

Annex 2 - Background document Southern Dogger Bank

Background document to the proposed Joint Recommendation for Conservation measures under the Common Fisheries Policy

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Summary

This document contains the site-specific background information to the proposed Joint Recommendation under Art. 11 and 18 of Regulation (EU) 1380/2013) on the Common Fisheries Policy to implement conservation measures on the Southern Dogger Bank necessary to comply with Union Environmental legislation, such as the Habitat Directive, Birds Directive or Marine Strategy Framework Directive. The Southern Dogger Bank is designated under the Marine Strategy Framework Directive to protect the seabed. Additional to the already proposed closure of part of the Natura 2000 area Dogger Bank (HD) of circa 1354 km² as proposed in the Joint Recommendation of 19 October 2023 an additional closure of circa 530 km² for all bottom contacting towed gear is proposed in the adjacent area Southern Dogger Bank (MSFD). The list of gear types prohibited in this area can be found in the Joint Recommendation (JR). The area covers the southern deeper edge of the Dogger Bank (exceeding 40m depth). The extension provides a wider protection of a more complete depth gradient which also includes species characteristic for sediments with a higher mud content. These communities generally have a higher species richness. Overall, the protected area in the southern region of the Dogger Bank comprises a higher variation in habitat and species diversity. The southern region is also connected to the MSFD area Central Oyster Grounds. This additional closure, is therefore expected to contribute to the Good Environmental Status. The majority of the fishing activity on the Dogger Bank is concentrated on the top part of the Dogger Bank, especially bottom contacting towed gear. It is therefore expected that the proposed conservation measures are proportionate when compared to the higher species richness in the area. In other words, the proposed conservation measures ensure protection of an area with relative high species richness and lower bottom contacting towed gear activity. The potential impacts of other human activities in the Southern Dogger Bank are assessed. Measures for these activities in the Natura 2000 Dogger Bank area are integrated in the management plan (Rijkswaterstaat, 2023a). The southern extension of the Dogger Bank management zone was drafted during the national North Sea Agreement (NSA) process, which is the result of consultations between nature organisations, research organisations, fisheries and national government. Within the NSA, agreements are made on new N2000- and MSFD-areas and on the extension of existing N2000- and MSFD-areas. For the Dogger Bank it means an extension of the management zone and with this extension a connection with the Central Oyster Grounds management zone (see figure 1).

1 Introduction

This document contains the site-specific background information to the proposed Joint Recommendation¹ under Art. 11 and 18 of Regulation (EU) 1380/2013) on the Common Fisheries Policy to implement conservation measures on the Southern Dogger Bank necessary to comply with Union Environmental legislation, such as the Habitat Directive, Birds Directive or Marine Strategy Framework Directive. The Joint Recommendation contains a request and a proposal to the European Commission to implement conservation measures necessary in this area to ensure a key contribution to the Good Environmental Status (GES) of the North Sea under the Marine Strategy Framework Directive (MSFD) (Directive 2008/56/EC).

This chapter provides the introduction of this Background Document. Chapter 2 (Site description) elaborates upon the site description including its natural features, fishing activities, and other human activities. Chapter 3 (Rationale for conservation measures) describes the rationale for conservation. The conservation objectives are explained, the policy considerations are described and the translation into conservation measures is discussed. Chapter 4 (Expected effects of conservation measures) describes the expected effects of the conservation measures on natural features, fishing and other human activities. Finally, chapter 5 (Discussion) elaborates on the discussions in the Scheveningen Group and NSAC regarding the proposed conservation measures for the Southern Dogger Bank. Chapter 6 (Conclusion) contains the conclusion leading to the Joint Recommendation..

Since the Southern Dogger Bank is closely connected to the Habitat Directive (HD) Natura 2000 Dogger Bank area, some of the chapters are written with the scope of the entire Dogger Bank area.

The content of this Background Document is established in accordance with the requirements as requested by the European Commission (2007a, 2018).

This Background Document needs to be read in conjunction with the Joint Recommendation and General Background Document.

¹ This document refers to the (current) Joint Recommendation. With this reference the proposed Joint Recommendation for conservation measures is meant.

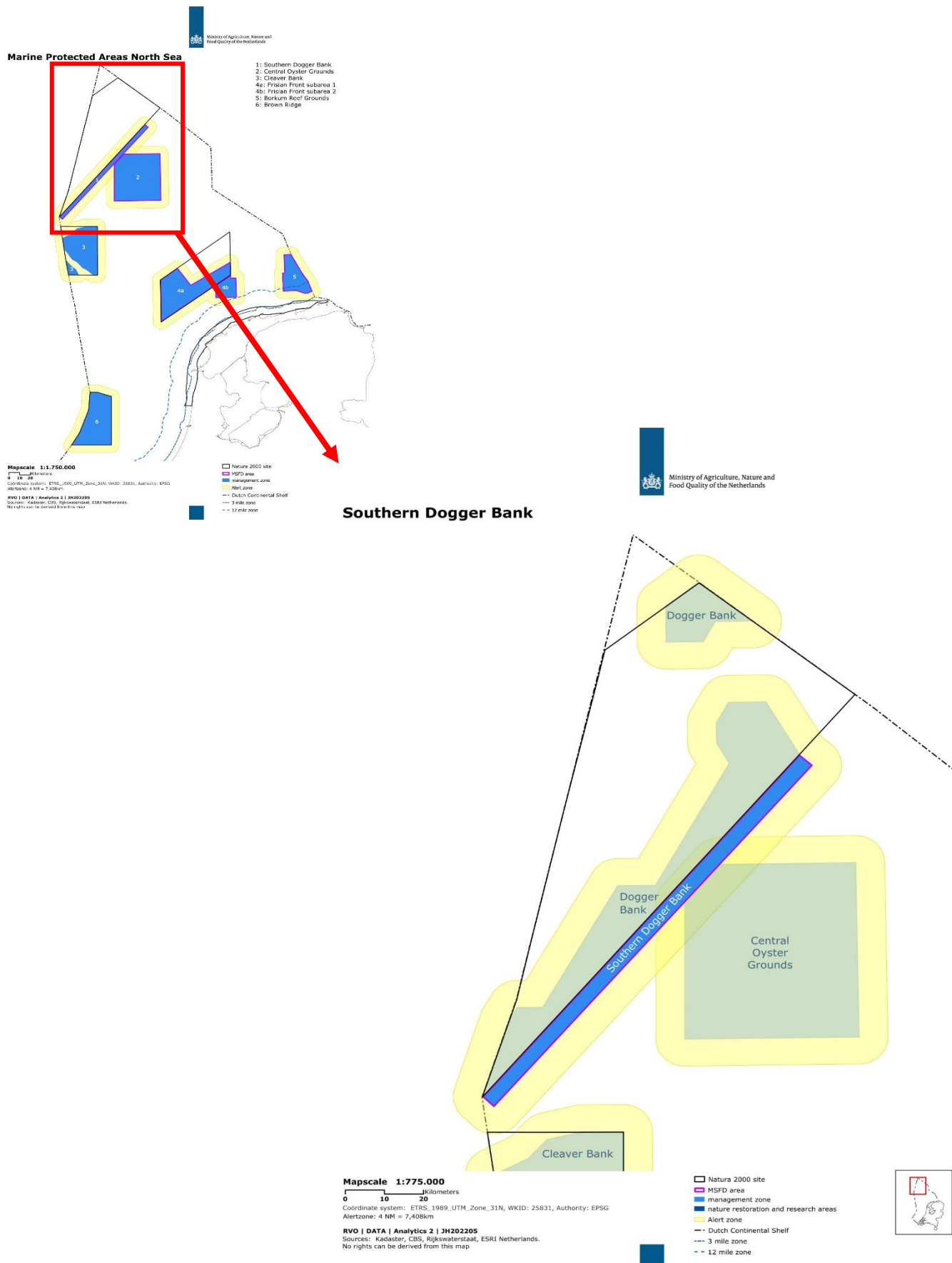


Figure 1: North Sea protected areas with a detailed map of the site Southern Dogger Bank.

2 Site description

2.1 Legal status

Protection of the seabed ecosystem in the Southern Dogger Bank is offered on the basis of article 13.4 of the MSFD.

The MSFD is implemented in art. 4.6 and 4.16 of the Water Decree under the Dutch Water Act. Nature 2000 areas and MSFD area protection are part of the Dutch Policy Document on the North Sea 2022-2027 (IenW, 2022a) and Marine Strategy for the Dutch part of the North Sea 2022-2027, Part 3 Programme of Measures MSFD (IenW, 2022b). These documents are part of the Dutch Water Plan under article 4.1 paragraph 3b of the Dutch Water Act.

Protection of the area contributes to achieving Good Environmental Status (GES) under the MSFD. How protection of the extension of the southern border of the Dogger Bank could contribute to relevant GES and environmental targets is listed in Table 1. The main characteristics are listed in Table 2.

In the Netherlands, the benthic habitat quality status is evaluated by use of the Benthic Indicator Species Index (BISI) (Wijnhoven and Bos, 2017; Wijnhoven, 2019), which is specifically designed for areas of special ecological value and used for MSFD status reporting (IenW & LNV, 2018). For the extension of the southern border of the Dogger Bank no benthic habitat quality status report has yet been made, see paragraph 2.5 Monitoring.

The Dutch site "Doggersbank" was included in the list of Sites of Community Importance (SCI), pursuant to Art. 4(2) of the HD, by Commission Decision 2010/43/EU of 22 December 2009. It was designated in a national designation decree on 27 May 2016, and therefore the current status is a Special Area of Conservation (SAC). The southern border of the HD Dogger Bank area is connected to the MSFD Southern Dogger Bank. The Southern Dogger Bank is not included in the HD Dogger Bank area since the natural characteristics do not meet the criteria of habitat type 1110 (H1110) as described in the Dutch profile documents. Nevertheless, as paragraph 2.2 will show the Southern Dogger Bank is of ecologic importance and therefore protected as an MSFD area.

Table 1: Overview of environmental targets under the Dutch Marine Strategy (IenW & LNV, 2018) to which conservation measures in the southern Dogger Bank will contribute.

Good Environmental Status	Environmental target	Contribution Southern Dogger Bank
D6 Habitats		
Overarching: improvement in the size, condition and global distribution of populations of the community of benthos species.	D6T1: 10-15 % of the area of the Netherlands' part of the North Sea is not notably disrupted by human activities. D6T2: Improvement of quality of areas and habitats.	D6T1: protection of southern Dogger Bank will help reaching 10-15 %. D6T2: Prohibiting all forms of bottom contacting towed gear in the area improves the quality of the habitat type sand banks.
Physical disturbance of the seabed – D1 (biological diversity), D6 (sea-floor integrity)		
Overarching: physical disruption of the seabed due to human activities is restricted to ensure that the scale, condition and global distribution of populations of the community of characteristic benthos species increases, and targets for specific habitats are achieved.	D6T1: 10-15 % of the surface of the Netherlands' part of the North Sea is not notably disrupted by human activities. D6T3: no rise in the physical disturbance due to fishing activities over time on the total seabed of the NCP and on the habitats described in the framework of the MSFD.	D6T1: protection of the Southern Dogger Bank will help reaching 10-15 % D6T3: fishery measures will contribute to this target.

	D1T3: achieving the conservation objective for habitat types and species in the Natura 2000 areas at sea (BHD)	D1T3: Prohibiting all forms of bottom contacting towed gear in the area contributes to the conservation targets of the habitat type 1110 under the HD (European Commission, 2007b).
D1 Species/marine mammals and birds		
D1C2 - The population of the grey seal (H1364), harbour seal (H1365) and harbour porpoise (H1351) comply with the favourable reference value for the population size (FRP) according to the Habitats Directive. D1C4 - Distribution of harbour porpoise and harbour seal satisfies the favourable reference value for population range (FRR) according to the Habitats Directive. Also relevant is the extent to which the area and quality of habitats of marine mammals continue to develop: D1C5 - Preservation of the size and quality of the habitat of the grey seal (H1364), the harbour seal (H1365) and the porpoise (H1351).	D1T3: achieving the maintenance targets for habitat types and species in the Natura 2000 areas at sea (BHD).	D1T3: The Southern Dogger Bank serves as feeding grounds for marine mammals.
D1 Species/fish community		
D1C2 - Commercial fish populations (D3C1 and D3C2) D1C2 - Rise in the proportion of vulnerable species of fish in the fish community (OSPAR).	D3T1/T2: Management of all commercial fish stocks complies to FsMSY and spawning stock biomass is above MSY Btrigger. D1T3: realising conservation measures for habitat types and species in Natura -2000 areas at sea (BHD).	D3T1/T2: Extending the southern border of the Dogger Bank contributes to a larger area protected of the habitat type 1110. Reducing the fisheries impact in the area contribute to recovery of fish stocks in and around the entire Dogger Bank. D1T3: closing the extension for all bottom contacting towed gear contribute to the preservation and protection of habitat type 1110 in the HD.

Table 2: Summary of characteristics of the Dogger Bank and the southern extension

Characteristic	Description
Area	The Dogger Bank is designated as a Natura-2000 under the Habitat Directive. The extension of the southern border (circa 530 km ²) will be assigned under the Marine Strategy Framework Directive.
Habitats	The Dogger Bank consists solely of sand bank. The area covers a large surface area from the British EEZ to the German EEZ, crossing the Dutch EEZ. Habitat types: - Sand bank (habitat type 1110 from the Habitat Directive).
Benthos	Dominated by <i>A. filiformis</i> community with commensal bivalve species <i>K. bidentata</i> . Overall species composition is dominated by relatively small species.
Fish	Present: Fish species that are widespread are plaice (<i>P. platessa</i>), sand eel (<i>Ammodytes sp.</i>), sole (<i>Solea solea</i>), sprat (<i>Sprattus sprattus</i>), cod (<i>Gadus morhua</i>), herring (<i>Clupea harengus</i>), and whiting (<i>Merlangius merlangus</i>). All borders of the entire Dogger Bank show high fish species numbers and diversity.
Marine mammals	Feeding Grounds for grey seals, harbour seals, harbour porpoise, minke whale and white beaked dolphin.
Birds	Part of the Birds Directive survey to see if the Dogger Bank qualifies under the criteria of the Birds Directive. Possible site allocation in 2025 at the latest.
Fisheries	Fishery dominated by Bottom otter trawling and beam trawling. Scottish and Danish seines occur in the area.

2.2 Natural features

Since the Southern Dogger Bank is connected to the HD Natura 2000 Dogger Bank and the areas of the Dogger Bank in neighbouring countries, the natural features of the whole Dogger Bank will be discussed in this paragraph.

The Dogger Bank is the largest sandbank in the North Sea. It stretches from the southwest to the northeast over a length of approximately 300 km (Kröncke and Knust, 1995) and covers approximately 25,000 km². The surface area covers 4.3 % of the total North Sea (575,000 km²). It is a shallow area between the

shallow Southern Bight and the deeper northern part of the North Sea. The 40 m isobath approximates the shape of the Bank. The Bank crosses the borders of the EEZs (or equivalent) of the UK, the Netherlands, Germany and Denmark (Figure 2 and Figure 3).

The description of the biological features of the Dogger Bank is largely based on our knowledge on the recent situation, dating back to only a few decades ago. It has been argued that due to fishery activities in the preceding centuries, the fish and probably also benthic communities had already considerably changed (Plumeridge and Robert, 2017). Their assessment was based on eye witness accounts of fisherman starting in the late 18th century. Especially larger fish species, including Cod, Haddock, Halibut, have seriously declined since. At present, catches of fish are dominated by species from lower trophic levels. It is suggested by Plumeridge and Roberts (2017) that also the benthic habitat has reduced complexity by centuries of trawling and has now resulted in macro-faunal communities with low diversity and increased dominance of opportunistic fast growing species, as reported by Kröncke (2011).



Figure 2. Location of the Dogger Bank (a) satellite image (NASA), (b) EEZ borders.

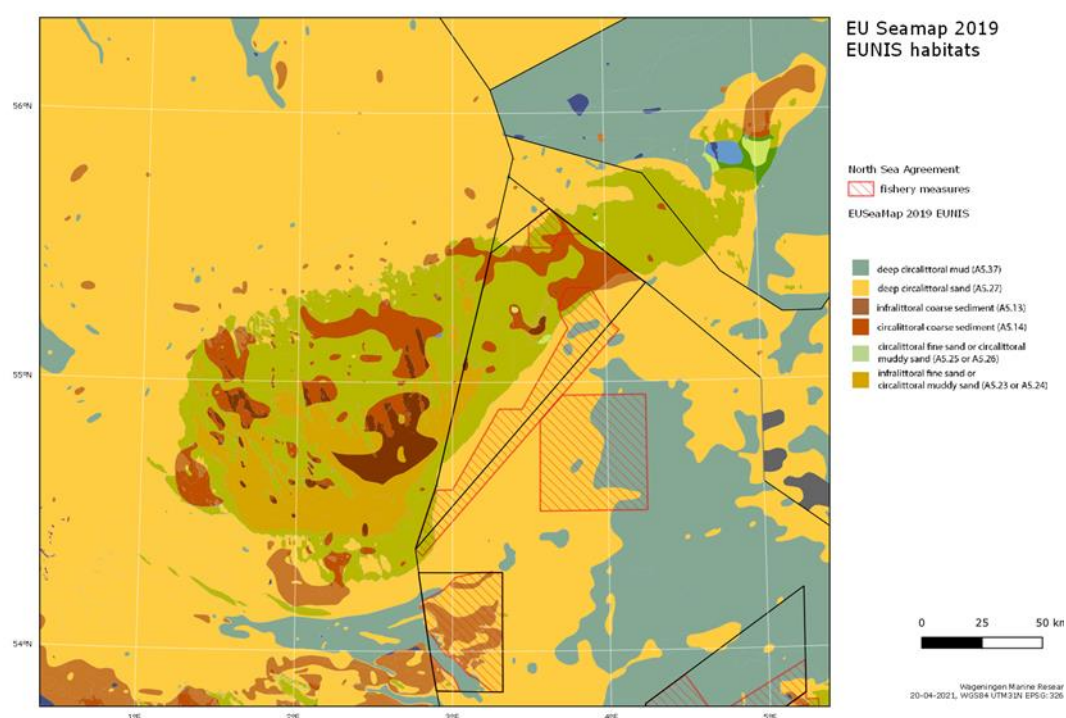


Figure 3. EU Seamap 2019 with EUNIS habitats (Source : EMODnet).

The flat top of the Dogger Bank is dominated by small characteristic endobenthic species, well adapted to disturbances. Larger epibenthic species also occur in this part of the bank, but these are ubiquitous in the southern North Sea.

Lesser sand eel (*Ammodytes marinus*) is especially abundant in sandy areas on the slopes. These fish are caught by industrial fisheries, but also serve as staple food for several (commercial) fishes, birds and marine mammals.

At the shallow top of the Dogger Bank, two of the top-10 species in two studies from the 1950s (Ursin 1952 and Birkett 1953) have disappeared: *Ophelia borealis* and the suspension-feeding *Galatowenia oculata* (both bristleworms, polychaeta). Juveniles of ocean quahogs (*Arctica islandica*) were present at the borders of the whole Dogger Bank (Witbaard and Bergman, 2003), but adult specimens were hardly found. The Dutch MWTL program indicates that rayed trough-shells (*Mactra stultorum*) and small crustacean (*Iphinoe trispinosa*) have virtually disappeared. New species in the 1980s as well as in the most recent period were *Spiophanes bombyx* (bristleworm, polychaeta), *Amphiura filiformis* (brittle star belonging to the family amphiuridae) and *Phoronids* (horseshoe worms, a separate phylum) representing a shift towards short-living and opportunistic deposit feeders. Thornback ray (rocker, *Raja clavata*) has become rare at the Dogger Bank (ICES, 2011). Historically, the Dogger Bank has been in the centre of distribution in the North Sea of the thornback ray (Olsen, 1883).

Typical species for the Dogger Bank include: sand mason worm (*Lanice conchilega*), brittle star (*Acrocnida brachiate*), quahogs (*Arctica islandica*), whelk (*Buccinum undatum*), rayed trough shell (*Mactra corralina*), sand eel (*Ammodytes marinus*), lesser weever (*Trachinus vipera*), thornback ray (*Raja clavate*) and plaice (*Pleuronectes platessa*).

The southern deeper edge of the Dogger Bank is designated as a marine protected area under the Marine Strategy Framework Directive for protection of the seabed. Here water depths exceeds 40 m depth and the sediment is more silty than the shallower parts of the Dogger Bank (Figure 4). The benthic community being present is characterized by the southern *Amphiura*-community and is dominated by interface-feeding species (e.g. the echinoderm *Amphiura filiformis* and the polychaete worm *Spiophanes bombix*), and subsurface deposit feeders (e.g. the bristle worms *Amphictene auricoma* and *Lagis koreni*, and the bivalve *Nucula nitidosa*) (Wieking & Kröncke, 2003). Overall, the area shows characteristics resembling those of the area south of the Dogger Bank, i.e. the Oyster ground area (Meyer et al., 2018). The extension of the SAC results in the protection of a more complete depth gradient which also includes species characteristic for sediments with a higher mud content. These communities generally have a higher species richness. Overall, the protected area in the southern region of the Dogger Bank comprises a higher variation in habitat and species diversity as a result of the proposed extension.

In the UK area, the bank rises up to a depth of approximate 15 m. The shallow and flat top occupies a

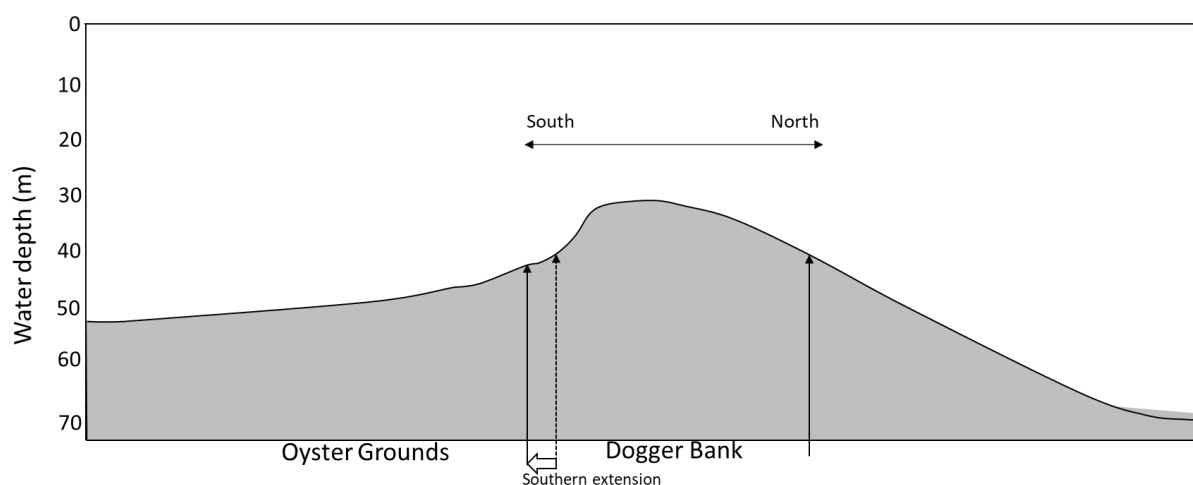


Figure 4. Schematic cross section of the Dogger Bank and boundary with the Oyster Grounds area to the south, to where the southern boundary is extended (not to scale).

large proportion of the bank and regularly experiences turbulent hydrodynamic conditions. Due to its

central position in the North Sea, the Dogger Bank acts as a stepping stone or crossroad for species of similar habitats in more coastal areas (Van Moorsel, 2011). Its location, between the Southern Bight being influenced by the Channel region and the northern North Sea with Boreal/Arctic elements, results in a large range of species. Although clean sands strongly dominate the area, muddy and stony grounds are present as well. Next to its central position, the range of habitats also explains the high biodiversity of the Bank (Rachor, 2006). In contrast to most coastal sand-dominated areas, clear water enables sub-surface phytoplankton blooms and benthic photosynthesis. Benthos is locally enriched due to the presence of hydrographic fronts. Compared to the coastal zone, seabed life is more constant in density and biomass. The high biomass constitutes a year-round source of food for fish, birds as well as marine mammals up to the size of minke whales (Van Moorsel, 2011).

2.2.1 Depth contours

The Dogger Bank forms a border between the deep northern part of the North Sea and the shallower southern North Sea (Figure 5). From north to south, water depths gradually decrease from about 80 m to 55 m, and steeply decrease at the edge of the bank to about 30-35 m. In the UK part of the North Sea the Dogger Bank is broad and shallow; it rises up to a depth of 15 m at Lowest Low Water Spring. The shallowest part of less than 20 m (the 'Western Shoal') is in the southern end of the UK area. To the northeast (Dutch and German part), the Bank narrows down and gets deeper (the 'Tail End'). The majority of the Dogger Bank is a flat area between 25 and 30 m depth. In the southern part of the Dutch Dogger Bank, water depths increase from about 30 m to 35-40 m at the edge of the bank. More to the south, water depths gradually further increase to 50 m till the Central Oyster Grounds.

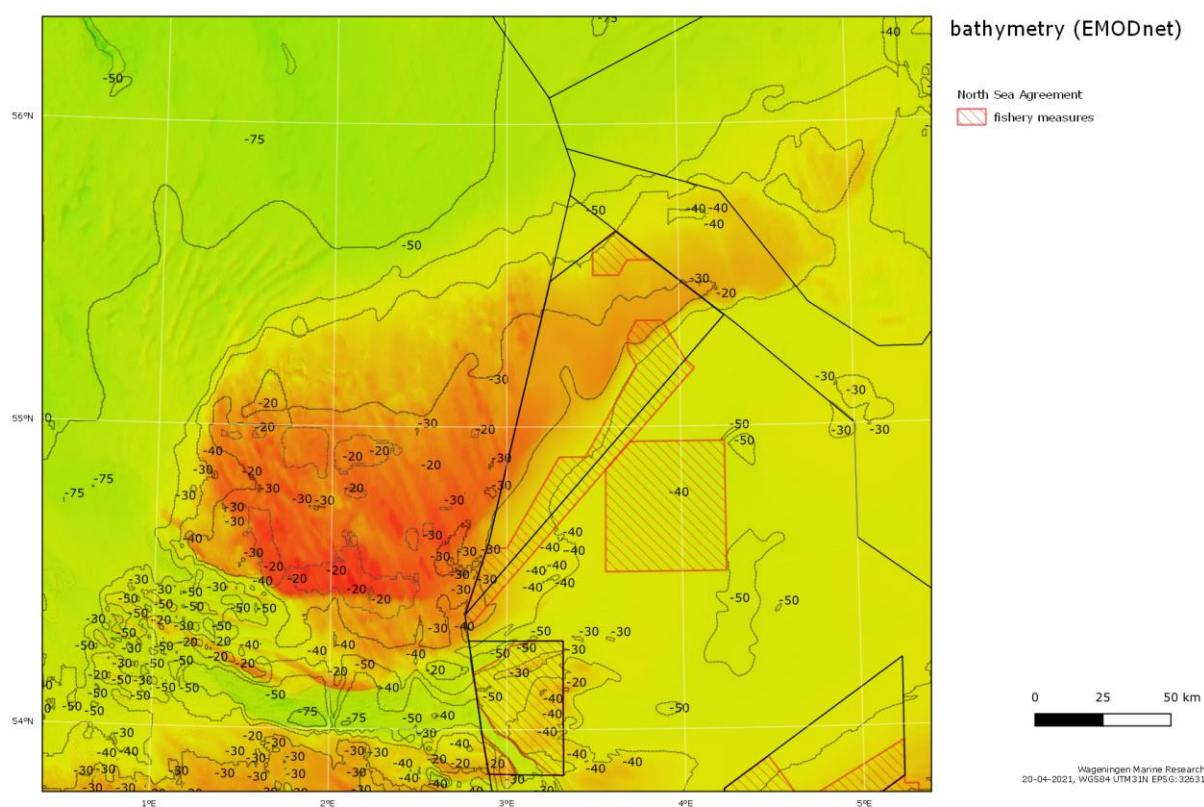


Figure 5. Bathymetry of the Dutch part of the Dogger Bank and the borders of areas proposed for closure.

2.2.2 Sediment type

The Dogger Bank consists of coarse sediment types on the higher parts and finer sandy and muddy sediments towards the slopes of the bank (Figure 3). Diesing *et al.* (2009) found a clear distinction between infaunal groups supported by coarse sediment and those found in fine sand and muddy sand. This indicates that substrate type (grain size) has a major influence on the associated infauna. Biological zones are,

however, less clearly reflected by the infaunal groups, displaying significant overlap. This indicates that depth-related changes in infaunal groups are transitional rather than sharp.

2.2.3 Benthic communities

Figure 6 indicates the current benthic communities on Dogger Bank based on the map of the endobenthic communities from Wieking and Kröncke, 2003, as depicted by Van Moorsel (2011).

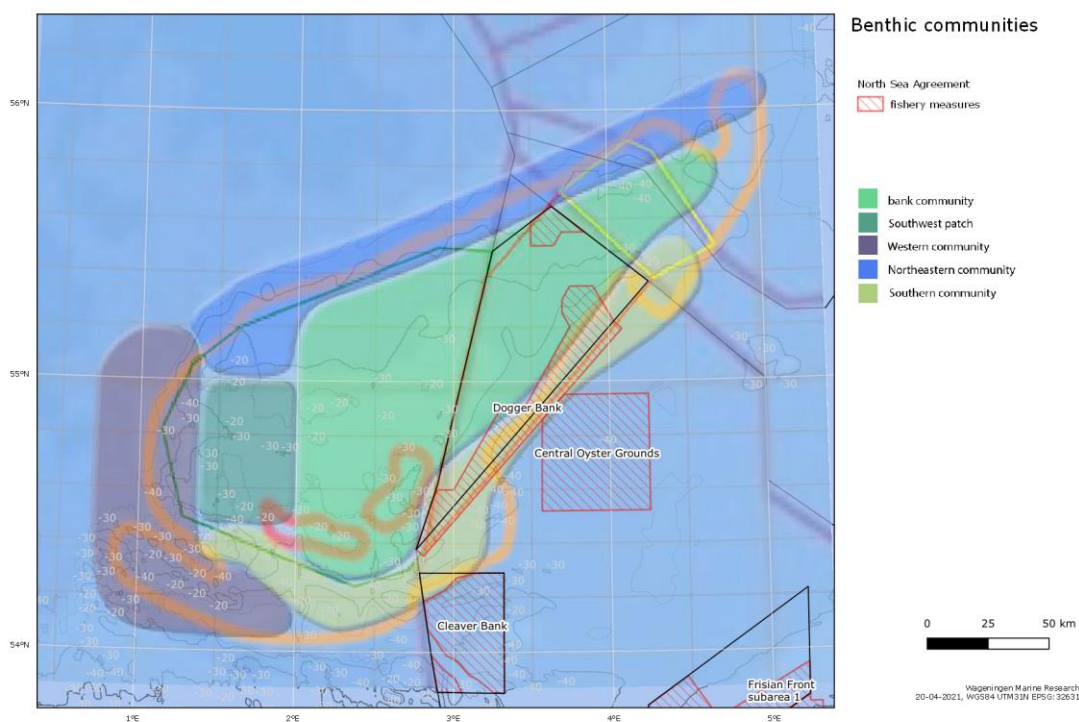


Figure 6. Benthic communities at Dogger Bank, based on Wieking and Kröncke (2003), adapted by van Moorsel (2011). Green: Bank community; dark green: Bank sub-community; yellow: Southern community; purple: Western community; blue: North-eastern community. 20 m (red) and the 40 m (orange) isobaths.

Bank community

The shallow part of the Dogger Bank is inhabited by a *Bathyporeia-Tellina* community. Water turbulence causes this community to remain in a stage of early succession. It is characterized by interface feeders: the polychaete *Spiophanes bombyx* and the ophiuroid *Acrocnida brachiata*. *S. bombyx* constructs protective sandy tubes, and *A. brachiata* buries relatively deep into the sediment, hence they are well protected against sediment mobility. Other characteristic species are subsurface feeding amphipods: *Bathyporeia elegans* and *B. guillamsoniana*. These small amphipods feed by removing benthic diatoms off sand grains (‘sand lickers’). The importance of *Bathyporeia* in the shallowest parts of the Dogger Bank hints at a considerable contribution of benthic primary production to the nutritional and energetic needs of the benthic community on top of the bank.

Bank sub-community

At the shallow western side (18-23 m depth) a subgroup - the Southwest patch - can be discerned (Figure 6) with the lowest species number and abundance. Here, *Bathyporeia elegans* is the most abundant species. The bivalve *Donax vittatus* and the polychaete *Nephtys cirrosa* show their highest abundances in this sub-area of the Bank community (Wieking and Kröncke 2003).

Most species in Table 3 (next page) are small (< 5 mm) opportunistic species. The bivalve *Tellina fabula* may also be characterized as such, but it grows to a length of 20 mm. The bathyporeid amphipods and the

Bank Community	W&K	MWTL	Southern Community	W&K	MWTL
<i>Spiophanes bombyx</i>	320	273	<i>Amphiura filiformis</i>	640	505
<i>Bathyporeia elegans</i>	207	343*	<i>Kurtiella bidentata</i>	127	361
<i>Bathyporeia guilliamsoniana</i>	152	107	<i>Spiophanes bombyx</i>	300	173
<i>Tellina fabula</i>	67	126	<i>Pholoe baltica</i>	66	97
<i>Magelona johnstoni</i>	52	67	<i>Magelona johnstoni</i>	38	42
<i>Euspira pulchella</i>	40	27	<i>Euspira pulchella</i>	13	17
<i>Acrocnida brachiata</i>	43	56	<i>Nucula nitidosa</i>	61	77
<i>Urothoe poseidonis</i>	20	137	<i>Echinocardium cordatum</i>	10	6
<i>Perioculodes longimanus</i>	22	21	<i>Phaxas pellucidus</i>	11	12
<i>Owenia fusiformis</i>	22	46	<i>Bathyporeia tenuipes</i>	11	7
mean species number/sample	44			48	

Western Community	W&K	Northeastern Community	W&K
<i>Amphiura filiformis</i>	541	<i>Scoloplos armiger</i>	70
<i>Spiophanes bombyx</i>	179	<i>Spiophanes bombyx</i>	138
<i>Pholoe baltica</i>	39	<i>Bathyporeia elegans</i>	90
<i>Kurtiella bidentata</i>	50	<i>Cerianthus lloydii</i>	74
<i>Diplocirrus glaucus</i>	28	<i>Euspira pulchella</i>	16
<i>Phaxas pellucidus</i>	11	<i>Edwardsia</i> spp.	25
<i>Phoronis muelleri</i>	12	<i>Chaetozone</i> sp.	12
<i>Edwardsia</i> spp.	10	<i>Perioculodes longimanus</i>	15
<i>Nucula nitidosa</i>	50	<i>Dosinia</i> spp.	13
<i>Echinocardium cordatum</i>	5	<i>Nephtys assimilis</i>	10
mean species number/sample	51		53

*A recent analysis (Verduin *et al.* in prep.) showed that in the MWTL Bank community 30% of *Bathyporeia elegans* actually belonged to *B. nana*.

Table 3: Ten dominant species of four Dogger Bank communities (source: Van Moorsel, 2011). W&K: densities (n/m²) from 1996-1998, sample size 0,4 m² (Wieking and Kröncke, 2001); MWTL: densities (n/m²) from 1995-2009. Names updated according to World Register of Marine Species (www.marinespecies.org).

long-armed *Acrocnida brachiata* are amongst the most characteristic species of the Bank community (Lindeboom *et al.*, 2008).

Southern community

The deeper southern part of the Bank harbours an *Amphiura* community. The polychaete *S. bombyx* is again abundant, but here the ophiuroid *Amphiura filiformis* and its commensal bivalve *Kurtiella bidentata* also dominate in numbers. They prefer muddy sediments. Other common species: the small scale worm *Pholoe baltica* and the bivalve *Nucula nitidosa*. Like the Bank community, most dominant species are small (< 5 mm) but the deep-burying echinoid *Echinocardium cordatum* and the bivalve *Phaxas pellucidus* reach larger sizes.

Western community

The western part of the Bank has a similar *Amphiura* community but its diversity is somewhat increased due to the presence of northern species such as the bivalve *Lucinoma borealis* and the holothuroid *Leptopentacta elongata*. This community extends into the heterogeneous Outer Silver Pit, where several large and long-lived species were found such as *Acanthocardia echinata* and the echinoid *Brissopsis lyrifera* (Wieking and Kröncke, 2003).

Northeastern community

The northern and northeastern part of the bank, bordering the northern North Sea is inhabited by a community with lower densities but with the highest number of species. The tube-inhabiting velvet anemone (*Cerianthus lloydii*) and the small echinoid *Echinocyamus pusillus* occur at high densities in the shallower part. The ophiuroid *Amphiura filiformis*, the bivalve *Abra prismatica* and the polychaete *Scoloplos armiger* are more common in the deeper part. The community has a high number of rare northern species and the diversity is highest of all four communities.

All five benthic infauna habitats are considered essential parts of the Dogger Bank-H1110 biotope complex.

Epibenthos

The epibenthic community of the Dogger Bank combines species of the southern as well as the northern North Sea. Although northern species predominate, a similarity analysis shows a similarity of the epibenthic

community with the southern part of the North Sea, as was the case in the endobenthic community. In recent years, an increase of southern species takes place (Sonnewald and Türkay, 2011). Especially the top of the bank is dominated by generalist mobile species known to be ubiquitous in the North Sea (Frauenheim *et al.*, 1989). Biodiversity is enhanced in the presence of hard substratum. The species composition is possibly influenced by fisheries. Vulnerable sessile and large species are mainly present at the northern border of the Dogger Bank.

2.2.4 Fish communities

On the top of the Dogger Bank, three flatfish species were by far the most common: dab (*Limanda limanda*), the small non-commercial omnivorous generalists solenette (*Buglossidium luteum*) and sculdfish (*Arnoglossus laterna*). Other common species were the lesser weever (*Echiichthys vipera*) and common dragonet (*Callionymus lyra*), grey gurnard (*Eutrigla gurnardus*), sand goby (*Pomatoschistus minutus*) and plaice (*Pleuronectes platessa*). At the western part of the bank at shallow, gravelly areas the lemon sole (*Microstomus kitt*) was found. Zühlke (2001) also reports some of these species as frequently occurring at the Dogger Bank, but since she also reports on the deeper edges of the Bank, other species are reported as well, e.g. the northern long rough dab (*Hippoglossoides platessoides*). Sonnewald and Türkay (2011) found an increase of 'temperate oceanic' species: *E. vipera* (lesser weever), *Mullus surmuletus* (striped red mullet) and *Trisopterus minutus* (poor cod).

High species numbers were especially found along the borders of the Dogger Bank (Callaway *et al.*, 2002). In 2-m beam trawls, high fish diversities were found along the southern and western border of the Bank. Otter trawls showed a high fish diversity being present along the northern border. The 2-m beam trawl samples demonstrated two different fish communities. The centre of the Dogger Bank was similar to the Southern Bight, characterized by whiting (*Merlangius merlangus*), grey gurnard (*Eutrigla gurnardus*), dab and scad (*Trachurus trachurus*). At the western and northern edge as well as at the Tail End the fish community was similar to the adjacent northern part of the North Sea. Otter trawling resulted in a somewhat different pattern with most of the Dogger Bank harbouring a community similar to the Danish offshore area.

Fish species that are widespread are plaice (*P. platessa*), sand eel (*Ammodytes sp.*), sole (*Solea solea*), sprat (*Sprattus sprattus*), cod (*Gadus morhua*), herring (*Clupea harengus*), and whiting (*Merlangius merlangus*).

2.2.5 Birds

Currently a desk study is taking place to verify if the area qualifies under the BD. In case insufficient data is available to do a verification, additional field research will be carried out in 2022-2025. If the area qualifies it will be a designated area under the BD in 2025 at the latest. See for more information the General Background Document.

2.2.6 Marine mammals

During the 2019 marine mammal survey of the Dutch Continental Shelf (Geelhoed *et al.*, 2020), harbour porpoise (*Phocoena phocoena*) and minke whale (*Balaenoptera acutorostrata*) were observed at the Dogger Bank. The densities of harbour porpoise on the Dogger Bank were slightly lower (0.46 animals/km²) than the average on the Dutch Continental Shelf (0.66 animals/km²), ranging between 0.35-1.39 animals/km² (Geelhoed *et al.*, 2020). Dedicated studies have shown that the Dogger Bank area is home to minke whale (De Boer, 2010; Geelhoed *et al.* 2014) as well as other marine mammals species such as the white beaked dolphin (*Lagenorhynchus albirostris*). Also grey seals (*Halichoerus grypus*) and to a lesser extent harbour seals (*Phoca vitulina*) may be present in the Dogger Bank area.

2.3 Fishing activities

In the proposed closed area of the Southern Dogger Bank, the main fishery efforts concern bottom otter board trawling. Also substantial pelagic trawling with mid-water otter trawls take place. For more information on the data sources and processing, data for fishing effort calculations and fishing gear types and groups see the General Background Document and Jongbloed et al. (2021). A data call to relevant EU Member States was sent out in November 2020 (Roskam, et al. 2021) and August 2022 (Hamon, K. G. & Klok, A, 2023) by Wageningen Marine Research. Wageningen Research provided the R-script to collect data from the Dutch, Danish, German, Belgian, Swedish and French fleets. No UK fleet data were used, since the UK is not part of the EU anymore. The pre-processing of the data follows the approach developed in Hintzen et al. (2013).

2.3.1 Fleet activity in effort

Data on the fishing activity of fleets, gear types and gear groups for each year in the period 2014 to 2021 on the Dutch part of Southern Dogger Bank are shown in Table 4, Table 5, Table 6 and Figure 7. The extent and trends in the fishing activity are described in the next sections. Effort data are expressed in fishing days (1 day = 24 h). The tables 4 and 7 plus figure 7 and 8 (country) show the fishery effort of EU Member States only. This is because the article 11 procedure only applies to Member States and does not apply to third countries. For instance, UK interests are being evaluated after consensus has been reached between Member States.

Table 4: Overview of fishery effort (fishing days) per year of fleet nationality in the proposed management zones of the Southern Dogger Bank.

Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Belgium	1	3	2	1	4	3	1	0	2
Denmark	6	1	5	1	2	1	1	2	2
France	0	0	0	0	0	0	0	0	0
Germany	2	3	2	1	2	1	1	1	2
Netherlands	8	12	11	7	9	6	5	4	8
<i>Total</i>	<i>16</i>	<i>19</i>	<i>19</i>	<i>11</i>	<i>17</i>	<i>11</i>	<i>8</i>	<i>8</i>	<i>13</i>

Table 5: Overview of fishery effort (fishing days) per year of gear types in the proposed management zones of the Southern Dogger Bank.

Gear type	2014	2015	2016	2017	2018	2019	2020	2021	Average
TBB+	1.3	2.3	1.6	0.3	0.1	0.4	0.4		0.8
OTB	8.6	12.3	11.3	8.5	12.6	9.2	4.8	5.4	9.1
OTT	1.4	3.3	1.7	1.5	2.4	0.3	2.1	1.0	1.7
SSC				0.1					0.0
OTM	4.8	0.6	4.4	0.7	1.4	0.8	0.8	1.3	1.9
PTM					0.1				0.0
<i>Total</i>	<i>16.0</i>	<i>18.5</i>	<i>19.0</i>	<i>11.1</i>	<i>16.7</i>	<i>10.7</i>	<i>8.2</i>	<i>7.6</i>	<i>13.5</i>

Table 6: Overview of fishery effort (fishing days) per year of gear groups in the proposed management zones of the Southern Dogger Bank.

Gear group	2014	2015	2016	2017	2018	2019	2020	2021	Average
Beam trawl	1.3	2.3	1.6	0.3	0.1	0.4	0.4		0.8
Bottom trawl	10.0	15.6	13.0	10.0	15.0	9.5	6.9	6.4	10.8
Flyshooting seine				0.1					0.0
Pelagic trawl	4.8	0.6	4.4	0.7	1.5	0.8	0.8	1.3	1.9
<i>Total</i>	<i>16.0</i>	<i>18.5</i>	<i>19.0</i>	<i>11.1</i>	<i>16.7</i>	<i>10.7</i>	<i>8.2</i>	<i>7.6</i>	<i>13.5</i>

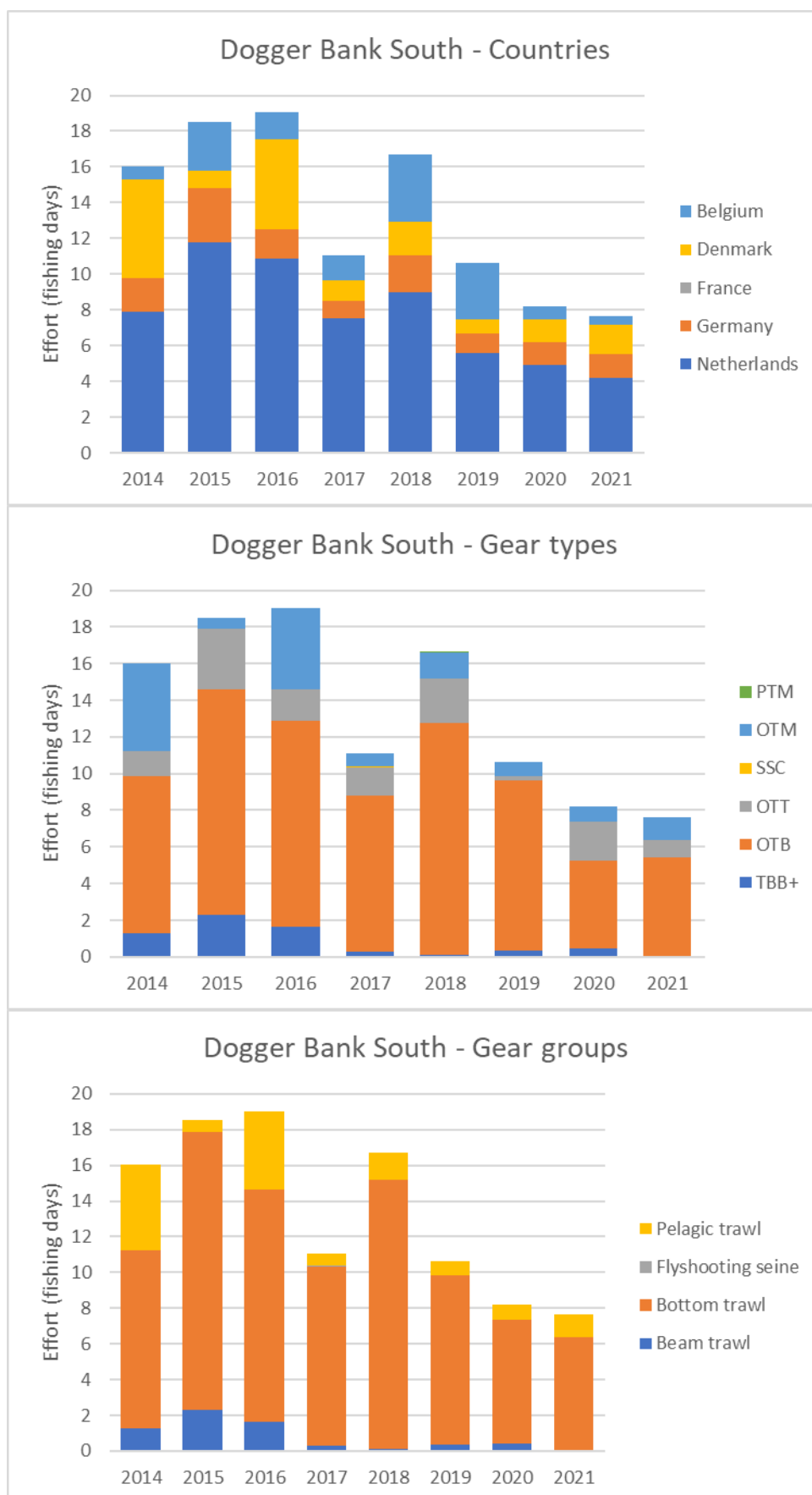


Figure 7. Fishing effort (days) per year in the proposed management zones on the Dogger Bank South for fleets (countries), gear types and gear groups. Gear types 'PTM' and 'OTM' and gear group 'Pelagic trawl' are not part of the proposed fishery measures.

2.3.2 Fleet activity by Member State

The majority of the fishing activities on the Southern Dogger Bank is carried out by the Dutch fleet with an average of 8 fishing days per year, which represents 57% of total average fishing effort of 13 fishing days per year of the five countries considered. Next highest fishing activities are found for Denmark, Belgium and Germany with a share of 17%, 13% and 12%, respectively. There was no fishing activity of the French fleet.

The trend of the fishery effort over the period 2014-2021 in Southern Dogger Bank is comparable with the one in Dogger bank N2000. There was a strong trend of decrease in total fishery activity in the Southern Dogger Bank amounting to 8.2% per year. This is mainly caused by the decrease in the effort of the Dutch fleet. For the Belgian, Danish and German fleets no clear trend occurred.

2.3.3 Gear and gear groups

During 2014-2021 fishing took place with six different gear types in the Southern Dogger Bank. The average share of the gear types in the annual total fishing effort in the Southern Dogger Bank was with 9 fishing days per year the highest for OTB (67%), followed by OTM (14%), OTT (13%) and TBB+ (6%) (Table 5). There was very little fishing activity with SSC (0.1%) and PTM (0.1%). Thus, ~ 86% of all fishery activity was carried out with bottom-contacting gears.

Over the whole 2014-2021 period there was a decreasing trend in the fishery activity of OTB and TBB+, but no trend for OTT.

2.3.4 Seasonal variation in fishing activity

Data on the fishing activity per month of fleets, gear types and gear groups in the period 2014-2021 are shown in Table 7, Table 8, Table 9 and Figure 8. There was a remarkably pronounced seasonal pattern for the fishing activity on the Southern Dogger Bank (Figure 8). The relative fishing activity over an average year is the highest in the period April to July. It is also relatively high in the period August - October. The effort is relatively low in the months November, December and March. There is no fishing activity in the months January and February. In general, this seasonal pattern also applies to the three most applied fishing gear types (OTB, TBB+, OTT) and also to the national fleets (countries) individually.

Table 7: Overview of fishery effort (fishing days) per month of fleets nationality in the proposed management zones of the Southern Dogger Bank. Months are numbered as follows: 1 January; 2 February; 3 March; 4 April; 5 May; 6 June; 7 July; 8 August; 9 September; 10 October; 11 November; 12 December.

Country	1	2	3	4	5	6	7	8	9	10	11	12	Average
Netherlands			0.45	0.45	1.42	1.16	1.42	0.85	0.95	0.47	0.42	0.12	0.64
Germany		0.01	0.04	0.11	0.29	0.44	0.26	0.07	0.12	0.17	0.06	0.12	0.14
France													0.00
Denmark	0.01	0.01		0.01	0.01	0.03	0.05	0.22	0.37	1.03	0.17	0.40	0.19
Belgium			0.04	0.21	0.26	0.18	0.31	0.21	0.47	0.10	0.03		0.15
<i>Total</i>	<i>0.01</i>	<i>0.02</i>	<i>0.52</i>	<i>0.77</i>	<i>1.98</i>	<i>1.80</i>	<i>2.04</i>	<i>1.35</i>	<i>1.91</i>	<i>1.77</i>	<i>0.67</i>	<i>0.64</i>	<i>1.12</i>

Table 8: Overview of fishery effort (fishing days) per month of gear types in the proposed management zones of the Southern Dogger Bank.

Gear type	1	2	3	4	5	6	7	8	9	10	11	12	Average
TBB+			0.02	0.01	0.17	0.00	0.10	0.09	0.14	0.04	0.21	0.02	0.07
OTB	0.01	0.02	0.30	0.58	1.61	1.53	1.55	1.08	1.40	0.57	0.26	0.19	0.76
OTT			0.21	0.17	0.19	0.26	0.37	0.03	0.10	0.20	0.08	0.09	0.14
SSC								0.01				0.00	0.00
**OTM							0.02	0.14	0.26	0.97	0.13	0.34	0.15
**PTM									0.01				0.00
<i>Total</i>	<i>0.01</i>	<i>0.02</i>	<i>0.52</i>	<i>0.77</i>	<i>1.98</i>	<i>1.80</i>	<i>2.04</i>	<i>1.35</i>	<i>1.91</i>	<i>1.77</i>	<i>0.67</i>	<i>0.64</i>	<i>1.12</i>

**not part of the proposed fisheries measures

Table 9: Overview of fishery effort (fishing days) per month of gear groups in the proposed management zones of the Dogger Bank.

Gear group	1	2	3	4	5	6	7	8	9	10	11	12	Average
Beam trawl			0.02	0.01	0.17	0.00	0.10	0.09	0.14	0.04	0.21	0.02	0.07
Bottom trawl	0.01	0.02	0.50	0.75	1.80	1.80	1.92	1.11	1.50	0.77	0.34	0.28	0.90
Flyshooting seine								0.01					0.00
**Pelagic trawl							0.02	0.14	0.27	0.97	0.13	0.34	0.16
<i>Total</i>	<i>0.01</i>	<i>0.02</i>	<i>0.52</i>	<i>0.77</i>	<i>1.98</i>	<i>1.80</i>	<i>2.04</i>	<i>1.35</i>	<i>1.91</i>	<i>1.77</i>	<i>0.67</i>	<i>0.64</i>	<i>1.12</i>

**not part of the proposed fisheries measures

Gear group	1	2	3	4	5	6	7	8	9	10	11	12	Average
Beam trawl			0.02	0.01	0.17	0.00	0.10	0.09	0.14	0.04	0.21	0.02	0.07
Bottom trawl	0.01	0.02	0.50	0.75	1.80	1.80	1.92	1.11	1.50	0.77	0.34	0.28	0.90
Flyshooting seine								0.01					0.00
**Pelagic trawl							0.02	0.14	0.27	0.97	0.13	0.34	0.16
<i>Total</i>	<i>0.01</i>	<i>0.02</i>	<i>0.52</i>	<i>0.77</i>	<i>1.98</i>	<i>1.80</i>	<i>2.04</i>	<i>1.35</i>	<i>1.91</i>	<i>1.77</i>	<i>0.67</i>	<i>0.64</i>	<i>1.12</i>

**not part of the proposed fisheries measures

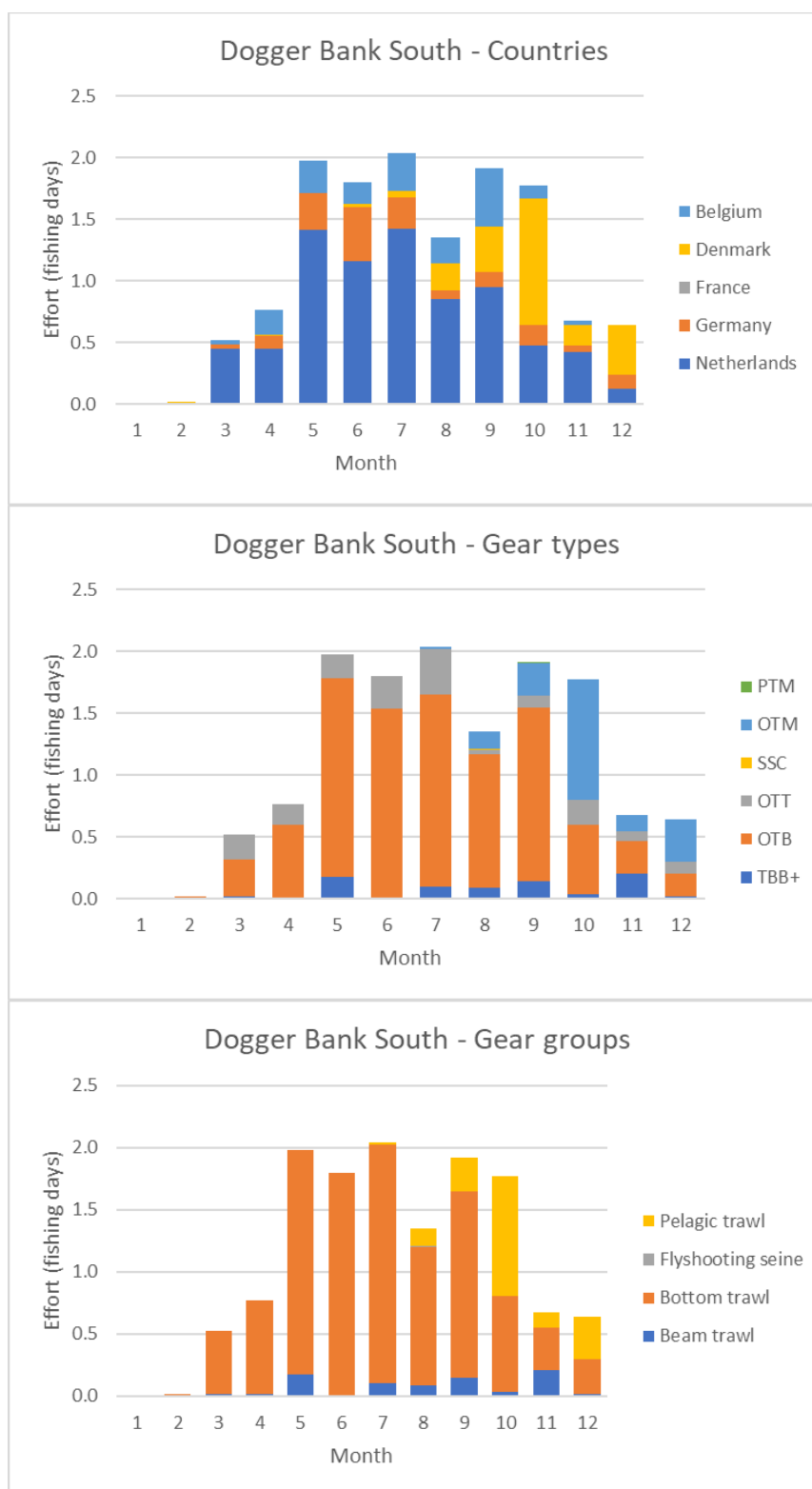


Figure 8. Fishery effort (days) per month in the proposed management zones of the Dogger Bank South for fleets (countries), gear types and gear groups. Months are numbered as follows: 1: January; 2: February; 3: March; 4: April; 5: May; 6: June; 7: July; 8: August; 9: September; 10: October; 11: November; 12: December. Gear types 'PTM', 'OTM' and gear group 'Pelagic trawl' is not part of the proposed fishery measures.

2.3.5 Spatial distribution of fishing activity

Background information on the general spatial distribution of the fishing activity of all gear groups combined and per gear group is shown in the General Background Document. The composition of the gear groups is the same as the one applied in the other sections of this report. General maps for the North Sea are shown in the General Background Document. Detailed maps for the Dogger Bank and their surroundings are shown in Figure 9 and Figure 10.

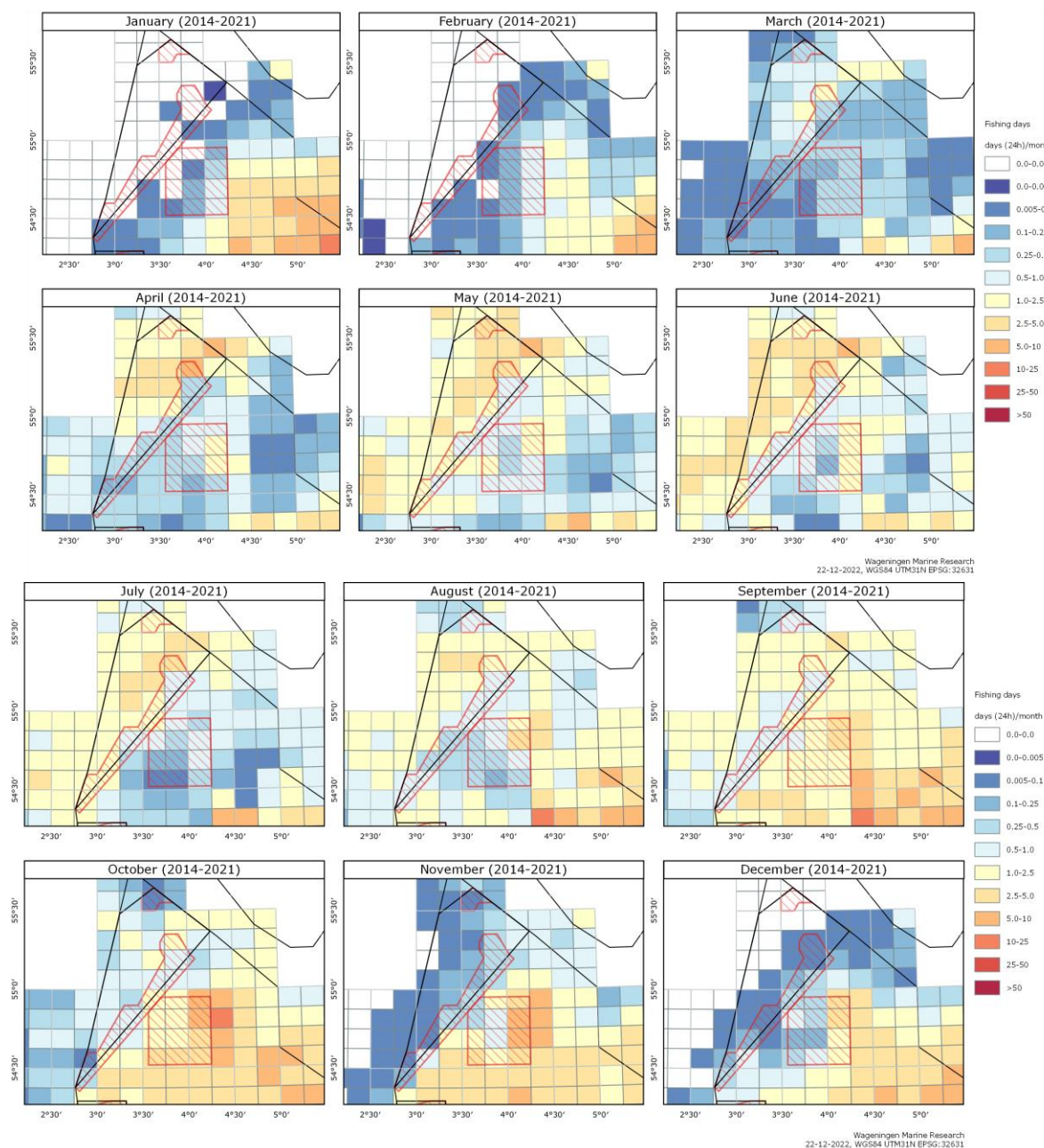


Figure 9. Dogger Bank N2000 and Dogger Bank South: fishing effort per month, of all gears groups combined (fishing days/month).

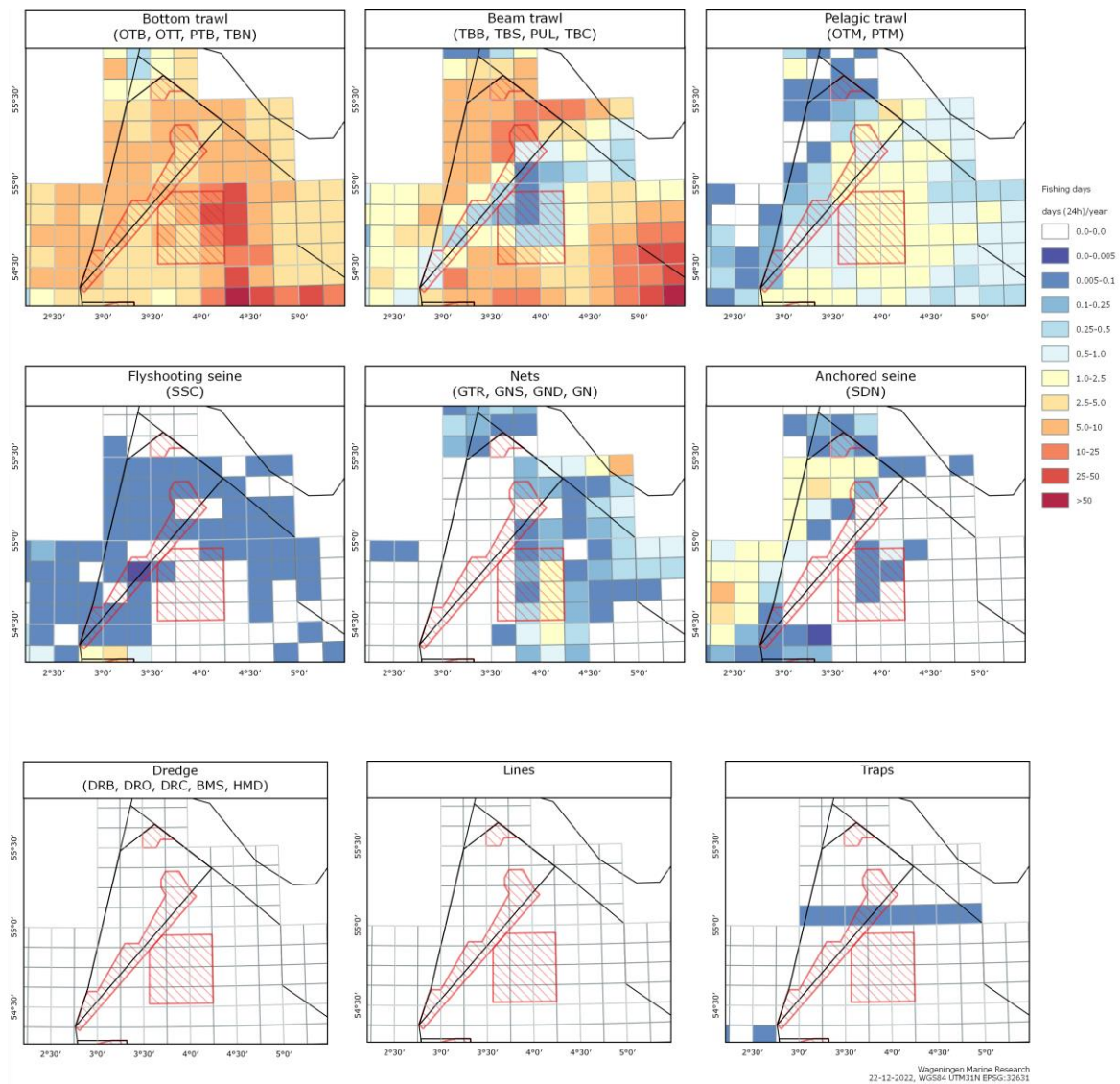


Figure 10. Dogger Bank N2000 and Dogger Bank South: Fishing effort (fishing days (24 hours)/year) per gear group. Gear groups 'Pelagic trawl', 'Nets', 'Lines' and 'Traps' are not part of the proposed fishery measures.

2.3.6 Main target species

The main species caught in this area are European sprat (*Sprattus sprattus*; SPR), Atlantic herring (*Clupea harengus*; HER), European plaice (*Pleuronectes platessa*; PLE) and anchovy (*Engraulis encrasicolus*; ANE). Figure 11 shows that most landings in the Dogger Bank (South) consist of European sprat caught by the Danish fleet. European sprat are caught both by the Danish demersal trawlers or seiners and the Danish, Swedish and German pelagic trawlers. The Danish fleets also catch Atlantic herring. In addition, Dutch beam trawlers and Dutch demersal trawlers or seiners mainly caught European plaice in the Dogger Bank (South). However, the landings of the Dutch fleet were much lower compared to the landings of the Danish fleet caught in the Dogger Bank (South).

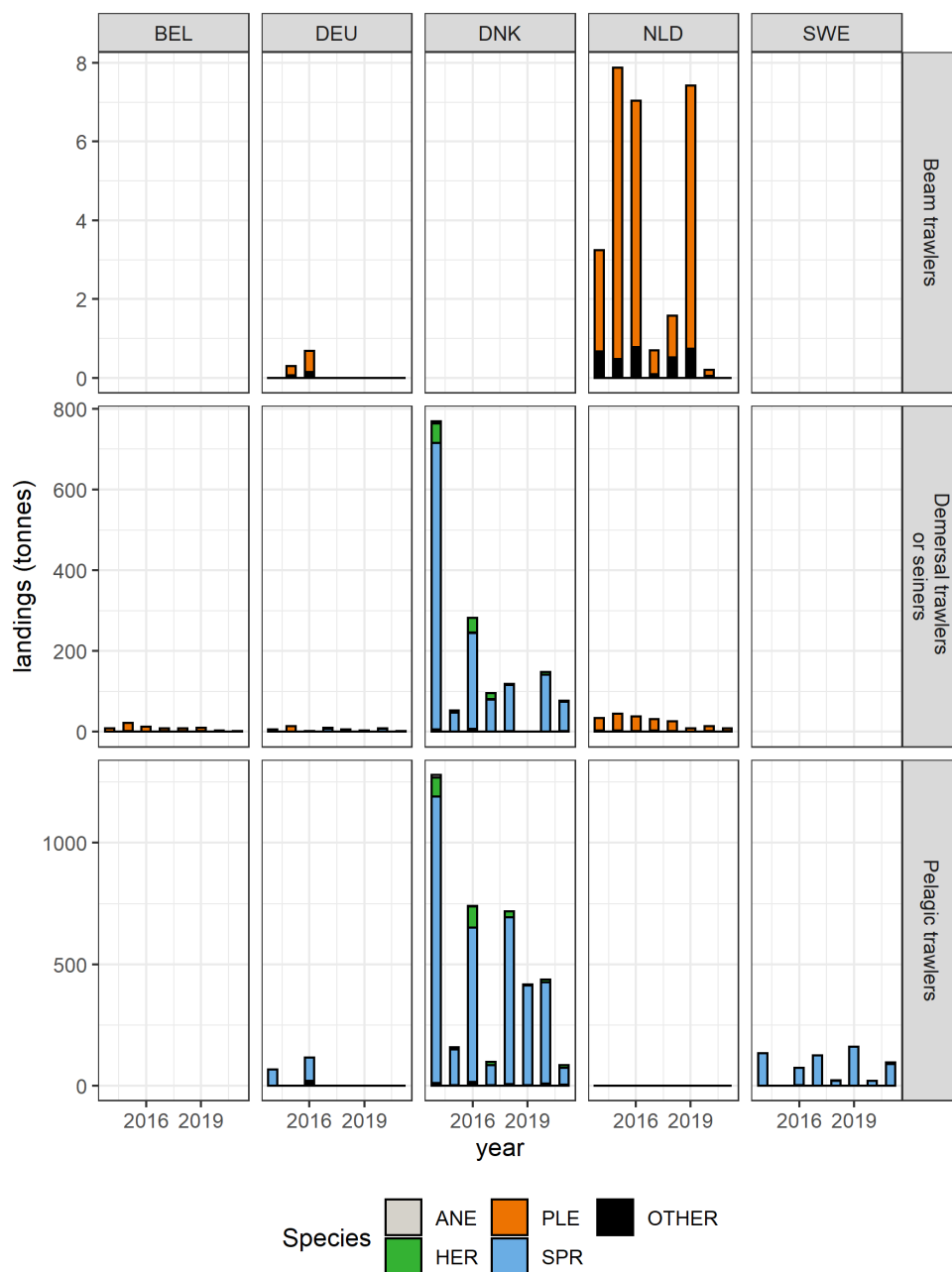


Figure 11. Historical trend by gear type of the species caught in the Dogger Bank (South) by the Belgian, German, Danish, Dutch and Swedish fleets (ANE: European anchovy; HER: Atlantic herring; PLE: European plaice; SPR: European sprat; Other: other species). Note the scale difference for the landings by gear type

Source: Logbook data and VMS data, processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

2.3.7 Economic value of the historic landings

The southern part of the Dogger Bank showed similar trends as the Natura 2000 part. Over the 2014 - 2021 period the amount of fishing activities has decreased significantly in Total effort in the Dogger Bank (South) decreased from 19 fishing days in 2015 down to 8 fishing days in 2021 (average of 14 days) and the added value decreased from 400 down to 90 thousand euros (average of 200 thousand euros) (Table 10). In economic terms, the Danish fleet was the most important in the area representing about 65% of the GVA, while the effort of the Dutch fleet was higher each year.

Table 10: Effort, landings and values and gross value added of the fishing sector in the Dogger Bank (South) by country.

	Country	2014	2015	2016	2017	2018	2019	2020	2021	Average
Effort (fishing days)	BEL	1	3	2	1	4	3	1	-	2
	DEU	2	3	2	1	2	1	1	1	2
	DNK	6	1	5	1	2	1	1	2	2
	NLD	8	12	11	8	9	6	5	4	8
	SWE	-	-	-	-	-	1	-	-	-
	Total	17	19	19	12	17	11	8	8	14
Landings (tonnes)	BEL	8	23	12	11	10	13	5	7	11
	DEU	73	14	119	10	6	3	9	2	29
	DNK	2,059	211	1,021	207	883	416	587	170	694
	NLD	37	58	51	41	28	16	13	9	32
	SWE	134	2	74	124	21	208	24	95	85
	Total	2,312	308	1,277	392	948	656	638	283	852
Value (1,000 euros)	BEL	13	42	22	26	31	36	13	18	25
	DEU	22	23	38	8	15	8	9	5	16
	DNK	453	55	265	38	225	116	156	55	170
	NLD	57	95	95	81	55	45	36	22	60
	SWE	28	-	19	27	5	54	6	31	21
	Total	573	215	439	180	331	259	220	130	293
Gross Value Added (1,000 euros)	BEL	6	23	13	15	16	18	7	10	13
	DEU	12	13	22	4	10	4	5	3	9
	DNK	330	46	222	29	183	89	130	46	134
	NLD	30	49	56	43	30	19	16	10	32
	SWE	14	-	11	16	2	28	4	17	11
	Total	392	131	324	107	240	157	162	86	200

Source: Logbook data and VMS data and data from the Annual report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

All fleets operating on the Dogger Bank (South) used some bottom otter trawls (OTB). OTB represented most activity of the Belgian and German fleets (Figure 12). The Danish fleets also operated midwater otter trawls (OTM) and the Dutch fleet used beam trawls (TBB) and otter twin trawls (OTT). While TBB used to be the most used gear in the area in 2015 and 2016, its use decreased steadily years thereafter while other gears show no clear trends.

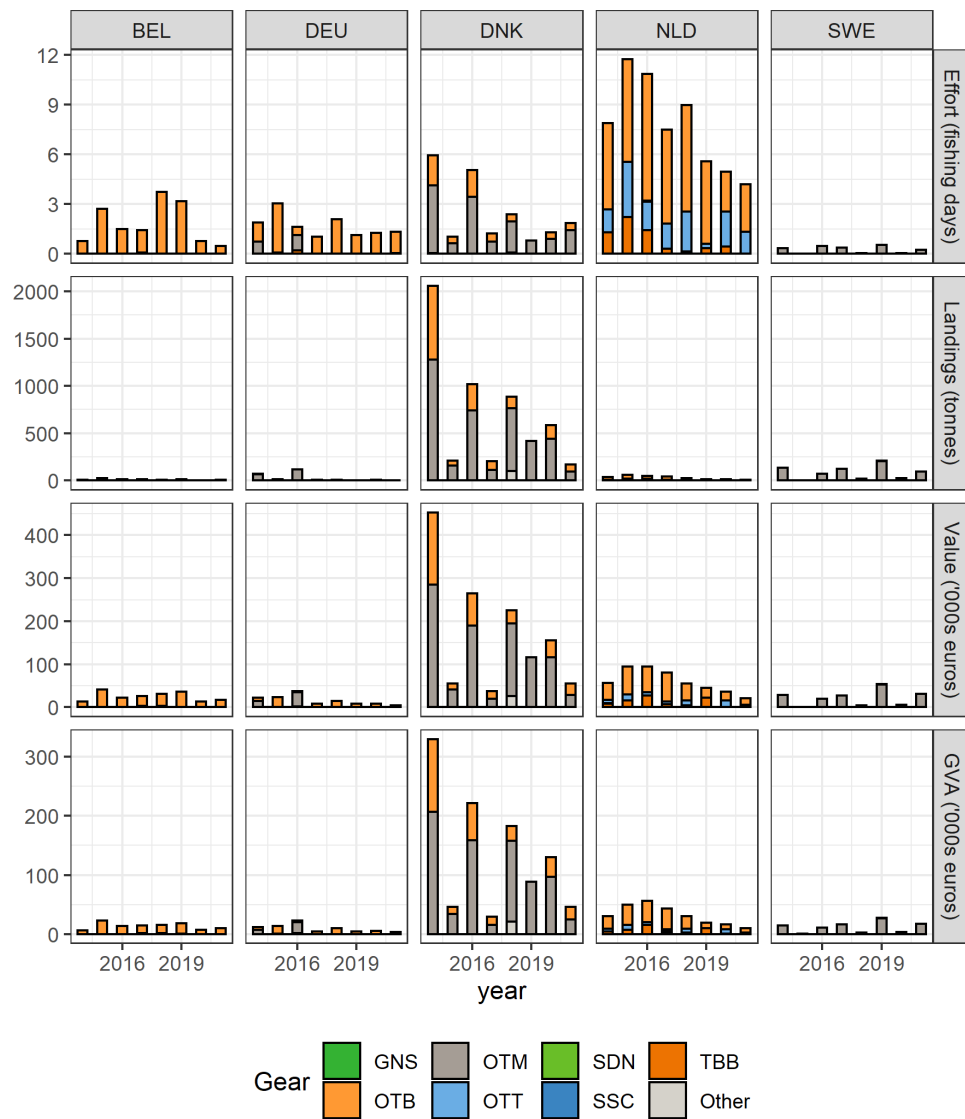


Figure 12. Historical trend of the fishing activities in the Dogger Bank (South) with different gears (FPO: fishing pots; GNS: set gillnets (anchored); OTB: bottom otter trawls; OTM: otter trawls midwater; OTT: otter twin trawls; SDN: Danish seines; SSC: Scottish seines; TBB: beam trawls; Other: other gears) in the proposed closure of the Dogger Bank (South) for the different countries. Effort, landings, value of landings and GVA are given by country

Source: Logbook data and VMS data and data from the Annual Economic report (STECF 2022), processed by WUR, DTUAQUA, TI, ILVO, SLU and IFREMER.

2.3.8 Individual dependency of Dutch fishermen

Figure 13 shows that the number of Dutch vessels actively fishing on the Dogger Bank varied over the study period between 16 and 39 vessels. The revenue dependency on the Dogger Bank was lower than 10% for all vessels except for a one vessel a year in 2015 and 2016 that obtained up to 20% of their revenue on the Dogger Bank (Hamon & Klok, 2023).

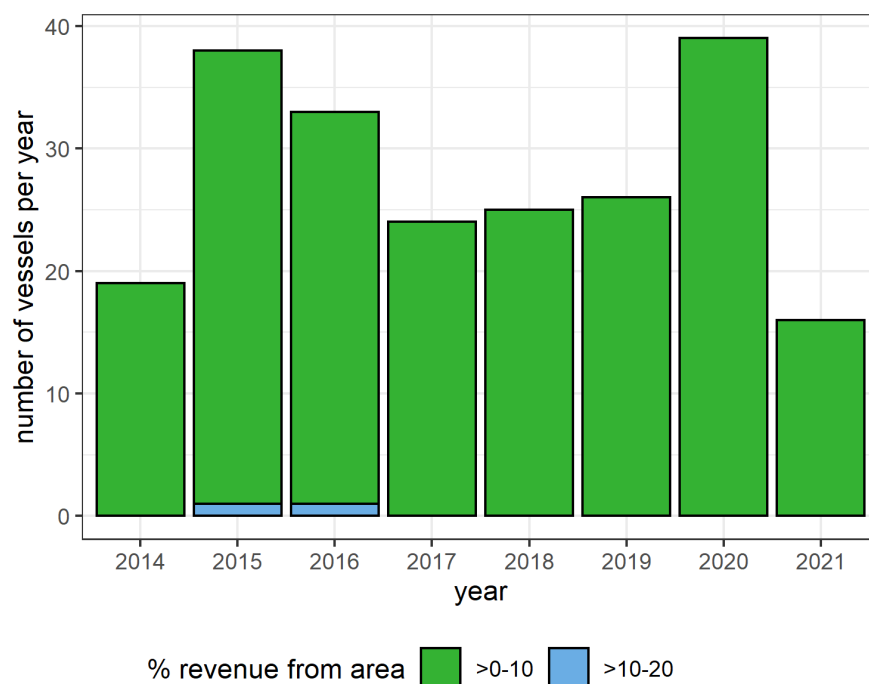


Figure 13. The number of Dutch vessels per year and the revenue dependency.

Figure 14 shows that over the 2014-2021 period, the majority of the vessels with fishing activities on the Dogger Bank had a moderate dependency on the area (less than 10% of their revenue) and they came mainly from Urk (14 vessels) or Holland (about 10 vessels). Only one vessel came from Zeeland and about two from the North of the Netherlands. Vessels with a higher revenue dependency came from Urk.

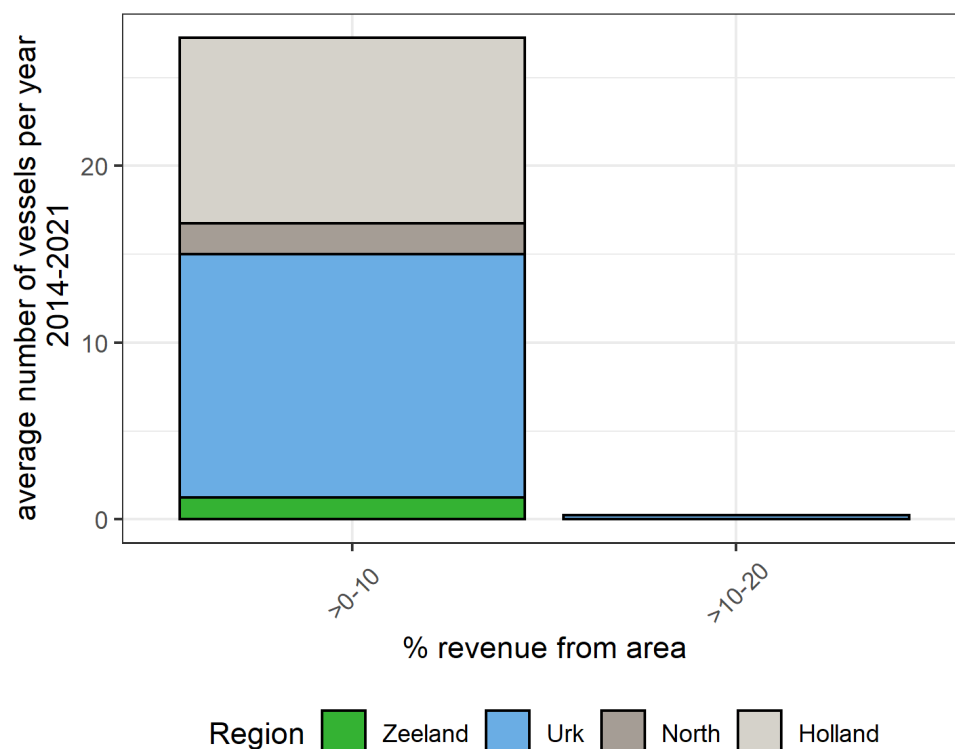


Figure 14. The average number of vessels per region and the revenue dependency.

The majority of the fishing revenue from the Dogger Bank, about 190 thousand euros per year was obtained with beam trawls fishing for flatfish (TBB) (Figure 15). The second most important gear was the bottom otter trawls (OTB) with a revenue of about 140 thousand euros. For all gears, most revenue came from vessels with an annual dependency lower than 10% although for the bottom otter trawl, more than 20 thousand euros were fished by vessels with a dependency between 10 and 20%. (Roskam et al., 2021).

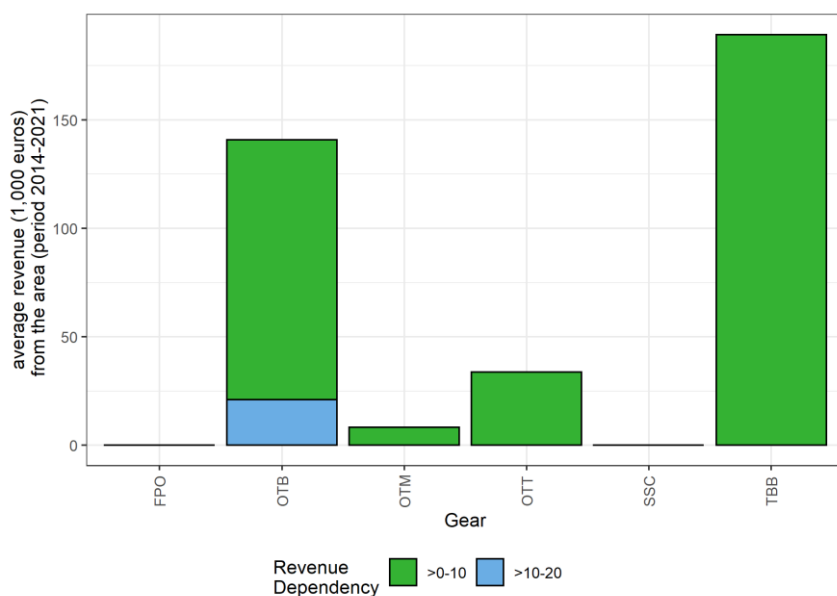


Figure 15. Total of the average revenues (x 1,000 euros) of the vessels with different dependencies on the area per gear type.

2.3.9 Impact of fisheries on natural values

The fisheries activities as described above have an impact on integrity of the seafloor and natural values. This is described in chapter 3 of the General Background Document.

2.4 Other human activities

Besides fishing, there are other human activities present in the Dogger Bank area, mainly shipping and activities related to gas extraction. Again, since the Southern Dogger Bank is connected to the HD Natura 2000 Dogger Bank the other human activities in the entire Dogger Bank will be discussed in this paragraph.

Information about other human activities in the HD Natura 2000 Dogger Bank area, including its effects on the N2000 objectives for the Dogger Bank, are described and assessed by Royal HaskoningDHV (Van Mastrigt et al., 2019) and summarized in the N2000 management plan 2022-2027 of RWS (Rijkswaterstaat, 2023a). In addition to the activities described below, other activities on a small scale that can be mentioned, include research and monitoring, recreational activities (wreck diving, sea sailing and recreational fishing) and sporadic explosives clearance. However, these activities are not considered to impact the habitat type 1110.

2.4.1 Oil/gas platforms (or exploration)

There are currently three gas extraction platforms on the Dogger Bank, and several in the near vicinity (Figure 16). The platforms are connected to a pipeline network, and the network includes one sidetap at the Dogger Bank. Here, a branch is connected to a main pipeline. The presence of platforms does not only involve use of space, but also leads to shipping and air traffic (helicopters). Due to the depletion of gas

reserves, gas extraction will be gradually phased out due to the energy transition, whereby more wind power will be developed at sea.

Emissions from gas platforms might affect the quality of the habitat type 1110. Emissions include the discharge of produced water, black and grey water, release substances from anti-fouling and corrosion prevention, and discharge of sanitary waste. It was assessed that these discharges only have a minor, non-significant and local effect on the quality of the habitat type 1110 (details in Van Mastrigt et al., 2019).



Figure 16. Installations and connected infrastructure at the Dogger Bank area.

2.4.2 Cables and pipelines

There are three active telecom cables and two main pipelines for the transport of gas passing the Dogger Bank (see Figure 17). In addition, three smaller pipelines connecting the gas platforms. All cables and pipelines need to be buried to a depth of 1-3 meters in order to avoid any risks for shipping and fishing². In addition, an increase in power cables can be expected. It is assessed that the effects of the presence and maintenance activities for cables and pipelines only have a minor and non-significant impact on the habitat type 1110 (Van Mastriigt et al., 2019).

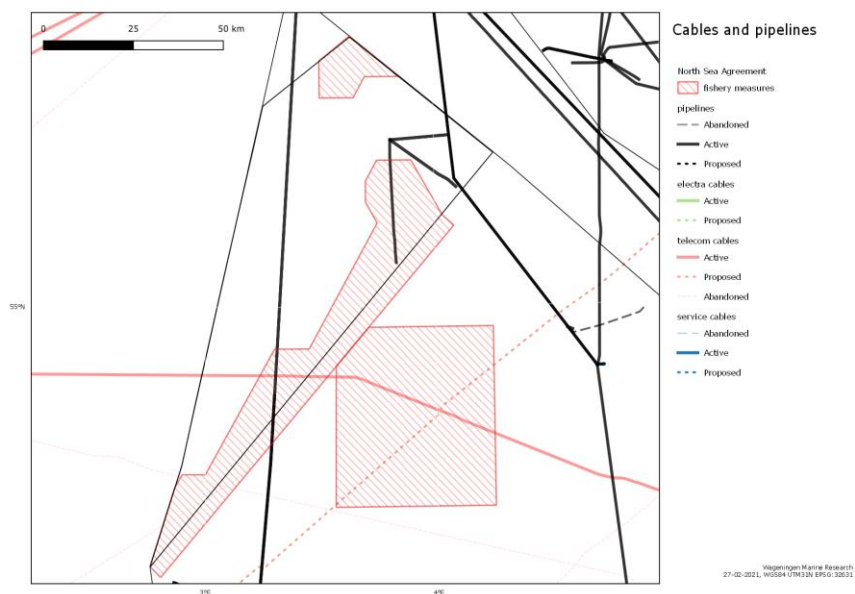


Figure 17. Cables and pipelines crossing the Dogger Bank area.

² Waterbesluit, Art. 6.16j: <https://wetten.overheid.nl/BWBR0026872/2019-01-01>

2.4.3 Shipping routes

Although there are no official shipping routes in or in the immediate vicinity of the Dogger Bank, there is some route-specific shipping, especially from Great Britain (Figure 18). In addition, there are shipping routes on the south of the Dogger Bank to Norway and the Skagerrak. There are no anchorage areas on the Dogger Bank (Van Mastrigt et al., 2019). Most shipping concerns merchant navy, fishing vessels, and ships involved in gas exploration activities, including installation of platforms and operation and maintenance manoeuvres. Shipping might potentially affect habitat type 1110 in case released contaminants exceed legal standards, but it is assessed that shipping does not significantly affect the conservation objectives of the Dogger Bank (Van Mastrigt et al., 2019).

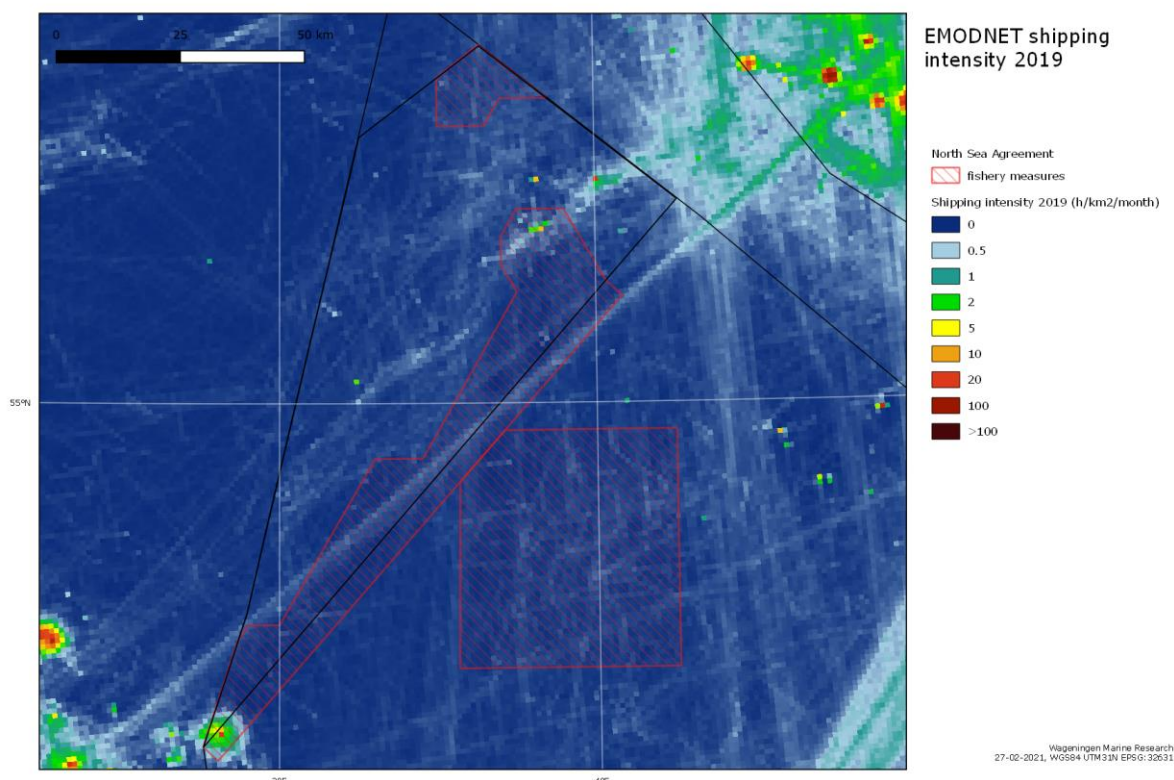


Figure 18. Shipping intensity (h/ km²/month) in and around the Dogger Bank area, based on Emodnet data, 2019.

2.4.4 Military use

There are no specific military activities known to have an effect on the habitat of the Dogger Bank.

2.4.5 Wind energy

In the UK part of the Dogger Bank a wind farm is planned and developed. The permits have been granted and effects on the Dutch N2000-areas have been taken into account.

2.4.6 Air traffic

There are no specific information on air traffic known to have an effect on the habitat of the Dogger Bank.

2.4.7 Shell/sand/gravel extraction

There is no shell, sand or gravel extraction taking place on the Dogger Bank.

2.4.8 Dredging

There are no specific dredging activities known to be active on the Dogger Bank.

2.4.9 Coastal protection

There are no specific coastal protection activities known to have an effect on the habitat of the Dogger Bank.

2.4.10 Recreation

There are no specific recreational activities known to be active on the Dogger Bank

2.4.11 Cumulation

In the 'Nadere Effectenanalyse Doggersbank' (Van Mastrigt et al., 2019) a cumulation test was executed for all conservation objectives of the Dogger Bank. For a couple of activities in the N2000-area Dogger bank, there is a residual effect that influences habitat type 1110C. The cumulation of these effects of different activities might lead to a significant effect on habitat type 1110C. The main reason is because it is not clear what the extent of the different effects are, therefore significant effects cannot be excluded. There are activities taking place on the Dogger Bank area that can negatively influence the quality of the habitat type, mainly because of pollution. Since there is a worldwide increase in waste and microplastics these effects could play a bigger role in the future. It is however unclear how many microplastics are present in the area and to what extent this influences the habitat type 1110C quality. The effects of underwater noise from different activities on the specific species of the habitat type are unclear, the extent of the effect is therefore unclear.

Also effects on the conservation goals for species in this area were examined, however these will not be elaborated here since the conservation measures proposed in this context are only regarding the conservation objective for habitat type 1110C, and not for the species in the area. .

2.5 Monitoring

In 2015, a baseline measurement campaign was executed for benthos at the Dogger Bank. In 2018, a second measurement campaign was executed. A recent study has been done to update the measurement plan for the evaluation of the effectiveness of area closure for the purpose of improving the quality of benthic habitats (Wijnhoven, S. 2022 and 2022a).

To monitor the improvement of the benthic habitat once every three years samples are taken with a box corer and dredge (Figure 19). All species found in the samples are recorded. The analysis needed for the detection of an increase in hit rate will be performed only for the indicator species as mentioned in Wijnhoven and Bos (2017). For more general information about monitoring, see the General Background Document.

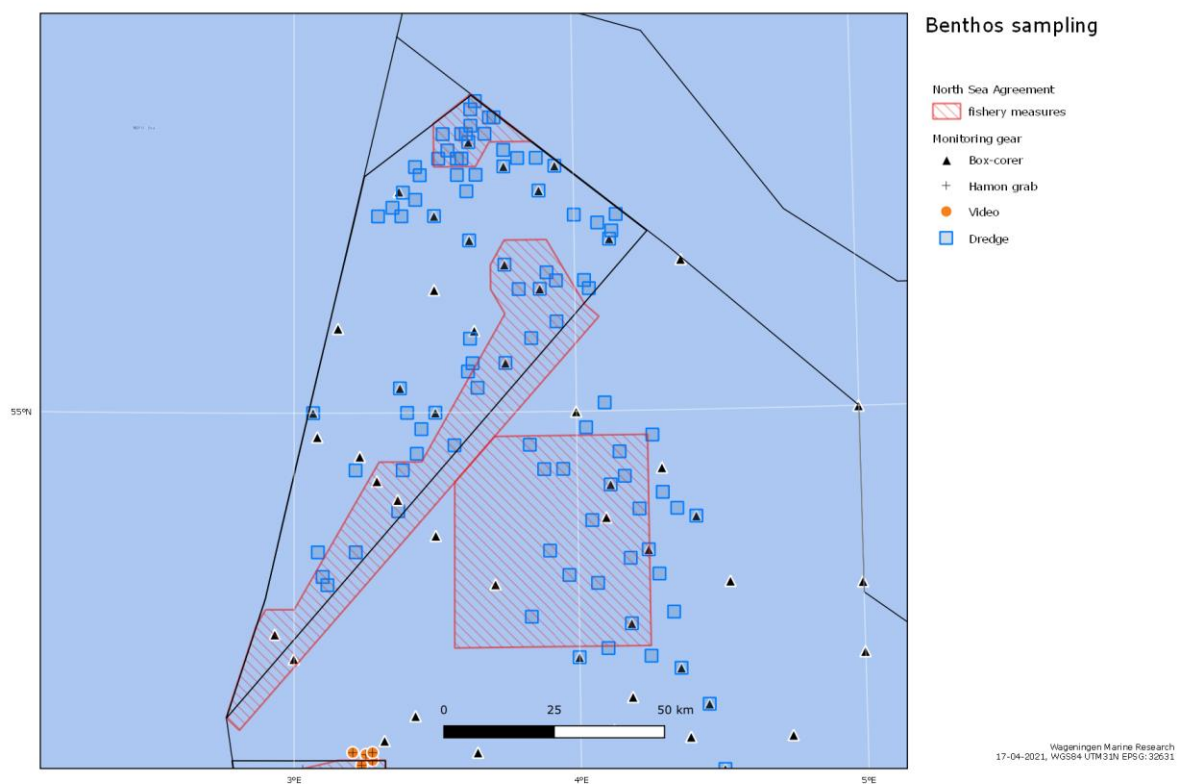


Figure 19. Overview sampling stations of the monitoring campaign at the Dutch part of the Dogger Bank. Source: Marine Information and Data Centre. Selected sampling points: offshore MWTL monitoring agenda 2021.

3 Rationale for conservation measures

3.1 Conservation objectives for H1110

The aim of the Marine Strategy Framework Directive (MSFD) is to reach a Good Environmental Status (GES). Despite the implementation of the measures from the previous program of measures (2015), the Marine Strategy part 1 (IenW & LNV, 2018) concludes that Good Environmental Status has not yet been reached for the Dutch North Sea: there is a remaining task for the descriptors of biodiversity (D1), seabed integrity (D6), marine litter (D10) and underwater noise (D11). Additional measures are required to achieve Good Environmental Status.

The main descriptors for the benthic habitat are D1 (biological diversity) and D6 (sea-floor integrity). The overarching goal to achieve good environmental status is to improve the size, condition and global distribution of populations of the benthic community species. This goal is primarily supported by two criteria: D6C3: improvement in the quality of the assessed areas and habitats in the Dutch part of the North Sea (Benthic Indicator Species Index, BISI), and D6C5: the diversity of benthos demonstrates no further downward trend in the assessed areas (OSPAR assessment value). These criteria are supported by three environmental targets:

- D6T1: 10-15 % of the surface of the Dutch part of the North Sea will not be notably disturbed by human activities;
- D6T2: improvement in the quality of the assessed areas and habitats;
- D6T4: further development and testing of regional assessment methods (OSPAR and ICES) which can be used in the future for assessing benthic and pelagic habitats;

The program of measures of the MSFD identifies measures which need to be taken in order to achieve or maintain GES. The measures shall be devised on the basis of the initial assessment being MS1 (2018-2021) (art. 13, sub 1 of the MSFD). The Dutch draft Marine Strategy part 3 (IenW, 2022b) includes the measures for seabed protection on the southern extension of the Doggerbank of circa 530 km². The draft Marine Strategy part 3 (2022-2027) is adopted in March 2022. It is expected that the proposed conservation measures contribute to reaching the objectives as described in the MSFD and are proportionate in regards to the socio-economic impact of the proposed measure.

3.2 Conservation objective for species

In addition to the conservation objective for habitat type 1110, there are conservation objectives for harbour porpoise, grey seal and harbour seal, because these natural features listed on Annex II of the HD are present on the site. Nevertheless, the site has not been selected for these features. Objectives for harbour porpoise and grey seal are: maintain the extent and quality of habitat in order to maintain the population. Objectives for harbour seal are: maintain the distribution, extent and quality of habitat in order to maintain the population.

For *harbour porpoise*, FIMPAS (ICES 2011b) and the ICES advice (ICES, 2012) suggest not to develop site specific measures, but rather to develop and implement generic protection through a species protection plan and the possibility of capping effort on a regional scale. For *seal species*, FIMPAS and the ICES advice concluded that no site specific measures for fisheries would be needed. Therefore, this proposal only concerns H1110 and does not concern harbour porpoise and seal species.

See the General Background Document for more information on national measures regarding species.

3.3 Policy considerations

The aim of the conservation measures is to contribute towards fulfilling the conservation objective as stated in paragraph 3.1. Several policy considerations played a role in designing the conservation measures for the Southern Dogger Bank. It is relevant to emphasize that this current Joint Recommendation with proposals for conservation measures builds on the Joint Recommendation for the N2000 area Dogger Bank, which has been submitted to the European Commission on 19 October 2023. The measures presented in the current Joint Recommendation have been removed from an earlier proposal that included both measures for the MSFD area Southern Dogger Bank and the N2000 area Dogger Bank. The separation of these measures into different proposals streamlines their individual process. The measures in the Southern Dogger Bank adds to the measures proposed for the N2000 area Dogger Bank, taking a holistic perspective of the entire Dogger Bank. The management zones in the N2000 area combined with the Southern Dogger Bank include all benthic communities. The Netherlands aims to reach the objectives as stated in paragraph 3.1 by restoring:

- physical structure (shape, form and composition of the habitat and its substrata),
- diversity (the number of different biological communities or number of species within a given community),
- community structure (e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility) and
- typical species.

These elements have been taken into consideration designing the conservation measures. In addition, assessments (see paragraph 2.3 and 4.1) show significant habitat disturbance and distorted species composition towards smaller and short-lived species as a result of (bottom contacting) fishing activities. The decrease of bottom contacting fishing activities is therefore considered to be a key factor to improve the quality of the Southern Dogger Bank.

In the Dutch zone of Dogger Bank, two out of five benthos communities are present (see 2.2.3). The protected area in the north-east of the Dutch zone covers partly the “bank community” located at the central range of the bank. The largest zone proposed for closure concerns the “southern community” present along the southern edge of the bank. This community is mainly present in the Dutch zone of the international Dogger Bank area.

In the North Sea Agreement (NSA), it was agreed that the southern management zone should be extended. This would lead to an enlargement of the coverage of the benthic “southern community”. This extension results in the protection of an area with a higher variation in habitat and species diversity, as it adds to a more complete depth gradient of the southern slope of the Dogger Bank. It is relevant to emphasize that the other agreement made in the negotiations of the North Sea Agreement was the ban on Scottish seine in the management zones of the Dogger Bank. This measure is therefore also part of these conservation measures and was agreed upon in the former Draft Joint Recommendation of 19 October 2023.

Another element relevant in the designing process is the zoning concept. The measures have been built around a zoning concept with three zones (an unrestricted zone, an alert zone and a management zone), in order for the measures to be controllable and enforceable in a cost-effective manner. In line with EC guidance, the zoning would have to avoid a scattered pattern and areas which are too small. A limited number of management zones is considered appropriate in this respect. In designing the management zones, control, compliance and enforcement considerations have been included.

The measures take into consideration socioeconomic factors in a proportional approach. The aim is to reach the conservation objectives while taking proportionality regarding the socioeconomic impact on the fishing industry into account.

The current Joint Recommendation is designed taking the different elements described above into consideration.

4 Expected effects of conservation measures

4.1 Expected effects on the natural feature

To achieve the conservation goal as described in paragraph 3.1, the Netherlands wants to establish a more natural situation in which conditions will allow to restore the following structures:

- physical structure (the shape, form and composition of the habitat and its substrata),
- diversity (the number of different biological communities or number of species within a given community),
- community structure (e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility) and
- typical species.

The Netherlands wants to maintain the surface area and the extent of the habitat, improve the abiotic preconditions and the physical structure, reduce the disturbance of the benthic communities including infauna and epibenthic species, and improve the habitat quality by natural processes so that the benthic communities will be characterized by long-lived species in natural proportions of size and age. It is agreed that the requirements of a good structure and function can be applied to both benthic communities and typical fish species. If possible, individuals of all typical occurring species (fish, benthos) should be present in natural proportions of sizes and ages. Typical species include: *Lanice conchilega*, *Acrocnida brachiata*, *Artica islandica*, *Buccinum undatum* (common whelk), *Mactra corralina*, *Ammodytes marinus* (sand eel), *Echiichthys vipera* (lesser weever), *Raja clavata* (Thornback ray), *Pleuronectes platessa* (Plaice).

As restoration objectives are distinguished:

1. For abiotic and biotic factors in the area to achieve a state which enables benthic communities to reach and maintain a good state of preservation;
2. Benthic communities should be characterized by, in particular, long-lived species. Of all typical occurring species, individuals should be present in natural proportions of sizes and ages;
3. Characteristic fish species should be present in characteristic population structures and of all typical species in natural proportion of sizes and ages.

Trawling on the Dogger Bank began in the 1880s, thus there is little data that can be related to Dogger Bank communities not affected by fishing. Scientific literature suggests that the closures to bottom contacting towed gear on the Dogger Bank Site of Community Importance (SCI) are likely to contribute to improving the conservation status of the benthic habitat including its typical species and communities. In particular, closures should lead to increased average age and occurrence of long-lived benthos species typically of the Dogger Bank such as Ocean quahogs and Rayed trough-shell which are both assessed to be in unfavourable conditions (see summary by Van Moorsel, 2011). Other long-lived species include sea-pens for which the status is 'poor' in the North Sea according to OSPAR's 2022 Status Assessment³. Among the more mobile species, the Thornback Ray has become rare on the Dogger Bank (Fock, 2014). Restoring the habitat to favourable conditions could create the environment for these species to be present in more natural proportions of sizes and ages. It is therefore important that we find out as much about the species as possible if populations are to be preserved at a healthy level.

In the Joint Recommendation, a description of the proposed conservation management measures can be found. The measures should be proportionate to their impacts on the protected features and the level of

³ Sheet BDC2022/Sea-pen and Burrowing Megafauna Communities. <https://oap.ospar.org/en/ospar-assessments/committee-assessments/biodiversity-committee/status-assessments/sea-pen-and-burrowing-megafauna-communities/>

impact may vary regarding the sensitivity of the features to the activity. In this respect, the level of natural disturbance compared to human disturbance has to be taken into account in the measures proposed.

According to the document "Overview of sensitivity, interactions and impacts of commercial fishing methods on marine habitats and species protected under the EU Habitats Directive" (requested by the European Commission (DGENV), produced by the N2K group 2016), impact associated with the use of particular types of fishing gear can be less significant or negligible compared to the same activity in low energy environments', but the document does neither give a definition for "high energy environment" nor a method for quantification of its effects. Reliable scientific information on the relative quality and quantity of human and natural disturbance is not available.

In the ICES advice of 2012 this question was addressed as follows:

In relatively high-energy environments, characteristic species and communities are all adapted to some frequency of natural disturbance. Hence, for time periods longer than six years there will continue to be an increase in the number of species that re-establish self-sustaining populations, but there will be diminishing gains over longer time periods. However, that is not cause to suspend restrictive management after six years. In general, the fisheries management measures suggested will reduce the pressure on the benthic habitats from bottom-contacting fishing gears, although the scale of this effect and consequences to the status of the habitats are not possible to predict.

By limiting the fisheries activities in the management zones, it is expected that the structure of the benthic community (e.g. age classes, sex ratios, distribution of species, abundance, biomass, reproductive capacity, recruitment, range and mobility) and typical species will restore, since the physical structure (the shape, form and composition of the habitat and its substrata) will not be disturbed by bottom contacting fishing gears. The designation of the MSFD area Southern Dogger Bank, adjacent to the south side of the Dogger Bank (HD), will enlarge the contribution to the diversity of protected benthic communities. Within the benthic communities, long-lived species will be enabled to reach a higher age and size.

4.2 Expected effects on fisheries

Area closures can have different effects on fisheries. These effects can lead to displacement (see chapter 7.2.1 of the General Background Document). The area closure for all bottom contacting towed gear on the Dogger Bank can therefore lead to a displacement effect. This means that the active part of the fleet which has fished in the proposed closed area will have to catch fish elsewhere to maintain an economic viable company.

In chapter 2.3, a description of the spatial distribution of the fishing activities is shown. In general, it shows that most gear groups have a lower amount of fishing days in the proposed closed area than on top of the Dogger Bank. The difference is mostly visible for the beam trawl gear group which is primarily used by the Dutch fishing fleet in this area. The difference is less visible for the bottom trawl gear group which is mostly used by the Danish fishing fleet in this area. The Danish fleet focusses on sand eel and or sprout, although the proposed closed area is not a typical habitat for these target species. It is therefore expected that the impact of the closure is limited to the economic impact on the Dutch and Danish fishing fleet. Similar expected effects are applicable to the fishing fleet of Sweden, Germany, and Belgium. France had no fishing activity during the 2014-2019 period. The Netherlands and Denmark are used as an example in these considerations as these Member States generate the highest economic value in the proposed closed area. These considerations are not corrected for fleet size.

Based on the above it is to be expected that the proposed closure will have limited effect on the active fleets in this area based on the historical landing data. Compared to the expected natural value of the benthic community, in the area which is to be protected by these measures, the expected limited effects on the fishing fleet is considered to be proportionate.

4.3 Expected effects on other human activities

An assessment of impacts of human activities on the ecosystem of the Dogger Bank, and H1110 in particular, has been made in the Effect Analyses by Van Mastrigt et al. (2019). In this analysis, effects of current activities on the nature conservation goals were assessed on the basis of best available scientific knowledge and expert judgement. The findings from the assessment serve as input for the Management plan for the Natura 2000 area Dogger Bank 2023-2029 (Rijkswaterstaat, 2023a). The management plan describes which activities do not cause impacts on the conservation goals, and that those activities will be exempted from permitting in the framework of the Nature Conservation Act. For these activities, specific preconditions that should be met will be described in the management plan. It concerns regular mining operations, marine detonation of mines, use of echo survey and high-frequency systems for military activities, maintenance of cables and pipelines, and regular research and monitoring.

Any other activities are subject to a permitting process. These include seismic research and drilling (mining), installation and decommissioning of cables and pipelines, and research and monitoring projects. No current activities were identified for which significant effects cannot be excluded on the nature conservation goals (Rijkswaterstaat, 2023a).

5 Discussion

See Chapter 8 of the General Background Document.

6 Conclusion

See chapter 9 of the General Background Document.

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