeing system are set out in annex 2. While there is no chart available which describes the entire area on a suitable scale, the Netherlands Hydrographic Offices and the Flemish Hydrography have constructed an overview chart which shall not be used for navigation. To give a clear understanding of the proposals both a nautical and graphical chartlet is displayed. Geographical positions and relevant details will be described in associated documents NCSR 3/3/2 to NCSR 3/3/5.

The spatial use of the Belgian/Netherlands’ Continental Shelf (CS) is very complex; it includes commercial shipping, fisheries, oil and gas exploration/exploitation, offshore renewable energy developments (in particular wind energy), sand extraction, coastline defence and conservation, cables and pipelines, military exercise areas, recreational use, nature development and conservation, land reclamation and coastal protection.
12. The multiple use of the Continental Shelf together with ship movement data is shortly emphasized below:

.1 In the Dutch part of the North Sea over 260,000 ship movements per year take place, of which 60% is destined for or coming from Dutch ports. The Belgian part adds an additional 100,000 movements of which 50% has a direct relation with a Belgian port.

.2 The future spatial use of the Continental Shelf aims for sustainable development in balance with the marine system, with an additional emphasis on the development of large scale renewable energy (wind) and sand extraction for coastal and flood protection, whilst maintaining the safety of shipping at least at its present level.

.3 Results of several safety studies over the years and present knowledge about shipping density, combined with the accommodation of future wind farm developments and the lack of any present routeing system in a large part of the Schelde estuary as mentioned in paragraph 4, led to the conclusion that it would be necessary to comprehensively (re)develop an exhaustive routeing system in the Belgian/Dutch part of the North Sea in order to enhance safety of navigation and protection of the marine environment.

.4 In 2015 a study, comprising a full Formal Safety Assessment (FSA) based on the proposed new routeing measures, was carried out to assess the proposed redevelopment of the routeing system (see NCSR 3/INF.3). The FSA for the proposed routeing system in the southern part of the North Sea includes a HAZID Assessment, a Quantitative Risk Assessment (QRA) and an abstract of the Risk Assessment of North Sea shipping routes. In the HAZID risks for different traffic scenarios, incident (hot spot) scenarios and risk mitigating measures have been addressed and compared, resulting in the proposed routeing measures. The QRA has focussed on the mathematical cost/benefit on different subjects to shipping. The FSA is included as an information paper to this submission (NCSR 3/INF.3).

13. The chartlet on which the entire proposed routeing system is shown is set out in annex 3. While there is no chart available which as described in the entire area on a suitable scale, both the Netherlands and Belgium Hydrographic Offices have constructed an overview chart which shall not be used for navigation. To give a clear understanding of the proposals both a nautical and graphical chartlet is displayed.

Cooperation between States

14. As both Belgium and the Netherlands have common interests in the area, the Netherlands and Belgian Administrations consulted one another several times. This cooperation resulted in a joint submission which contains one overview document and four sub-documents. They vary from new routeing measures to amendments to existing routeing systems as outlined in paragraph 16.

15. The United Kingdom and French Administration have been consulted because of the common interest in respectively the North Hinder area and West Hinder area in order to formulate agreed routeing proposals. Since the area where amendments are proposed are of interest to both the United Kingdom and France, these countries have been approached with a request to consider the proposals and if possible to co-sponsor the submissions containing amendments to the traffic separation schemes “In the Approaches to Hook of Holland and at
North Hinder” (NCSR 3/3/2) and the amendments to the traffic separation scheme “At West Hinder” (NCSR 3/3/3). Although the United Kingdom and France were not in a position to co-sponsor the papers they did not object to the proposals.

Outline of the proposals and their aims

16 The proposals are subdivided into the following categories and are described in relevant sub-documents. Where appropriate, measures are combined in one sub-document in accordance with the categorization used in section 2 of the General Provisions on Ships’ Routeing (resolution A.572(14), as amended).

.1 Amendments to existing TSSs and new traffic separation schemes (TSSs):

.1 NCSR 3/3/2: New traffic separation scheme and amendments to existing traffic separation schemes "In the Approaches to Hook of Holland and at North Hinder" refers to paragraphs 17.1.1 and 17.1.3 where amendments to the traffic separation schemes "North Hinder South" and "Maas West Outer" are described. Establishment of new traffic separation scheme "Off North Hinder" as an addition to "In the Approaches to Hook of Holland and at North Hinder" as described in paragraph 17.1.2. The amendment to the precautionary area "North Hinder Junction" as described in paragraph 17.2.1 is also included in this sub-document; and

.2 NCSR 3/3/3: Amendments to the traffic separation scheme "At West Hinder" and adjacent routeing measures as described in paragraph 17.1.4. The amendment to the precautionary area "At West Hinder" and the amendment to the two-way recommended directions of traffic flow east of the anchorage at West Hinder as described in paragraphs 17.2.2, 17.2.3 and 17.2.4 are also included in this sub-document.

.2 Routeing measures other than TSSs:

.1 NCSR 3/3/4: Routeing measures other than traffic separation schemes "Approaches to the Schelde estuary". Amendments to routeing measures other than traffic separation schemes "in the vicinity of Thornton and Bligh Banks" as described in paragraph 13.2.5 and Establishment of new routeing measures other than traffic separation schemes "Approaches to the Schelde estuary" as described in paragraphs 17.2.6 to 17.2.11; and

.2 NCSR 3/3/5: New routeing measures other than traffic separation schemes "Wind Farm Borssele". Establishment of new routeing measures other than traffic separation schemes proposes a precautionary area "Wind Farm Borssele" and an area to be avoided "Wind Farm Borssele corridor" as described in paragraphs 17.2.12 and 17.2.13. The implementation date of the latter is to be determined at a later stage, pending the actual construction and completion of the wind farm site.
The following subparagraphs list the specific proposals and summarize their aims.

.1 Amendments to existing traffic separation schemes (TSSs) and new TSSs:

.1 for an optimal integration of the proposed new TSS "Off North Hinder" with existing routeing, the separation zone and adhering shipping lanes at the north-eastern end of TSS "North Hinder South" will be shortened. This will enlarge the North Hinder Junction precautionary area in the same direction;

.2 the establishment of a new traffic separation scheme "Off North Hinder" adjacent to the North Hinder precautionary area that separates inbound from outbound traffic lanes and regulates in- and outgoing traffic between the North Hinder Junction precautionary area, the precautionary area "At West Hinder" and the new precautionary area "At Gootebank" (see paragraph 17.2.6). In this way, traffic is also separated from developments of renewable energy in this area adjacent to the east. For an optimal connection and integration with existing routeing measures the separation zone and adhering shipping lanes at the north-eastern end TSS "North Hinder South" will be shortened, resulting in an extension of the North Hinder Junction precautionary area which is part of the proposal;

.3 in order to make a proper alignment and to create an optimal traffic flow from North Hinder Junction precautionary area to the proposed new routeing system "Approaches to the Schelde Estuary", the southern coordinate of the western boundary of the eastbound shipping lane of TSS "Maas West Outer" has to move 1.9 miles to the east. This has a marginal effect on the sizes of TSS "Maas West Outer" (shortened) and the consequently extended North Hinder Junction precautionary area and optimizes the connection between the separate routeing measures; and

.4 for an optimal integration of the proposed new recommended direction of traffic flow as part of the routeing system "Approaches to the Schelde Estuary", a shortening of the TSS at the eastern end of TSS "At West Hinder" is proposed. This allows an extension of the precautionary area "At West Hinder" in westerly direction, designated for ingoing traffic to the Schelde approaching from the North passing through the natural shoals and west of the anchorage at West Hinder. This provides more manoeuvring space and better/safer opportunities to embark pilots on ships heading for any harbour situated in the Schelde estuary.

.2 Amendments to routeing measures other than TSSs:

.1 in order to create an optimal traffic flow near the junctions with the proposed new TSS "Off North Hinder" and proposed new routeing system "Approaches to the Schelde Estuary", amendments to the current precautionary area "North Hinder Junction" are necessary as described earlier in paragraphs 17.1.1 to 17.1.3. Details will be described in sub-document NCSR 3/3/2: New traffic separation scheme and amendments to existing traffic separation schemes "In the Approaches to Hook of Holland and at North Hinder".
.2 in order to provide a safe passage for ships through natural shoals a recommended direction of traffic flow is proposed from the proposed new TSS "Off North Hinder" to the modified precautionary area "At West Hinder", passing west of the anchorage at West Hinder in order to provide more manoeuvring space and better/safer opportunities to embark pilots on ships bound for any harbour in the Schelde estuary;

.3 in order to provide more manoeuvring space and better/safer opportunities to embark pilots on ships heading for any harbour situated in the Schelde estuary and to align properly with the proposed new recommended direction of traffic flow as described in paragraph 17.2.2, the extension of the current precautionary area "At West Hinder" in westerly direction is proposed;

.4 in order to reduce the number of ships on opposite course in approaches east of the anchorage area West Hinder, a separation of in- and outgoing traffic is proposed. Ingoing traffic will be recommended to follow the route as described in paragraph 17.2.2 and the current two-way recommended directions of traffic flow east of the anchorage area West Hinder will be amended to a recommended direction of traffic flow for outgoing traffic only. The new recommended direction of traffic flow starts east of the anchorage and leads to the northbound lane of the proposed new TSS "Off North Hinder";

.5 in order to create enough sea room for the proposed new two-way route "Westpit" (see paragraph 17.2.7), a reduction of the current precautionary area "in the vicinity of Thornton and Bligh Banks" is necessary;

.6 in order to merge traffic flows from different directions and to coordinate crossing traffic a new precautionary area "At Gootebank" is proposed to the north of the existing DW-route "Vaargeul 1". Moreover, it connects two routeing measures, as such creating an integral and integrated routeing system. Finally it claims sea room for shipping as well. The area extends in north eastern direction to the western boundary of the proposed new two-way route Westpit and is part of a set of routeing measures distinguished as routeing system "Approaches to the Schelde Estuary";

.7 in order to establish a coordinated traffic flow between precautionary area "at Gootebank" and precautionary area "Schouwenbank Junction" (see paragraph 17.2.11) a two-way route "Westpit" is proposed. This routeing measure will be the primary route for large ships sailing between the Schelde estuary and northerly situated ports. This two-way route is part of the proposed new routeing system "Approaches to the Schelde Estuary";

.8 in order to improve situational awareness, navigational safety and to complete the routeing system in this area, a two-way route "Schouwenbank Southeast" is proposed. This route is the most used route for ships with a limited draught entering and leaving the Schelde estuary. The routeing measure connects the precautionary area "Schouwenbank Junction" and the buoyed channel "Oostgat".
Additionally this measure also marks the free space for navigation bearing in mind the navigational hazards such as wrecks and sandbanks. This two-way route is part of the proposed new routeing system "Approaches to the Schelde Estuary";

.9 in order to optimize routeing between the Schelde Estuary and the Dutch ports, a two-way route "Schouwenbank Northeast" will connect precautionary area "Schouwenbank Junction" and precautionary area "Maas Junction". In order to integrate traffic flows with existing use in the limited space available, the anchorage Schouwenbank east of this route is configured in shape and slightly enlarged in surface area. This is both assessed and approved on national level and is not subject to approval by the Organization. This two-way route is part of the proposed new routeing system "Approaches to the Schelde Estuary";

.10 in order to optimize routeing between the Schelde Estuary and the northerly/north-westerly ports, a two-way route "Schouwenbank Northwest" connects precautionary area "Schouwenbank Junction" and precautionary area "North Hinder Junction". This two-way route is part of the proposed new routeing system "Approaches to the Schelde Estuary";

.11 in order to accommodate traffic flows from different directions at a junction between four two-way routes, an anchorage, a pilotage area and a nearby small ships corridor through the Dutch wind farm sites, a precautionary area "Schouwenbank Junction" is proposed. This area is part of the proposed new routeing system "Approaches to the Schelde estuary";

.12 freedom of movement for shipping on the Dutch Continental Shelf will be restricted by the existence of obstructions to navigation, such as planned developments of large scale renewable energy (largely wind farms). In order to make mariners aware of the areas to be developed and corresponding activities, a precautionary area "Wind Farm Borssele" is proposed. When actual working operations commence, sites within the wind farm area will be closed for navigation; and

.13 in order to optimize the use of available sea room on completion of the Dutch wind farms, an east-west oriented corridor for certain categories of ships will be assigned within the Dutch wind park sites and basically will follow the trajectory of the existing Farland North cable. The corridor will be designated as an area to be avoided for ships larger than 45 m or carrying dangerous cargo, in view of the limited width of the corridor. This routeing measure will primarily be implemented in order to keep as much as possible small ships from interacting with the large commercial ships in the surrounding shipping routes and precautionary areas, and will mainly be used by recreational and fishing vessels. The actual date of implementation is likely to deviate from the implementation of the other routeing measures due to the lack of certainty regarding the realisation time schedule of the wind farm site.
Traffic considerations

18 An overview of the existing routeing system off the Dutch/Belgian coast is presented in annex 1 and the area of concern is displayed in annex 2. Flow and density of traffic in the area based on both AIS and radar data with the projected proposed routeing system is shown in annex 4. Given that the available sea room for shipping will be reduced, a full FSA study has been carried out based on the proposed routeing measures and related predicted traffic flows and density. The results and the impact from the proposed routeing measures to the safety of navigation is presented in NCSR 3/INF.3.

19 Existing and proposed aids to navigation in the specific area are as follows: the area is covered by a system of mainly floating aids to navigation which are maintained by the competent authorities. Actual realization of wind farm sites will potentially facilitate the use of fixed aids to navigation, if deemed necessary. Routeing measures are not implemented yet in this area as shown in annex 2.

20 New and amended routeing measures are of a width consistent with the density of traffic predicted and are situated in appropriate water depths and taken into account any obstacles. The entrances to the shipping lanes, as well as the area to be avoided, will be appropriately marked by floating aids to navigation.

21 To enable traffic in both the existing and proposed routeing measures to take avoiding action when encountering crossing traffic, the proposals imply a safety margin between wind farm sites and the shipping lanes.

22 The following traffic patterns have been observed in the area:

1 traffic patterns and volumes are briefly described in paragraph 18 and extensively described in NCSR 3/INF.3;

2 existing (and future) traffic management measures: pilot services to the Schelde estuary and its adjacent ports are available from different directions, a ship reporting system is already implemented and proper adjustments to the new routeing measures are part of the proposals. VTS coverage is provided within the area of responsibility for the Common Nautical Management Westerschelde (shown by the black line in annex 4);

3 vessel interactions are extensively addressed in the FSA study as presented in document NCSR 3/INF.3;

4 distance offshore of traffic patterns in the proposed routeing measures are: minimum 5 nm (Oostgat off coast Westkapelle-Domburg) to maximum 35 nautical miles (separation zone North Hinder South TSS off coast Zeebrugge); and

5 types of shipping in the area are displayed in annex 4 and considered in more detail (quantity of substances on board (e.g. hazardous cargo, bunkers)) in several figures in the FSA document (NCSR 3/INF.3) and in the sub-documents (NCSR 3/3/2 to NCSR 3/3/5).
The state of hydrographic surveys and nautical charts in the area is the following: the area is covered by the Survey Program of the Belgium and the Netherlands ensuring that the area is systematically and adequately surveyed as recommended by the IHO standards for Hydrographic Surveys (Special Publication no 44).

Two alternative routeing measures are specified below. The first one will be addressed as an area to be avoided in document NCSR 3/3/5, whereas the second one may be addressed as an adjustment to proposed routeing measures.

1. An alternative routeing measure, as outlined in paragraph 17.2.13, will be implemented for ships up to 45 m and not carrying dangerous goods or dangerous cargo. The measure will be implemented in order to keep small ships from interacting with the large commercial ships within the assigned TSSs, precautionary areas and two-way routes as much as possible. As such reducing the risk on incidents between route bound and non-route bound traffic. The corridor will mainly be used by recreational and fishing vessels. Additionally it is anticipated that the Dutch government may allow ships up to 24 m within the wind park sites for innocent passage under certain conditions.

2. The south-west part of the two-way route "Westpit" is bounded by wind farms to the north and a spoil ground ("Baggerstortplaats S1") to the south. Regarding the dimensions of the sea room, the ships passing this area and the relatively small safety zone, a recommendation from the qualitative FSA is to consider an alternative location for "Baggerstortplaats S1" to stretch navigational space in this area more southwards or extend the safety margin to the wind farms.

3. The hot spot analysis, Risk Control Options and appropriate measures are well presented in appendix 1 of annexed document to NCSR 3/INF.3. The QRA part of the FSA states that in case an alternative location will be considered for the spoil ground, the piloted part of the traffic will be able to enter or leave the Westpit route via the location of the present spoil ground and is therefore kept on a larger distance from the wind farms. This will reduce the ramming collision frequency between vessels and wind turbines but also reduce the number of nautical miles sailed and corresponding economic costs. Another direct effect is that more sea room for shipping is available, leading to increased situational awareness and navigational safety. It is also expected to reduce the encounter situations between ships and ultimately reduce the number of ship-ship collisions. Details are well described in paragraph 8.2 and appendix 2 of NCSR 3/INF.3. Up to now, the Belgian authorities have not yet indicated an alternative location for the spoil ground due to complexities in spatial use of the Belgian Continental Shelf.

Offshore structures such as drilling rigs and exploration platforms are not situated in the direct vicinity of the proposed routeing measures as being shown in annex 1. In the wind farm sites, the separate energy cables from each turbine will be converged at platforms and then the energy will be transported to shore with one cable. The platforms will be located inside the wind park sites and not be vulnerable to interaction with (route bound) shipping.

The wind turbines will be more vulnerable to ship collisions. In particular the outer wind turbines will have an increased risk to damage. More detailed information as well as possible mitigating measures are described in paragraph 8.2 and appendix 2 of NCSR 3/INF.3.
The entire North Sea is used by fishing vessels however there are no designated fishing grounds in the area of the proposed routeing system.

The area is affected by existing activities and foreseeable development of offshore exploration and exploitation of the seabed and offshore structures, as described through this document. The development of large scale renewable energy in wind farm sites and its direct restrictive effect on the navigable space for shipping is one of the leading arguments for the submission. Other existing activities are the presence of military exercise areas. The areas are not used very frequently and relevant authorities have been contacted. No objections for the routeing proposals was raised.

Due to the establishment of the wind farm sites and its resulting claim on the sea area, the navigable space for shipping will be limited and navigational routes to ports will change because the wind farm areas cannot be navigated by all types of ships. As a direct effect changes in the traffic patterns are foreseen while ships have to use other routes with less navigable space. During the realization of the wind farm sites an increase in specific ship types will occur, which will mainly concern offshore construction ships. After realization the maintenance ships will have a minor influence on the main traffic patterns.

Position-fixing in relation to the routeing system

The following position-fixing aids or services are available: the area is covered by the public Differential Global Positioning System (DGPS) service which provides mariners with real time integrity monitoring of GPS derived positions and the capability of fixing positions within 2 metres (99.8% probability). The area is thereby well covered by a system of fixed and floating aids to navigation which are maintained by the competent authorities and will be adjusted according to the proposed amended and new routeing measures.

Marine environmental considerations

The following environmental factors may affect the shipping in the vicinity of the proposed routeing system: prevailing weather conditions, continuous varying tidal streams, currents and depths. The occurrence of ice concentrations is very rare. Full details of wind, swell, tides, navigational hazards and currents liable to be encountered in the area concerned are contained in the Netherlands’ Coast Pilot (HP1), Digipilot (HP1D), List of Lights (HP2), the Netherlands’ Tide Tables (HP33 and NL Tides HP33D), Wreckregister for the Dutch Continental Shelf and Westerschelde (HP39) and the Admiralty Sailing Directions (NP55). The Belgian authorities provide tide tables, notices to Mariners, List of Lights for Belgium and adjacent waters, atlas of tidal streams for Belgium (and detail for their ports) and the marine buoyage system.

The primary purpose of the proposals is to enhance safety of navigation and the protection of the marine environment by regulating flows of traffic. The proposed routeing system will prevent, minimize or reduce the risk of marine pollution or other damage to the marine environment of the area concerned because of the anticipated decrease in number of ship-ship encounters and the expected reduction in collisions. Actual results and numbers can be found in NCSR 3/INF.3.

In the area covering the proposed routeing measures there are no actual Marine Protective Area’s (MPA’s) other than the PSSA of the North Sea itself. The routeing measures have been assessed by national experts against their potential effects on existing and proposed MPAs. From this it is concluded that the proposed routeing measures do not lead to additional negative effects of shipping on MPAs. In some protected areas nearer to the coast, effects of shipping on MPAs will actually decrease as a result of the proposed recommendatory
routeing measures. Due to the lack of any routeing in the area at this moment, movements of ships are less predictable and less directional. The routeing measures are expected to reduce the number of ships sailing outside the recommended routes and as such to reduce the interaction with the MPAs.

**Mandatory (or recommendatory) routeing systems**

34 The proposed measures are all of recommendatory nature.

35 The ports and harbours of littoral States would not be affected by this system because both the proposed amendments to existing routeing measures and the new routeing measures are complementary to existing and/or adjacent routeing. The nature of the routeing measures is only mandatory (according to COLREGs) when ships do actually use the TSSs.

**Miscellaneous information**

36 Consultations have taken place with mariners using the area, port authorities, or other groups with an interest in the area, as follows:

1. the Dutch Directorate-General for Mobility and Transport; Ministry of Infrastructure and the Environment;
2. the relevant ports in the Schelde Estuary including Antwerpen and Rotterdam;
3. Dutch Shipping Advisory Board North Sea (Scheepvaart Adviesraad Noordzee);
4. the National Pilots Corporation, pilots region Schelde and Rotterdam;
5. North Sea and Delta Directorate; Ministry of Infrastructure and the Environment;
6. the Netherlands Shipmasters Association;
7. the Netherlands Coastguard;
8. the Common Nautical Management Westerschelde;
9. the Dutch Ministry of Economic Affairs;
10. the Fishery Associations;
11. the Netherlands Wind Energy Association (NWEA);
12. the Dutch Hydrographic Office and the Flemish Hydrography;
13. the Royal Association of Netherlands Shipowners;
14. the Ministry of Defence of Belgium and the Netherlands;
15. the Administrations of the United Kingdom and France;
16. the Belgian Directorate – General for Maritime Transport, Federal Public Service for Mobility;
17. the Flemish agency for Maritime and Coastal Services;
18. the Royal Belgian Shipowners Association; and
the Belgian Coastguard.

**Proposed date of implementation**

37 It is proposed that the proposed routing measures and amendments to existing routing measures will enter into force on 1 June 2017. The entry into force date of the Area to be avoided in the Dutch wind farm corridor is to be determined at a later stage.

**Action requested of the Sub-Committee**

38 The Sub-Committee is invited to consider this submission in connection with each of the separate proposals in documents NCSR 3/3/2 to NCSR 3/3/5 and the FSA study (NCSR 3/INF.3) as this submission explains the interrelation between these proposals.

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ANNEX 2

AREAS OF CONCERN ADDRESSED BY THE PROPOSALS (EXISTING SITUATION)
The current routeing measures

(See description of deep-water routes forming parts of routeing systems "off Friedland" in section II of part C)

TSS "North Hinder North" (See part B, section II)

Precautionary area "Maas Junction" (See part E)

Precautionary area "Maas West Outer" (See part B, section II)

Schouwenbank

Area to be avoided "At West Hinder" (See part D, section I)

TSS "At West Hinder" (See part B, section II)

Deep-water route "in the approaches to the River Scheldt" (See part C, section II)

Boundary of WETREP reporting area

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ANNEX 3

AREAS OF CONCERN ADDRESSED BY THE PROPOSALS (PROPOSED SITUATION)

TO BE WGS84 NOT FOR NAVIGATION

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The proposed routeing measures to be submitted to the IMO

(See description of deep-water routes forming parts of routeing systems "off Friesland" in section II of part C)

TSS "North Hinder North" (See part B, section II)

Precautionary area "Maas West Outer" (See part E)

Precautionary area "North Hinder Junction" (For part E)

Precautionary area "North Hinder South" (For part B, section II)

Precautionary area "Windfarm Borsselen" (For part E)

Area to be avoided "Windfarm Borsselen corridor" (For part D section I)

Precautionary area "In the vicinity of Thornton and Blyth Banks" (For part E)

Two way routeing "In the approaches to the Schelde Estuary" (For part E)

Boundary of WETREP reporting area

Deep-water route "In the approaches to the River Scheldt" (See part C, section II)
ANNEX 4
THE CURRENT SHIPPING DATA FOR THE AREA OFF THE BELGIAN/DUTCH COAST

Legend:
- Tankers Afvaart
- Tankers Opvaart
- Cargo Afvaart
- Cargo Opvaart
- Passagiersschepen Afvaart
- Passagiersschepen Opvaart
- Fishing Afvaart
- Fishing Opvaart
- Other Afvaart
- Other Opvaart

AIS data from September 2015 based on unique MMSI numbers. The black limits mark the VTS area of responsibility from Common Nautical Management Westerschelde.