communicating with the VTS.

4. **Ever Chivalry-Nova Frisia:**

Figure 7

The container ship 'Ever Chivalry' is heading for TSS Maas North, the reefer 'Nova Frisia' outbound IJmuiden. According to the ColRegs (rule 15) the 'Nova Frisia' must give-way to the container ship. The 'Nova Frisia' crossed the 'Ever Chivalry' ahead on short distance during foggy conditions.

5. **Harlequin-Little Jane:**

Figure 8

The 'Harlequin' is on a NNE'ly course towards the TSS Off Texel and 'Little Jane' is outbound IJmuiden. The 'Harlequin' must give-way to the 'Little Jane' but didn't comply to the ColRegs and crossed the 'Little Jane' on a short distance.

6. **CS Manatee-King Alfred:**

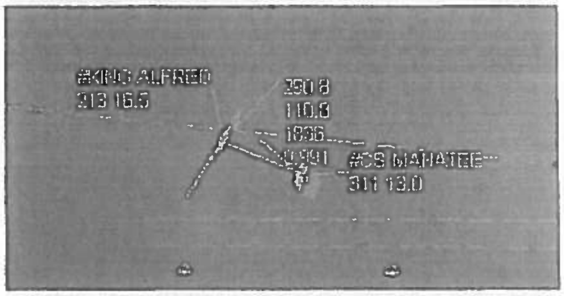


Figure 9

'CS Manatee' bears 'King Alfred' over her starboard side. According to the ColRegs the 'CS Manatee' must give-way to 'King Alfred'. 'King Alfred' contacted the 'CS Manatee' and pointed her to the ColRegs. On close distance both vessels alters course to starboard.

7. **Tambourin-Dettifoss:**

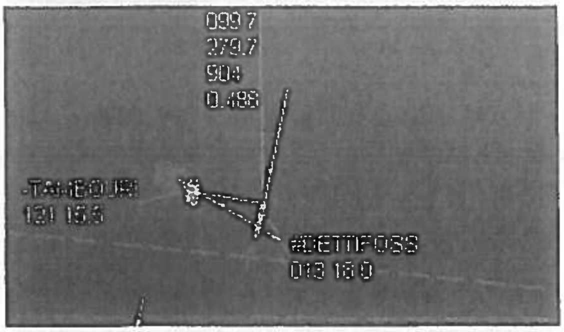


Figure 10

'Tambourin' bears 'Dettifoss' over her starboard bow. According to the ColRegs the 'Tambourin'must give-way to the 'Dettifoss'. Because Tambourin doesn't comply to the ColRegs, Dettifoss alters course to starboard and shortly here after the Tambourin also changes course to starboard.

	date	ships	type	speed	CPA	destination	situation	location (IJ-geul buoys)	visibility	nm form
1	22/06-2010 17:45	Baltic Altantic UK-170	tanker fishing	unknown	0,06' 110	anchorage north bound	crossing	IJ-7	good	X
2	07/07-2010 02:45	Tanea Cap Portland	tanker container	unknown	close CPA	IJmuiden TSS Off Texel	crossing	IJ-5 and IJ-7	good	X
3	18/09-2010 21:20	Vela Major Hubal	bulkcarrier bulk carrier	unknown	0,3' 555	westbound TSS Maas North	crossing	IJ-7 and IJ-9	good	X
4	28/06-2011 10:00	Dana-1 Karei	general cargo tanker	unknown	0,1' 185	TSS Off Texel westbound	crossing	IJ-7	good	X

26A

MEMO

MARIN

To : [redacted]

From : [redacted]

CC : [redacted]

Date : 13 oktober 2011

Project No : 25648 QRA voor nieuwe routestructuur

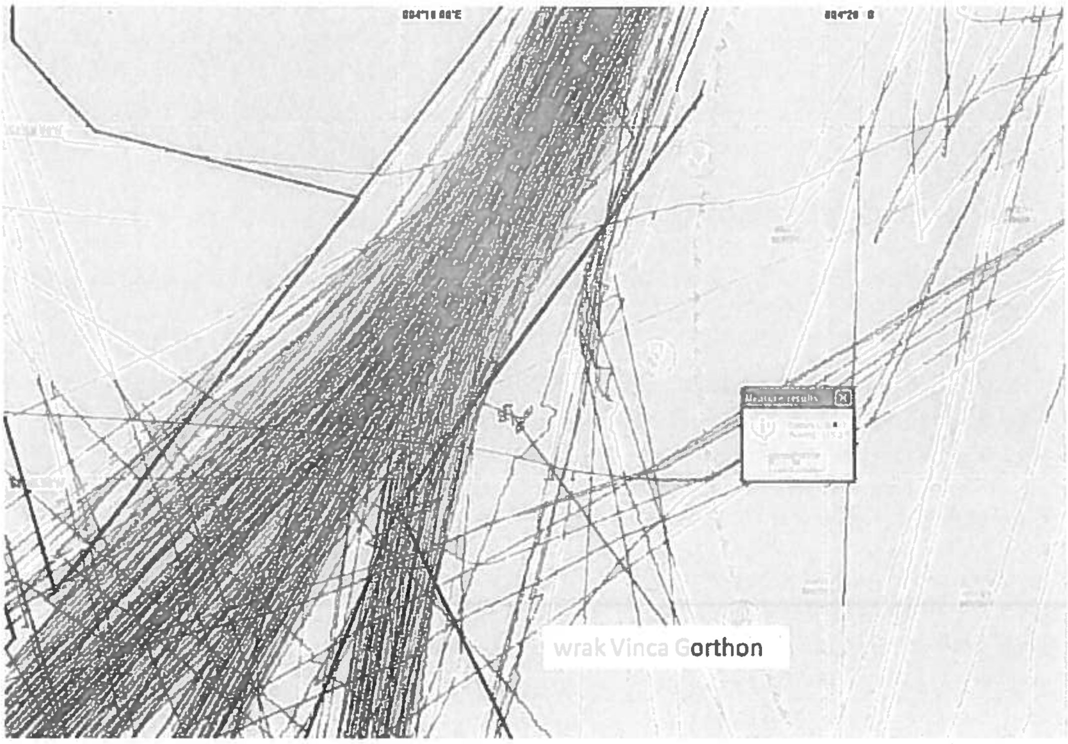
Subject : Verandering van aanvaringsrisico van Vinca Gorthon en wrak bij de IJgeul

Inleiding

In het kader van de QRA voor de nieuwe routestructuur is gevraagd extra aandacht te besteden aan het risico door het wrak van de Vinca Gorthon en van een wrak in het nieuwe diepwater ankergebied voor de IJgeul. Dit memo gaat in op deze twee onderwerpen.

Wrak van de Vinca Gorthon

In Figuur 1 zijn de tracks van het routegebonden verkeer van 14 – 16 januari 2011 geplot



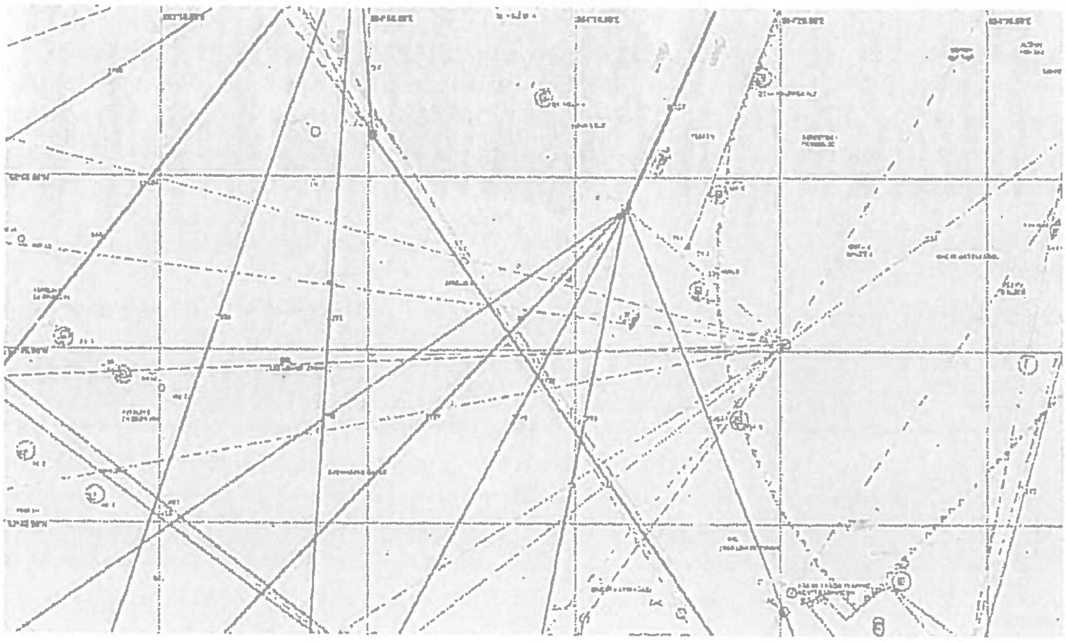
Figuur 1 Tracks van 3 dagen in 2011 bij wrak Vinca Gorthon

Figuur 1 laat duidelijk zien dat het wrak aan beide kanten wordt gepasseerd. Door de voorgestelde nieuwe routestructuur verandert de verkeerssituatie bij het wrak van de Vinca Gorthon. Omdat onlangs de berging niet geslaagd is, is het van belang te weten in hoeverre berging nog noodzakelijk is wanneer wordt overgaan op de nieuwe routestructuur. In de huidige verkeersafwikkeling passeert een deel van het verkeer aan de oostkant van het wrak. Het verkeer op de verbindingsroute van Maas Noord TSS naar Texel TSS wordt bij de huidige verkeersafwikkeling gesplitst in een deel dat aan de westkant passeert en een deel dat aan de oostkant passeert, zie Figuur 2.

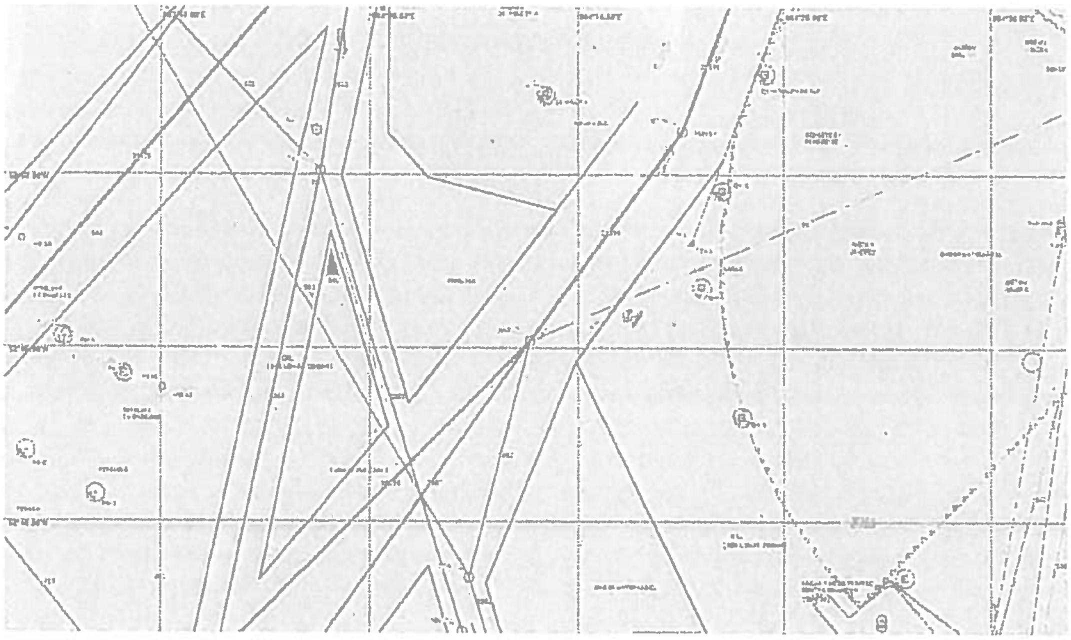
Figuur 2 Tracks van schepen in een half jaar die van Maas Noord TSS naar Texel TSS en binnen de rechte verbindingsvaarbaan blijven

In de nieuwe routestructuur zal al het verkeer richting Texel TSS aan de westkant passeren en is de belemmering in de vaarroute opgeheven. Maar de passeerafstand voor de schepen die aan de rand van de vaarbaan varen zal nauwelijks groter worden. Dit is geïllustreerd in Figuur 1 door ook de zwarte lijnen van de grenzen van de vaarbanen in de nieuwe routestructuur te tekenen.

De kans op een aanvaring met dit wrak is bepaald voor de huidige verkeersafwikkeling in Figuur 3 en voor de nieuwe verkeersafwikkeling in Figuur 4. De zwarte lijnen in Figuur 4 tonen de grenzen van de vaarbanen in de nieuwe routestructuur



Figuur 3 Routestructuur bij huidige verkeersafwikkeling



Figuur 4 Routestructuur bij voorgestelde verkeersafwikkeling

De berekeningen zijn met SAMSON uitgevoerd waarbij het wrak als een object wordt voorgesteld. Voor de Vinca Gorthon is een object van 185m lang en 37 m breed genomen. Voor een dergelijk object is de kans op raken van het object bepaald na een storing (driften) en door een navigatiefout (rammen): Tabel 1 bevat de berekende kans op raken per jaar voor driften en rammen voor de huidige verkeersafwikkeling en voor de verkeersafwikkeling op de nieuwe routestructuur.

Tabel 1 Cumulatieve Kans op raken van wrak Vinca Gorthon per jaar indien wrak aan de oppervlakte zou liggen voor een schip in een bepaalde GT-klasse of groter

	Scheepsgrootteklassen in GT							
	100-1000	1000-1600	1600-5000	5000-10000	10000-30000	30000-60000	60000-100000	>100000
gemiddelde ontwerpdiepgang	3.27	4.23	5.40	7.46	9.96	12.31	15.27	19.52
huidige structuur rammen	0.008271	0.008267	0.008212	0.007361	0.006530	0.004779	0.002513	0.000558
nieuwe structuur rammen	0.006140	0.006139	0.006121	0.005742	0.005350	0.004017	0.002023	0.000358
huidige structuur driften	0.001088	0.001057	0.000992	0.000520	0.000365	0.000184	0.000064	0.000010
nieuwe structuur driften	0.000975	0.000949	0.000895	0.000480	0.000345	0.000176	0.000060	0.000009
huidige structuur totaal	0.009359	0.009324	0.009204	0.007881	0.006895	0.004963	0.002577	0.000568
nieuwe structuur totaal	0.007115	0.007088	0.007016	0.006222	0.005695	0.004193	0.002083	0.000367

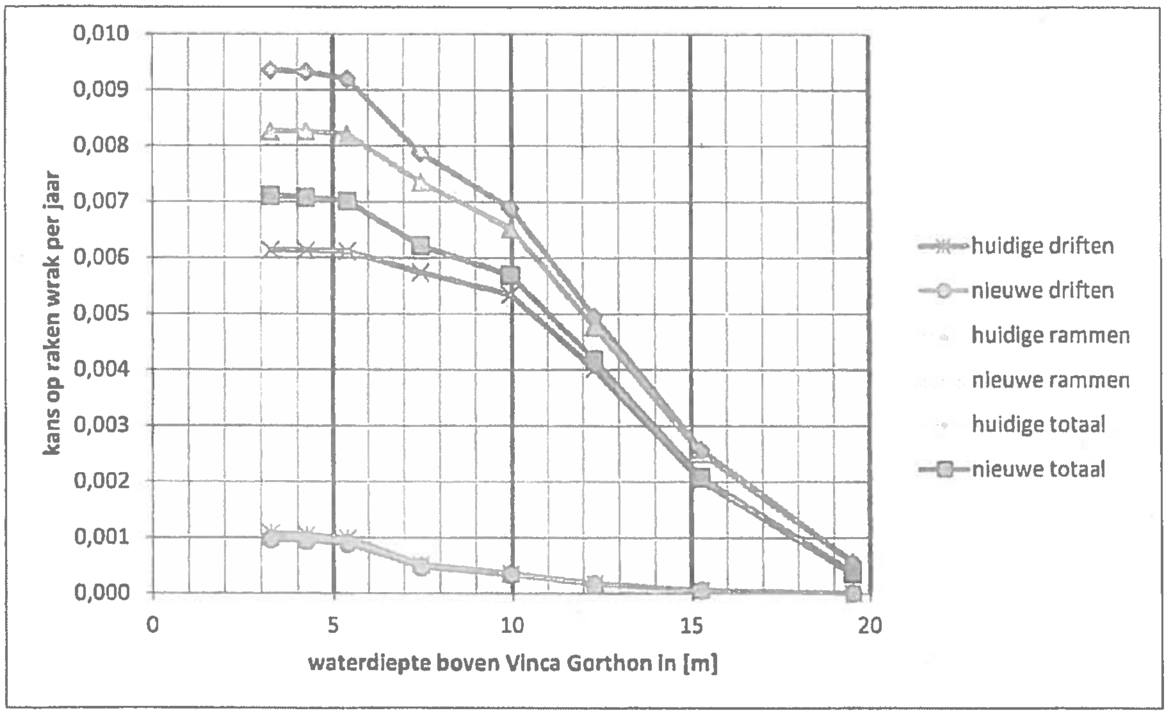
In Tabel 1 is cumulatief opgesteld. Dat wil zeggen dat niet de raakkans onder een bepaalde scheepsgrootte staat maar de kans op raken door een schip in deze grootteklasse of groter. Bijvoorbeeld: het getal 0.006222 bij "nieuwe structuur totaal" onder scheepsgrootte 5000-10000 GT geeft de kans op raken van het wrak aan door een schip van 5000GT of groter. Dit is een overschatting van de kans omdat er gevallen zijn dat de diepgang van het schip kleiner is dan de waterdiepte boven het wrak, zodat het schip zonder raken over het wrak kan zijn gevaren. Om het deel dat zonder raken het wrak kan overvaren weg te filteren is de diepgang van de betrokken schepen meegenomen. Voor iedere grootteklasse is de maximale diepgang bepaald. Dit is een overschatting van de operationele diepgang, dus ook een overschatting van de raakkans. Deze gemiddelde maximale diepgang staat ook in Tabel 1. In Figuur 5 is vervolgens Tabel 1 als functie van de waterdiepte weergegeven. Hieruit kan dan de kans worden afgelezen dat een schip de Vinca Gorthon raakt. De figuur moet als volgt gelezen worden. Bijvoorbeeld bij de waterdiepte van 10.8 m boven het wrak voor de bergingspoging geeft de figuur bij de huidige verkeersafwikkeling een raakkans van 0.006 per jaar, dus gemiddeld een incident eens in de 1/0.006= 167 jaar. Voor de nieuwe routestructuur zou de raakkans 0.005 per jaar zijn, dus eens in de 200 jaar.

MARIN

Door de mislukte berging is de waterdiepte boven het wrak veranderd. De gewijzigde kans op aanvaren kan uit de figuur afgelezen worden. De werkelijke kans is kleiner omdat:

- de operationele diepgang minder is de ontwerpdiepgang;
- de waterdiepte boven het wrak meestal groter is dan de minst gepeilde diepte die op de kaart wordt aangegeven;

De onderlinge verhouding van de aanvaarkans voor de huidige en nieuwe routestructuur zal echter weinig veranderen. Er kan dan ook worden geconcludeerd dat de raakkans van de Vinca Gorthon bij de nieuwe routestructuur kleiner zal zijn.

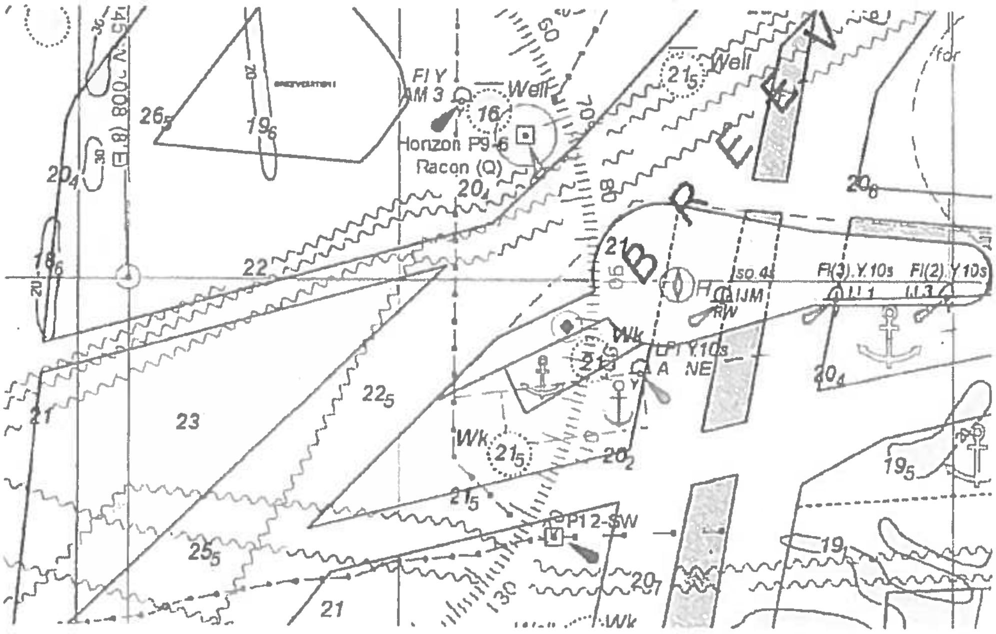


Figuur 5 Raakkans van de Vinca Gorthon per jaar als functie van de waterdiepte beven het wrak

Figuur 5 laat ook zien dat het verschil in raakkans voornamelijk wordt bewerkstelligd door een kleinere kans op rammen voor de nieuwe routestructuur. De kans op raken na een storing, driften, is veel kleiner en is voor beide routestructuren bijna gelijk.

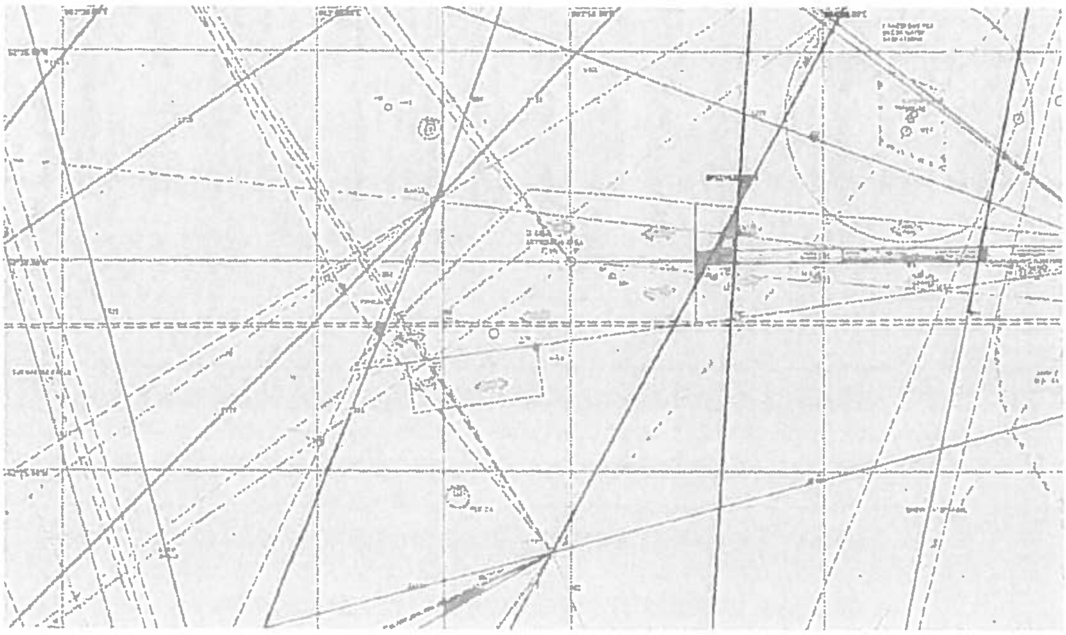
Wrak in het aanloopgebied van de IJgeul

Het wrak in het aanloopgenbied van de IJgeul ligt op waterdiepte 21.0m LAT of wel -22.1 m t.o.v. N.A.P.. Dit wrak zou bij de nieuwe routestructuur in het ankergebied voor de IJgeul terecht komen.

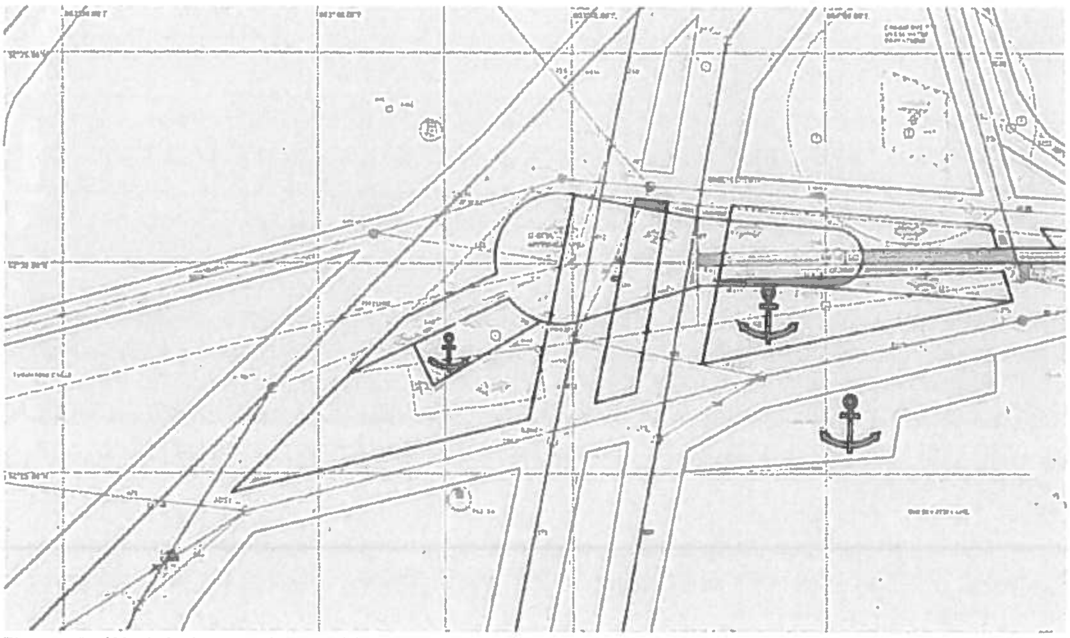


Figuur 6 Locatie van wrak bij de IJgeul

De traffic databases voor de huidige en de nieuwe structuur zijn weergegeven in Figuur 7 en Figuur 8.



Figuur 7 Wrak in het aanloopgebied van de IJgeul met de huidige verkeersafwikkeling



Figuur 8 Wrak in het aanloopgebied van de IJgeul met de voorgestelde verkeersafwikkeling

Op dezelfde wijze als voor de Vinca Gorthon zijn hier berekenignen uitgevoerd voor dit wrak. Het resultaat is weergegeven in Tabel 2.

Tabel 2 Cumulatieve Kans op raken van wrak bij de IJgeul per jaar indien wrak aan de oppervlakte zou liggen voor een schip in een bepaalde GT-klasse of groter

	Scheepsgrootteklassen in GT							
	100-1000	1000-1600	1600-5000	5000-10000	10000-30000	30000-60000	60000-100000	>100000
gemiddelde ontwerpdiepgang	3.27	4.23	5.40	7.46	9.96	12.31	15.27	19.52
huidige structuur rammen	~~0.003010~~	~~0.003002~~	~~0.002996~~	~~0.002934~~	~~0.002841~~	~~0.002466~~	~~0.002059~~	0.000115
nieuwe structuur rammen	~~0.001460~~	~~0.001460~~	~~0.001459~~	~~0.001432~~	~~0.001385~~	~~0.001225~~	~~0.000963~~	0.000053
huidige structuur driften	~~0.000730~~	~~0.000713~~	~~0.000684~~	~~0.000446~~	~~0.000354~~	~~0.000188~~	~~0.000087~~	0.000007
nieuwe structuur driften	~~0.000852~~	~~0.000829~~	~~0.000783~~	~~0.000465~~	~~0.000348~~	~~0.000171~~	~~0.000070~~	0.000006
huidige structuur totaal	~~0.003740~~	~~0.003715~~	~~0.003680~~	~~0.003380~~	~~0.003195~~	~~0.002654~~	~~0.002146~~	0.000122
nieuwe structuur totaal	~~0.002312~~	~~0.002289~~	~~0.002242~~	~~0.001897~~	~~0.001733~~	~~0.001396~~	~~0.001033~~	0.000059

Alleen de laatste kolom van de tabel is zinvol omdat de andere schepen gewoon over het wrak zullen varen zonder dat te raken. Daarom zijn de andere waarden doorgestreept. De meeste schepen in de grootste klasse zullen ook niet genoeg diepgang hebben om het wrak te raken. In de AIS data van 2010 is xx m (weet ik woensdag 19 oktober) de grootste diepgang van een schip dat dit gebied heeft doorkruist.

Wanneer wel alle schepen boven de 100000GT het wrak zouden raken is de kans hierop eens in de 8200 jaar (=1/0.000122) voor de huidige verkeersafwikkeling en eens in de 17000 jaar (=1/0.000059) voor de nieuw routestructuur. De nieuwe routestructuur verkleint de kans op raken aanzienlijk. Hierbij is het ankeren zelf buiten beschouwing gelaten. Ankeren op de locatie van het wrak is ongewenst omdat de kans op het verliezen van het anker dan aanmerkeijk groter is.

Ook al omdat de actuele waterdiepte boven het wrak vrijwel altijd groter is dan de waterdiepte van 21m t.o.v. LAT in de kaart, is het uiterst onwaarschijnlijk dat een schip dit wrak kan raken.

Bij de bovenstaande beschouwing is voorbijgegaan aan de gegarandeerde diepte in het aanloopgebied van de IJgeul van 21.3 m LAT (of wel -22.1 m t.o.v. N.A.P.). Indien het wrak in de toekomst in het ankergebied zou komen te liggen is volgens de huidige richtlijn een waterdiepte van -23.0 m t.o.v. N.A.P vereist.

27A

Ministerie van Infrastructuur en Milieu

Rijkswaterstaat

TNO PML LAB
Postbus 45
2280 AA RIJSWIJK

Opdracht

Datum
12.10.2011

Ons kenmerk
bestelnummer 4500185854

Onderwerp
Bepalen van de risico's van scheepvaart over munitiedepots in de Noordzee.

Uw kenmerk
Offerte 11 PPS/225, d.d. 26 september 2011

Einde looptijd
15.12.2011

Contactpersoon
[redacted]

Opdracht voor het verrichten van de volgende werkzaamheden, diensten en/of leveringen:

Pos.nr.	Omschrijving			
Bestelhoevh.	Besteleenheid	Prijs per eenheid		Nettowaarde
00010	Risico van scheepvaart over munitiedepot			42.000,00
Totale nettowaarde excl. BTW in EUR				42.000,00

Voor inhoudelijke vragen betreffende deze opdracht kunt u contact opnemen met [redacted] kantoorhoudende te Rijswijk, telefoon [redacted]

Voor inkoopgerelateerde vragen kunt u contact opnemen met de Frontoffice van de afdeling Inkoopondersteuning te Rijswijk (ZH), telefoon [redacted]

Voor vragen over facturen en betalingen kunt u contact opnemen met het KCC, telefoon [redacted]

Overige afspraken
Kostencalculatie op basis van nacalculatie (zie offerte)

Rijkswaterstaat Noordzee
Postadres Postbus 5807, 2280 HV Rijswijk
Bezoekadres Lange Kleiweg 34, BTW nr. NL 0032 14 412 B23

Factuuradres

Afleveradres

Rijkswaterstaat Dienst Noordzee
T.a.v. de crediteurenadministratie
Postbus 8185
3503 RD UTRECHT

Factureren onder vermelding van bestelnummer en positienummer (Pos.nr). Facturen die ingediend worden zonder het hierboven vermelde bestelnummer en positienummer kunnen niet in behandeling worden genomen.

Correspondentie dient te worden gericht aan het postadres met vermelding van het zaaknummer 31061525.
DE MINISTER VAN INFRASTRUCTUUR EN MILIEU,
namens deze,
De Directeur Water en Scheepvaart,

[redacted]

Op deze opdracht zijn van toepassing:

Algemene Rijksvoorwaarden voor het verstrekken van opdrachten tot het verrichten van Diensten, (ARVODI - 2011)

Nadrukkelijk uitgesloten zijn, de in de in uw offerte en/of in de factuur van toepassing verklaarde (Algemene) Voorwaarden.

30A

Ministerie van Infrastructuur en Milieu

> Retouradres Postbus 20904 2500 EX Den Haag

RWS Dienst Noordzee
Directie water en Scheepvaart
[redacted]
Postbus 5807
2280 HV Rijswijk
Nederland

DNZ	
NR. RWS/DNZ-2011/1395	
03 OKT. 2011	
TB/TK: WS	
Bijlage: in -voud	
Classificatie	Dossiernr.
020-0931	101.01

2010/2213

Directoraat-Generaal Luchtvaart en Maritieme Zaken
Maritieme Zaken
Plesmanweg 1-6
Den Haag
Postbus 20904
2500 EX Den Haag

Contactpersoon
[redacted]

Ons kenmerk
IenM/BSK-2011/120861

Datum 21 september 2011
Betreft opdrachtverlening ontwerp VSS

Beste [redacted]

Naar aanleiding van de uitvoering van de motie Velthoven inzake de verlenging van de levensduur van de negen nog niet gebruikte vergunningen voor windparken op zee is door Rijkswaterstaat een traject gestart met de wind- en scheepvaartsector om draagvlak te verkrijgen voor het verlengen van de huidige vergunningen voor windparken op zee met zicht op realisatie.

De gesprekken die daartoe zijn gevoerd met de vergunninghouders, de havenbedrijven en Rijkswaterstaat zijn inmiddels gevoerd en hebben geleid tot een gedragen aanpak.

Deze aanpak bestaat uit het verleggen van de scheepvaartroutes en ankergebieden en het verplaatsen van de capaciteit van het windvergunning gebied "Scheveningen Buiten" naar een andere lokatie.

Omdat nieuwe scheepvaartroutes op het Nederlandse deel van de Noordzee de goedkeuring behoeven van de lidstaten van de Internationale Maritieme Organisatie (IMO) moeten deze aan de door IMO geformuleerde uitgangspunten voldoen; zo zal moeten worden aangetoond dat de veiligheid van de scheepvaart door een nieuw routesysteem wordt verbeterd.

Om aan dit laatste te voldoen verzoek ik u op het nieuw ontworpen routesysteem een kwantitatieve risico analyse (QRA) uit te (doen) voeren en op basis van deze QRA een veiligheidsanalyse in de vorm van een IMO Formal Safety Assessment (FSA) uit te (doen) voeren.

Omdat deze werkzaamheden buiten de tussen Rijkswaterstaat en DGLM gesloten SLA nog in de huidige BOA zijn vastgelegd, ben ik bereid tot aanvullende financiering van genoemde onderzoeken uit het budget op product 33.02.01.0001 Verbeteren veiligheid.

Directoraat-Generaal Luchtvaart en Maritieme Zaken
Maritieme Zaken

Datum
21 september 2011

Ons kenmerk
IenM/BSK-2011/120861

Naar ik heb vernomen zullen de kosten voor het uitvoeren van de FSA gedragen worden door zowel de havenbedrijven, de windenergie sector en Rijkswaterstaat en zal de QRA in zijn totaal ten laste komen van Rijkswaterstaat.

In gedachten de offertes voor het uitvoeren van de FSA door Arcadis/Vectra ad [redacted] exclusief reis en verblijfskosten die worden geschat op [redacted] beiden ex BTW, en de offerte van Marin voor het uitvoeren van de QRA ad [redacted] ›x BTW, machtig ik u voor de financiering van de gezamenlijke onderzoeken een bedrag van maximaal € 43.000, ex BTW, ten laste brengen van verplichtingennummer 33.02.01.0001 Verbeteren veiligheid zeevaart.

Met vriendelijke groet,

DE DIRECTEUR MARITIEME ZAKEN,

[redacted]

3

31A

Directeuren Dialoog Wind

RWS Noordzee
Lange Kleiweg 34
Postbus 5807
2280 HV Rijswijk (ZH)
T 070 336 66 00
F 070 390 06 91
www.rijkswaterstaat.nl

Contactpersoon
[redacted]

T 666
[redacted]dnz.rws.minvenw.
..

memo
stand van zaken routering/FSA

Datum
21 september 2011

Bijlage(n)
-

Doel
U te informeren

- over de stand van zaken over de routering/FSA en verdere vervolgstappen
- te informeren over de status van de "bevroren" kaart, die gebruikt wordt bij de FSA en QRA

Lopende onderzoeken
De opdrachten aan MARIN (QRA, Kwantitatieve risicoanalyse) en ARCADIS VECTRA (FSA, kwalitatieve risicoanalyse en opstellen IMO submissie) zijn verleend. Ook is opdrachtverlening aan TNO vwb het onderzoek naar de veiligheid van de scheepvaart irt de munitiestortplaatsen nagenoeg afgerond. RWS doet samen met de Dienst der Hydrografie onderzoek naar eventuele overige risico's voor de scheepvaart (obstakels, w.o. wrakken, ondiepten etc).

De FSA (Formal Safety Assesment) is een door IMO gewenste wijze van veiligheidsonderzoek die ten grondslag moet liggen aan het voorstellen van routeringsmaatregelen. De FSA bestaat uit 5 stappen:

1. identificeren van zgn hazards of risico's (een lijst van alle relevante ongewenste gebeurtenissen met hun potentiele gevolgen).
2. beoordelen van die risico's
3. opties vaststellen voor eventuele mitigerende maatregelen, naast routeringsmaatregelen worden ook andere maatregelen besproken (zoals verkeersbegeleiding, sleepboothulp, ed)
4. kosten/batenanalyse van die mitigerende maatregelen
5. aanbevelingen voor besluitvorming.

In de FSA worden ook de genoemde onderzoeken bij MARIN, TNO en RWS meegenomen/meegewogen.

De aanbevelingen voor besluitvorming zullen voorgelegd worden aan dit directeurenoverleg. Het uiteindelijke besluit (welke mitigerende maatregelen, incl de routeringsmaatregelen moeten we treffen) wordt genomen door het ministerie van I&M. Het ministerie dient namens de Nederlandse staat de IMO-submissie in.

Stand van zaken

de voortgang van alle gesprekken wordt u op de hoogte gehouden.

Status van de "bevroren" kaart van 16 september

Planning

- 29 september: aanpassen routering nav nu reeds bekende issues
- 30 september: vaststellen routeringsmaatregelen Min van I&M: RWS/DGB, dit wordt daarna ikv FSA weer besproken met KW, HbR, GHA en Loodswezen als input voor IMO submissie
- Bespreken eventuele nieuwe ruimteclaims met relevante partijen
- Onderzoek RWS (samen met Dinest der Hydrografie) naar wrakken en ondiepten: eind oktober
- MARIN/QRA: medio oktober
- Munitiestortplaatsen: medio november 1^e indicatie, eind 2011 rapport
- FSA: medio november 1^e resultaten bekend
- Daarna IMO submissie en afronding FSA: afronding medio jan 2012.

Mede namens HbR/[redacted]

Met vriendelijke groet,

[redacted]
Verkeersmanager
Rijkswaterstaat Dienst Noordzee
Postbus 5807
2280HV Rijswijk .

32A

Formal Safety Assessment, a qualitative risk assessment for the proposed route structure in the North Sea (FSA)

Prepared by:	Arcadis UK Limited 5th Floor, Portland Tower. Portland Street Manchester M1 3AH. United Kingdom.
Presented to:	[redacted] Port of Rotterdam World Port Centre Rotterdam Wilhelminakade 909, Rotterdam The Netherlands
Date:	20th September 2011
Revision No.:	**Final version**
Ref.:	L60151/1

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9	26th March 2012	10	Capt Thomas J. Proctor	Ian Clark	Capt Thomas J. Proctor

TABLE OF CONTENTS

EXECUTIVE SUMMARY

ARCADIS(UK) has been commissioned to assess the (relative) safety level of routeing measures developed in the Netherlands using the FSA process, expert judgement and qualitative methods, to recommend risk control options for this routeing proposal and to provide support data for evidence based decision making on cost-benefit of the proposals.

The report has its basis in a previous study made by Arcadis, commissioned by the Ministry of Transport and the Environment, entitled 'Navigational Risk Review of Wind Park Development in Dutch Waters (Ref:259-7051 HZ01) 12th October 2010. Five Wind Park schemes (Variants) were considered and analysed with the most favourable Variant being identified. This favoured Variant was subjected to further consideration and a hybrid Variant was produced namely IMO Variant 16.09.11.

The IMO Variant was subjected to a HAZID assessment at a workshop held in Rotterdam on 20th September 2011. The HAZID assessment used expert judgement and qualitative methods to arrive at this comparison of risk levels. After several iterations of the routing design this resulted in the final IMO Variant 12.12.11. This Variant was subjected to further Hazid Analysis with notable improvement in comparison to the intermediate draft IMO variants. Hazids were also applied to the Present situation and Variant 1- 2010 of the initial study.

As part of the HAZID assessment, Arcadis compared the 'IMO Variant' (with all Round 2 Wind Parks except Scheveningen WP and with the traffic routeing amended) with two baseline Variants:

1. The present situation with Wind Park 'Q10' under construction about twelve miles off the coast south of IJmuiden with the existing traffic routeing (separation schemes and precautionary areas) remaining the same.
2. The 'Variant 1' (2010) situation with all of the 'Round 2' wind parks developed and with the present traffic separation schemes, associated precautionary areas and inshore traffic zones remaining unchanged but connected by recommended routes.

Apart from leading the workshop, the project team has carried out interviews with all relevant experts, industries and interested organisations, in the run up to the workshop as well as after the workshop to clarify outstanding points and complement the workshop results. This fact finding missing yielded the following observations:

1. A significant amount of near misses in the approaches to IJmuiden and near misses with oil/gas platforms have been observed. These stress the importance of a review of routeing measures and the limited anchoring space around IJmuiden. Greater control and influence of VTS could be a mitigating factor.
2. The trend is up with clear optimism from Amsterdam Port which has maintained its position in the fourth place of European ports. Tanker traffic is clearly on the increase and measures must be in place to address this trend.
3. Concern is registered at the apparent indifference to the safety zones around wind park and oil/gas assets. 2010 over 2009 saw a 72% increase in violations of Safety Zones.

Arcadis (UK) compiled Hazard and Risk tables showing the results of the HAZID assessment in great detail, including the following locations that required particular attention in the Q10 and Variant 1 scenarios (both assuming the unchanged, present route structure in place):

- **Approaches to IJmuiden**: various potentially hazardous situations can be created by the small clearances between traffic streams, close quarter situations at large aspect angles leading to ambiguous situations in terms of colregs and deep draft vessels that are restricted in their ability to move and therefore may not be able to comply with their duty to give way **(see area A in figure i)**.

- **Entrance to Off Texel TSS**: potentially hazardous situations can arise when various traffic streams merge at the narrow entrance to the Off Texel TSS (due to the buoyed Vinca Gorthon wreck), leading to a close quarters situation at a large aspect angle and uncertainty as to whether it is a crossing or an overtaking encounter **(see area B in figure i)**.

- **Horizon oil platform:** potentially hazardous situations can arise when give way ships respond to a close quarters encounter in accordance to Colregs by altering course towards the platform **(see area C in figure i)**.

- **Maas centre precautionary area:** Ships from Maas North TSS must alter course to starboard to approach the pilot station whilst at the same time being stand on vessels for outbound traffic in a close quarters crossing encounter. Traffic from Maas North TSS and Maas Northwest TSS have to cross the deep water channel to approach the pilot station and inbound ships from Maas West TSS cross the area to approach Scheveningen pilot station. This results in multiple crossing in the precautionary area **(see area D in figure i)**.

- **Approaches to and from Hook of Holland:** Multiple crossing at poor aspect angles between traffic to and from Hook of Holland and to and from Schouwenbank occur in this area. Traffic to and from Schouwenbank also crosses the deep water route in this area. Vessels in the deep water route are restricted in their ability to take avoiding action **(see area E in figure i)**.

- **At Brown Ridge/ De Ruyter:** Near Brown Ridge and De Ruyter close quarter situations between ships moving at very different speeds from all directions converge at large aspect angles and can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel **(see area F in figure i)**.

- **Breeveertien and West Rijn wind parks:** if wind parks are developed, the poor visibility at both locations can obscure timely onboard visual, AIS and radar detection of close quarter encounters between crossing vessels. (Radar detection may also be obscured by false echoes of a target due to radar signals reflecting off one or more wind turbines).

Overall, IMO variant 12.12.11 has a significantly lower level of risk than either of the other two systems, leading to the conclusion that the benefits derived from implementation of the IMO Variant in terms of safety of life at sea and improving navigation in the area is clear from the Hazid process and is certainly an improvement on the present situation. This can, amongst others, be ascribed to the following features of the proposed IMO variant routeing design that mitigate the above hazards:

1. **The approaches to IJmuiden:** Traffic between the Maas North and the Texel traffic separation schemes is directed to cross the deep-water route leading to IJmuiden in a precautionary area west of the deep-water channel and so deep draft vessels have room to take the proper evasive action in risk of collision encounters. Furthermore, the traffic separation scheme in the approaches to IJmuiden will prevent the crossing encounters between inbound and outbound traffic that currently occur, whilst north and south going ships cross the scheme in just the two precautionary areas. This allows for more anchorage areas on the south side of the separation scheme so that inbound ships do not cross the outbound lane when arriving at or departing from the anchorages.

2. **Entrance to Off Texel TSS:** In the IMO variant, ships from the Maas North to the Off Texel traffic separation schemes are directed to join northeast going traffic about 10 miles southwest of where they currently do and so the congestion of merging traffic that currently occurs at the south end of the Off Texel northeast bound lane is reduced. The adjusted boundaries of the Off Texel traffic separation scheme's northeast bound traffic lane also puts the Vinca Gorthon wreck outside of the lane, so effectively increasing the lane's width.

3. **Around Horizon platform:** In the IMO variant, the extended southwest bound traffic lane of the Off Texel traffic separation scheme obliges ships for Schouwenbank via the amended Maas Junction precautionary area to continue in the southwest lane until they reach the south bound branch lane, rather than turning south-southwest as soon as they exit the current traffic lane. This reduces the traffic passing through the current 'hot spot' at the Horizon manned oil platform. Furthermore, re-aligning the northeast bound lane of North Hinder North traffic separation scheme directs vessels to pass the Horizon platform at a greater distance than it currently does.

4. **Maas Centre precautionary area:** Vessels from Maas North TSS for the Maas Centre do not need to turn to starboard to approach the pilot station whilst being stand on traffic for outgoing ships. The enlarged Maas Centre precautionary area also provides more manoeuvring space for vessels embarking or disembarking the pilot.

5. **Approaches to and from Hook of Holland:** The crossing angle of N/S going ships with east/west going traffic in the amended Maas Junction precautionary area is improved.

6. **At Brown Ridge/ De Ruyter:** The recommended route from the south going branch directs traffic for Schouwenbank to cross northeast bound traffic for the Off Texel traffic separation scheme and northwest/southeast traffic in and out of the Maas

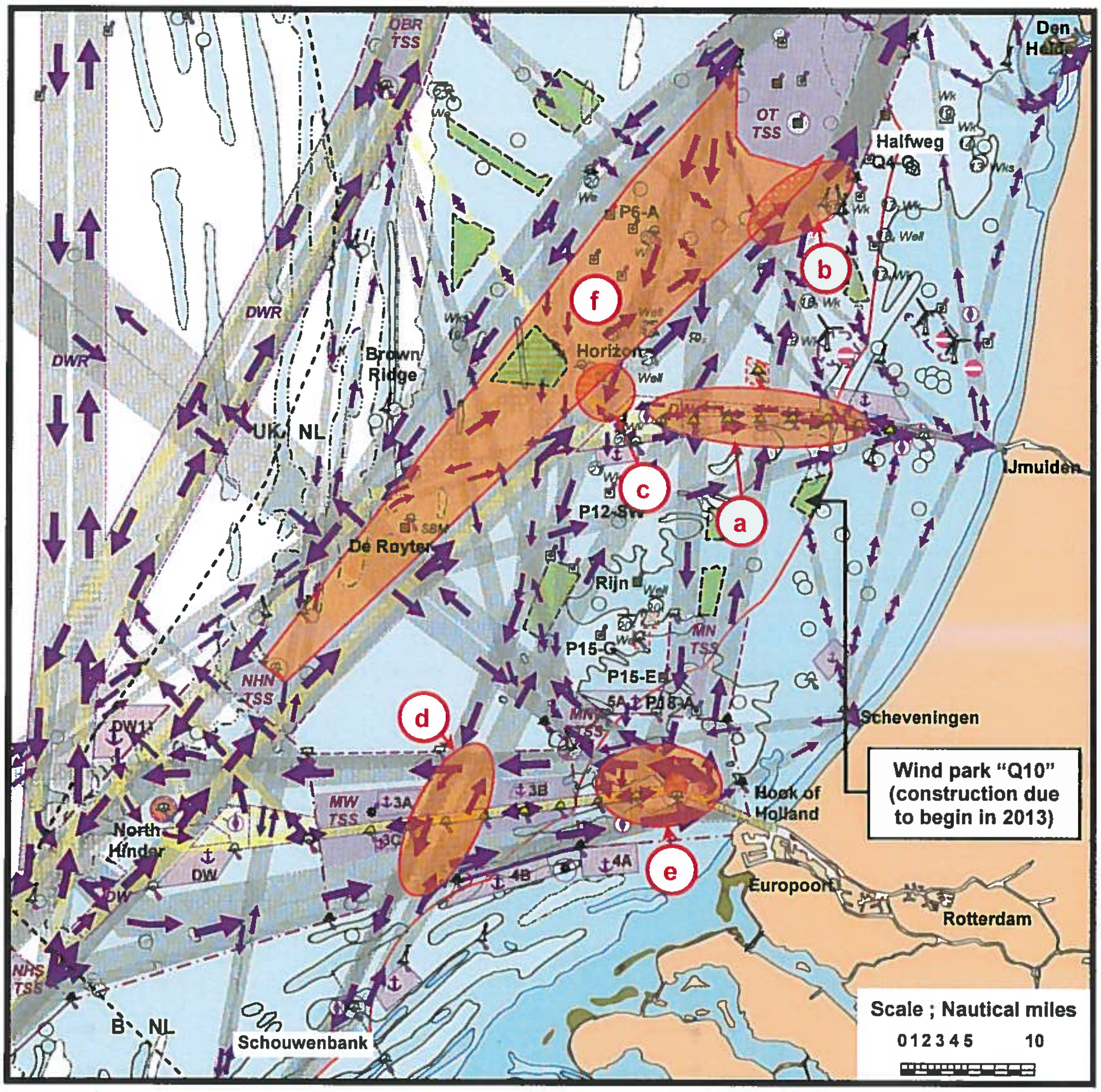
Northwest traffic separation scheme in the new Rijnveld precautionary area. The area's shape and the orientation of its boundaries have been designed so that the different of risk of collision scenarios between vessels passing through the area are sufficiently far apart for two or more different risk of collision encounters not to coincide.

7. **Around Breeveertien and West Rijn Wind Parks:** The IMO variant provides greater clearance between shipping and the wind parks than variant 1. Note that clearance is still less than a mile near the end of the Off Texel extended southwest bound lane, but the junction shadowed by the wind park is a diverging one so there is not a high risk of a potentially dangerous crossing encounter being obscured.

Implicit in the selection of IMO Variant was the utilization of the majority of the listed Risk Control Options. The remaining RCOs are directed at reducing residual risk after implementation of the IMO Variant and can be summarised as follows:

- application of the International Regulations for Preventing Collisions at Sea 1972 (COLREGS);
- risk aware design, construction and operation of licensed wind parks;
- a review of ETV capacity; and
- a review of the extend of VTS control areas.

This FSA study concludes that the proposed routeing measures will lead to additional distances for commercial traffic and associated costs. It is noted that additional distances incurred by commercial traffic are small and within the limits of error when considering individual foreign going vessels that transit the routes prior to or after making long ocean passages. Even so, this figure escalates to a large amount when considering all vessels that enter the ports of Rotterdam and IJmuiden on an annual basis. The additional mileage, and therefore costs, is more readily felt by those individual vessels which frequent the ports on a daily basis and classed as regular runners, that is, ferries, feeder vessels and similar.



= Possible wind park sites, = Ammunition dumps to be avoided

= Manned offshore platforms, = Unmanned offshore platforms

Fig i. Principal areas of concern to be improved by the proposed traffic system

Abbreviations and definitions

ALARP	-	As Low As Reasonably Practicable
ATBA	-	Area To Be Avoided
AIS	-	Automatic Identification System
CD	-	Chart Datum
COLREGS	-	The International Regulations for the Prevention of Collisions at Sea / Collision Regulations 1972.
CBA	-	Cost Benefit Analysis
CPA	-	Closest Point of Approach.
DWR	-	Deep Water Route
ETV	-	Emergency Towing Vessel
EU	-	European Union
FSA	-	Formal Safety Assessment
HAZID	-	Hazard Identification
HSE	-	Health and Safety Executive
IALA	-	International Association of Lighthouse Authorities
IMO	-	International Maritime Organisation
MARIN	-	Maritime Research Institute Netherlands
MCA	-	Maritime and Coastguard Agency
MEPC	-	Marine Environment Protection Committee
MHWS	-	Mean High Water Springs
nm	-	Nautical Miles (1nm ≡ 1,852 metres)
PA	-	Precautionary Area
QRA	-	Quantitative Risk Assessment
QA	-	Quality Assurance
RCO	-	Risk Control Options
TSS	-	Traffic Separation Scheme
VTS	-	Vessel Traffic Service
WP	-	Wind Park

A HAZARD is an unplanned event which may have an adverse effect on:

- personal safety (injury or death to people)
- environment (pollution or loss of natural habitat)
- property (damage to offshore installations or ships)
- business continuity or business reputation

Frequency or probability is the number of times that a hazard might occur

Consequence or severity is the result that will follow if a hazard (unplanned event) does actually take place

Risk is the combination of the above frequency and consequence.

Risk Value is the general description of a hazard that has been risk assessed by combining the frequency and consequence. These are described later.

Risk Matrix is the format used to record the information in a logical and systematic format, as is described below.

Risk Acceptance Criteria is the graduated levels of frequency and consequence as used in the Risk Matrix. These are described below.

Risk Control Option (RCO) is an existing or proposed method of reducing the risk until it is as low as possible

ALARP is an abbreviation which means that a risk from a hazard has been reduced to a level which is **As L**ow **As R**easonably **P**racticable.

1. Introduction

This introductive chapter serves to make the reader acquainted with the history, context, motives, objectives and methods of the Formal Safety Assessment (FSA) and with the structure of this report, in which the FSA process is documented.

1.1 Context

The plan to increase the Netherland's wind power generating capacity by building several large wind parks off the coast between the Hook of Holland and Texel has considerable implications for shipping in this busy area. ARCADIS(UK) and MARIN were contracted to assess the impact of these wind parks on shipping to determine whether or not the present routing measures for shipping in the area must be modified to accommodate the wind parks.

The basis of the report is a previous study conducted by Arcadis, commissioned by the Ministry, entitled 'Navigational Risk Review of Wind Park Development in Dutch Waters (Ref:259-7051 HZ01) 12th October 2010. Five different wind park schemes (Variants) were considered and the analysis identified the most favourable Variant. This favoured Variant was subjected to further consideration and a hybrid Variant was produced namely IMO Variant 16.09.11.

The IMO Variant was subjected to a HAZID assessment at a workshop held in Rotterdam on 20th September 2011. After several iterations of the routing design this resulted in the final IMO Variant 12.12.11. This Variant was subjected to further Hazid Analysis with notable improvement in comparison to the intermediate draft IMO variants. Hazids were also applied to the Present situation and Variant 1- 2010 of the initial study.

1.2 Proposal

At a meeting held at the Port of Rotterdam offices on Thursday, 28th July 2011, attended by Captain Ben Van Scherpenzeel for the Port of Rotterdam, Capt Fred Bloot for the Ministry of Water, Captain Jaques Van Kooten for RWS and Captain Thomas J Proctor for Arcadis (UK) a request was tabled by the Port of Rotterdam to tender a proposal for the provision of a qualitative FSA, including HAZID assessment of a new 'Variant IMO' Wind park.

The proposal incorporating all requirements of the scope of work was submitted on the 02 September 2011 and accepted on the 05 September 2011 by Captain Ben Van Scherpenzeel.

1.3 Scope of work

The following text lays out the scope of work for this project and records subsequent dialogue, instruction between client, Port of Rotterdam and Arcadis (UK) to date to ensure deliverables will meet the following requirements:

(Terms of reference Formal Safety Assessment, Capt Ben Van Scherpenzeel 04.08.11)

1. The new "Variant IMO" should be compared with the following Variants:
    a. Present situation with wind park Q10 marked as a construction area for wind parks.
    b. Variant No.1 of the FSA2010 (all so-called 2nd round Wind parks implemented).
2. The HAZID/FSA includes calculation of the extra nautical miles to be sailed to the Port of Rotterdam and Port of Antwerp due to the changed lay-out of the shipping lanes.
3. Part of the HAZID/FSA will be a discussion about navigation marks (amongst other things the number and location of additional navigation buoys)
4. Part of the HAZID/FSA will be to discuss which routes should be recommended routes or Traffic Separation Schemes (TSS)

5. Part of the HAZID/FSA will be to at least address, but not be restricted to, the following issues:
   a. Exploration of small oil/gas fields (changed since 2088).
   b. Exploration of Wind parks (changed since 2008).
   c. Increased tanker traffic Port of Amsterdam (changed since 2008).
   d. Small Aspects of crossing traffic (in present situation).
   e. Issues found in previous report (in present situation).
   f. Near misses with oil and gas platforms (in present situation).
   g. Risks concerning the two ammunition dumping grounds (in present and proposed situations).
6. All draft reports will be shared with stakeholders for comments.

1.4 Objectives

Both ARCADIS (UK) and Marin were asked to compare the risk levels for the following three different situations:

(i) The present situation **with Wind Park 'Q10' under construction** about twelve miles off the coast south of IJmuiden with the existing traffic routeing (separation schemes and precautionary areas) remaining the same.

(ii) The 'Variant 1' (2010) situation **with all of the 'Round 2' wind parks developed** and with the present traffic separation schemes, associated precautionary areas and inshore traffic zones remaining unchanged but connected by recommended routes.

(iii) The 'IMO Variant' (12.12.11) with **all Round 2 Wind Parks except Scheveningen WP** and with the traffic routeing amended to increase the distance between the shipping lanes and the wind parks.

Arcadis (UK) uses expert judgement and qualitative methods to arrive at this comparison of risk levels.

1.5 Methodology

The HAZID method uses a team based approach which incorporates a structured brainstorming technique in a workshop setting, used to draw out information from the participants. The team is made up of appropriately qualified persons. The aim is to identify hazards capable of leading to undesirable consequences as well as the current and recommended control measures for each hazard. The hazards are further assessed in terms of the associated consequences and frequency of occurrence. The HAZID is carried out under supervision of experts with both strong nautical and methodological experience, in the present case two experts from Arcadis (UK).

Apart from leading the workshop, the supervisors have carried out interviews with the relevant experts, industries and organisations, in the run op to the workshop as well as after the workshop to clarify outstanding points and complement the workshop results. As part of this broader inventory, the supervisors have undertaken action to identify relevant marine activities other than shipping itself, that form external influences to the HAZID process.

The HAZID also uses the Formal Safety Assessment process, illustrated in Figure 1. This is a structured and systematic methodology based on risk analysis and cost benefit assessment (if applicable). There are five basic steps within this process:

1. Identification of hazards (a list of all relevant accident scenarios with potential causes and outcomes);
2. Assessment of risks (evaluation of risk factors);
3. Risk control options (devising regulatory measures to control and reduce the identified risks);
4. Cost benefit assessment (determining cost effectiveness of risk control measures); and
5. Recommendations for decision-making (information about the hazards, their associated risks and the cost effectiveness of alternative risk control measures).

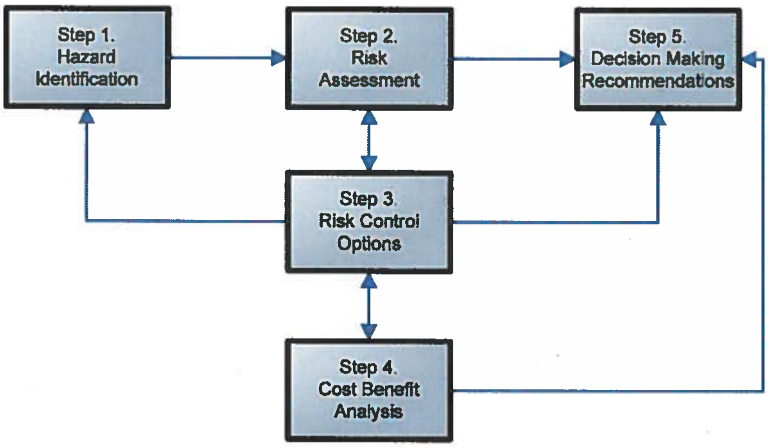


Figure 1. The FSA process

1.6 Report Structure

Chapter 2 of this report addresses the External Hazard Influences, such as oil and gas platforms, wind parks, traffic trends and near-miss trends that have been considered in this HAZID study.

Chapters 3 of this report gives a detailed overview of the HAZID methodology and approaches.

Chapter 4 (Step 1 and 2 of the FSA) presents the results of the HAZID study, both for Hazard Identification and the subsequent Risk Assessment.

Chapter 5 (Step 3 of the FSA) lists the Risk Control Options (measures to reduce the identified risks). A distinction is made between RCO's that are integral in the proposed routeing structure and RCO's that can reduce the residual risk in further implementation processes.

Chapter 6 (Step 4 of the FSA) outlines the Cost Benefit Analyses (cost effectiveness of the risk control measures), focussing on the cost of employing ETVs (Emergency Towing Vessels) and the additional distance incurred for commercial traffic.

Chapter 7 (Step 5 of the FSA) gives the Decision Making Recommendations

2. External Hazard Influences

The following external data were gathered to give a most realistic and objective approach to the HAZID findings:

1. Near Misses in the Approaches to IJmuiden
2. Exploration of Small Oil/Gas Fields (changes since 2008)
3. Offshore Wind parks
4. Increased Tanker Traffic for Port of Amsterdam (changes since 2008)
5. Near Misses from Oil/Gas Platforms (Present Situation)

The main observations are first summarized below. Readers interested in detailed descriptions of the nature of the external hazard influences are referred to the paragraphs thereafter.

2.1 Main observations

1. Near misses in the approaches to IJmuiden and near misses with oil and/or gas platforms are of great significance and readily illustrate the need for more organisation of shipping in the area under consideration and the assets. Giving greater control and influence to VTS could be a mitigating factor and a fact finding visit to the VTS station confirmed the need for this additional control.

2. The near misses in the approaches to IJmuiden are disturbing in that all the incidents relate to the misinterpretation and/or understanding of the Collision Regulations. The situation for the approaches to IJmuiden can be improved by:
   - designation of a TSS;
   - better utilization of the VTS of the competent authority at IJmuiden (CNB), giving them greater control and authority; in addition to
   - repositioning of the existing anchorage areas.

3. It is clear that the Dutch government is proactive in their commitment and support to wind parks as a form of sustainable energy. However, this commitment and progress must be in line with an established safety regime.

4. The existing wind parks, PAWP and OWEZ (numbered as ‘32’ and ‘33’ respectively in the maps of the three different traffic scenarios examined in the FSA) have proved successful which has laid a firm foundation for the encouragement for further exploration which is evidenced in the 12 licensed wind parks under consideration.

5. The trend is up with clear optimism from Amsterdam Port which has maintained its position in the fourth place of European ports. Tanker traffic is clearly on the increase and measures must be in place to address this trend.

6. Concern is registered at the apparent indifference to the safety zones around wind park and oil/gas assets. 2010 over 2009 saw a 72% increase in violations of Safety Zones.

2.2 Near misses in the approaches to IJmuiden

The Centraal Nautisch Beheer, Central Nautical Management (CNB), of the so-called Dutch “Noordzeekanaal” (the canal leading from Amsterdam to IJmuiden), is the VTS Administration in the North Sea Canal Area and also lock operator of the North Sea Locks IJmuiden. Authority of CNB encompasses not only the locks and the canal, but also the North Sea approaches to IJmuiden, as follows:

- on the west side from the harbour entrance: a circular area with a radius of 12 nm that includes the deep draft channel IJ-geul and Deep Water Anchorage;
- on the east side from the harbour entrance: the area from the breakwaters to the North Sea Locks IJmuiden including adjacent harbours;
- the North Sea Canal with its adjacent harbours to the buoys IJ11 and IJ12 on the fairway 'het IJ' in Amsterdam.

The following figures and tables illustrate several near-miss reports on the IJmuiden Approaches (see overview in Figure 2). The Centraal Nautisch Beheer informed the Rijkswaterstaat North Sea department about the insufficient anchorage capacity and the dangerous situations arising between ships to or from IJmuiden and ships in the recommended routes between TSS Maas Noord and TSS Off Texel.

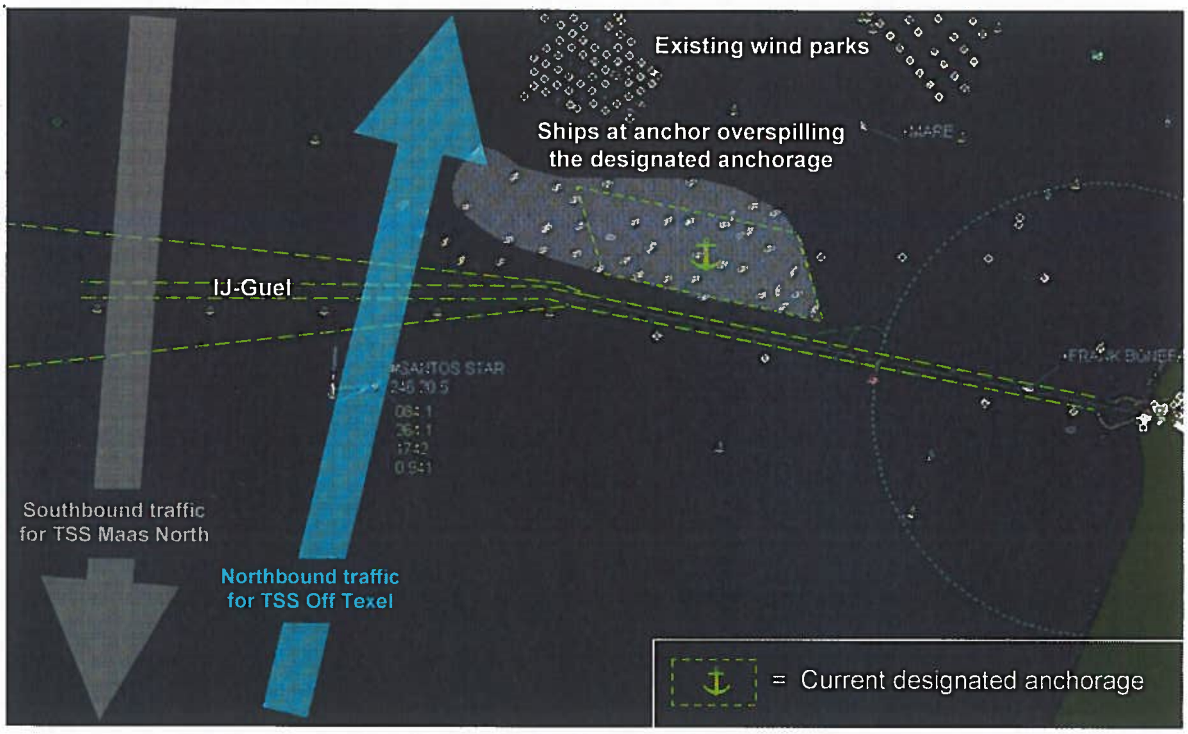


Figure 2. Overview of the approaches to IJmuiden

At sea the management area of CNB is divided into the following two VTS areas:

- IJmuiden Port Control, VHF-61, working area: 5' from harbour entrance to west side of the locks;
- IJmuiden Traffic Centre, VHF-07, working area: from 5 nm out to (official) 12nm out.

The radar range of the VTS radar is about 25nm, therefore it is doubtfull that small vessels on the edge of the radar range are detected. The VHF range (VHF-61 and VHF-07) is about the same distance as the radar range. On the VTS Centre is also a VHF transmitter with VHF-16 available with a range >30 nm. In case of 'near-miss' situations the VTS operators will use the distress channel and divert the involved ships to the VTS channel or use this channel to alert the ships on collision course.

The Vessel Traffic Service frequent reports dangerous 'near-miss' situations, between traffic to- and from IJmuiden with ships in the recommended routes between TSS Maas North and TSS Off Texel, in particular between km and 23 km 43 of the IJ-geul (see Figure 3 and the red circle in Figure 4).

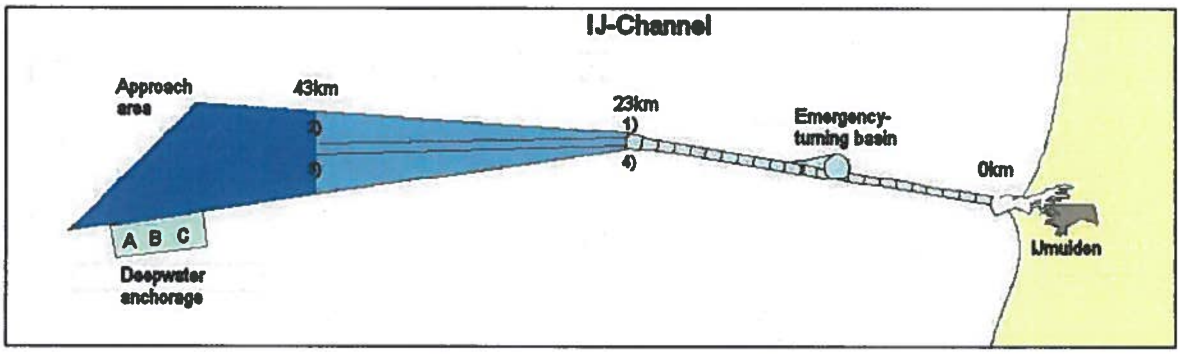


Figure 3. Subdivision of the IJ-geul (IJ-channel)

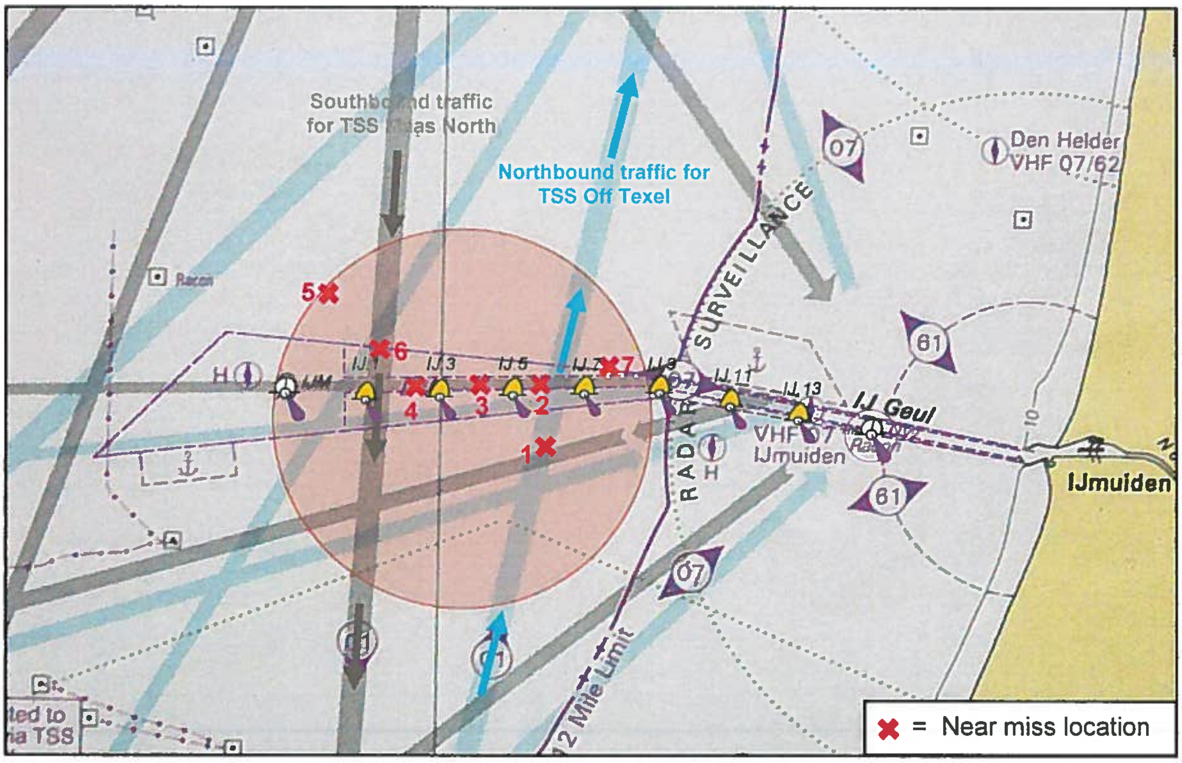


Figure 4. Area with high rate of near-misses in the IJ-geul (IJ-channel) (in red circle)

The near-miss situations outside of the management area of the CNB (>12 nm of the harbour entrance) during the year 2009, as reported in the document 'Aanpassing redegebied IJmuiden' are in the following page. Today 'near miss' situations are recorded on the so called 'near miss' forms (nm form) and handed to RWS DVS (Dienst Verkeer en Scheepvaart, part of the ministry of Infrastructure and the Environment, responsible for development of knowledge, management and policy in relation to Shipping).

The speeds of the ships involved in these near miss incidents are experessed in knots, the closest point of approach (CPA) in nautical miles and meters, and visibility in meters.

	Date	Ships	Type	Speed knots	CPA mls	Destination	Situation	Visibility
1	02/01/2009	Santos Star MOL Endowment	container container	20½ 19½	0.94	westbound TSS Off Texel	crossing	good
2	13/02/2009	Niledutch Singapore Cosco Europe	container container	18 22	0.35	IJmuiden TSS Off Texel	crossing	good
3	15/03/2009	CMA CGM Voltaire Chem Vega	container ch tanker	21½	0.49	TSS Off Texel IJmuiden	crossing	good
4	15/03/2009	Ever Chivalry Nova Friesia	container reefer	5½ 12	0.50	TSS Maas N westbound	crossing	≤ 500 m
5	01/08/2009	Little Jane Harlequin	coaster container	8½ 14	0.44	westbound TSS Off Texel	crossing	good
6	05/11/2009	King Alfred CS Manatee	container bulker	16½ 13	0.99	Scheveningen westbound	crossing	good
7	17/11/2009	Tambourin Dettifoss	tanker container	15½ 18	0.49	IJmuiden TSS Off Texel	crossing	good

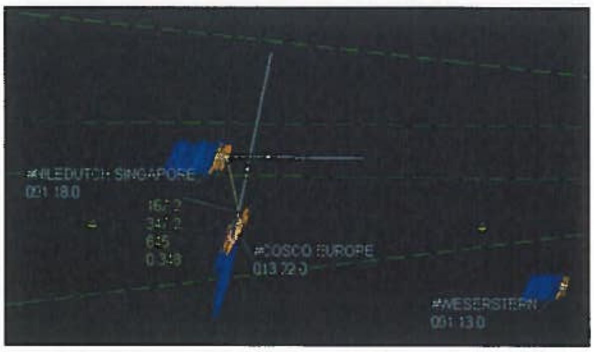
Table 1. Overview of near misses in the approaches to IJmuiden in 2009

Three of the near misses occurred where a north or south bound ship was crossing a vessel in the deep-water channel, so there may have been confusion over rule 9 of the 'Colregs'.

1. **MOL Endowment-Santos Star:**

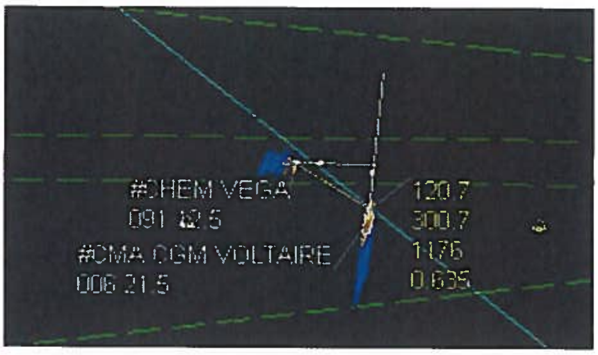
The container ship 'MOL Endowment' is heading for the TSS Off Texel, the out-bound container ship 'Santos Star' left the IJ-geul off buoy IJ-9. According ColRegs rule 15, (crossing situations) the 'MOL Endowment' should change course to starboard. However, both vessels agreed on VHF-16 for the 'MOL Endowment' to cross very close ahead the 'Santos Star', due to the crowded situation in the anchor area (see figure 2)

2. **Niledutch Singapore-Cosco Europe:**



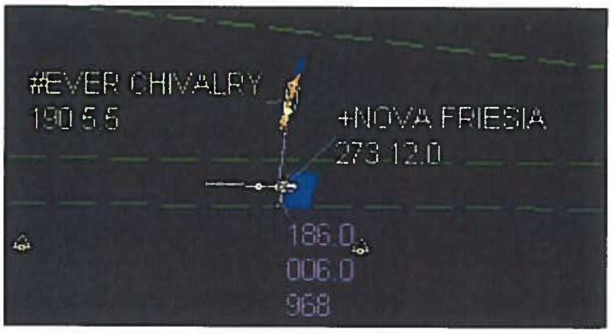
The container ship 'Niledutch Singapore' is following the IJ-geul buoys to IJmuiden. The container ship 'Cosco Europe' is heading for TSS Off Texel. 'Niledutch Singapore' probably assumes she must keep speed and heading. Both ships agreed an avoidance manoeuvre by VHF, which failed or was misunderstood. At the last minute the 'Cosco Europe' alters course hard to starboard and shortly after the 'Niledutch Singapore'alters course hard to port.

3. Chem Vega-CMA CMG Voltaire:



The tanker 'Chem Vega' is following the IJ-geul buoys and must give way to the container ship 'CMA CGM Voltaire'. On a distance of 1nm, the IJmuiden VTS informed the 'Chem Vega' of the risk of collision. Hereafter the 'Chem Vega' alters course to starboard. The blue line is the VHF transmission line of bearing while communicating with the VTS. on VHF-07

4. Ever Chivalry-Nova Frisia:

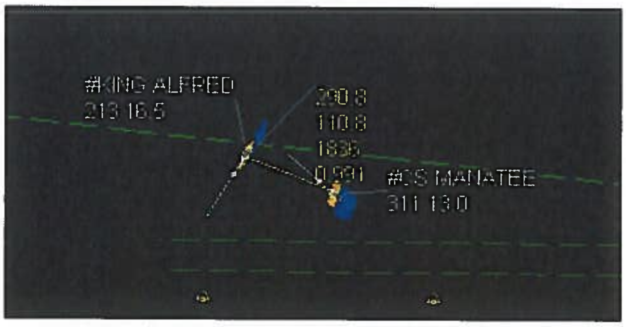


The container ship 'Ever Chivalry' is heading for TSS Maas North, the reefer 'Nova Frisia' outbound IJmuiden. The ColRegs (rule 15) required 'Nova Frisia' to give way to the container ship. However, the 'Nova Frisia' crossed very close ahead of the 'Ever Chivalry' *without* altering its course or speed during foggy conditions.

5. Harlequin-Little Jane:

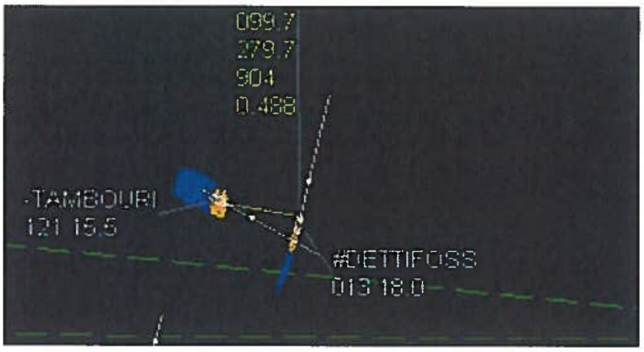
The 'Harlequin' is on a NNE'ly course towards the TSS Off Texel and 'Little Jane' is outbound IJmuiden. The 'Harlequin' must give way to the 'Little Jane' but didn't comply with the ColRegs and crossed the 'Little Jane' with a very small CPA.

6. CS Manatee-King Alfred:



'CS Manatee' bears 'King Alfred' over her starboard side. According to the ColRegs, the 'CS Manatee' must give way to 'King Alfred'. 'King Alfred' contacted the 'CS Manatee' and pointed her to the ColRegs. Both vessels alter course to starboard at very close range.

7. Tambourin-Dettifoss:



'Tambourin' bears 'Dettifoss' over her starboard bow. According to the ColRegs, the 'Tambourin' must give way to the 'Dettifoss'. However, 'Tambourin' doesn't appear to be complying with the ColRegs, so Dettifoss alters course to starboard and shortly after the Tambourin also changes course to starboard.

The CNB report also includes four other near miss encounters in 2010 and 2011, which are listed in the following table, but more precise details of the incidents and their locations are not given in the report.

Date	Ships	Type	Speed knots	CPA mls	Destination	Situation	Visibility
22/06/2010	Baltic Altantic UK-170	tanker fishing	unknown	0.06	anchorage north bound	crossing	good
07/07/2010	Tanea Cap Portland	tanker container	unknown	close	IJmuiden TSS Off Texel	crossing	good
18/09/2010	Vela Major Hubal	bulker bulker	unknown	0.30	westbound TSS Maas N	crossing	good
28/06/2011	Dana-1 Karei	cargo tanker	unknown	0.10	TSS Off Texel westbound	crossing	good

Table 2. Overview of near misses in the approaches to IJmuiden in 2010 and 2011

2.3 Exploration of small oil/gas fields (changes since 2008)

2.3.1 Exploration 2009

The exploration activities in 2009 remained similar to the previous six years illustrated in graph below.

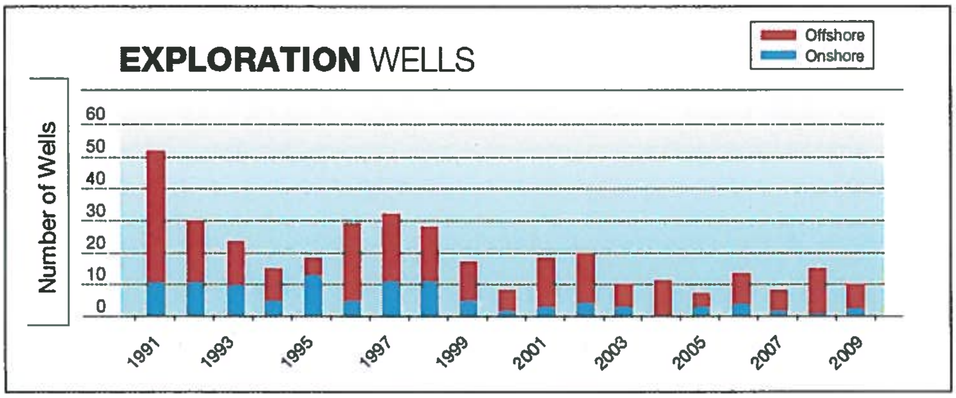


Figure 5. Overview of exploration activities in 2009

Source: 2009 Annual Review Ministry of Economic Affairs

Ten exploration wells were drilled in 2009, which comprised of three onshore wells and seven offshore wells. This is a small decrease from the previous year, 2008 when eleven wells were drilled. Of the ten wells drilled, six proved successful.

EXPLORATION WELLS 2009	*Offshore*	*Onshore*
GDF SUEZ	4	0
NAM	2	1
Northern Petroleum	0	1
Vermilion	0	1
Wintershall	1	0
Total Exploration Wells 2009	*7*	*3*

Offshore GDF SUEZ, NAM and Wintershall drilled exploration Wells, onshore Northern Petroleum, NAM and Vermilion each drilled one exploration well.

Seven appraisal wells were drilled, all of which found gas.

APPRAISAL WELLS 2009	Offshore	Onshore
Cirrus	1	0
GDF SUEZ	1	0
NAM	0	3
Wintershall	1	1
Total Appraisal Wells 2009	*3*	*4*

Source: 2009 Annual Review Ministry of Economic Affairs

In 2009 seven appraisal wells were drilled: three offshore, and four onshore.

The total area carrying offshore exploration licenses fell by some 7% over the period 2008 and 2009 together. Some licenses were returned or reduced in size, and several new ones were awarded. GDF SUEZ, Tullow and Wintershall are currently the main holders of exploration licenses, together representing almost 60% of the total licensed area.

Source: 2009 Annual Review Ministry of Economic Affairs

2.3.2 Operations 2009

Although the total production of small fields fell by 6.7%, the offshore activity remained high with operators placing greater emphasis on maintenance and asset integrity.

2.3.3 Exploration 2010

Exploration activities in 2010 were slightly up compared with 2009. However, the underlying trend appears similar to previous years.

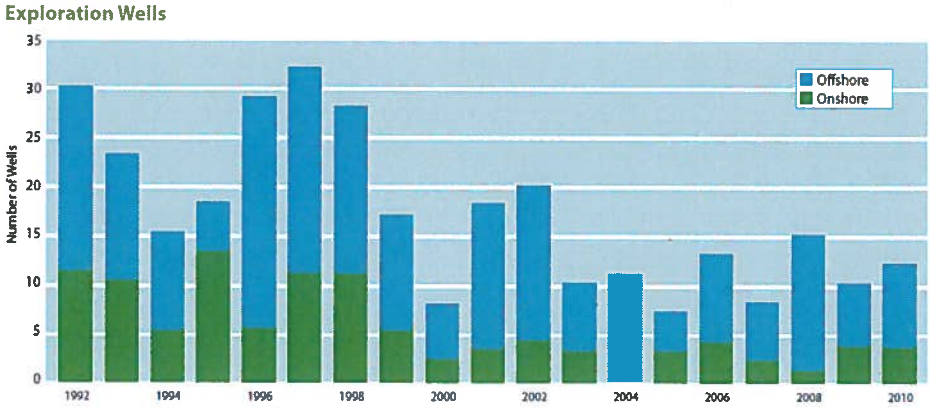


Figure 6. Overview of exploration activities in 2010

Source: Natural Resources and Geothermal Energy in the Netherlands. Annual Review 2010.

Ten exploration wells and two appraisal wells were drilled. Offshore, seven wells encountered gas of which one is considered sub-economic. Onshore, two wells encountered gas.

Exploration Wells in 2010	Offshore	Onshore
Cirrus	1	
GDF SUEZ	3	
NAM	1	1
Northern Petroleum		1
Vermilion		1
Wintershall	2	

Source: NATURAL RESOURCES AND GEOTHERMAL ENERGY IN THE NETHERLANDS - Annual review 2010

Offshore Cirrus, GDF SUEZ, NAM and Wintershall drilled exploration wells. Onshore NAM, Northern Petroleum and Vermilion each drilled one exploration well.

Appraisal Wells in 2010	Offshore
Cirrus	1
NAM	1

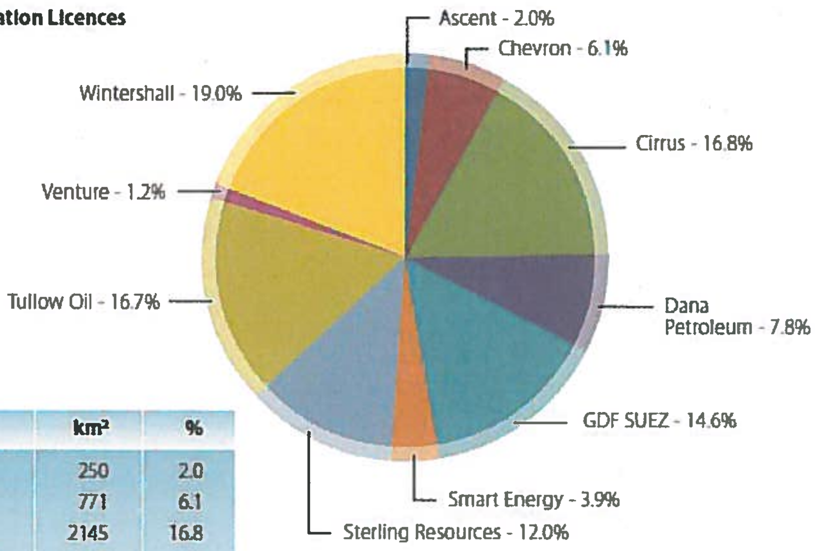
Source: NATURAL RESOURCES AND GEOTHERMAL ENERGY IN THE NETHERLANDS - Annual review 2010

Two appraisal wells were drilled offshore: one by Cirrus and one by NAM.

The total area carrying offshore exploration licences remained at a similar level. The largest holders of offshore exploration licences are now:

1. Wintershall 19 %
2. Cirrus (ONE) 17 %
3. Tullow 17 %

Offshore Exploration Licences



Operator	km²	%
Ascent	250	2.0
Chevron	771	6.1
Cirrus	2145	16.8
Dana Petroleum	999	7.8
GDF SUEZ	1861	14.6
Smart Energy	493	3.9
Sterling Resources	1532	12.0
Tullow Oil	2123	16.7
Venture	147	1.2
Wintershall	2416	19.0
	12217	100.0

Source: NATURAL RESOURCES AND GEOTHERMAL ENERGY IN THE NETHERLANDS - Annual review 2010

2.4 Offshore wind parks

The existing farms, OWEZ and PAWP have proved successful which has laid a firm foundation for the encouragement for further exploration which is evidenced in the 12 licensed wind parks under consideration.

An area for concern which manifests itself in both Wind Parks and Oil and Gas Platforms is the Security Breaches which need to be addressed as soon as possible as the study has concluded that unauthorized / unsupervised visits are a serious hazard. There are presently two offshore wind parks in the Netherlands, namely:

1. Princess Amalia Wind Park (PAWP), shown as '32' on the FSA maps and formerly known as 'Q7' and
2. Egmond aan Zee (OWEZ), shown as '33' on the FSA maps and formerly known as Near Shore Wind Park (NSW).

2.4.1 OWEZ

The Egmond aan Zee wind park, OWEZ, was the first big wind park to be built in the North Sea off the Dutch coast and operating since 2006. The wind park is a project of Nuon and Shell. The OWEZ wind park is situated some 10 to 18 km off the Dutch coast in the vicinity of Egmond aan Zee, in water depths of 17 to 21 metres. The farm consists of 36 Vestas V90 wind turbines having a total capacity of 108 MW. The total area of the farm is approximately 27 km^2.

Operations management

Operations management is built on a foundation of management of health, safety, security and the environment – abbreviated HSSE. All activities related to the performance of the wind park asset, the electrical infrastructure and substation, as well as all surveying and monitoring activities are carried out in a structured fashion. HSSE is a core line management responsibility, built on a policy that is shared between all parties working on the project.

Man hour recording and Incident Reporting

The total number of man hours spent at the project site in 2009 was over 70,000 hours (over 60,000 in 2007 and 2008). Helped by the joint efforts from all staff working on the project, including contractors, subcontractors, and owner representatives, again no injuries or incidents needed to be reported. NoordZeeWind (NZW) stimulates and tracks the safety reporting to learn and to improve. Excellent reporting was done in 2009, resulting in over 200 reports.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Total Exposure hours	4139	2285	9755	10349	7022	6031	7438	5423	6377	6655	4527	3925	73926
LTI	0	0	0	0	0	0	0	0	0	0	0	0	0
TRC	0	0	0	0	0	0	0	0	0	0	0	0	0
TRCF	0	0	0	0	0	0	0	0	0	0	0	0	0
HSE review	1	1	1	2	1	1	1	1	0	0	0	0	9
Unsafe acts\Near miss\Review	21	10	15	26	24	14	33	7	13	24	16	13	216
Safety improvements	3	0	1	0	0	0	1	0	0	0	0	0	5
Stop Work	0	0	0	0	0	0	0	0	0	0	0	0	0
Near Miss	0	0	0	0	0	0	3	0	1	1	0	2	7
Unsafe condition	1	0	1	3	6	0	0	1	5	5	4	4	30
Unsafe behaviours	0	0	0	1	0	2	3	0	1	1	2	1	11
Safety audits\reviews	0	1	1	1	0	1	1	1	1	1	1	1	10
Safety observations	13	8	12	17	17	10	23	4	2	14	7	4	131
Accidents	0	0	0	0	0	0	0	0	0	0	0	0	0
Stop work ambient	3	1	0	4	1	1	2	1	2	2	1	1	19
First aid	1	0	0	0	0	0	0	0	1	0	1	0	3

Figure 7. OWEZ HSE Statistics 2009

Conclusion and outlook

The offshore wind park at Egmond aan Zee successfully continued the third year of operation. with just over 315 GWh delivered to the grid (sufficient electricity for approximately 95,000 Dutch households). The performance of the plant has been good, and the outlook for 2010 is positive.

2.4.2 Princess Amalia Wind Park (PAWP)

The Princess Amalia wind park has been operating since 2008 and is located in sector Q7 of the Dutch continental shelf, 23 km off the Dutch coast in the vicinity of IJmuiden in water depths of 19-24 metres of water. The 120 MW wind park will generate about 435 GWh annually. The wind park is a project of ENECO and Q7 holdings. The total area of the park is approximately 14 km^2.

2009

MEASUREMENT AGAINST PAWP POLICY														
Health & Safety:														
1. No major accidents (serious industrial accident)	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
2. Maximum of 5 (3-DAFW) Lost Time Cases	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
Security:														
4. No unauthorised access offshore	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
5. No significant material theft onshore	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
Environment:														
6. No spills.	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
7. No objects left on seabed	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
Generally:														
8. Maximum of 3 officially reportable issues	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
9. No permit violations	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0

2010

MEASUREMENT AGAINST PAWP POLICY														
Health & Safety:														
1. Major accidents (serious industrial accident)	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
2. Lost Time Accident > 1 day	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
3. Restricted Work Accident	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
4. Medical Treatment	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
5. First Aid cases	0	0	0	0	0	0	0	1	0	0	0	0	1	0,1
Security:														
6. Unauthorised access offshore	0	0	0	0	1	0	0	1	0	0	1	0	3	0,3
7. Significant material theft onshore	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
Environment:														
8. Spills.	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
9. Objects left on seabed	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
Generally:														
10. Maximum of 3 officially reportable issues	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0
11. Permit violations	0	0	0	0	0	0	0	0	0	0	0	0	0	0,0

2011

MEASUREMENT AGAINST PAWP POLICY														
Health & Safety:														
1. Major accidents (serious industrial accident)	0	0	0	0	0	0	0	0	0	0	0		0	0,0
2. Lost Time Accident > 1 day	0	0	0	2	0	0	0	0	0	0	0		2	0,2
3. Restricted Work Accident	0	0	0	0	0	0	0	0	0	0	0		0	0,0
4. Medical Treatment	0	0	0	0	0	0	0	0	0	0	0		0	0,0
5. First Aid cases	0	1	0	0	0	0	0	1	0	0	0		2	0,2
6. Long-term health issues (physical or physcological)	0	0	0	0	0	0	0	0	0	0	0		0	0,0
Security:														
7. Unauthorised access offshore	1	0	0	3	2	3	2	0	0	0	0		11	1,0
8. Significant material theft onshore	0	0	0	0	0	0	0	0	0	0	0		0	0,0
Environment:														
9. Spills.	0	0	0	0	0	0	0	0	0	0	0		0	0,0
10. Objects left on seabed	0	0	0	0	0	0	0	0	0	0	0		0	0,0
Generally:														
11. Maximum of 3 officially reportable issues	0	0	0	0	0	0	0	0	0	0	0		0	0,0
12. Permit violations	0	0	1	0	0	0	0	0	0	0	0		1	0,1
13. Monthly OHSSE coordination sessions	1	1	1	3	3	1	1	1	1	0	1		14	1,3
14. Monthly audits / inspection on OHSSE disciplines	0	0	1	1	1	4	0	1	2	0	0		10	0,9
15. Monthly reporting & review	1	1	1	1	1	1	1	1	1	0	1		10	0,8
16. Emergency response drill	0	0	0	1	0	2	0	1	0	0	0		4	0,4

HSE statistics 2009/11

Figure 8. Amalia HSE Statistics 2009-2011

Conclusion and outlook

The safety performance at PAWP continues to be good. Before the last Lost Time Incident (LTI) in 2011 there was a continuous 3 years without any LTIs.

2.4.3 New Initiatives.

Besides the existing wind parks mentioned above, there have been many new initiatives for offshore wind parks resulting in subsidy and permit application. By the end of 2009, a total of 12 building permits for a total of 3250 MW were granted to initiators. The parties which acquired a permit were enabled to submit a bid for production subsidy.

No.	Location	Size		Status	Company
		MW	Turbines		
1.	Breeveertien II	349	97	Not defined	Airtricity
2.	West Rijn	259	72	2013	Airtricity
3.	Den Helder	468	78	Not defined	Airtricity
4.	Brown Ridge Oost	282	94	Not defined	Brown Ridge Oost
5.	Tromp Binnen	295	59	Not defined	RWE
6.	Beaufort	279	93	Not defined	NUON
7.	Q10	153	51	2015	Eneco
8.	Q4-WP	78	26	Not defined	Q4-WP-BV
9.	Scheveningen Buiten	212	59	2015	Evelop
10.	Buitengats	300	60	2012	BARD
11.	Clear Camp	295	59	Not defined	Eolic Power
12.	ZeeEnergie	300	60	2012	Global Wind Support

Figure 9. Round 2 licensed wind parks

The Dutch government is working on a new scheme for future wind parks for the periods 2010 onwards. The Government wants to allocate new locations for the further development of wind energy offshore.

2.5 Increased tanker traffic port of Amsterdam (Changed since 2008)

The Amsterdam seaports occupy the fourth position in the European rankings after Rotterdam, Antwerp and Hamburg. The port is clearly doing well compared with many ports in Europe.

2.5.1 An Overview of Growth

Transhipment at the Amsterdam Seaports

- Transhipment at the Amsterdam Seaports (Amsterdam, Beverwijk, Zaandam and Velsen / IJmuiden) increased by 4.5% in 2010 over the previous year.
- Total Transhipment amounted to 90.7 million tons.

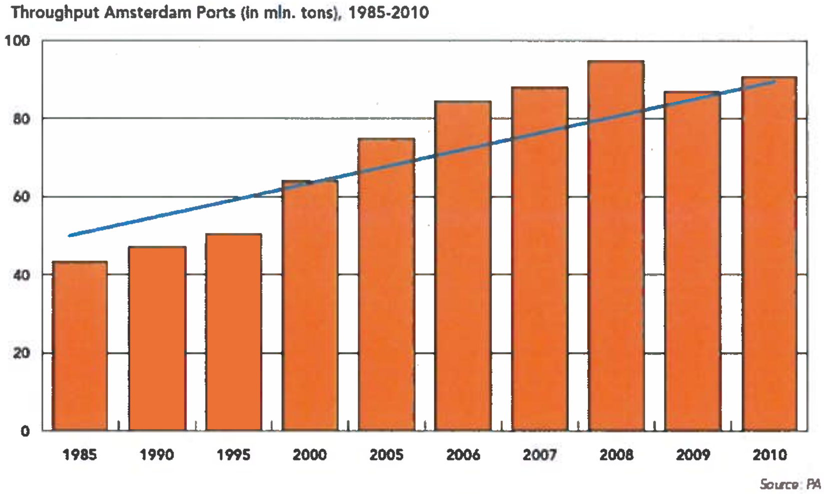


Figure 10. Throughput Amsterdam Ports (in million tons), 1985-2010

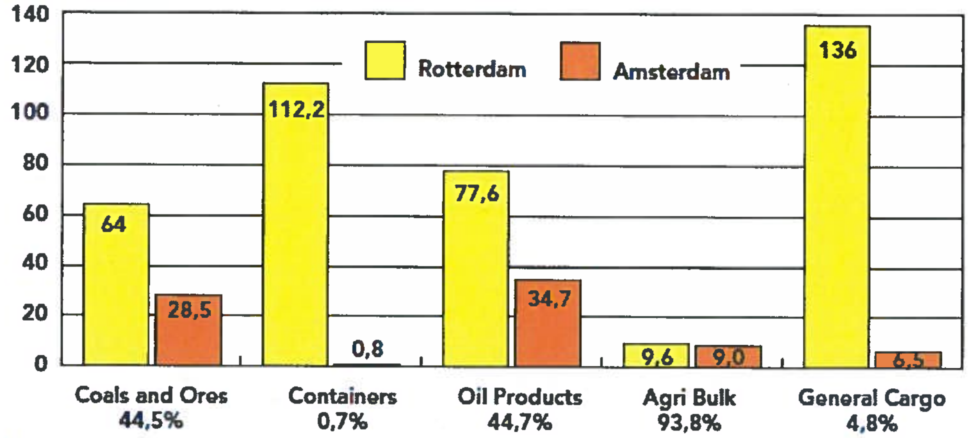
Throughput of Amsterdam ports 2007-2010 (overall)

Year	Throughput (Mill Tons)	Trend[1]
2007	87.8	
2008	94.8	8%
2009	86.8	8%
2010	90.7	4%

Throughput of Amsterdam ports 2007-2010 (oil products)

Year	Throughput (Mill Tons)	Trend[2]
2007	24.866	
2008	30.617	23%
2009	35.252	15%
2010	34.653	2%

[1] On previous year
[2] On previous year



Source: PA

Figure 11. Throughput and Commodity comparison Amsterdam/Rotterdam 2010

Tanker visits to Amsterdam ports 2008-2011

Year	Tankers Visits[3]	Trend[4]
2008	2072	
2009	2184	5.5%
2010	2063	5.5%
2011	1703[5] (2044)	1.0%

[3] A Visit includes arrival from sea, anchorage, and leaving to sea directly or outervia anchorage.
[4] On previous year
[5] Extrapolating to end of 2011 gives a figure of 2044

2.6 Near misses with oil/gas platforms (present situation)

In 2010, there were no collisions with platforms or wind parks. However, the safety zones (500m) around these platforms and wind arms have been breached on several occasions which had the potential to lead to serious incidents.

The tables below provide an overview of the number of violations of the 500 m zone. The tables show the number of violations of the safety zone in 2010 increased significantly when compared to 2009.

Year	Breaches of Safety Zones (500 Mtrs)	Trend[6]
2007	9	
2008	18	100%
2009	11	39%
2010	19	72%

Table 3. Number of violations of the 500 m zone of platforms

Year	Breaches of Safety Zones (500 Mtrs)	Trend[7]
2007	9	
2008	4	44%
2009	5	25%
2010	NA	Unavailable

Table 4. Number of violations of the 500 m zone of wind turbines

The safety of the platforms is based on Article 43 of the Mining Act. This article prohibits the presence of people and equipment in the safety zone. If a ship or a person enters the safety zone without prior permission of the operator an serious offence is committed. Incidents with Offshore Installations since 2000 are shown in table on the following page.

[6] On previous year
[7] On previous year

Year	Platform	Incident
2000	L10 - AP	Bracing of Jacket
2000	L5-FA-1	Bracing of Substructure
2001	P12-C	Total loss of Platform. Gas production ceased.
2001	P15F	NW leg of platform
2001	Q4-A	Pipeline
2002	Q10-10	Wellhead dome disappeared
2002	K8-FA-2	Umbilical
2002	F2-A	Pickup line
2002	K-1-A	Bracing of Jacket
2002	Q1 Halfweg	NW leg of platform
2003	K12-G	NW leg of platform
2004	L10-PM	NE leg of platform
2005	G14-a/G17d	Pipeline
2005	K2	Side tap of the pipeline
2006	P6-S	NW leg of platform
2007	P15-A	For re-inspection (after 2 years) 'trawler board' found, N & W legs damaged.
2008	-	No
2009	Q1-Helder	SW leg wellhead platform and bracing between SW and NW legs
2009	K5-CC	Damaged railing and scaffolding
2010	-	No.

Table 5. Incidents with Offshore Installations since 2000

No	Platform	Location	Production	Company	Mannned/ Unmanned
1.	L16(Logger)	53-00.9N 004-13.1E	Oil	Wintersh	**Manned**
2.	Halfweg	52-52.1N 004-19.1E	Gas	Chevron	Unmanned
3.	Haven-A	52-58.1N 004-06.1E	Oil	Chevron	**Manned**
4.	Helder-A	52-55.1N 004-05.1E	Oil	Chevron	**Manned**
5.	Helm-A	52-52.1N 004-08.1E	Oil	Chevron	**Manned**
6.	Hoorn-A	52-55.5N 004-09.1E	Oil	Wintersh	**Manned**
7.	P6-A	52-45.3N 003-45.4E	Gas	Wintersh	**Manned**
8.	P6-B	52-44.3N 003-48.3E	Gas	Wintersh	Unmanned
9.	P6-D	52-42.1N 003-43.6E	Gas	Wintersh	Unmanned
10.	P6-S	52-40.8N 003-47.0E	Gas	Wintersh	Unmanned
11.	P9-A(Horizon)	52-33.4N 003-44.1E	Oil	Chevron	**Manned**
12.	P11-B(de Ruyter)	52-21.6N 003-20.5E	Oil/Gas	Dana Pet	**Manned**
13.	P12-SW	52-24.4N 003-45.6E	Gas	Wintersh	Unmanned
14.	P15-ACD(Rijn-C)	52-17.5N 003-49.0E	Oil	Taqa	**Manned**
15.	P15-E	52-10.3N 003-52.1E	Gas	Taqa	Unmanned
16.	P15-F	52-18.4N 003-41.2E	Gas	Taqa	Unmanned
17.	P15-G	52-13.4N 003-44.4E	Gas	Taqa	Unmanned
18.	P18-A	52-07.7N 003-56.3E	Gas	Taqa	Unmanned
19.	Q4-A	52-46.8N 004-16.1E	Gas	Wintersh	Unmanned
20.	Q4-B	52-43.0N 004-18.1E	Gas	Wintersh	Unmanned
21.	Q4-C	52-49.6N 004-17.1E	Gas	Wintersh	Unmanned
22.	Q8-A	52-35.7N 004-31.8E	Gas	Wintersh	Unmanned
23.	Q8-B	52-38.4N 004-25.9E	Gas	Wintersh	Unmanned

Table 6. Platform Manning

Furthermore there are on average about 3 exploration rigs active in this area but of course these rigs move regularly. These exploration rigs have between 80 and 120 personnel o/b.

The production platforms shown in the table above have between 10 to 30 personnel onboard. These numbers can vary when maintenance personnel is flown in

3. HAZID Methodology

3.1 Introduction

The ARCADIS (UK) HAZID is based on a mariner's view of the risk and is mainly a qualitative approach, though it does give a numerical level of risk to each identified hazard to allow a comparison between the three different traffic systems to be made.

The HAZID method employed uses a team based approach which incorporates a structured brainstorming technique used to draw out information from the participants. The aim is to identify hazards capable to leading to undesirable consequences as well as the current and recommended control measures for each hazard.

The team is made up of appropriately qualified persons. The activity under review is broken down into tasks and steps. As each step is identified and they are in turn assessed for potential hazards. The hazards are further assessed in terms of the associated consequences and frequency of occurrence.

3.2 Study Areas

The Hazid was initiated by subdividing the area to be considered into three sectors:

1. Section A Offshore Routing
2. Section B Inshore Routing
3. Section C Secondary Traffic

These sectors were further subdivided and addressed the individual routes/channels therein accordingly.

3.2.1 Section A: Offshore Routing

1 NNE / SSW Offshore deepwater route between the North Hinder and the Off Brown Ridge TSS.
2 The sea area between the off shore deep water route and the SW going route from the Off Texel TSS to the North Hinder Nord TSS.
3 SW bound through lane to the North Hinder buoy from the Off Texel TSS.
4 Sea area between the SW and NE going routes between the North Hinder North and the Off Texel TSSs.
5 NE going through lane from the North Hinder buoy to the Off Texel TSS.

3.2.2 Section B: Inshore Routing

6 The Noord Hinder Junction Precautionary Area.
7 Maas West TSS
8 Maas Northwest TSS from the NE going lane between the North Hinder North and the Off Texel TSSs
9 Maas Central Precautionary Area
10 Maas North TSS.
11 Routes between IJmuiden and the NE bound lane between the North Hinder North and the Off Texel TSSs.

3.2.3 Section C: Secondary Traffic

12 Hook of Holland to IJmuiden Port Area
13 IJmuiden to Texel.

3.3 Guide Words

At each junction/area under consideration and shown on attached charts the following guide words were used to focus the attendees attention on tasks that may impact on the junction/area under consideration.

1. **Crossing, Converging & Overtaking Traffic.**
2. **Pilot Boarding/disembarking Areas**
3. **Anchorages**
4. **Platforms/Rigs**
5. **Ammunition Dumping Grounds**
6. **VTS/Guidance**

Where the guide word did not apply or where the Hazard did register as being significant then that Hazard, for brevity, was not ranked.

3.4 Hazard Workshop

A Hazard Workshop was carried out at the offices of the Port of Rotterdam on Tuesday, 20th September 2011 with the following attendees.

3.4.1 HAZID Participants

No.	Name	Title	Company
1.	[redacted]	Representing	Ministry of Transport, Public Works & Watermanagement
2.	[redacted]	Representing	Dutch Pilots Association
3.	[redacted]	Representing	Ministry of Transport, Public Works & Watermanagement
4.	[redacted]	Representing	Netherlands Shipsmaster Association
5.	[redacted]	Representing	Harbour Master, Port of Rotterdam
6.	[redacted]	Representing	Hydrografic Office
7.	[redacted]	Representing	Hydrografic Office
8.	[redacted]	Representing	RWS
9.	[redacted]	Representing	NWEA
10.	[redacted]	Representing	NWEA
11.	[redacted]	Representing	RWS
12.	[redacted]	Hazid Scribe	Arcadis (UK)
13.	[redacted]	Facilitator	Arcadis (UK)
14.	[redacted]	Chairman	Arcadis (UK)

Table 7. HAZID Workshop Participants

3.5 Assessment of Inherent Risk.

In order to assess the risk associated with hazard components, i.e., frequency and consequence need to be determined. The frequency and consequence may be expressed quantatively using the categories defined in Table .

Category	FRN	Definition
High	5	Very likely to occur during activity.
Medium	4	Likely to occur during activity.
Low	3	May occur during activity
Remote	2	Unlikely to occur in practice
Not Credible	1	Not expected to occur during activity.

**FRN: Frequency Ranking No.*

Table 8. HAZID Frequency Categories

Consequences may be sub categorized to take account of the consequences to People, Property, the Environment, and Business, as shown in the following tables.

Category	CRN	Definition
Catastrophic	5	Multiple fatalities or multiple permanent disabilities.
Severe	4	Single death or permanent disability
Significant	3	Major injury or health affected
Minor	2	Minor injury or health affected.
Negligible	1	Slight injury or health affected

**CRN: Consequence Ranking No*

Table 9. Risk Acceptance Criteria/ Consequences for People

Category	CRN	Definition
Catastrophic	5	Massive effect. Major national response required. Widespread effects at sea and on coastline.
Severe	4	Major effect at sea and some effect on coastline.
Significant	3	Localised effect. Moderate pollution in incident area, possibly extending beyond local area.
Minor	2	Minor effect. Minor pollution limited to incident area.
Negligible	1	Slight effect to incident area.

**CRN: Consequence*

Table 10. Risk Acceptance Criteria/ Consequences for Environment

Category	CRN	Definition
Catastrophic	5	Extensive structural damage
Severe	4	Major structural damage
Significant	3	Localised damage
Minor	2	Minor structural damage
Negligible	1	Slight structural damage

**CRN: Consequence*

Table 11. Risk Acceptance Criteria/ Consequences for Property

Category	CRN	Definition
Catastrophic	5	Severe international adverse publicity with permanent loss of customers. Severe loss of trade
Severe	4	Major adverse national publicity/customer reaction.
Significant	3	Considerable impact on trade
Minor	2	Minor impact on trade
Negligible	1	Slight impact on trade

***CRN**: *Consequence*

Table 12. Risk Acceptance Criteria/ Consequences for Business

Category	CRN	Generic Definition
Catastrophic	5	Fatality, or severe personal injury, total plant loss, irreversible environmental damage. Severe international publicity/loss of trade.
Severe	4	Serious/moderate personal injury. Major/ long term equipment damage. Long term environmental damage. Major adverse national publicity/customer reaction
Significant	3	Minor/Serious injury. Medium term equipment and environmental damage. Considerable impact on trade
Minor	2	Minor personal injury. Minor/short term equipment damage. Short term environmental damage. Minor impact on trade
Negligible	1	Negligible personal injury/ plant or equipment failure/environmental damage. Slight impact on trade

***CRN**: *Consequence Ranking No*

Table 13. Integrated Risk Acceptance Criteria for all categories

3.6 Risk Matrix

Each hazard will be identified and considered within the Risk Matrix using these definitions for frequency and consequences. The risk matrix is then used for recording all the hazards and for "scoring" each hazard with a frequency and consequence in order to establish the risk value.

Let us look at ***working from a ladder***.

The 'Frequency' of working from a ladder is quite common and we must decide, in the context of the task, what **FRN** (**F**requency **R**anking **N**umber) to assign to the task.

For example let us say **4.**

The 'Consequence' of working from a ladder can be severe and we must decide, in the context of the task, what **CRN** (**C**onsequence **R**anking **N**umber) to assign to the task. A fall from a ladder can result in at least '***Serious /moderate personal injury***' which gives CRN of, say, **4**.

Hence, **F**requency **(4)** x **C**onsequence **(4)** = Risk **(16)**

The combination of **F**requency **X C**onsequence is illustrated in the following Risk Matrix to predict the risk associated with each hazard.

Table 14 shows an example of a risk matrix. Having set the criteria we now move on to assessing all the tasks.

Risk Matrix			Frequency				
			Not Credible	Remote	Low	Medium	High
			1	2	3	4	5
Consequence		Integrated (Generic Definition)	Not expected to occur during activity	Unlikely to occur in practice	May occur during activity	Likely to occur during activity	Very likely to occur during activity
Catastrophic	5	Fatality, or severe personal injury, total plant loss. Irreversible environmental damage. Severe international publicity/loss of trade	5	10	15	20	25
Severe	4	Serious/moderate personal injury. Major/ long term equipment damage. Long term environmental damage. Major adverse national publicity/customer reaction	4	8	12	16	20
Significant	3	Minor/Serious Injury. Medium term equipment and environmental damage. Considerable impact on trade.	3	6	9	12	15
Minor	2	Minor personal injury. Minor/short term equipment damage. Short term environmental damage. Minor impact on trade.	2	4	6	8	10
Negligible	1	Negligible personal injury/ plant or equipment failure/environmental damage. Slight impact on trade.	1	2	3	4	5

Broadly Acceptable ALARP Unacceptable

Table 14. example of a risk matrix

3.7 Estimating the frequency rating 'F' for each identified hazard

The frequency of an accident occurring for each hazardous encounter was estimated in the FSA by considering the following factors:

(i) How busy are the traffic lanes are involved in the encounter? (This was roughly estimated from the density of ships' tracks in the AIS plot of ship movements in the area taken over a three month period.)

(ii) How much sea room is available for ships to manoeuvre in when taking action to avoid a collision? (The depth under the ships' keels is also relevant to this, as restricted underkeel clearance increases a ship's turning circle.)

(iii) What speeds are the ships likely to being moving at during the encounter? (This is closely related to points (i) and (ii), as ships should be at reduced speed when manoeuvring is restricted by either the sea room available or the depth under the keel or the density of traffic.)

(iv) How complex is the encounter in terms of how many ships moving in different directions could be involved? (Simultaneous collisions between more than two ships are very rare but the actions of ships in close quarters encounters are often heavily influenced by other vessels in the immediate vicinity. Ships are often restricted in the options available to them when giving way to another ship because the most preferable evasive action to take would involve a close quarters encounter with yet another vessel that is close by.)

(v) What is the aspect angle of the close encounter? (The MARIN QRA uses the difference between two vessels' courses to differentiate between 'overtaking', 'crossing' and 'head on' encounters *but* the 'Rule of the Road' distinguishes each of these three different types of close quarters encounter by the relative bearing (known as the *'aspect angle'*) of each vessel involved in a close quarters encounter, as seen from the other. How each ship should behave in the three different types of encounter is explained in part II of the Rules entitled "conduct of vessels in sight of one another".

The aspect angle of another ship seen from one's own vessel is its bearing relative to one's own ship's heading. The side and masthead lights of *each* ship are visible to the other in *'end on'* and *'crossing'* encounters and the aspect angle in '*end on'* encounters is within about 3° of dead ahead whilst *'crossing'* encounters are defined by an aspect angle of between 3° and 112.5°. *'Overtaking'* encounters occur at aspect angles greater than 112.5° when the side and masthead lights of the overtaking vessel ship can be seen from the ship being overtaken but the overtaking vessel will only see the stern light of the ship that it is overtaking. A risk of collision exists if the aspect angle of another vessel remains constant but at a decreasing range whilst one's own ship maintains a constant heading

Small aspect angle close quarters encounters are characterised by:

(a) A fast closing speed between the two ships.

(b) Reducing speed only increases the time to the point of nearest approach (or collision), whereas a small alteration of course to starboard by the give way vessel will avoid the collision (both ships must alter course to starboard in an end on encounter).

Large aspect angle encounters can cause doubt as to whether the two ships are in a crossing or an overtaking encounter, as defined by the Rule of the Road. The characteristics of *crossing* close quarters encounters are as follows:

(c) A slow closing speed between the two ships where the stand on vessel can appear to be overtaking and so may not immediately give the bridge watch keeper on the give way ship cause for concern until the range between the two ships has reduced considerably.

(d) The stand on vessel will be the faster of the two ships when seen from the give way ship with an aspect angle greater than 60° to starboard. At aspect angles much larger than this (but less than 112.5°), it would only require the stand on vessel to make a relatively small course alteration to starboard to avoid collision *but* the Rules state that the stand on vessel must maintain its course and speed until collision cannot be avoided by the action of the give ship alone.

The give way vessel must make a large initial alteration of course to starboard to present its port side to the stand on vessel (over 90° if the stand on vessel is abaft the beam). A significant reduction in speed is effective at avoiding collision and a less drastic action for the give way ship to take, especially in restricted waters, but it is not immediately so apparent to the stand on vessel (however, it should soon be indicated by ARPA radar).

Collisions between two isolated ships are relatively easy to avoid in close quarters crossing encounters at small aspect angles, as only small deviation to starboard by the give way ship is required. The situation is more problematic when a ship attempts to cross a stream of traffic at a small aspect angle, as the stream of traffic is going in predominately the opposite direction so the lone crossing ship will remain moving against the flow of traffic and is likely to have more close quarters encounters with other vessels than if it crossed the stream at right angles at aspect angles in the region of 45°.

Large aspect close quarters crossing encounters can high risk of collision if the slower ship is the give way vessel because its watch keeper will see the other ship's port side fairly square on a bit abaft the beam at a fairly steady range and bearing but that is what he would expect if the other ship was overtaking, so that is what he might assume, in which case it must keep clear of him. However, the watch keeper on the faster vessel will clearly see the slower ship's starboard side and side light on his port side, so he would be in no doubt that he was the stand on vessel, especially at night because he would not see the slower ship's stern light. Hence the watch keeper on the give way ship may not realise his peril until the range between the two ships is alarmingly close at which point the prospect of altering 90° or so towards the stand on vessel is a highly unattractive option and the action to take would be to drastically slow down.

The risk in overtaking encounters arises from the fact that the difference in speeds between the two ships involved is often less a than a knot, so overtaking situations can last for hours, during which each ship restricts the other's ability to take evasive action if either one or both of them become involved in a close quarters encounter with a third vessel.

In order to attempt to maintain a consistency in the assessment of the three traffic situations in the introduction, the FSA identified the following different types of risk of collision between ships:

1) Crossing encounters where the ships' courses are within approximately 20° of a right angle to each other. (This is the most straight forward crossing situation with regard to complying with the Rule of the Road and the frequency of a collision is mainly based on the density of traffic.)
2) Close quarters encounters when a ship joins or crosses a traffic stream immediately after weighing its anchor. (This is a particularly hazardous situation because the ship leaving the anchorage will be changing its course and speed, so traffic in the adjacent lane will not have sufficient time to determine its intentions. It not good seamanship to create an immediate close quarters situation when leaving a berth or anchorage.)
3) Close quarters encounters between ships where ships join a stream of traffic or where streams of traffic merge at large aspect angles. (Close quarters encounters between ships in these situations may be crossing or overtaking situations, depending on whether or not the aspect angle is less than 112.5°, with the added complication that one or more of the ships involved is very likely to alter course in order to follow the new common track. It is a particularly hazardous situation when there is restricted sea room to take evasive action, such as currently exists at the entrance to the northeast bound lane of the Off Texel traffic separation scheme, which is partially blocked by a wreck almost in the middle of the approach to the lane.)
4) Close quarters encounters where ships leave or diverge from a stream of traffic. (There should not be a collision between ships on diverging courses *but* if the ship about to alter course is poorly placed in a stream of traffic to leave it, then it may cut across the bows of other vessels astern of it and so collide with one of them or contribute to a collision between two of the ships astern as they take evasive action to avoid running into the ship that has just cut across their bows. One place in the IMO variant where there is a risk of this occurring is the extended approach to the deep-water route leading to Europoort, as this lines up with the western boundary of the North Hinder South northeast bound lane, so ships entering the deep-water route from the southwest will cut across traffic for the North Hinder North northeast bound lane.)

Each of traffic systems include locations where several of the above risks of collision exist, such as complex junctions where most of the traffic crosses at angles close to 90° but some ships will leave one stream of traffic to join another bound in a different direction to the stream that they have just left. The FSA assesses each type of risk separately in these cases.

The FSA considered the risk of a collision between an offshore oil or gas platform and ships in transit to be relatively low, provided that the platforms are either on the boundary of a traffic lane or outside it completely. Most damage to offshore installations caused by ships is done by support vessels (rig supply vessels, standby vessels etc.) legitimately working within the 500 metre exclusion zone around the installation, though fishing vessels have been known to illegally get too close and cause problems. In either case, these particular hazards cannot be prevented by any traffic routeing measure. However, the Horizon oil platform currently is vulnerable to shipping because it is in the middle of a traffic stream bound for Schouwenbank from the Off Texel southwest bound lane and, furthermore, the platform is sited where several streams of traffic cross about two and a half miles northwest of the outer limit of the approaches to IJmuiden. Consequently, this risk is higher for both the present situation and the Variant 1 option than for the IMO variant, which reduces crossing encounters close by the platform and moves traffic from Off Texel to Schouwenbank away from the platform.

The De Ruyter gas platform and single buoy mooring is also in a very congested area but the AIS traffic plot shows ships giving it a wide berth. The IMO Variant, nevertheless, has been designed to keep traffic at least two miles clear of the installation.

The Rijn gas platform is well outside of current traffic flows but the key component of the IMO Variant is the proposal to move the Maas North traffic separation scheme about four miles to the west, which will put the Rijn platform in the middle of the Maas North separation zone, which obviously increases the risk of a ship colliding with it. However, the separation scheme will be bounded on both sides by wind parks in the vicinity of the platform and there are enough underwater obstructions in the form of gas pipelines, wells and power cables to deter fishing activities, so there should not be much traffic crossing the Maas North scheme in this vicinity, except for vessels supporting the gas field.

The risk of grounding on an underwater obstruction within the IMO Variant traffic streams is very low now that the proposed changes to the approach to the Off Texel northeast bound lane will move traffic clear of the wreck that currently blocks of nearly half the lane's entrance. The risk from the two ammunition dumps that lie in the proposed Maas North separation zone has been assessed separately by TNO and is explained further on page 32.

The FSA follows the guidance given in the UK Maritime and Coastguard Agency's (MCA) Marine Guidance Notices MGN 371 and 372 and assumed the frequency of a collision between a ship and a wind turbine to be negligible if the clearance from the wind park is greater than 2 miles but this increased to an 'L' value of 2 where clearance is between 1 and 2 miles and an 'L' value of 5 where the clearance is half a mile or less.

3.8 Estimating the consequence rating 'C' for each identified hazard

The consequences of two ships colliding at speed vary widely, as they depend on:

(i) The possible loss of life. A ship's size is no indication of the number of persons onboard or the risk that a collision poses to their lives. Small ships, such as survey vessels, may have at least as many persons onboard as a large ocean going vessel, whilst small ferries will have many more passengers onboard. Small ships are also more likely to sink after a collision and sink fast, so time to evacuate the people onboard can be very limited.

(ii) Damage to the ship, which can range from some buckled plates all the way up to one or both of the ships being lost through sinking, fire and or explosion. With regard to a ship staying afloat, an IMO 'Focus' article on roll on - roll off vessels stated that casualty statistics suggest that these ships have about a 83% frequency of staying afloat after a collision whereas the chances increase to 91% for other ship types. This is somewhat at odds with the subdivision regulations in chapter II-1. part B of SOLAS that requires all ships of 80 metres in length or more and built after 1982 to be designed with a level of survivability that is determined by the ship's length and, in the case of passengers hips, the number of passengers that they are certified to carry. The minimum survivability required is given by a required subdivision index 'R' that ranges for cargo ships from 0.36 for ships of 80 metres in length to 0.60 for ships of 220 metres in length. A ship's actual subdivision index is calculated by assessing the frequencies for all the different possible damage scenarios occurring and the chances of the ship remaining afloat after each scenario has occurred. The minimum required subdivision index 'R' is based on an analysis of the outcomes of over one hundred collisions between ships and so it roughly represents a probability of a ship surviving a random collision. This suggests that if one hundred 80 metre long cargo vessels built to the minimum required subdivision were each involved in a collision, then only about 36 of them would stay afloat afterwards.

(iii) Damage to the cargo, which often is worth much more than the ships carrying it.

(iv) The cost of clearing up any pollution that resulted from oil tanks being ruptured or cargo spaces being flooded and so allowing the sea to be contaminated through seepage.

(v) Salvage costs, which would include the cost of ships being towed away for repairs (an expensive operation for large ships that can only be repaired in a limited number of shipyards) and the cost of those repairs.

(vi) The costs due to any delays in port operations and ship movements caused by collision and the necessary clearing up afterwards, such as would follow a collision that partially blocked an important channel.

Given that the types of ships likely to be involved in collision at any of the identified hazards are not known exactly the FSA allocates a consequence rating of '3' for any collision between two *unspecified* ships *moving at speed*. The consequence rating is reduced to '2' for collisions at slow manoeuvring speeds and increased to '4' if a collision possibly involves a loaded tanker. The FSA gives the highest consequence rating of '5' to a collision between a ship moving at speed and a gas platform or going aground on a subsea production well and rupturing it but only allocates a consequence rating of '2' for a collision between a ship and a wind turbine (the FSA does not consider damage to more than one turbine).

4. Results of Hazard Identification & Risk Assessment (Steps 1 & 2)

4.1 Hazard and Risk tables

The HAZID worksheets are included in the appendices, as follows:

- Appendix 1: Present traffic routeing worksheet, representing the present traffic routeing structure and the assumed realization of Q10 wind park;
- Appendix 2: Variant 1 traffic routeing worksheet, assuming that all round 2 wind parks are realized, but the traffic routes remain as they are;
- Appendix 3: IMO variant traffic routeing worksheet.

The worksheets yield the following locations in particular that require detailed attention (for numbers of the described points see also Figure 12 to Figure 14).

The "present traffic routing" worksheets show that dangerous situations (red risk scores or high-end yellow scores around the value 12) occur for the following locations and situations:

- **Horizon Platform – Figure 12 and Appendix 1, Point 5g**: SSW going ships for Schouwenbank, WSW going ships and NWxN/ SExS going deep draft ships cross NE going traffic close to the Horizon gas platform. The gas platform is right on the Western edge of the NE and SSW going traffic lanes. Concern exists that NWxN and WSW going vessels alter course towards the gas platform when giving way.
- **Entrance to Off Texel TSS – Figure 12 and Appendix 1, Point 5j**: NExE, NExN and NxNE going ships merge with NE going traffic at the entrance to the Off Texel TSS where the width of the approach to the NE lane width is halved by the buoyed Vinca Gorthon wreck at a depth of 10.8m. Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel. The wreck precludes a large course alteration to starboard, so a give way ship in this situation should reduce speed.
- **Approaches to IJmuiden - Figure 12 and Appendix 1, Point 11a:** ENE going ships pass the site for wind park Q10 to starboard at a minimum clearance of about 0.5nm. This presents a risk of a ship colliding with a vessel engaged in constructing the wind park or of a ship breaking down and drifting into a wind turbine. **Point 11e:** NxE going inbound ships merge with all ExS going inbound traffic at the inner fairway buoy, leading to close quarter situations at large aspect angles. This can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel. **Point 11g:** All WxN going outbound traffic and ExS inbound deep draft vessels pass the inner anchorage. Ships may join the inbound lane from the anchorage from the port side, which means that must give way to all WxN going traffic but at the same time they are the stand on vessel to ExS going deep draft vessels in a close quarters situation. This creates an ambiguous situation in terms of colregs. **Point 11h:** Inbound SSE going ships from the north cross all W going outbound and E going inbound deep draft traffic at the west end of the inner anchorage. W going traffic must give way to SSE going ships but vessels restricted to the narrow deep-water channel may have difficulty complying with this obligation. **Point 11i:** NxW going ships from the Maas North TSS cross *all* E going inbound and W going outbound traffic. Inbound E going traffic must give way to NxW going ships but vessels restricted to the narrow deep-water channel may have difficulty complying with this obligation. **Point 11j:** NNE bound ships from Schouwenbank and S bound traffic for the Maas North TSS cross inbound ENE and outbound W going traffic. NNE going ships must give way to W going traffic, which must give way to S going

ships, which must give way to inbound E going traffic that must give way to NNE going ships. However, E and W going vessels restricted to the narrow deep-water channel may have difficulty complying with their obligations under 'Colregs' Rule 16 (see also Rules 8, 9 and 18).

- **The outer approaches to IJmuiden – Figure 12 and Appendix 1, Point 5f:** SxE going ships must give way to ExN and NE going ships and NE going traffic must give way to WxS going ships, where ships for the IJmuiden outer approaches diverge from the NE going lane as they turn to go WxN. This can lead to a poorly positioned vessel cutting across ahead of a ship astern.
- **Traffic from and to Sunk East - Figure 12 and Appendix 1, Point 1a and 6h:** In point 1a NE/SW going ships to and from Sunk East TSS cross NS going traffic in the deep water route. This may result in south going deep water traffic having to give way to NE going ships which at the same time must give way to deep water traffic which also at the same time must give way to SW going ships, which finally have to give way to South going deep water traffic. This creates a very confusing situation. A similar situation occurs at point 6h.
- **At Brown Ridge/ De Ruyter – Figure 12 and Appendix 1, point 3b, 4i:** At point 3b, nearer to Brown Ridge also close quarter situations between ships moving at very different speeds from all directions converge at large aspect angles and can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel. A similar situation occurs at point 4i.
- **Approaches to and from Hook of Holland – Figure 12 and Appendix 1, point 7b and 7j:** Multiple crossing at poor aspect angles between traffic to and from Hook of Holland and to and from Schouwenbank occur in this area. Traffic to and from Schouwenbank also crosses the deep water route in this area. Vessels in the deep water route are restricted in their ability to take avoiding action.
- **Maas centre precautionary area – Figure 12 and Appendix 1, point 9e, 9g and 9h:** Ships from Maas North TSS must alter course to starboard to approach the pilot station whilst at the same time being stand on vessels for outbound traffic in a close quarters crossing encounter. Traffic from Maas North TSS and Maas Northwest TSS have to cross the deep water channel to approach the pilot station and inbound ships from Maas West TSS cross the area to approach Scheveningen pilot station. This results in multiple crossing in the precautionary area.

Furthermore, if all round 2 wind parks will be built in the future, the following additional points of concern arise (see red risk scores in the "Variant 1 traffic routing" Worksheet):

- **Breeveertien wind park - Figure 13 and Appendix 2, Point 3e**: W going vessels from IJmuiden cross SW going traffic close to the Breeveertien wind park site. W going vessels then must give way to SW going traffic. In poor visibility situations, the wind park, however, will obscure onboard visual and radar detection of a close quarters situation between SW and W going ships until the range is only about 2mls.
- **West Rijn wind park - Figure 13 and Appendix 2, Point 8d**: SSW going vessels for Schouwenbank cross NW/SE going traffic in and out of the Maas Northwest TSS. NW going traffic must give way to SSW going ships, which in turn must give way to SE going traffic. In poor visibility situations, the nearby West Rijn wind park will obscure

onboard visual and radar detection of a close quarters situation between NW and SSW going ships until the range between them is only about 4 miles.

- **Existing Princess Amalia wind park - Figure 13 and Appendix 2, Point 11o:** NE/SW going vessels pass the existing Princess Amalia wind park to starboard with no clearance. Small vessels, such as maintenance craft emerging without warning from the wind park *or* a ship breaking down and drifting into a wind turbine could pose a hazard and result in ship-ship or ship-turbine collisions. A collision between a ro-ro passenger ferry and a wind turbine could, moreover, have severe consequences.

In the Worksheets of the IMO variant the above points of attention colour yellow or green, indicating that the bottlenecks have been solved. Note that no new red scores are incurred either. Looking into the HAZID worksheet in the appendices, this can be ascribed to the following features of the proposed IMO variant routeing design.

1. **Around Horizon platform:** In the IMO variant, the extended southwest bound traffic lane of the Off Texel traffic separation scheme obliges ships for Schouwenbank via the amended Maas Junction precautionary area to continue in the southwest lane until they reach the south bound branch lane, rather than turning south-southwest as soon as they exit the current traffic lane. This reduces the traffic passing through the current 'hot spot' at the Horizon manned oil platform. Furthermore, re-aligning the northeast bound lane of North Hinder North traffic separation scheme directs vessels to pass the Horizon platform at a greater distance than it currently does.

2. **Entrance to Off Texel TSS:** In the IMO variant, ships from the Maas North to the Off Texel traffic separation schemes are directed to join northeast going traffic about 10 miles southwest of where they currently do and so the congestion of merging traffic that currently occurs at the south end of the Off Texel northeast bound lane is reduced. The adjusted boundaries of the Off Texel traffic separation scheme's northeast bound traffic lane also puts the *Vinca Gorthon* wreck outside of the lane, so effectively increasing the lane's width.

3. **The approaches to IJmuiden:** Traffic between the Maas North and the Texel traffic separation schemes is directed to cross the deep-water route leading to IJmuiden in a precautionary area west of the deep-water channel and so deep draft vessels have room to take the proper evasive action in risk of collision encounters. Furthermore, the traffic separation scheme in the approaches to IJmuiden will prevent the crossing encounters between inbound and outbound traffic that currently occur, whilst north and south going ships cross the scheme in just the two precautionary areas. This allows for more anchorage areas on the south side of the separation scheme so that inbound ships do not cross the outbound lane when arriving at or departing from the anchorages.

4. **The outer approaches to IJmuiden:** Due to the shifting of Maas North TSS approximately 5 miles to the West, traffic to and from this TSS now crosses in and out going traffic to IJmuiden West of the deep water route in a new precautionary area.

5. **Traffic from and to Sunk East:** It has been concluded that sufficient distance exists between the North and South going traffic in the deep water route.

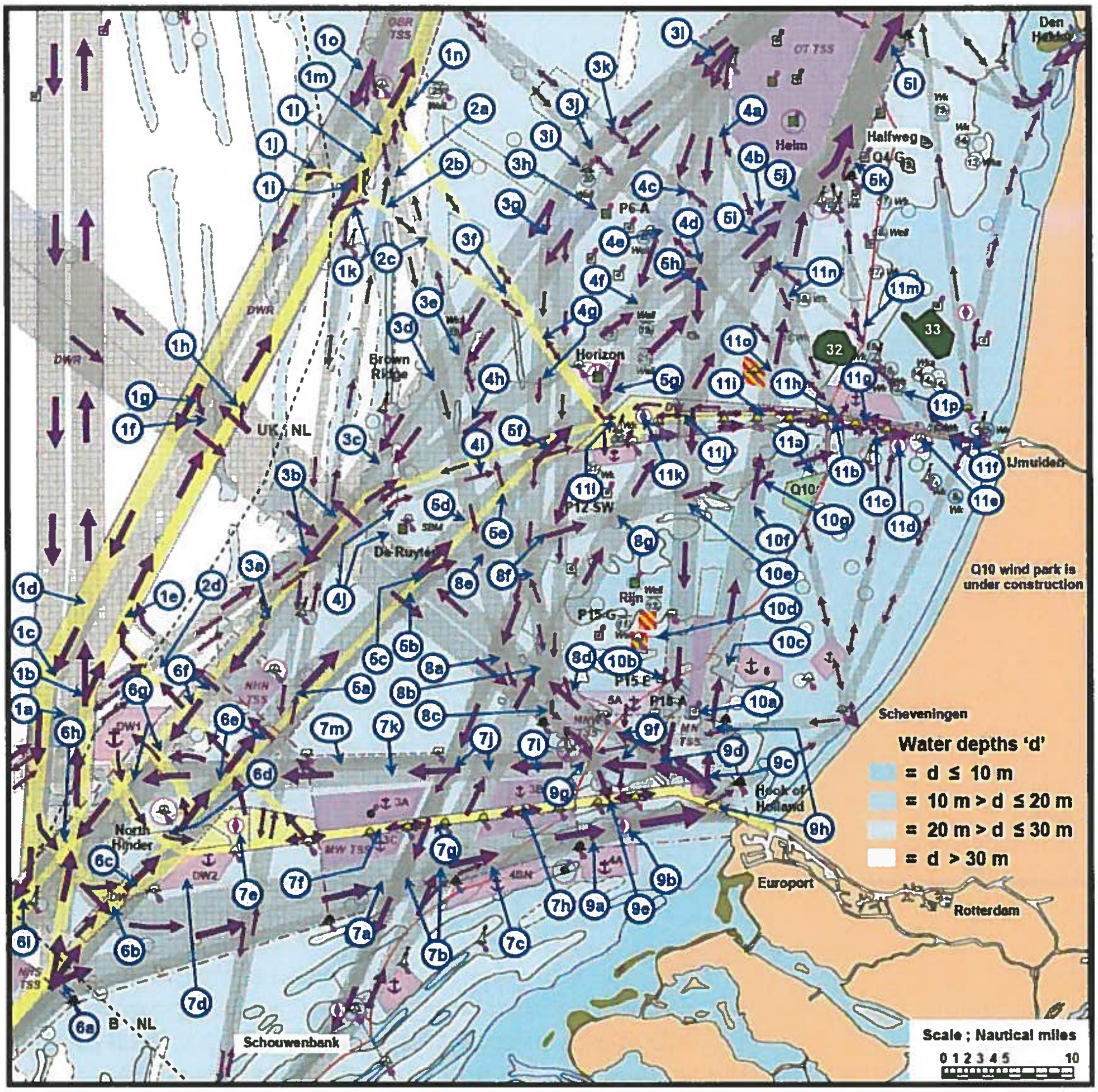
6. **At Brown Ridge/ De Ruyter:** The recommended route from the south going branch directs traffic for Schouwenbank to cross northeast bound traffic for the Off Texel traffic separation scheme and northwest/southeast traffic in and out of the Maas Northwest traffic separation scheme in the new Rijnveld precautionary area. The area's shape and the orientation of its boundaries have been designed so that the different of risk of

collision scenarios between vessels passing through the area are sufficiently far apart for two or more different risk of collision encounters *not* to coincide.

7. **Approaches to and from Hook of Holland:** The crossing angle of N/S going ships with east/west going traffic in the amended Maas Junction precautionary area is improved.

8. **Maas Centre precautionary area:** Vessels from Maas North TSS for the Maas Centre do not need to turn to starboard to approach the pilot station whilst being stand on traffic for outgoing ships. The enlarged Maas Centre precautionary area also provides more maneuvering space for vessels embarking or disembarking the pilot.

9. **Around Breeveertien, West Rijn, and Amalia Wind parks:** The IMO variant provides greater clearance between ships and the wind parks than variant 1. Clearance is still less than a mile for the Breeveertien wind park but the park shadows a diverging junction, so there is not a high risk of a potentially dangerous crossing encounter being obscured.



= Current wind park, = Proposed site, = Q10 under construction, = Ammunition dump

= Traffic stream (arrow size indicates the flow rate), = Recommended route, = tanker route

Figure 12. Present route structure with Wind Park Q10 under construction

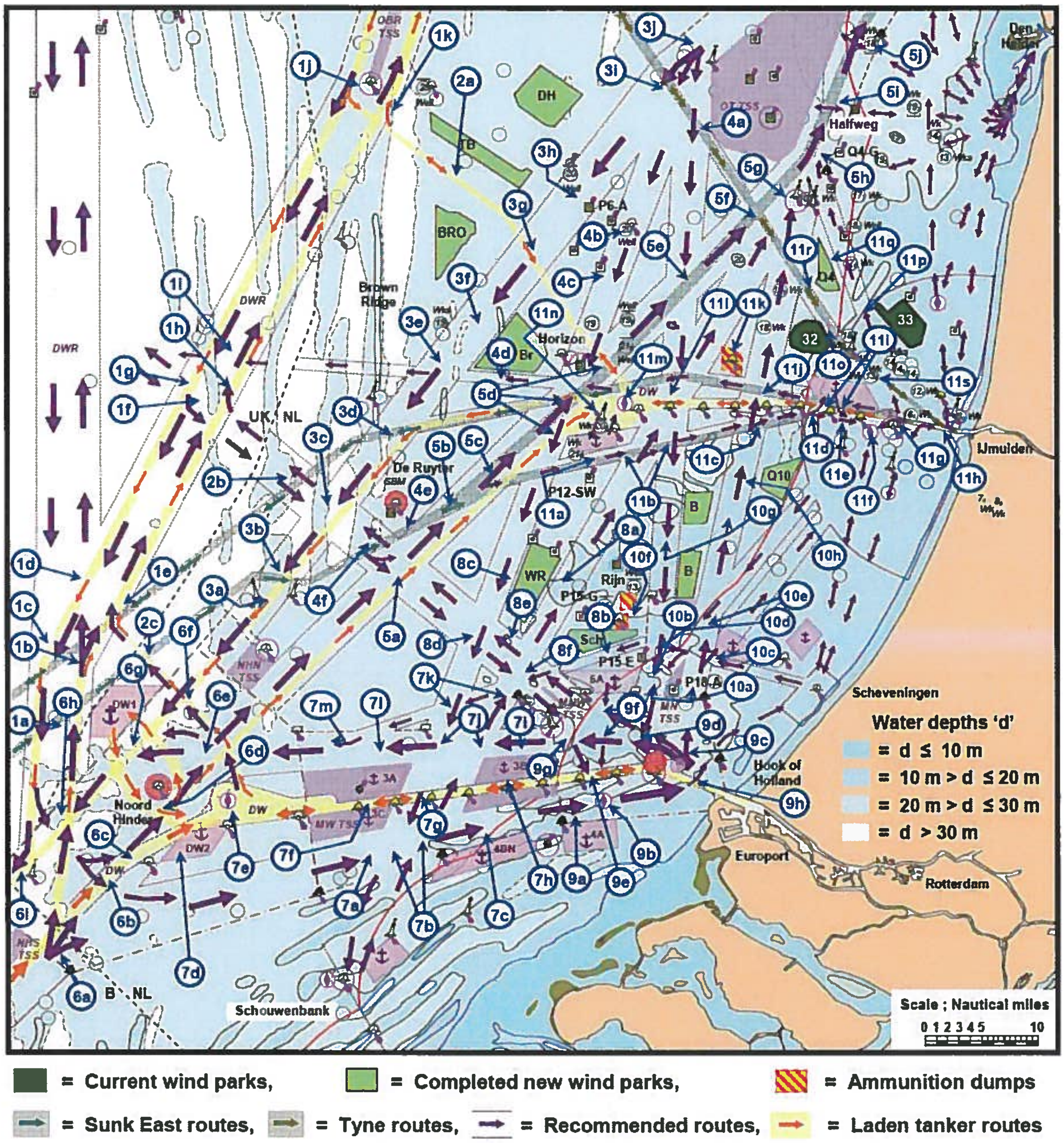
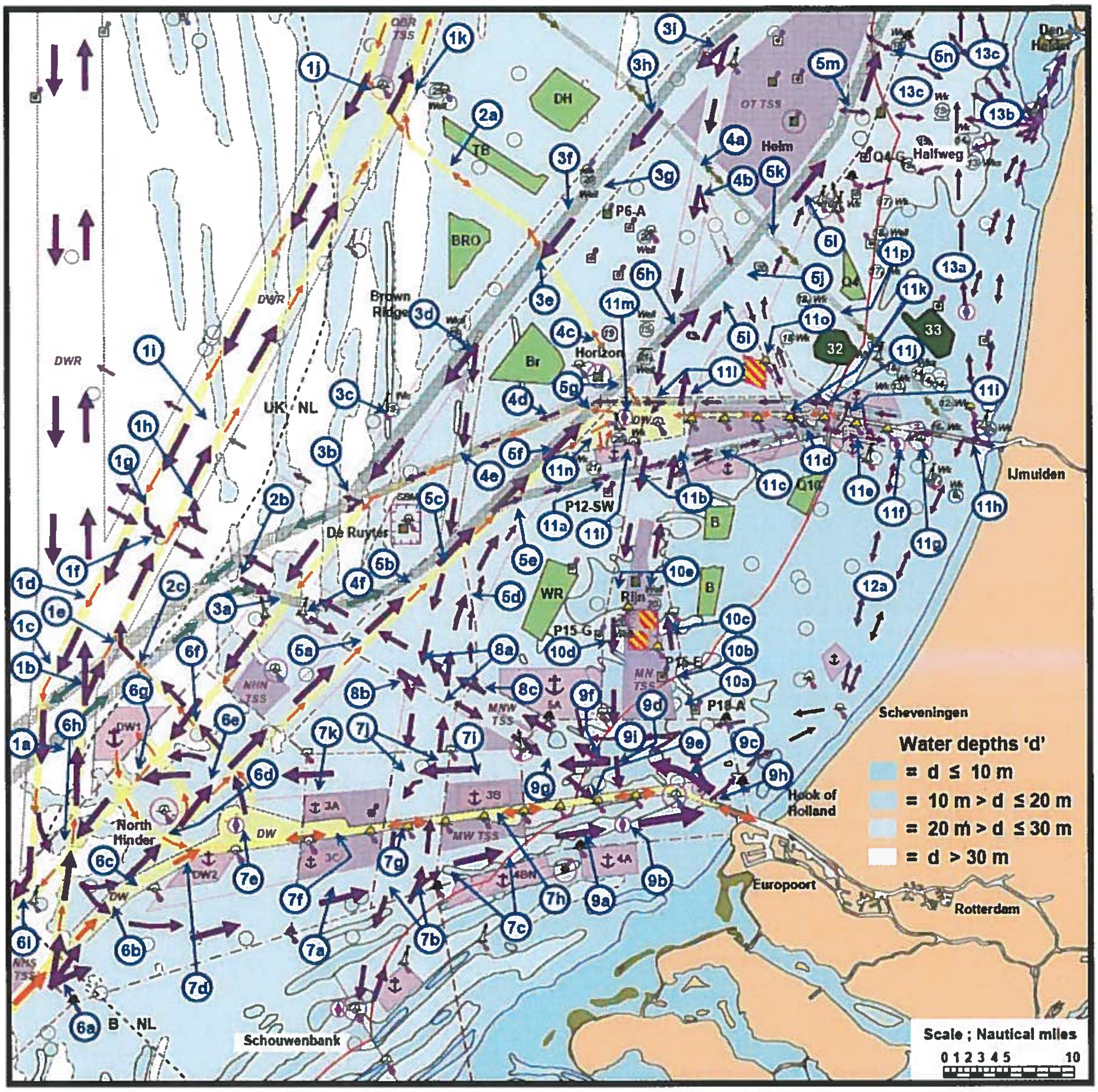


Figure 13. Variant 1 Traffic Flow with all the Round 2 Wind Parks developed and present route structure



■ = Current wind parks, ■ = Completed new wind parks, ▨ = Ammunition dumps

→ = Sunk East TSS routes, → = Tyneside routes, → = Laden tanker routes

Figure 14. IMO Variant 12.12.11 with all Round 2 wind parks, except for the Scheveningen Buiten park, developed and new route structure

4.2 The HAZID comparison of the three different traffic routeing systems

The HAZID total level of risk scores for three different traffic systems are shown in Figure 15.

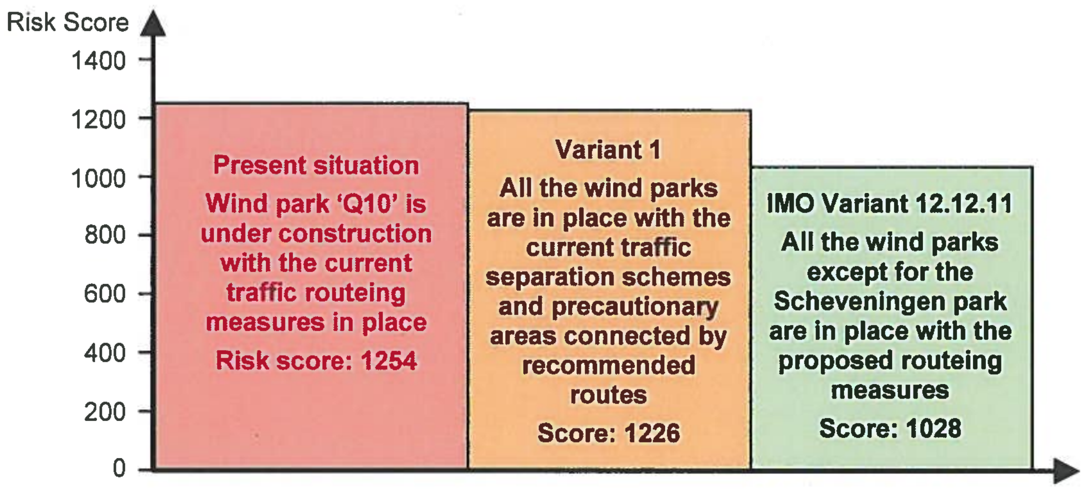


Figure 15. Comparison of total level of HAZID risk scores for the IMO Variant and the two baseline Variants

IMO variant 12.12.11 has a significantly lower level of risk than either of the other two systems.

It may seem strange that the present situation without wind parks should have a higher risk score than the Variant 1 option, as this keeps all the traffic separation schemes and precautionary areas in their current forms with the additional hazards that the presence of the wind parks might pose to shipping. It is possible that the wind parks themselves have a regulating effect on ships' movements in the same way that traffic islands help to regulate road traffic but road vehicles can only go where roads are built and also are bound by highway laws to stay in the lanes allocated to them. Variant 1 attempts to replicate this by projecting the route-selection of ships in this situation (based on MARIN data) and the FSA is based that ships use these routes. This goes some way to explain why variant 1 has a slightly lower risk score than the present situation, as the wind parks between the northeast and southwest bound lanes between North Hinder and Texel would reduce the number of different crossing encounters that can occur in this area. However, recommended routes are not mandatory in the same way that separation schemes are and ships can go just about anywhere, providing there is sufficient depth of water for their drafts, so there is no guarantee that all the ships in the area would follow the recommended routes, even if they were adopted by the IMO. Furthermore, some of the locations where these routes pass very close to wind parks are where traffic flows cross and so obscure shipboard AIS, radar and visual detection of a close quarters encounter developing until the vessels involved have passed clear the wind parks' shadows, by which time the range between them is uncomfortably close for assessing the situation and taking the appropriate evasive action.

Taking all factors into consideration, the difference between the risk scores for the present situation and the Variant 1 option is almost certainly within the FSA processes' limits of error and should not be given any real significance.

4.3 Comparison to results of QRA: quantitative risk assessment

MARIN applied the ship movements database to carry out a computerised quantitative risk assessment (QRA), which simulates ships moving between selected way points (ends of traffic separation schemes, pilot stations, anchorages etc.) at a very much accelerated rate so that, if the ships are started at a random times over the period being assessed and they are moving at a scaled up range of real speeds, then the programme can count up the number of close quarters encounters that could be expected to occur over the period being assessed. The programme then assesses the frequency of a collision occurring at each of these close quarters encounters, based on the angle between the two vessels' courses and their relative speeds. Although a collision between two vessels is perhaps the main risk, stranding and collisions between a vessel and a wind turbine or offshore platform are also taken into account.

The software must be programmed with a definition of a close quarters encounter (e.g. two vessels passing less than half a mile of each other) and MARIN divide close quarters encounters into three categories, namely: *'overtaking'* where the difference in courses is less than 60°, *'crossing'* where the difference in courses is between 60° and 150° and *'end on'* where the difference in courses is between 150° and 180°. It must be noted that these definitions are *not* the same as those given in the "International regulations for preventing collisions at sea" (otherwise known as the 'Colregs' or the 'Rule of the Road'), which state the rules by which ships should behave in each of these three types of a close quarters encounter (see pages 5 to 10). Consequently, the MARIN QRA does not take the possible actions of ships' officers into account *but*, as its aim is to compare the levels of risk for the three different traffic situations listed in the introduction, the comparison will be valid, provided that the same assumptions are applied to each of the three assessments.

The MARIN QRA came to the same conclusion though its reasoning is slightly different as it considered the main reduction in risk with the wind parks in place would be due to the extra clearance from shipping routes that the 'IMO Variant' provides, compared with leaving the traffic routeing measures as they currently are. The QRA actually predicts a slight increase in collisions between ships due to traffic being more concentrated in fewer routes but it admits that it cannot quantify the effect that rationalising the traffic flows has on how ships' officers react to close quarters encounters. The FSA, based on the mariner's view of the situation, may have judged this aspect of the risk analysis better but both methods of risk assessment have their limitations.

5. (Residual) Risk Control Options (Step 3)

The following risk control options have been discussed during the HAZID study and directly incorporated into the design of the IMO Variant:

1. Establishing a traffic separation scheme in the approaches to IJmuiden to keep inbound ships south of the deep-water channel and outbound ships north of it prevents the crossing encounters between these two traffic flows that currently occur. It also restricts the crossing of these lanes by north and south going vessels to within the two proposed precautionary areas and so provides more anchorage areas on the south side of the separation scheme so that inbound ships do not cross the outbound lane when arriving at or departing from the anchorages.
2. Moving the Maas North traffic separation scheme 4.5 miles to the west directs traffic moving between the Maas North the Texel traffic separation schemes to cross the deep-water route leading to IJmuiden in a precautionary area west of the deep-water channel and so deep draft vessels have room to take the proper evasive action in risk of collision encounters. The westward move of the traffic separation scheme also directs ships bound for the Off Texel traffic separation scheme to join northeast going traffic about 10 miles southwest of where they currently do and so reduces the congestion of merging traffic that currently occurs at the start of the Off Texel northeast bound lane.
3. Amending the Maas West Inner and Outer traffic separation schemes to accommodate moving the Maas North traffic separation scheme 4.5 miles to the west improves the crossing angle of north/south going vessels with east/west going traffic in the amended Maas Junction precautionary area.
4. The adjustment to the boundaries of the Off Texel traffic separation scheme's northeast bound traffic lane puts the *Vinca Gorthon* wreck outside of the lane, so effectively increasing the lane's width.
5. Extending the southwest bound traffic lane of the Off Texel traffic separation scheme 25 miles southwestwards to a south going branch lane obliges ships for Schouwenbank via the amended Maas Junction precautionary area to stay in the southwest lane until they reach the branch lane, rather than turning south-southwest as soon as they exit the current traffic lane, which puts them directly on course for the 'hot spot' at the Horizon manned oil platform.
6. Establishing a recommended route from the south going branch in paragraph '5' directs traffic for Schouwenbank to cross northeast bound traffic for the Off Texel traffic separation scheme and northwest/southeast traffic in and out of the Maas Northwest traffic separation scheme in the new Rijnveld precautionary area. The area's shape and the orientation of its boundaries have been designed so that the different of risk of collision scenarios between vessels passing through the area are sufficiently far apart for two or more different risk of collision encounters ***not*** to coincide.
7. Re-aligning the northeast bound lane of North Hinder North traffic separation scheme directs vessels to pass the Horizon platform at a greater distance than it currently does.
8. Extending the current traffic zone inshore of the Maas West Inner traffic separation scheme to include the entrance to the Oosterschelde allows small coastal vessels trading between the Maas and the Oosterschelde to use the inshore traffic zone, instead of going through the Maas West Inner traffic separation scheme and the Maas Junction precautionary area and so reduces the traffic in these congested areas.

9. IMO variant 12.12.11 provides greater clearance between shipping and the wind parks than variant 1. Clearance is less than a mile near the end of the Off Texel extended southwest bound lane but the junction shadowed by the wind park is a diverging one so there is not the risk of a potentially dangerous crossing encounter being obscured.

The following options for wind park construction are furthermore suggested to mitigate residual risk:

1. The primary means of risk management is the future placement of the Wind Parks themselves to ensure that the site selection alignment, size and layout are optimal.
2. A review of marks and lights is recommended to ensure each Wind Park is optimally lit and marked to aid safe navigation. This review should give account to vessels passing the Wind Parks under normal navigation and also those that may navigate within the Wind Parks themselves. It has been suggested that people can become disorientated within a Wind Park and a small vessel may need to identify its position relative to the turbines to aid rescue. IALA Recommendation 0-117 provides general advice on the marking of Offshore Wind parks. Temporary buoys can be an important part of this process especially during the construction phases, i.e. for marking a construction zone boundary.
3. Safety zones can be used to exclude vessel navigation from the Wind Park. There are a variety of options available, including implementation of a full 500m safety zone around all turbines during construction and operation, which would extinguish the rights of navigation of vessels entirely. Alternatives to this are to have 500m safety zone established around any structure that is being worked upon during the construction phase and then reduce this to a 50m or 100m safety zone when not being worked on during construction. During the operational mode the safety zone could be set to 50/100/500m or removed entirely. The current Dutch policy includes the designation of temporary safety zones during construction, as well as designation of permanent safety zones around the turbines, so that access of all vessels to the wind parks is effectively excluded.
4. Future opening of the wind parks to small vessel traffic, for example by abolishing permanent safety zones or reducing their size, is discussed by Dutch policy makers. In the event that small navigation is permitted within the Wind Parks, it is recommended that a minimum safe (air) clearance be defined. Small vessel navigation needs to be managed to ensure these vessels are not endangered by exiting Wind Parks into major shipping routes undetected. Their presence in the fringes of Wind Parks also reduces valuable sea room to passing vessels which may place them at increased danger.
5. An emergency service review should be carried out to ensure an acceptable response can still be affected, especially within and in close proximity to the Wind Parks. This could include the use of lifeboats, helicopters and emergency towing vessels (ETVs). Consideration should also be given to oil spill response within this process.

There are number of auxiliary risk control options in the nautical domain that can or must be considered during implementation of the new routeing system:

6. Application of The International Regulations for Preventing Collisions at Sea 1972 (COLREGS). Rules 1 – 19, as these are the rules directly concerned with how vessels should avoid collision and so are particularly pertinent to the assessing the risk of collision to vessels in the traffic lanes shown in the different wind parks, relative to the current situation (i.e. with no the wind parks).

7. Cable routes and whether they are trenched, buried or exposed needs careful consideration, to reduce the likelihood of fishing gear and anchoring interaction.
8. Pilotage can be used to reduce or manage risks around Wind Parks. A review of pilotage is required within the area. Boarding points may benefit from relocation following the development of the Wind Parks.
9. Anchoring is the first line of defence when vessels suffer engine failure and await further assistance, if required. Safe anchoring when navigating within the confines of Wind Parks should be carried out with the full knowledge of the VTS.
10. A review of anchorage areas is required to ensure adequate provision is made and that areas are appropriate in location and size, and accessible.
11. Promulgation of information and warnings through notice to mariners and other appropriate media will reduce risks. This will include the appropriate marking of developments on navigational charts. Methods for achieving this need consideration for all stakeholders, including recreational and fishing users.
12. The pattern of buoys in the area is to be revised appropriately to mark out the traffic lanes in the IMO Variant traffic schemes. There are also the following cardinal buoys that possibly could be relocated or even removed.
13. An emergency towing vessel (ETV) is a most effect risk reducing measure; an ETV in the vicinity of a concentration of wind parks can reduce the probability of a drifting contact considerably, namely with more than 50%. The recommendable amount of ETV capacity for the Dutch case is discussed in chapter X.
14. An ETV typically has a long working aft deck with forward and aft bridge control stations and should meet with the following requirements:
    - Be of sufficient size and power to render effective assistance to the largest vessels that it is likely to be sent to in adverse weather conditions. (Suitable vessels will typically have a sustainable bollard pull of between 120 and 150 tonnes, an overall length of between 60 and 70 metres and a displacement of between 3,500 and 4,500 tonnes. Such a vessel may not be able to tow the largest ships transiting the area, such as a 250,000 dwt laden tanker, but it would be powerful enough to alter the disabled tanker's rate and direction of drift away from immediate danger by, for example, pushing the tanker's bow further into the wind.)
    - Be sufficiently manoeuvrable to hold position close enough to a disabled vessel in adverse weather in order to pass messenger lines, a tow line etc. to it. (An ETV should be a twin screw (preferably controllable pitch propellers) vessel with twin rudders and a bow thrust capability of at least 15% of its bollard pull.)
    - Be able to carry fuel, lubrication oil and freshwater for at least 10 days at sea at 90% full power without compromising the vessel's stability
    - Be equipped with a range of towing gear (towing pennants, shackles, chafe chains, weak links etc. of different sizes and strengths) sufficient to assist any size of ship.
    - Have the capability to fight the range of fires that could be encountered when assisting a disabled vessel, as this may be necessary in order to get close enough to the stricken ship in order to get a towline across or evacuate its crew.

- Have sufficient life saving equipment, including a crash boat and trained crew, to rescue personnel from the sea.
- Have sufficient facilities to tend to survivors' needs, including the capacity to give emergency first aid.
- Have sufficient clear deck space for a helicopter to winch personnel down to or up from the ETV. (Extra personnel, particularly medical staff, may have to be put onboard to tend to seriously injured casualties or crew and equipment may need to be transferred to the stricken vessel to assist in securing the tow.)
- Be equipped with sufficient means to deal with any pollution likely to arise from an incident.
- Be equipped with a portable submersible pumps, a portable free standing power supply (e. g. a diesel generator) and a crane of sufficient lifting capacity (typically a safe working load of at least three tonnes) and reach to land the pumps and their power supply onboard a stricken vessel.
- To carry a range of emergency damage control equipment adequate for dealing with the incidents that the vessel is most likely to encounter.
- Be fitted with sufficient radio equipment to communicate with at least two other stations (e.g. helicopter, lifeboat, coastguard etc.) on different frequencies during an incident.
- Carry sufficient trained crew to adequately deal with a major incident. Such an incident at critical moments could require 5 personnel on bridge (The master, ship driver, winch / fire pump operator and 2 assistants / radio operators) 4 or 5 crew on deck attaching the tow, deploying anti-pollution measures, launching or recovering the crash boat etc. 3 crew in the crash boat (the driver and 2 crew to pull a person out of the water), 2 engineers to monitor the deck and engine room machinery and 3 staff to tend to survivors. Consequently, an ETV should carry a minimum of 18 specifically trained crew.

15. Near misses are still significant in the approaches to IJmuiden and near oil/gas platforms on the Dutch EEZ and readily illustrate the need for more organisation of shipping in the area under consideration and the assets. Greater control and influence of VTS should be a mitigating factor. A fact finding visit to the VTS station confirmed the need for this additional control. VTS stations could be established with greater and more extensive control of the area under surveillance to aid emergency response. By definition[8] a Vessel Traffic Service is a service implemented by a competent authority[9], designed to improve the safety and efficiency of vessel traffic and protect the environment. The service should have the capability to interact with the traffic and respond to traffic situations developing in the VTS area.

    The VTS can rightly be described, depending on local regulations, as 'control of space' of the area in which it exercises authority. Recognising at all times that Masters control and navigate their ships within that space. In this respect the services rendered by the VTS is best described as that of a Harbour/ Port rendering a level of service offering:

[8] IMO Resolution A857(20) - Adopted 27.11.97
[9] '**The**' Port Company

- A ***Traffic Organisation Service*** which prevents the development of dangerous maritime traffic situations and therefore provide for safe and efficient movement of traffic within the VTS area.
- An Information Service to ensure that essential information is available to those requiring it.
- A Navigational Assistance Service to assist[10] onboard decision making insofar as assistance is by information only and in keeping with the principle that instructions/ advice issued are 'result orientated'.

- To require compliance with National and International Law and Conventions and with the provisions of the Harbours Acts and subordinate legislation.
- Maintain a traffic organisation service to prevent dangerous situations[11] developing and to promote and provide for safe and efficient movement of vessels within the VTS area.
- A service which assists in the co-ordination of the supply of pilots together with the necessary information to assist in the formulation of a passage plan for their intended task.
- Provide information relating to the Port and its approaches to ships outside the Authorities area as and when requested.
- To keep an accurate, comprehensive and auditable record of all:
  - All commercial vessel movements.
  - Pilotage acts.
  - Ship/ Shore and Ship/ Ship communications for a limited period.
  - Incident Reports

Such detail will also assist with the investigation into incidents, which from time to time occur.

- Monitor shipping movements, including vessel routeing & speed, together with tidal and shipping movements within the ports area of authority and to provide timely information concerning hazardous situations.
- To act as coordinating authority in the event of an incident within the ports jurisdiction and area of authority which involves other organisations, services or authorities.
- To alert the Harbour Master or Assistant Harbour Master to any incident which may require the implementation of the Port Emergency Plan, carry out initial alerting and staff call out role.
- To act as the ports central point of contact outside normal office hours for all incoming inquiries or information.

16. During the more detailed planning of each of the developments more localised navigational issues require consideration as this study is conducted at a higher level.

[10] to be ***'result orientated'***
[11] Instructions to be ***'result orientated'***.

6. Cost Benefit Analysis (Step 4)

Much of the Risk Control Options (RCOs) listed above will have little on no additional cost implication but their improved utilisation and implementation will certainly impact on the safety aspect of navigation throughout the selected Variant. The RCOs which need to be considered in the FSA in more depth will be analysed below.

6.1 Emergency Towing Vessels (ETVs)

6.1.1 Benefits

The function of ETV capacity is to prevent that any maritime incident should escalate into one of catastrophic consequences for human, economic, financial or environmental values, due to the casualty vessel drifting. Early response to an incident is more likely to contain the situation and negate the historically large associated clean up and compensation costs.

6.1.2 Situation in the Netherlands

The Netherlands currently operate one ETV, which is moored in Den Helder. In 2010 the "Ievoli Black" has continued the ETV task of "De Waker". As soon as a report of a drifter is received by the Netherlands Coastguard and assistance is required, the ETV is alarmed and directed to the drifter. The probability of a ship needing assistance is higher during severe weather conditions when the drifting will also be larger. Consequently, the Coastguard ETV maintains its station at sea during wind conditions of 5 Beaufort or more to minimise its response times.

6.1.3 Market development

Although we might expect a fall in charter costs due to the present decline in the shipping market, the demand and hence charter rates for tugs, which most ETVs are drawn from, is currently rising and does not appear to be reaching any plateau. Lead times for new build can be as high a two or three years and the present second hand market is buoyant, with sellers demanding a premium for good tonnage.

It needs to be said that the present growth rate in cost is related directly to the supply of tugs that ETVs are eventually drawn from. Requirements for ETV's compete with a demand for high horse power tugs due to the expansion of the offshore industry / wind park developers into deeper and in some cases difficult waters. The expansion of the offshore industry may also pose an opportunity for the ETV market, as future multi-purpose of the tugs of this industry may be an alternative means of providing emergency towing services.

In 2010, the UK Government announced as part of the Department for Transport's share of cuts in the Comprehensive Spending Review, that the ETV fleet would no longer funded by the MCA from September 2011 claiming that ship salvage should be a commercial matter between the ship's owner and the salvor.

The British Government (MCA) have only recently in September 2011 terminated the use of two of the four ETVs, presently in use around the UK coast. It was announced that the two ETVs operating in the Minch (Stornoway) and the Shetland Islands (Lerwick) be retained for a period of 6 months and that the remaining two ETVs, based in the Orkneys and the Minches are up for review in March 2012.

6.1.4 Costs

Fig 1 illustrates the new build cost over the period with the bar chart showing that the sale price of vessels sold in 2011 averaged US$723/BHP which is an increase on the 2010 cost which rendered US$589/BHP. (It should be borne in mind that in both cases the average age profile was 25 years old for the two years under consideration.)

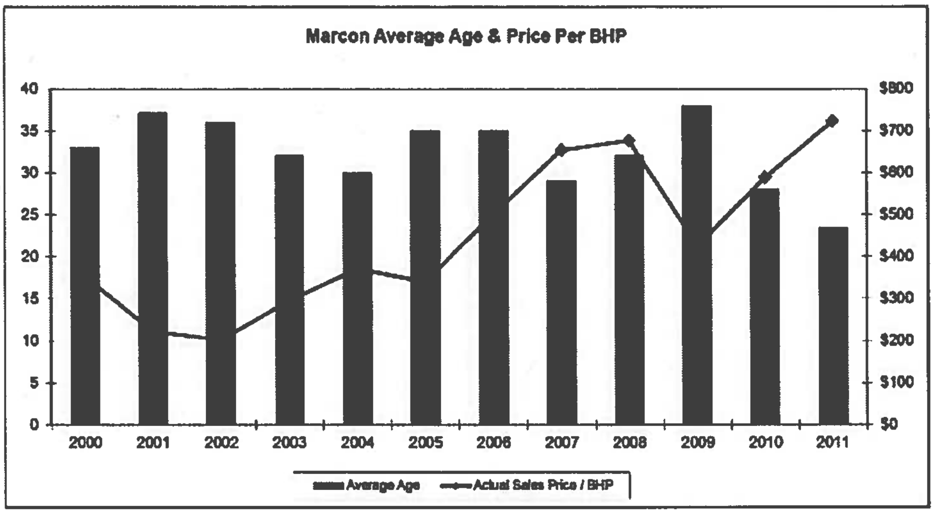


Fig 16. New and Used Tug Sale Prices (Source: Marcon International)

The contractual arrangements between charterer and shipowners are usually confidential and not easy to acquire. However, due to the relatively high profile decision for the Maritime Coastguard Agency (MCA) to terminate the arrangement, the contractual arrangements were disclosed.

As of 2010 the MCA maintains four (4) Level 1[12] ETVs, namely:

No.	Vessel	Built	Brake Horse Power	Bollard Pull
1	Anglian Prince	1980	11280	170
2	Anglian Princess	2002	16500	181
3	Anglian Sovereign	2003	16400	182
4	Anglian Monarch	1999	11400	152

Table 15.

These vessels were based in strategic locations around the UK. Two covering the south coast of England (Falmouth and Dover) and two in Scottish waters (Stornoway and Lerwick). The Dover station was partly funded by the French

The cost of the service is £12 million per annum or £3 million per tug. This £3 million equates to £8220.00 (£3000000/365). This rate paid by the MCA is significantly less than that which is available on the open market with rates suggested in the order of £20000/day.

This attractive rate obtained by the MCA arises through the Charter party governing the agreement being one of shared risk which allows the tug owners freedom to negotiate on salvage contracts throughout the Charter.

[12] Permanent standby

6.1.5 International use and capacity of ETV

The table below gives a general indication of Countries using ETVs off their coasts and the expected speed/bollard pull desired from these vessels.

No.	Nationality	Number	Bollard Pull (Tons)	Bollard Pull Range				
				25/49	50/99	100/149	150/199	200/250
1	Algerian	3	3 x 200					3
2	Finland	1	1 x 60		1			
3	France	5	2 x 200					2
			2 x 160				2	
			1 x 124			1		
4	Germany	3 – North Sea	1 x 201					1
			1 x 113			1		
			1 x 100			1		
		5 – Baltic Sea	3 x 40	3				
			1 x 65		1			
			1 x 100			1		
5	Iceland	1	1 x 110			1		
6	Netherlands	1	1 x 120			1		
7	Norway	3	1 x 118			1		
			1 x 144			1		
			1 x 150				1	
8	Poland	1	1 x 74		1			
9	South Africa	1	1 x 181				1	
10	Spain	14	2 x 228					2
			2 x 128			2		
			7 x 60		7			
			1 x 105			1		
			1 x 97		1			
			1 x 81		1			
11	Sweden	3	3 x 110			3		
12	United Kingdom	2	1 x 170				1	
			1 x 180				1	
	Total	45		3	12	14	8	8

Table 16. International comparison of ETV capacity

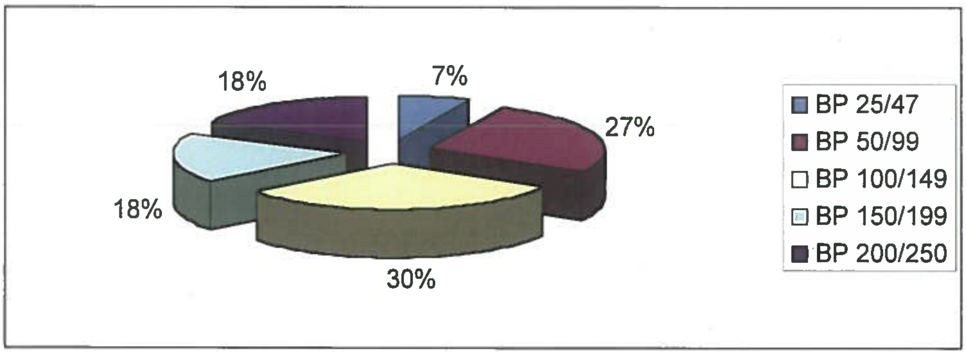


Fig 17. Bollard Pull percentages

Clearly the bollard pull favoured is in the 100 /150 Ton range which represent 30% of the range. This the bollard pull that the Dutch government is currently employing.

6.2 Travel costs for proposed routeing compared to baseline scenario's

6.2.1 Introduction

The HAZID project team conducted a desk study to determine the change in passage distances and associated costs due to the proposed routeing measures. The following paragraphs include the results and rationale of this study, subsequently discussing travel distances, input data for cost calculations, cost calculations and corporate implications of cost projections. Before these discussions, however, a summary of the finding is provided.

6.2.2 Summary

The below figures and tables demonstrate that the proposed routeing measures will lead to additional distances for commercial traffic and associated costs. It is noted that additional distances incurred by commercial traffic are small and within the limits of error when considering individual foreign going vessels that transit the routes prior to or after making long ocean passages. Even so, this figure escalates to a large amount when considering all vessels that enter the ports of Rotterdam and IJmuiden on an annual basis. The additional mileage, and therefore costs, is more readily felt by those individual vessels which frequent the ports on a daily basis and classed as regular runners, that is, ferries, feeder vessels and similar.

6.2.3 Distances

Figures 18, 19 & 20 show the differences in travel distance between the proposed route structure and the baseline situations for various common travels through the Dutch EEZ. The information is divided over three figures in order to make the maps readable and avoid an overflow of information. Table 14 outlines and summarizes the increase in travel distances. Particular attention is drawn to the additional mileage incurred by the vessels engaged in the internal coastal trade, Schouwenbank, Rotterdam, IJmuiden.

Figure 18 demonstrates that most proposed route structures increase the travel distances for the common East-West oriented routes, as follows:

- The extra distance for the proposed Schouwenbank to Off Texel route (bright red) is: **2.5** mls
- The extra distance for the proposed Off Texel to Schouwenbank route (dark red) is: **2.5** mls

- The extra distance for the proposed Maas Centre to Off Texel route (light blue) is: **2.5** mls
- The extra distance for the proposed Off Texel to Maas Pilot route (dark blue) is: **2.0** mls

- The extra distance for the proposed Sunk East to Off Texel route (dark green) is: **5.0** mls
- The extra distance for the alternative Sunk East to Off Texel route (light green) is: **5.5** mls

- The extra distance for the proposed IJmuiden to Off Texel route (purple) is: **6.5** mls
- The extra distance for the proposed Off Texel to IJmuiden route (grey) is: **6.5** mls

- The Off Texel to the Sunk East route going south of Brown Ridge (black) remains the same.

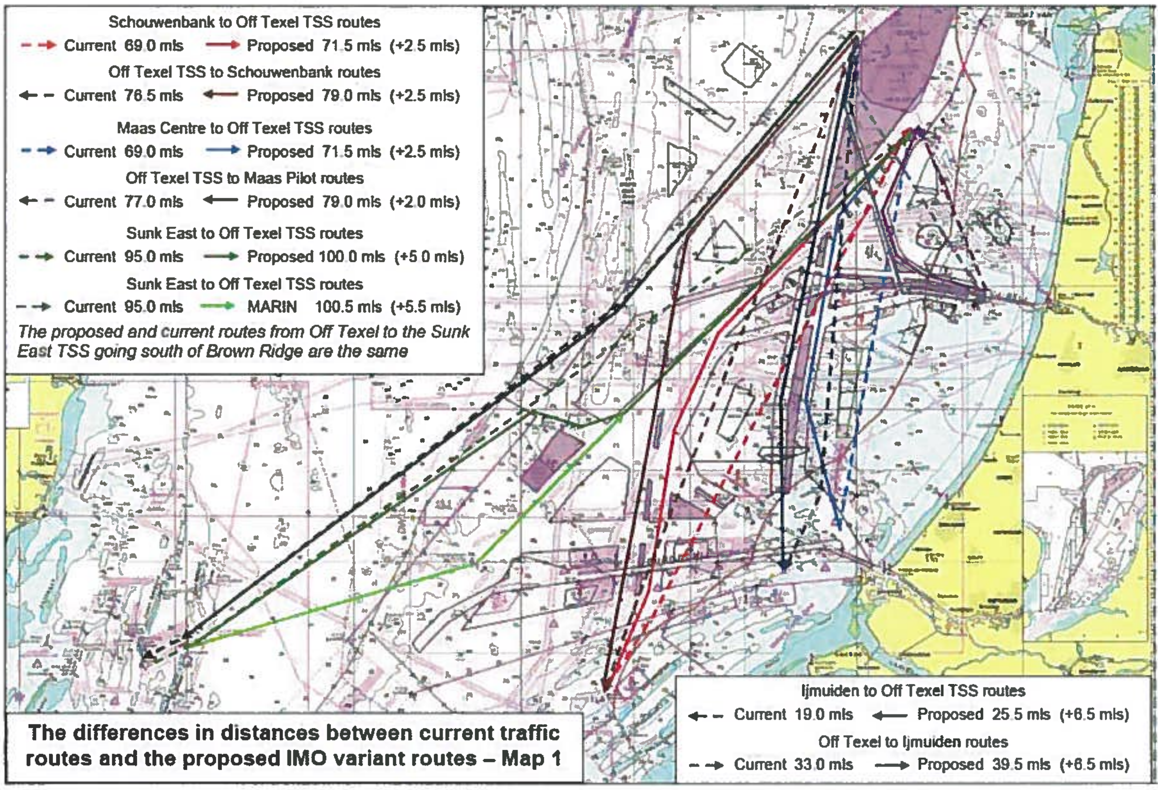


Figure 18. Map showing differences in travel distance between current traffic routes and the proposed IMO Variant routes (North South accent)

Figure 19 again demonstrates that most proposed route structures increase the travel distances for the common East-West oriented routes, as follows:

- The extra distance for the proposed Schouwenbank to IJmuiden route (bright red) is: 7 mls
- The extra distance for the proposed IJmuiden to Schouwenbank route (dark red) is: 12 mls

- The extra distance for the proposed Maas Centre to IJmuiden route (light blue) is: 7.5 mls
- The extra distance for the proposed IJmuiden to Maas Pilot route (dark blue) is: 9.5 mls

- The extra distance for the proposed Sunk East to IJmuiden route (dark green) is: 1.5 mls
- The extra distance for the alternative Sunk East to IJmuiden route (light green) is: 1.5 mls
- The extra distance for the proposed IJmuiden to the Sunk East route (black) is: 1.5 mls

- The extra distance for the proposed Schouwenbank to Maas Pilot route (purple) is: 1.0 ml
- The extra distance for the proposed Maas Centre to Schouwenbank route (grey) is: 2.5 mls

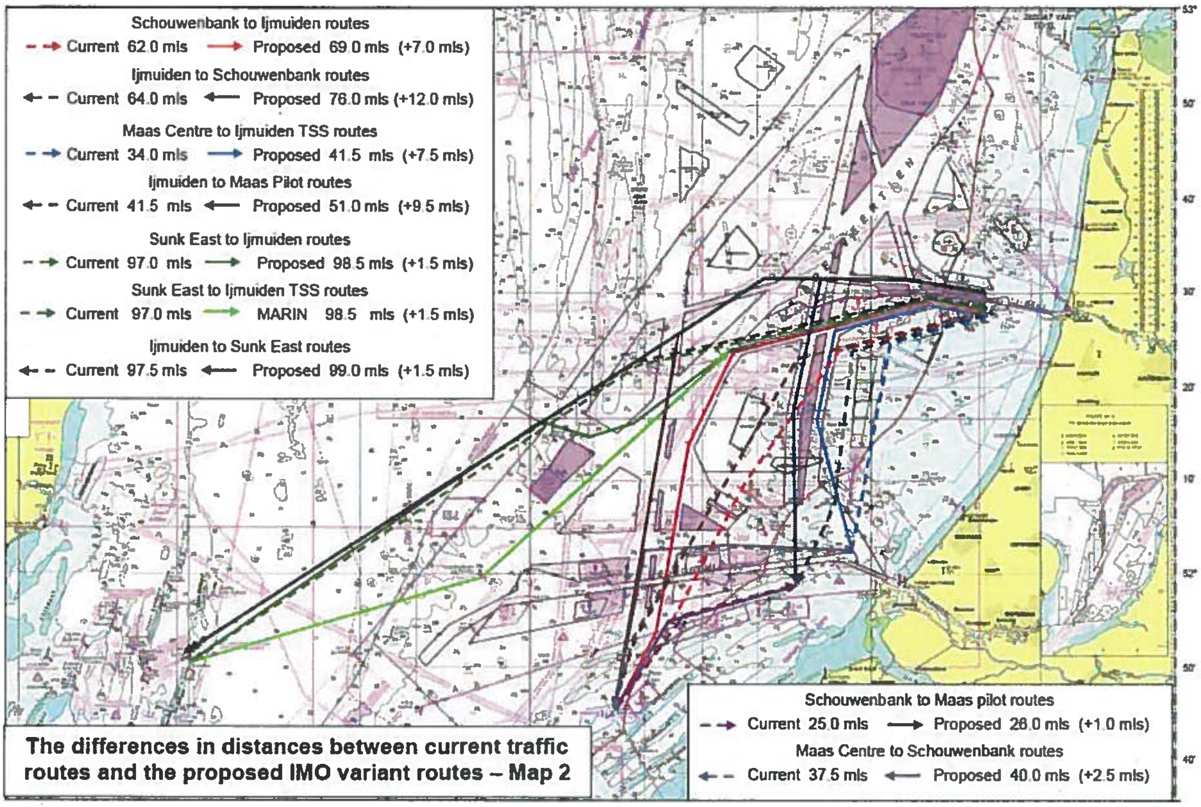


Figure 19. Map showing differences in travel distance between current traffic routes and the proposed IMO Variant routes (East West accent)

Figure 20 demonstrates that the proposed route structure leads to increasing travel distances for Ferry crossings, as follows:

- The extra distance for the proposed Newcastle to IJmuiden route (bright red) is: **5.0** mls
- The extra distance for the proposed IJmuiden to Newcastle route (bright red) is: **2.5** mls

- The extra distance for the proposed Hull to Rotterdam route (blue) is: **2.5** mls
- The extra distance for the proposed Rotterdam to Hull route (blue) is: **1.0** ml

- The extra distance for the proposed Smiths Knoll to Hook of Holland route (black) is: **2.5** mls
- The extra distance for the proposed Hook of Holland to Smiths Knoll route (black) is: **1.0** ml

- The extra distance for the proposed Harwich to Hook of Holland route (green) is: **0.5** mls
- The extra distance for the proposed Hook of Holland to Harwich route (green) is: **0.5** mls

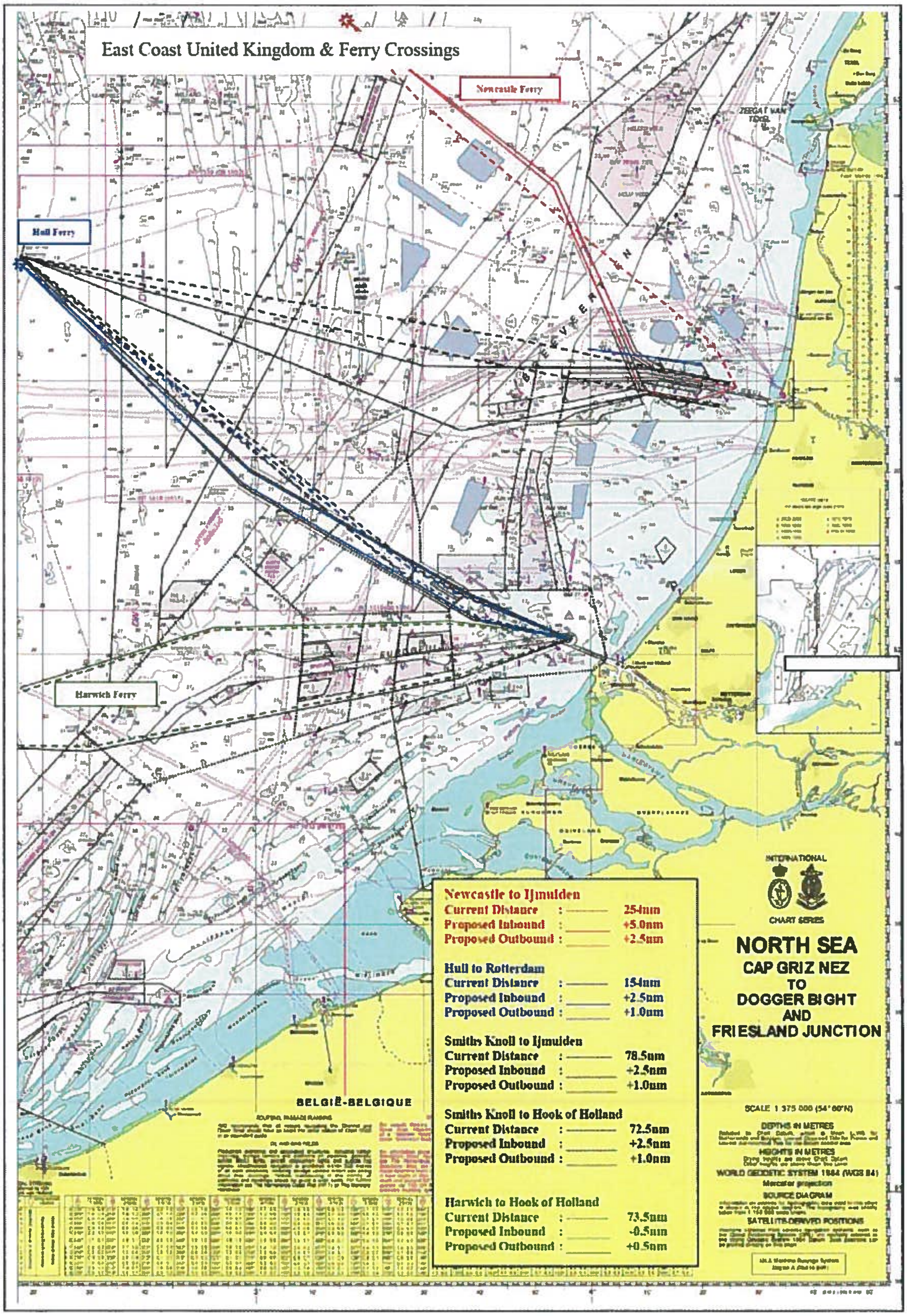


Figure 20. Map showing ferry crossings

Table 17. Overview of additional travel distances as a result of proposed IMO Variant routeing structure

Route	Additional Distance Incurred through Imposition of IMO Variant Wind Park															
	1.00	1.50	2.00	2.50	5.00	5.50	6.00	6.50	7.00	7.50	9.50	10.00	10.50	11.00	11.50	12.00
Map 1																
Schouwenbank to Off Texel Routes				x												
Off Texel TSS to Schouwenbank Routes				x												
Maas Centre to Off Texel TSS Routes				x												
Off Texel TSS to Maas Pilot Routes			x													
Sunk East to Off Texel TSS					x											
IJmuiden to Off Texel Tss Routes								x								
Off Texel to IJmuiden Routes								x								
Map2																
Schouwenbank to IJmuiden Routes									x							
IJmuiden to Schouwenbank																x
Maas Centre to IJmuiden TSS Routes										x						
IJmuiden to Maas Pilots											x					
Sunk East to IJmuiden Routes		x														
IJmuiden to Sunk East Routes		x														
Schouwenbank to Maas Pilot Poutes	x															
Maas Centre to Scouwenbank Routes				x												
Map 3																
Newcastle to IJmuiden Inbound					x											
Newcastle to IJmuiden Outbound				x												
Hull to Rotterdam Inbound				x												
Hull to Rotterdam Outbound	x															
Smiths Knoll to IJmuiden Inbound				x												
Smiths Knoll to IJmuiden Outbound	x															
Smiths Knoll to Hook of Holland Inbound				x												
Smiths Knoll to Hook of Holland Outbound	x															

6.2.4 Input for costs calculations: fuel prices and consumption

This paragraph provides an overview of the fuel prices used in subsequent calculations.

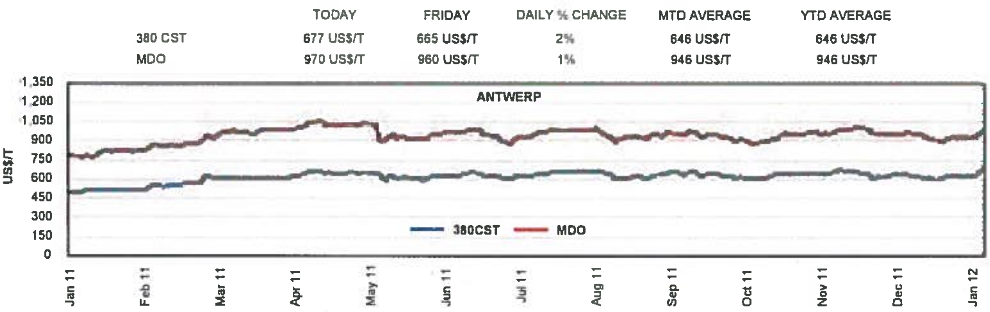
Heavy Fuel Oil (HFO-380CST)

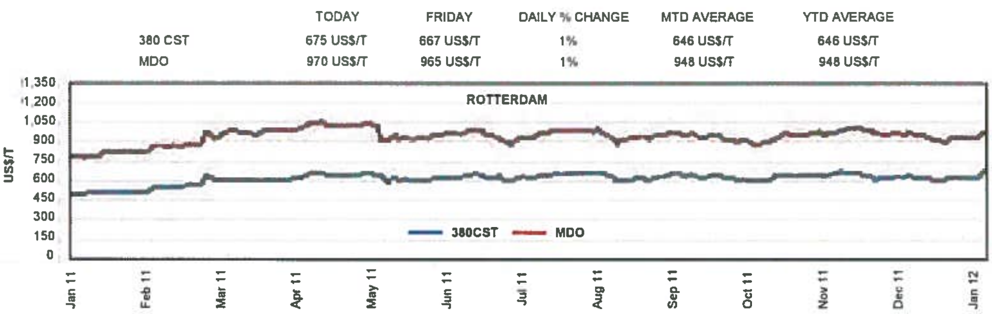
Most ocean going vessels today use Heavy Fuel Oil (HFO) in all engine and boilers, except the generator engines. Fuel most often used is known as HFO 380 which has a viscosity of 380 CentiStokes at 50°C. This fuel must be heated to reduce its viscosity before being burned in engines or boilers. Sulphur content of this fuel can be as high as 6%, but will be limited to 4.5% after May 2005 by international treaty. The average sulphur content of HFO in use today is about 2.6%. International regulations require a flash point (closed cup) of over 140°F (60°C).

Marine Diesel Oil (MDO)

Marine Diesel Oil (MDO) is very similar to Marine Gas Oil, but has slightly higher viscosity - typically 1 to 2 CentiStrokes at 50°C. This fuel does not require heating to reduce its viscosity before being burned in engines or boilers. MDO can be used in diesel engines and boilers without modifications.

Price developments of both fuels are shown in Table 18; fuel consumption of various vessels is shown in Table 19. The consequent fuel costs / mile for various ships are shown in Table 20.





Fuel Grade	AYTD[13] USD$ / Tonne
HFO (380CST)	646
MDO	947

Table 18. Bunker prices as of the 6th January 2012

[13] Average Yearly To Date (Antwerp/Rotterdam)

TANKER BUNKER CONSUMPTION			
Category	Speed	Daily Consumption (Tonnes)	
		HFO	MDO
VLCC	15.50	93.00	0.00
SUEZMAX	14.50	60.00	0.00
AFRAMAX	14.50	50.00	0.00
PANAMAX	14.50	42.00	0.00
HANDYMAX	14.00	34.00	0.00
HANDY (12/25K)	13.00	21.00	3.00
COASTAL (6K)	11.00	0.00	12.00
COASTAL (3/5K)	11.00	0.00	5.00

BULK CARRIER BUNKER CONSUMPTION			
Category	Speed	Daily Consumption (Tonnes)	
		HFO	MDO
CAPE SIZE	14.50	56.00	0.00
PANAMAX	14.00	32.00	0.00
SUPRAMAX	14.00	30.00	0.00
HANDYMAX	14.00	30.00	0.00
HANDY (25/30K)	14.00	22.00	0.00
COASTAL (6/10K)	11.00	0.00	12.00
COASTAL (3/5K)	11.00	0.00	5.00

CONTAINERSHIP BUNKER CONSUMPTION				
Category		Speed	Daily Consumption (Tonnes)	
Type	TEUs		HFO	MDO
6	12000	25.50	336.00	0.00
5	6500	24.00	190.00	0.00
4	4500	23.00	130.00	0.00
3	3500	23.00	122.00	0.00
2	2000	22.00	100.00	0.00
1	700	17.00	22.00	2.00

FERRIES BUNKER CONSUMPTION			
Category	Speed	Daily Consumption (Tonnes)	
		HFO	MDO
NEWCASTLE /IJMUIDEN	19.00	56.00	0.00
HULL/ROTTERDAM	19.00	106.00	0.00
HARWICH/HVH	20.00	96.00	0.00

FISHING VESSEL BUNKER CONSUMPTION				
Category		Speed	Daily Consumption (Tonnes)	
Type	LOA(m)		HFO	MDO
Over 15m	20/30	10.00	0.00	2.70

Table 19. Bunker consumption analysis

FUEL GRADE	USD$/Tonne
HFO (380 CST)	646
MDO	947

Vessel Type	Speed	Consumption		Cost ($USD)			
		HVO	MDO	HVO	MDO	Combined	USD$ Per Nm
TANKERS							
VLCC	15.50	93.00	0.00	60078.00	0.00	60078.00	162
SUEZMAX	14.50	60.00	0.00	38760.00	0.00	38760.00	111
AFRAMAX	14.50	50.00	0.00	32300.00	0.00	32300.00	93
PANAMAX	14.50	42.00	0.00	27132.00	0.00	27132.00	78
HANDYMAX	14.00	34.00	0.00	21964.00	0.00	21964.00	65
HANDY (12/25k)	13.00	21.00	3.00	13566.00	2841.00	16407.00	53
COASTAL (6k)	11.00	0.00	12.00	0.00	11364.00	11364.00	43
COASTAL(3/5K)	11.00	0.00	5.00	0.00	4735.00	4735.00	18
BULK CARRIERS							
CAPE SIZE	14.50	56.00	0.00	36176.00	0.00	36176.00	104
PANAMAX	14.00	32.00	0.00	20672.00	0.00	20672.00	62
SUPRAMAX	14.00	30.00	0.00	19380.00	0.00	19380.00	58
HANDYMAX	14.00	30.00	0.00	19380.00	0.00	19380.00	58
HANDY(25/30K)	14.00	22.00	0.00	14212.00	0.00	14212.00	42
COASTAL(6/10k)	11.00	0.00	12.00	0.00	11364.00	11364.00	43
COASTAL(3/5K)	11.00	0.00	5.00	0.00	4735.00	4735.00	18
CONTAINER SHIPS							
12000 TEUs	25.50	336.00	0.00	217056.00	0.00	217056.00	355
6500 TEUs	24.00	190.00	0.00	122740.00	0.00	122740.00	213
4500 TEUs	23.00	130.00	0.00	83980.00	0.00	83980.00	152
3500 TEUs	23.00	122.00	0.00	78812.00	0.00	78812.00	143
2000 TEUs	22.00	100.00	0.00	64600.00	0.00	64600.00	122
700 TEUs	17.00	22.00	2.00	14212.00	1894.00	16106.00	39
FERRIES							
NEWCASTLE	19.00	56.00	0.00	36176.00	0.00	36176.00	79
HULL	19.00	106.00	0.00	68476.00	0.00	68476.00	150
HARWICH	20.00	96.00	0.00	62016.00	0.00	62016.00	129
FISHING VESSELS							
LOA 20/30	10.00	0.00	2.70	0.00	2556.90	2556.90	11

Table 20. Additional cost per nautical mile due to IMO proposal

6.2.5 Travel cost analysis

Given the distances, fuel costs and fuel consumption provided in the above paragraphs, travel costs of the proposed route structure compared to the baseline situations is detailed in Table 21, Table 22 and Table 23.

VESSEL TYPE	USD$/nm	MAP 1 Difference between Current and adopted IMO Variant						
		Schouwenbank to Off Texel	Off Texel to Schouwenbank	Maas Centre to Off Texel TSS	Off Texel TSS to Maas Pilot	Sunk East to Off Texel TSS	IJmuiden to Off Texel TSS	Off Texel to IJmuiden
		Additional Cost of Single Transit ($USD)						
TANKERS								
VLCCs	162	404	404	404	323	808	1050	1050
SUEZMAX	111	278	278	278	223	557	724	724
AFRAMAX	93	232	232	232	186	464	603	603
PANAMAX	78	195	195	195	156	390	507	507
HANDYMAX	65	163	163	163	131	327	425	425
HANDY(12/25K)	53	131	131	131	105	263	342	342
COASTAL(6K)	43	108	108	108	86	215	280	280
COASTAL(3/5K)	18	45	45	45	36	90	117	117
BULK CARRIERS								
CAPE SIZE	104	260	260	260	208	520	676	676
PANAMAX	62	154	154	154	123	308	400	400
SUPRAMAX	58	144	144	144	115	288	375	375
HANDYMAX	58	144	144	144	115	288	375	375
HANDY(25/30K)	42	106	106	106	85	211	275	275
COASTAL(6/10k)	43	108	108	108	86	215	280	280
COASTAL(3/5K)	18	45	45	45	36	90	117	117
CONTAINER SHIPS								
12000 TEUs	355	887	887	887	709	1773	2305	2305
6500 TEUs	213	533	533	533	426	1065	1385	1385
4500 TEUs	152	380	380	380	304	761	989	989
3500 TEUs	143	357	357	357	286	714	928	928
2000 TEUs	122	306	306	306	245	612	795	795
700 TEUs	39	99	99	99	79	197	257	257
FISHING VESSEL								
LOA 20/30	11	27	27	27	21	53	69	69

Table 21. Local difference between Current and adopted IMO Variant (I)

VESSEL TYPE	USDS/nm	MAP 2 Difference between Current and adopted IMO Variant							
		Schouwenbank to Ijmuiden	Ijmuiden to Schouwenbank	Maas Centre to Ijmuiden TSS	Ijmuiden to Maas Pilot	Sunk East to Ijmuiden	Ijmuiden to Sunk East	Schouwenbank to Maas	Maas to Schouwenbank
		Additional Cost of Single Transit (£USD)							
TANKERS									
VLCCs	162	1131	1938	1211	1534	242	242	162	404
SUEZMAX	111	780	1337	835	1058	167	167	111	278
AFRAMAX	93	650	1114	696	882	139	139	93	232
PANAMAX	78	546	936	585	741	117	117	78	195
HANDYMAX	65	458	784	490	621	98	98	65	163
HANDY(12/25K)	53	368	631	394	500	79	79	53	131
COASTAL(6K)	43	301	517	323	409	65	65	43	108
COASTAL(3/5K)	18	126	215	135	170	27	27	18	45
BULK CARRIERS									
CAPE SIZE	104	728	1247	780	988	156	156	104	260
PANAMAX	62	431	738	461	584	92	92	62	154
SUPRAMAX	58	404	692	433	548	87	87	58	144
HANDYMAX	58	404	692	433	548	87	87	58	144
HANDY(25/30K)	42	296	508	317	402	63	63	42	106
COASTAL(6/10k)	43	301	517	323	409	65	65	43	108
COASTAL(3/5K)	18	126	215	135	170	27	27	18	45
CONTAINER SHIPS									
12000 TEUs	355	2483	4256	2660	3369	532	532	355	887
6500 TEUs	213	1492	2557	1598	2024	320	320	213	533
4500 TEUs	152	1065	1826	1141	1445	228	228	152	380
3500 TEUs	143	999	1713	1071	1356	214	214	143	357
2000 TEUs	122	856	1468	918	1162	184	184	122	306
700 TEUs	39	276	474	296	375	59	59	39	99
FISHING VESSEL									
LOA 20/30	11	75	128	80	101	16	16	11	27

Table 22. Local difference between Current and adopted IMO Variant (II)

VESSEL TYPE	USD$/nm	MAP 3 Difference between Current and adopted IMO Variant									
		Newcastle to IJmuiden	IJmuiden to Newcastle	Hull to Rotterdam	Rotterdam to Hull	Smiths Knoll to IJmuiden	IJmuiden to Smiths Knoll	Smiths Knoll to Hook of Holland	Hook of Holland to Smith Knoll	Harwich to Hook of Holland	Hook of Holland to Harwich
		Additional Cost of Single Transit ($USD)									
TANKERS											
VLCCs	162	808	404	404	162	404	162	404	162	-202	202
SUEZMAX	111	557	278	278	111	278	111	278	111	-139	139
AFRAMAX	93	464	232	232	93	232	93	232	93	-116	116
PANAMAX	78	390	195	195	78	195	78	195	78	-97	97
HANDYMAX	65	327	163	163	65	163	65	163	65	-82	82
HANDY(12/25K)	53	263	131	131	53	131	53	131	53	-66	66
COASTAL(6K)	43	215	108	108	43	108	43	108	43	-54	54
COASTAL(3/5K)	18	90	45	45	18	45	18	45	18	-22	22
BULK CARRIERS											
CAPE SIZE	104	520	260	260	104	260	104	260	104	-130	130
PANAMAX	62	308	154	154	62	154	62	154	62	-77	77
SUPRAMAX	58	288	144	144	58	144	58	144	58	-72	72
HANDYMAX	58	288	144	144	58	144	58	144	58	-72	72
HANDY(25/30K)	42	211	106	106	42	106	42	106	42	-53	53
COASTAL(6/10k)	43	215	108	108	43	108	43	108	43	-54	54
COASTAL(3/5K)	18	90	45	45	18	45	18	45	18	-22	22
CONTAINER SHIPS											
12000 TEUs	355	1773	887	887	355	887	355	887	355	-443	443
6500 TEUs	213	1065	533	533	213	533	213	533	213	-266	266
4500 TEUs	152	761	380	380	152	380	152	380	152	-190	190
3500 TEUs	143	714	357	357	143	357	143	357	143	-178	178
2000 TEUs	122	612	306	306	122	306	122	306	122	-153	153
700 TEUs	39	197	99	99	39	99	39	99	39	-49	49
FERRIES											
NEWCASTLE	79	**397**	**198**	0	0	0	0	0	0	0	0
HULL	150	0	0	**375**	**150**	0	0	0	0	0	0
HARWICH	129	0	0	0	0	0	0	0	0	**-162**	**162**
FISHING VESSEL											
LOA 20/30	11	53	27	27	11	27	11	27	11	-13	13

Table 23. Local difference between Current and adopted IMO Variant (III)

Tables 21, 22 and 23 readily illustrate the costs attributable to commercial ship owners on an individual basis. The traffic numerically transiting the routes and therefore affected by the IMO proposal is well documented in the Marin Study and consultation with the charts found therein is recommended.

6.2.6 Corporate Impacts

The additional mileage, and therefore associated costs, is more readily felt by those individual vessels which frequent the ports on a daily/regular basis and traditionally classed as regular runners, that is, ferries, feeder vessels and similar. Examples we may take are detailed in Table 24 through Table 27.

Service	Service Leg	Transit Cost($USD)	Annual Runs	Additional Annual Cost ($USD)
Shuttle Panamax	ECUK/ Rotterdam Rotterdam/ECUK	154.00 62.00	156	34,000

Table 24. Operation of a typical shuttle tanker

Service	Service Leg	Transit Cost($USD)	Annual Runs	Additional Annual Cost ($USD)
Coastal 6000k	ECUK/ Rotterdam Rotterdam/Amsterdam Amsterdam/ECUK	108.00 323.00 108.00	104	56,000

Table 25. Operation of a typical mini Bulk service

Service	Service Leg	Transit Cost($USD)	Annual Runs	Additional Annual Cost ($USD)
Feeder 700 TEU	ECUK/ Rotterdam Rotterdam/Amsterdam Amsterdam/ECUK	99.00 296.00 198.00	104	62,000

Table 26. Operation of a typical 700 TEU feeder service operating ECUK /Rotterdam/Amsterdam (Container ship)

Operator	Service	Transit Cost ($USD)	Annual Runs	Additional Annual Cost ($USD)
DFDS	Newcastle	595.00	363	216,000
P & O	Hull	525.00	363	190,000
Stena	Harwich	0	0	0

Table 27. Operation of Ferry services from the UK to the Netherlands

It is noted that additional distances incurred by commercial traffic are small when considered individually in the context of foreign going vessels that transit the routes infrequently. Even so, this figure escalates to a large amount when considering all vessels that enter the ports of Rotterdam and IJmuiden on an annual basis. The additional mileage, and therefore costs, is more readily felt by those individual vessels which frequent the ports on a daily basis and are classed as regular runners, that is, ferries, feeder vessels and similar.

7. Decision making recommendations (Step 5)

The benefits of implementing the IMO Variant in terms of safety of life at sea and improving navigation in the area is clear from the FSA/Hazid process and is certainly an improvement on the present situation.

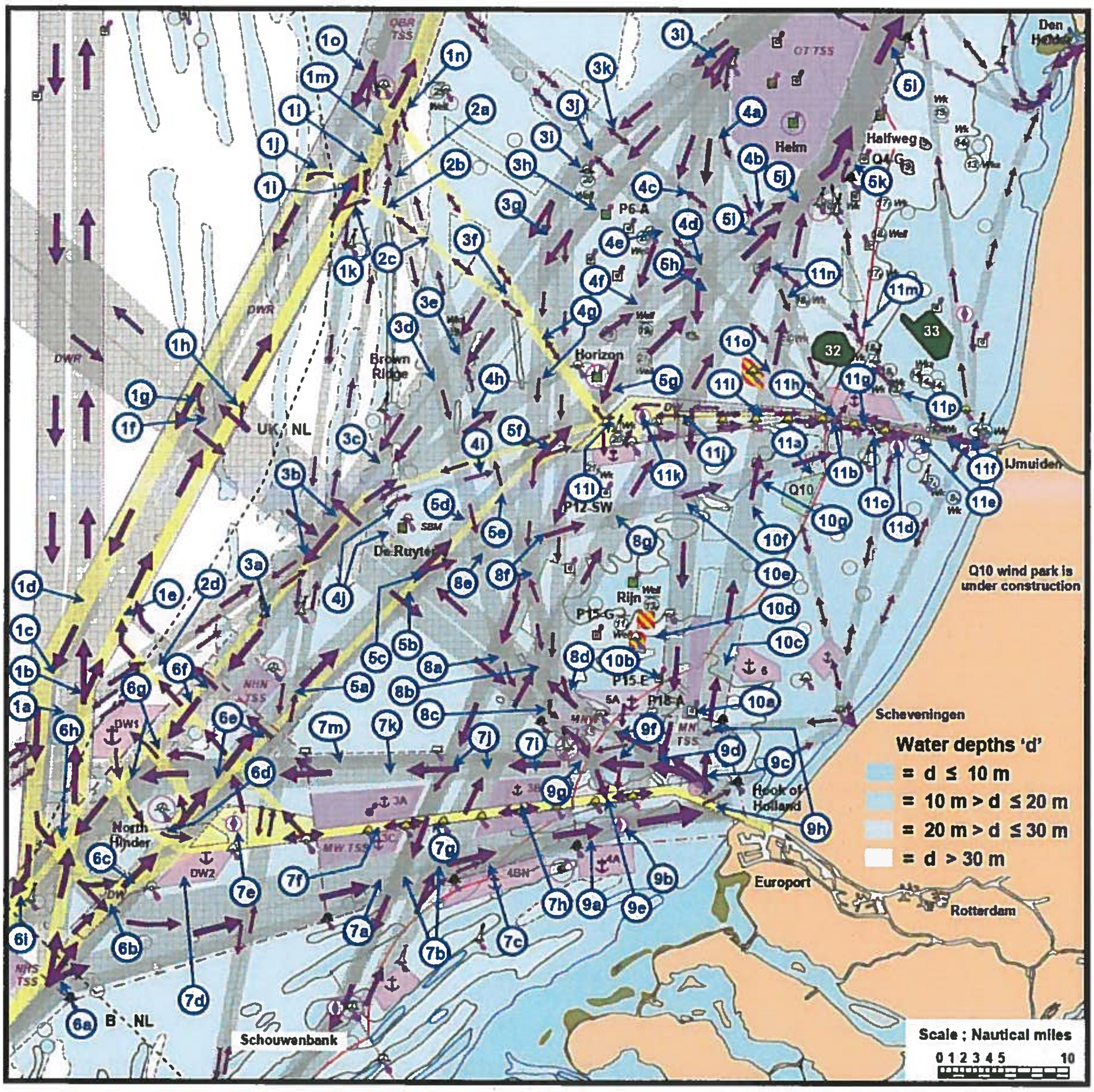
Implicit in the selection of IMO Variant was the utilization of the majority listed Risk Control Options (RCOs) (Step 3) in Chapter 5. Details of the alignment of ships' routeing measures relative to possible wind park developments and oil and gas platforms and supporting rationale are found in the relevant chapters on Risk Assessment (Step 2, chapter 4).

The remaining RCOs are directed at reducing residual risk after the implementation of the IMO Variant and can be summarised as follows:

- Application of the International Regulations for Preventing Collisions at Sea 1972 (Colregs);
- Risk aware design, construction and operation of licensed wind parks;
- A review of ETV capacity; and
- A review into extending the VTS control areas.

8. Appendix 1 –Present Traffic Routing Worksheet

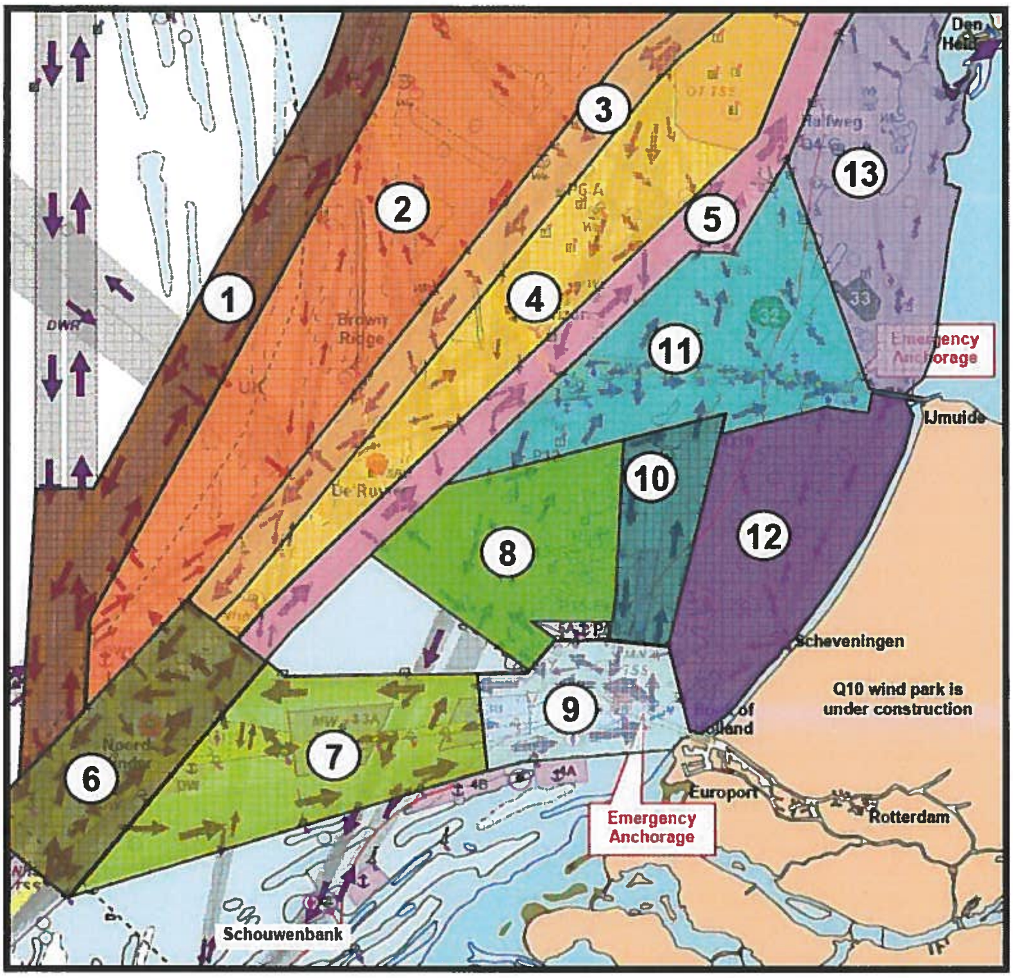
8.1 Present Traffic Flows with Wind Park 'Q10' under Construction



= Current wind park, = Proposed site, = Q10 under construction, = Ammunition dump

= Traffic stream (arrow size indicates the flow rate), = Recommended route, = tanker route

8.2 Subdivision Present Situation with Wind Park 'Q10' under construction



Section A : Offshore routes

1 NNE / SSW Offshore deepwater route between Noord Hinder and the Off Brown Ridge TSS.
2 The sea area between the off shore deep water route and the SW going route from the Off Texel TSS to the Noord Hinder Nord TSS
3 SW bound through lane to the North Hinder North TSS from the Off Texel TSS
4 Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's
5 NE going through lane from the North Hinder North TSS to the Off Texel TSS

Section B : Inshore routes

6 The North Hinder Junction Precautionary Area between the NHN and NHS TSS's (excluding the Europort deep water route
7 Maas West TSS and crossing traffic south of the shipping lanes in and out of the Maas Northwest TSS
8 The sea area bounded by the western edge of the Maas North TSS, the eastern edge of the NE lane from the Noord Hinder North TSS to the Off Texel TSS as far as the southern edge of the IJmuiden approaches and the southern edge of the Maas Northwest TSS
9 Maas Central Precautionary Area
10 Maas North TSS and its lanes up to the Southern boundary of the IJmuiden deep water route
11 Routes between IJmuiden inner fairway buoy and the NE going lane between the Noord Hinder North and the Off Texel TSS's

Section C : Secondary traffic

12 Hook of Holland to IJmuiden port area
13 IJmuiden to Texel

8.3 HAZID Worksheet – Present Situation with 'Q10' under construction

HAZID Worksheet for present traffic flows and Wind Park "Q10" under construction

The following Hazid is based on the following assumptions:-

1) Wind park Q10 is under construction whilst all other round 2 wind parks sites are clear.
2) Loaded tankers of 10,000 dwt trading north of 53° North and moving between IJmuiden and the mandatory deep water route must follow the shortest way possible and pass west of the Horizon gas platform.

The general control measures applied to reduce the risk of collision and grounding and to minimise the consequences of such accidents when they occur are contained in the relevant parts of the following:-

1) ***"The International Regulations for Preventing Collisions at Sea" (COLREGS)***
2) ***"The International Convention for the Safety of Life at Sea" (SOLAS)***
3) ***"The International Convention for the Prevention of Pollution from Ships" (MARPOL)***
4) ***"The Offshore Installations Regulations"*** issued by the UK and Dutch governments to the offshore oil and gas industry

The control measures to reduce the risk of collision and grounding that are specific to the present traffic movements are the existing traffic routeing measures (traffic separation schemes, precautionary areas etc.) shown on the map in the Appendix.

Risk Matrix			Frequency				
			Not Credible	Remote	Low	Medium	High
			1	2	3	4	5
Consequence		Integrated (Generic Definition)	Not expected to occur during activity	Unlikely to occur in practice	May occur during activity	Likely to occur during activity	Very likely to occur during activity
Catastrophic	5	Fatality, or severe personal injury, total plant loss, Irreversible environmental damage. Severe international publicity/loss of trade.	5	10	15	20	25
Severe	4	Serious/moderate personal injury. Major/ long term equipment damage. Long term environmental damage. Major adverse national publicity/customer reaction	4	8	12	16	20
Significant	3	Minor/Serious injury. Medium term equipment and environmental damage. Considerable impact on trade.	3	6	9	12	15
Minor	2	Minor personal injury. Minor/short term equipment damage. Short term environmental damage. Minor impact on trade.	2	4	6	8	10
Negligible	1	Negligible personal injury/ plant or equipment failure/environmental damage. Slight impact on trade.	1	2	3	4	5

Broadly Acceptable ALARP Unacceptable

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	1 - NNE / SSW Offshore deepwater route between North Hinder and the Off Brown Ridge TSS						
1a	NE / SW going ships to and from the Sunk East TSS cross N / S going traffic in the deep water route	S going deep water traffic must give way to NE going ships, which must give way to N going deep water traffic that must give way to SW going ships, which must give way to S going deep water traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker or more than two vessels	4	3	**12**	NE going traffic splits for IJmuiden and the Off Texel TSS and as such there can also be end on encounters between NE and SW going ships
1b	Ships for the NNE going deepwater route diverge from the N going traffic at the southern junction of the two deep water routes	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
1c	SSE going ships join the S bound deepwater lane just south of the southern junction of the two deep water routes	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
1d	The middle of the N / S deepwater route at the southern junction of the two deep water routes	N going traffic must give way to SSW going ships for the North Hinder	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
1e	NW going ships from the Noord Hinder precautionary area join NNE going deep water traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
1f	ESE / WNW traffic in and out of the Maas NW TSS and crosses the offshore deep water route	SSW going the deep water ships must give way to ESE going traffic, which must give way to NNE going deep water ships that must give way to WNW going traffic that must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	Deep draft vessels must stay in the deep water route. Ships crossing this route should cross at a 90° aspect, as per the colregs

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1g	Ships in the SSW going deep water lane join SE going traffic into the Maas North-west TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	SSW going ships for the Maas Northwest TSS should avoid creating an immediate close quarters situation when they alter course
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
1h	Ships in the NW going lane from the Maas Northwest TSS join NNE going deep water traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1i	NW going laden tankers and deep draft vessels out of IJmuiden and SxW going deep draft vessels for Schouwenbank cross NNE going deep water traffic south of the Off Brown Ridge TSS	SxW going ships must give way to NNE going traffic, which must give way to NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Tanker traffic out of IJmuiden is light but S going traffic for Schouwenbank is heavier and crosses at a small aspect angle
1j	NW going tankers and deep draft vessels out of IJmuiden join SSW going traffic in the deep water route south of the Off Brown Ridge TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Tanker traffic out of IJmuiden is light
1k	Laden tankers leave the NNE going deep water route to turn to go SE for IJmuiden south of the Off Brown Ridge TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Tanker traffic out of IJmuiden is light

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1l	NW going tankers and deep draft vessels out of IJmuiden join NNE going traffic in the deep water route south of the Off Brown Ridge TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Tanker traffic out of IJmuiden is light
1m	S'ly going tankers & deep draft vessels for the Maas Northwest TSS and IJmuiden cross NNE going deep water traffic south of the Off Brown Ridge TSS	S'ly going ships must give way to NNE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	S'ly going ships cross the NNE going traffic at a small aspect angle
1n	Ships out of Schouwenbank, the Maas Northwest TSS and IJmuiden join NNE going traffic in the deep water route at the south end of the Off Brown Ridge TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1o	Ships for Schouwenbank, the Maas Northwest TSS and IJmuiden from the North leave the SSW going deep water route and turn southwards at the south end of the Off Brown Ridge TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	2 – The sea area between the off shore deep water route and the SW going route from the Off Texel TSS to the North Hinder North TSS						
2a	NxE going vessels from Schouwenbank cross SxE going ships for the Maas Northwest TSS at a small aspect angle	SxE going ships must give way to NxE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	1	**3**	A collision at small aspect crossing is easy to avoid if traffic is light
2b	NxE going vessels from Schouwenbank cross SE / NW tanker traffic for and out of IJmuiden	SE going traffic must give way to NxE going vessels, which must give way to NW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	**4**	Tanker traffic in and out of IJmuiden is light
2c	NNW going vessels from the Maas Northwest TSS cross SE going tanker traffic for IJmuiden at a small aspect angle	SE going traffic must give way to NNW going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	**4**	Tanker traffic in and out of IJmuiden is light
	NNW going vessels from the Maas Northwest TSS cross NW going tanker traffic out of IJmuiden at a large aspect angle	Close quarters situations between crossing ships at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	1	**4**	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
2d	SW / NE going ships to and from the Sunk East TSS cross NW going traffic from the Maas West TSS between the North Hinder precautionary area and the Offshore deep water routes	NE going ships must give way to NW going traffic, which must give way to SW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision between more than two ships	4	3	**12**	NE going traffic splits for IJmuiden and the Off Texel TSS and as such there can also be end on encounters between NE and SW going ships

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	3 – SWxS bound through lane to the North Hinder North TSS from the Off Texel TSS						
3a	SWxS going traffic pass to starboard a wreck marked by an east cardinal buoy that is 1 ml inside the lane where it is 3 mls wide	Risk of colliding with the buoy	Damage and pollution due to a vessel colliding with the buoy	2	2	**4**	The swept depth over the wreck is 23.5 m, which is similar to the surrounding depths, so the buoy may be a greater threat than the wreck.
3b	SE / NW going ships in and out of the Maas Northwest TSS, NExE / SWxW going ships to and from the Sunk East TSS and N / S going ships to and from Schouwenbank cross the SWxS going traffic lane	N and NW going ships must give way to SWxS going ships that must give way to SE going ships, which must give way to N and NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	The accumulative level of risk at this location is high A close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	S going ships cross SWxS going traffic at a large aspect angle	SWxS going traffic must *usually* give way to S going ships but see comment		4	2	**8**	
	S going ships cross SE going ships at a large aspect angle	S going ships must *usually* give way to SE going ships but see comment		4	2	**8**	
	N going ships cross NW going ships at a large aspect angle	N going ships must *usually* give way to NW going ships but see comment		4	2	**8**	
	The tracks of SW and SWxS going ships merge at a small aspect angle	There can be a close quarters overtaking situation between SW and SWxS ships		4	2	**8**	
3c	Two streams of SWxS'ly going traffic moving on slightly different courses merge	There can be a close quarters overtaking situation between ships following slightly different courses	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	SWxS going traffic passes either side of a well buoy 26 mls Northeast of this location
3d	SxE going ships for the Maas Northwest TSS cross SWxS'ly going traffic	SWxS'ly going traffic give way to SxE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
3e	NxW going ships from the Maas Northwest TSS cross SWxS'ly going traffic	NxW going ships give way to SWxS'ly going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
3f	NW / SE going and NWxN / SExS going tankers and deep draft ships cross SWxS'ly going traffic close by a shoal of less than 20 m water depth	NW and NWxN going ships must give way to SWxS'ly going traffic, which must give way to SE and SExS going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		NW and SE going ships must both alter course to starboard when meeting end on		4	1	4	
		Tanker and deep draft ships to and from the South alter course around the shoal	Damage and pollution due to a laden tanker going aground	4	1	4	The shoal depth is only slightly less than 20 m
3g	Ships for the Maas Northwest TSS and Schouwenbank diverge to the South from the streams	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Ships diverging to the South that have passed North of the well buoy may cut across the bows of SWxS going ships that passed South of the buoy
3h	SWxS'ly going traffic that has passed South of the well buoy pass the P6-A gas platform to port	Some vessels pass within half a mile of the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	2	10	
3i	Half of the SWxS'ly going traffic pass the well buoy to port	Some vessels pass within half a mile of the buoy	Damage, pollution, fire and possible loss of life due to if the wellhead is ruptured by a ship grounding on it	5	2	10	This half of the SWxS'ly going traffic must alter course slightly to port when abeam of the platform
			Damage and pollution due to a vessel colliding with the buoy	2	2	4	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
3j	NW / SE going ships to and from IJmuiden cross SWxS'ly going traffic close by the well buoy	NW going ships must give way to SWxS'ly going traffic, which must give way to SE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Give way ships altering course to starboard alter course away from the buoy.
	NW and SE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	
3k	NWxW / SExE going ships to and from IJmuiden cross SWxS'ly going traffic	NWxW going ships must give way to SWxS'ly going traffic, which must give way to SExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
	NWxW and SExE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	
3l	SWxS going traffic diverges as it leaves the Off Texel TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Three streams of traffic going in different directions split off from the SWxS going lane

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
4 – Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's							
4a	SSE going traffic for the IJmuiden inner anchorage diverge from S going traffic at the South end of the Off Texel TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
4b	SSE going traffic cross NExE going ships for the Off Texel TSS	SSE going traffic must give way to NExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
4c	NWxW / SExE going ships cross S and SxW going traffic	NWxW going ships must give way to S and SxW going traffic, which must give way to SExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
	NWxW and SExE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	
4d	NW / SE and NExE going ships cross S going traffic	NExE going ships must give way to NW going ships, which must give way to S going traffic that must give way to NExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	S going ships cross SE going ships at a large aspect angle	S going traffic must give way to SE going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
	NW and SE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
4e	NW / SE going ships cross SSW going traffic close by a buoy and well at a depth of 20 m	NW going ships must give way to SSW going traffic which must give way to SE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	
		SSW and SE going give way vessels alter course towards the buoy	Damage and pollution due to a ship / buoy collision	2	2	4	The wellhead is deep enough not to be at risk
4f	NExE going ships cross SxW going traffic	SxW going traffic must give way to NExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	1	3	
4g	NWxN / SExS and NExE going ships cross S going traffic	NExE going ships must give way to NWxN going ships, which must give way to S going traffic that must, with SExS going ships, give way to NExE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	S going ships cross SExS going ships at a large aspect angle	S going traffic must give way to SExE going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
	NW and SE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		4	1	4	
4h	NExE going ships cross SxE / NxW going traffic	SxE going traffic must give way to NExE going ships, which must give way to NxW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
4i	WxS / ExN going ships in and out of the Maas Northwest TSS cross SxE / NxW going traffic	NxW going traffic must give way to WxS going ships, which must give way to SxE going traffic that must give way to ExN going ships that must give way to NxW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	
4j	NW going ships from the Maas NW TSS and NxW going ships for IJmuiden pass within a mile of the De Ruyter platform.	Collision with the platform or a supporting vessel	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	2	**10**	Current traffic flows show that ships clearly give the platform a reasonable berth

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5 - NE going through lane from the North Hinder North TSS to the Off Texel TSS							
5a	SxW / NxE going ships cross NE going traffic at the North end of the North Hinder North TSS	SxW going ships must give way to NE going traffic, which must give way to NxE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5b	SE / NW going ships in and out of the Maas Northwest TSS cross NE going traffic near to the De Ruyter platform	SE going ships must give way to NW going traffic, which must five way to NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5c	Ships for IJmuiden inner fairway buoy diverge from the NE going lane as they turn to go ENE	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5d	SxE going ships for the Maas Northwest TSS cross NE going traffic	SxE going ships must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	**4**	
5e	NxW going ships out of the Maas Northwest TSS cross NE going traffic	NE going traffic must give way to NxW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	**4**	
5f	SxE and WxS / ExN going ships cross NE going traffic where ships for the IJmuiden outer approaches diverge from the NE going lane as the turn to go ExN	SxE going ships must give way to ExN and NE going ships. NE going traffic must give way to WxS going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	The approaches to IJmuiden is a high risk area due to being very congested with vessels moving in almost all directions
		Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		4	2	**8**	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5g	SSW going ships for Schouwenbank, WSW going ships and NWxN / SExS going deep draft ships cross NE going traffic close by the Horizon gas platform	NE going traffic must give way to NWxN and WSW going ships. NWxN going ships must give way to WSW and SSW going ships. WSW going ships must give way to SSW and SExS going ships that must give way to NE going traffic.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		NWxN and SExS going ships must both alter course to starboard in the event of an end close quarters situation		4	1	4	Deep draft vessel traffic in and out of IJmuiden is currently quite light
		NWxN and WSW going vessels alter course towards the gas platform when giving way	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	3	15	The gas platform is right on the Western edge of the NE and SSW going traffic lanes
5h	NW / SE and S going ships cross NE going traffic	NE going traffic must give way to NW going ships, which must give way to S going ships that t give way to NE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	S going ships cross SE going ships at a large aspect angle	S going traffic must give way to SE going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
	NW and SE going ships can meet end on	NW and SE going ships must alter course to starboard in an end on close quarters situation		3	1	3	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5i	NWxW / SExE and SSE going ships cross NE going traffic	NE going traffic must give way to NWxW going ships, which must give way to SSE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
	SExE going ships cross SSE going ships at a large aspect angle	SSE going traffic must give way to SExE going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	NWxW and SExE going ships can meet end on	NW and SE going ships must both alter course to starboard when meeting end on		3	1	3	
5j	NExE, NExN and NNE going ships merge with NE going traffic at the entrance to the Off Texel TSS where the width of the approach to the NE lane width is halved by a buoyed wreck at a depth of 10.8 m	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving the buoy or more than two ships	4	4	16	The wreck precludes a large course alteration to starboard, so a give way ship in this situation should reduce speed
5k	NxW going ships from IJmuiden merge with the NE going lane about 1.5 ml SW of the Q4-G gas platform at the starboard hand buoy marking the South end of the NE lane for the Off Texel TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Smaller ships use this route out of IJmuiden and their point of joining the NE going lane is restricted by the wreck and the platform
5l	WNW / ESE going offshore support vessels cross the NE going lane in the Off Texel TSS where a wreck lies 0.5 mls inside the lane	ESE going ships must give way to NE going traffic, which must give way to WNW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		The charted depth over the wreck is 18m	Damage and pollution due to the vessel grounding	2	2	4	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	6 – The North Hinder Junction Precautionary Area between the NHN and NHS TSS's (excluding the Europoort deep water route)						
6a	Traffic leaving the North Hinder South TSS splits for the Maas West TSS, the offshore deepwater routes and the North Hinder North TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	
6b	SE going ships bound for the Maas West TSS from the North cross NE going traffic	SE going ships must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6c	Maas inbound deep draft vessels and tankers diverge from NE going traffic to enter the deep water channel	The deep water channel crosses part of the NE through traffic route so deep draft vessels may cross ahead of a ship astern at a large aspect angle	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6d	Ships from the DW 1 anchorage for the deep-water channel cross NE going traffic	Vessels coming from DW1 must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	Ships must keep the North Hinder buoy to port
	Ships bound for DW1 from the SW diverge from NE going traffic	Diverging traffic can lead to a vessel cutting across ahead of a ship astern		4	2	**8**	
6e	Vessels out off the Maas deepwater channel and the Maas West TSS bound for the SW or the offshore deepwater channels to the north cross NE going traffic	NE going traffic must give way to vessels outbound from the Maas in a situation where crossing angles can vary considerably	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	Ships must keep the North Hinder buoy to port
6f	NW going vessels bound for the offshore deepwater routes cross SW going traffic	SW going traffic must give way to NW going traffic bound for the offshore deepwater routes	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	

Section A: Offshore Routing (present situation)

No	Present situation location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
6g	Ships in and out of the DW1 anchorage cross SW going traffic from the Hinder Noord North TSS where this merges with SW bound vessels from the Maas	Ships entering DQ1 from the south must give way to SW going traffic, which must give way to ships leaving DW1 for the Maas.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	**8**	
6h	SSE going ships for the Maas from the offshore deepwater route and N going ships for the offshore deepwater route from crossing SW going traffic.	N going ships must give way to SW going traffic, which must give way to SSE going ships that must give way to N going ships.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6i	SW bound vessels from the offshore deep water route merge with SW going traffic for the Noord Hinder South TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
			Offshore routes' risk score			**658**	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
		7 – Maas West TSS and the Europort deep water route					
7a	Main inbound traffic lane passes anchorage 3C to port	S going ships leaving the anchorage to join the inbound lane must give way to E going inbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
7b	NNE /SSW going ships to and from Schouwenbank cross inbound traffic	SSW going ships must give way to E going inbound traffic, which must give way to NNE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	12	
	Ships for the Maas from Schouwenbank diverge from the NNE stream as they turn to go West	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
7c	Main inbound traffic lane passes anchorage 4B to starboard	E going inbound traffic must give way to N going ships leaving the anchorage but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
	Ships for the Maas from Schouwenbank merge with inbound West going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	Give way ships must be able to reduce speed in congested in merging traffic situations
7d	Deep water channel by the outer anchorage	Possible collision between an outbound vessel in the deep water channel and a vessel proceeding to pick up a pilot from the anchorage	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	3	2	6	The anchorage should be entered be the approach channel to the south to keep vessels about to anchor clear of the deep water channel

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
7e	Deep water area by the pilot station	Possible collision between an outbound vessel in the deep water channel and a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by helicopter (or launch)	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	3	2	**6**	
7f	Deep water channel between anchorages 3A and 3C	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3A. Ships leaving the anchorage must not impede deep draft vessels in the channel.	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel that is restricted by its draft' means taking early action to avoid a close quarters situation such as reducing speed (Rule 18)
7g	Deep water channel crosses NNE / SSW going ships to and from Schouwenbank	Possible collision between a vessel in the deep water channel and a ship crossing the channel. NNE / SSW going	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel that is restricted by its draft' means taking early action to avoid a close quarters situation such as reducing speed (Rule 18)
7h	Deep water channel by anchorage 3B to the north	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3B. Ships leaving the anchorage must not impede deep draft vessels in the channel.	Damage, pollution and possible loss of life due to a vessel / vessel slow speed collision involving a tanker	4	3	**12**	
7i	Main outbound lane abeam anchorage 3B to port	Possible collision with a vessel crossing the outbound lane as it leaves or approaches the anchorage	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
7j	NNE /SSW going ships to and from Schouwenbank cross W going outbound traffic	NNE going ships must give way to outbound traffic, which must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	12	Ships cross at a poor aspect angle
	Ships for Schouwenbank from the Maas leave the W going lane to join SSW going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
7k	Main outbound lane abeam anchorage 3A to port.	Possible collision with a vessel crossing the outbound lane as it leaves or approaches the anchorage	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
8 – The sea area bounded by the western edge of the Maas North TSS, the eastern edge of the NE lane from the Noord Hinder North TSS to the Off Texel TSS as far as the southern edge of the IJmuiden approaches and the southern edge of the Maas Northwest TSS							
8a	SSW going traffic to Schouwenbank cross NW / SE going ships in and out of the Maas Northwest TSS and SxE going ships for the Maas Northwest TSS	NW going ships must give way to SSW going traffic and SxE going ships and SSW going traffic must give way to SE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		SSW going traffic give way to SxE going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
	SxE going ships from the Off Brown Ridge TSS join SE going ships for the Maas Northwest TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
8b	NNE going traffic from Schouwenbank cross NW / SE going ships in and out of the Maas Northwest TSS, NxW going ships for the Off Brown ridge TSS, and S'ly going ships for the Maas	SE going ships must give way to NNE going traffic that must give way to NW going ships, which must give way to S'ly going ships that must give way to NNE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	The approach to the Maas Northwest TSS is a high risk area due to the high density of traffic
	S'ly going ships are on slightly different headings that converge at the start of the inbound lane of the Maas Northwest TSS.	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
8c	S'ly going ships join SE going ships for the Maas Northwest TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
8d	Ships for the Off Brown Ridge TSS diverge from the NW going lane out of the Maas NW TSS as they turn to go NxW	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
8e	SxE going ships from the Off Brown Ridge TSS cross ENE going ships for the IJmuiden inner fairway buoy	SxE going ships must give way to ENE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	1	3	This is a simple crossing at 90°
8f	ENE going ships for the IJmuiden inner fairway buoy, S going ships for the Maas Northwest TSS and NxW going ships from the Maas Northwest TSS cross SSW going traffic for Schouwenbank.	ENE going ships must give way to NxW going ships that must give way to SSW going traffic and S going ships. SSW going traffic must give way to ENE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
	SSW going traffic crosses S going ships at a large aspect angle	SSW going traffic must give way to S going ships in a crossing situation but a close quarters situation between ships at very different speeds converging at a large aspect angle can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
8g	ENE going ships for the IJmuiden inner fairway buoy cross NNE going traffic from Schouwenbank at a large aspect angle	ENE going ships must give way to NNE going traffic in a crossing situation but a close quarters situation between ships at very different speeds converging at a large aspect angle can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
			9 – Maas Central Precautionary Area				
9a	Main inbound lane abeam anchorage 4A to starboard	Possible collision with a vessel leaving the anchorage to join the inbound lane	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Ships leaving an anchorage should avoid creating an immediate close quarters situation
9b	Maas inner pilot station	Inbound vessels requiring a pilot converge at the pilot station from different directions	Damage, pollution and possible loss of life due to slow moving vessels colliding	4	2	**8**	
9c	North of the Maas Centre buoy. Vessels bound for the Maas North TSS diverge from the main outbound traffic flow.	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	2	2	**4**	
9d	W going outbound traffic crosses S going ships from the Maas North TSS for the pilot station	W going traffic must give way to S going ships.	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	
9e	S going ships from the Maas North TSS and SW going ships from the Maas Northwest TSS for the pilot station cross the deep water channel	Possible collision between a vessel in the deep water channel and a vessel crossing the channel. The S and SW going vessels should not *impede* an inbound or outbound deep draft vessel whilst also avoiding each other.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel in a narrow channel that is restricted by its draft' means taking early action to avoid a close quarters situation such as reducing speed (Rules 8, 9 & 18)
9f	S going ships for the pilot station from anchorage 5A cross both NW and W going traffic	Both NW and W going traffic must give way to S going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
9g	ESE going ships from the Maas Northwest TSS cross W going traffic outbound for the Maas West TSS	W going traffic must give way to ESE going ships crossing with a small aspect angle	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	**12**	

Section B: Inshore Routing (present situation)							
No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
9h	Any part of the Maas Central Precautionary Area	Traffic to Scheveningen from the west crossing the approach channel to the Maas	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	**12**	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	10 – Maas North TSS and its lanes up to the Southern boundary of the IJmuiden deep water route						
10a	NxE and S going traffic pass the P18-A gas platform in the separation zone with clearances of 0.7 mls 0.5 mls respectively	Collision with the platform due to a loss of control over the vessel	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	**5**	
10b	S going traffic pass the P15-E gas platform to starboard on the Western edge of the S going lane	Collision with the platform due to a loss of control over the vessel	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	**5**	
10c	NxE going traffic passes anchorage 6 to starboard	Possible collision with a vessel leaving the anchorage and crossing the N going lane to join the inbound lane	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
10d	S going traffic pass explosives dump areas about 1 ml west of the lane boundary	A ship sinking over the dump, or anchoring on top of the dump, or losing containers or other substantial objects overboard that then sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	2	**10**	Supply vessels supporting the manned Rijn platform also pass over these dumps and there will also be considerable activity during the erection of the Scheveningen wind park
10e	ENE going ships for IJmuiden inner fairway buoy cross S going traffic	S going traffic must give way to ENE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	This is a simple crossing at about 77°
10f	N going traffic passes the site for wind park Q10 to starboard with a minimum clearance of about 1.5 ml	Collision with vessels engaged in constructing the wind park *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	3	2	**6**	Notices to Mariners should be issued to inform ships of the changing required clearance from the site during the park's construction and guard vessels should be charted to warn off any ship approaching too close to the site

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
10g	Inbound ENE going ships cross NxE going traffic from the Maas North TSS	ENE going ships must give way to NxE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	1	3	
	Ships bound for IJmuiden from the Maas North TSS diverge from the NNE going traffic to join the ENE inbound lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
		Merging with ENE going ships creates confusion as to which vessel should give way in a close quarters situation		3	3	9	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11 – Routes between IJmuiden and the NE going lane between the North Hinder North TSS and the Off Texel TSS							
11a	ENE going ships for IJmuiden inner fairway buoy pass the site for wind park Q10 to starboard with a minimum clearance of about 0.5 ml	Collision with vessels engaged in constructing the wind park *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	3	4	**12**	Notices to Mariners should be issued to inform ships of the changing required clearance from the site during the park's construction and guard vessels should be charted to warn off any ship approaching too close to the site Inbound ships will have to follow a track further North
11b	Ships bound for the inner anchorage split off to port from the ExS going inbound traffic stream where inbound ships from the North merge with inbound ExS going traffic stream	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a ship / ship collision	3	3	**9**	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	3	**9**	
11c	ExS inbound ships pass the inner anchorage to starboard	Vessels may join the inbound lane from the anchorage from the port side, which would make them the give way vessels in a close quarters situation	Damage, pollution and possible loss of life due to a ship / ship collision	3	2	**6**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this would not be in the practice of good seamanship (Rule 2)
11d	Inner pilot station 2 mls west of the inner fairway buoy	Possible collision with a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch	Damage, pollution and possible loss of life due to a ship / ship collision	3	3	**9**	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11e	NxE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	ExS going traffic must allow NxE going ships to join the inbound channel ahead of them in a close quarters situation	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Ships in such confined waters should be at a reduced speed ('Colregs' Rule 6) to both to reduce their turning diameter and provide more time to avert a collision whilst also reducing ship / ship interaction effects in shallow water
	ENE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	3	12	
	All outbound WxN going traffic meets with all inbound ExS going traffic just East of the inner fairway buoy	Inbound and outbound traffic can meet in an end on situation, so they should keep to the starboard side of the channel		4	2	8	Most ships will be under pilotage here allowing ship movements to be coordinated
11f	The ExS / WxN channel between the inner fairway buoy and the port breakwaters	Risk of collision between ExS / NxW going traffic and outbound / inbound ships not under pilotage leaving and joining the channel to and from the North and South	Damage, pollution and possible loss of life due to a ship / ship collision involving a loaded tanker	4	2	8	Ships must not impede other vessels restricted in their ability to manoeuvre due to their size and draft
11g	All WxN going outbound traffic and ExS inbound deep draft vessels pass the inner anchorage	Ships may join the inbound lane from the anchorage from the port side, which means they must give way to all WxN going traffic but they are the stand on vessel to ExS going deep draft vessels in a close quarters situation	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	12	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters and not impede vessels restricted in their ability to manoeuvre due to their size and draft
11h	SSE going inbound ships from the North cross all WxN going outbound traffic and ExS inbound deep draft vessels at the west end of the inner anchorage	WxN going traffic must give way to SSE going ships, which must give way to ExS going deep draft vessels but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	12	SSE going ships must not impede WxN going deep draft vessels, as these are restricted in their ability to manoeuvre
	Outbound ships for the North split off from the main WxN traffic stream as they turn to go NNW	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11i	NxW going ships from the Maas North TSS cross all inbound E'ly going traffic and outbound W'ly going traffic	Inbound E'ly going traffic must give way to NxW going ships that must give way to all outbound W'ly going traffic but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	NxW going ships must not impede SxE going deep draft vessels, as these are restricted in their ability to manoeuvre
11j	S going ships for the Maas North TSS and NNE going ships from Schouwenbank cross all inbound E'ly going traffic and outbound W'ly going traffic	NNE going ships must give way to outbound W'ly going traffic, which must give way to S going ships, which must give way to inbound E'ly going traffic that must give way to NNE going ships but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	NNE and S going ships must not impede W'ly or E'ly going vessels in the deep water channel, as these are restricted in their ability to manoeuvre
11k	At the outer pilot station	Possible collision between with a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch or helicopter	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
111	At the manoeuvring area west of the outer pilot station where outbound WxS going ships for the South cross the E / W going deep draft traffic Deep draft vessels for the outer anchorage turn S to cross inbound ENE going traffic Inbound deep draft vessels from the outer anchorage go N on leaving the anchorage to cross inbound ENE going traffic on their way to the pilot station A buoyed wreck lies on the Northern edge of the deep water anchorage at a depth of 20.5 m and an unmarked wreck at a depth 21.5 m lies at the anchorage's SW corner.	E'ly going ships must pass W going traffic port to port in end on close quarters situations but WxS going ships must avoid passing too close ahead of E going deep draft traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Deep draft vessels are beyond the channel and are no longer restricted in their ability to manoeuvre due to their draft
		S going deep draft vessels must give way to inbound ENE going traffic		4	2	8	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this not be good seamanship (Rule 2)
		ENE going traffic must give way to N going deep draft vessels but see comment		4	2	8	
		A ship could go aground on the wreck if it dragged its anchor	Damage and pollution due to a tanker grounding on the wreck	3	2	6	
		A ship could drop its anchor on the wreck	Damage and delay due to a tanker fouling its anchor on the wreck or hitting the buoy	2	2	4	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11m	NW going traffic for the Off Brown ridge TSS diverge from N going ships for the Off Texel TSS whilst SE going traffic from the Off Brown Ridge TSS cross N going ships 0.5 mls East of wind park 32.	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		NW going traffic must pass SE going vessels port to port in end on close quarters situations. SE going traffic must give way to N going ships		3	2	6	
		Small vessels, such as maintenance craft can emerge without warning from the wind park to cause a collision *or* a ship can break down and drift into a wind turbine.	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	4	8	SE going vessels alter course towards the wind park when giving way to N going ships
11n	NNE, NxE and SSE going ships cross NW / SE going traffic to and from the Off brown ridge TSS	NNE and NxE going ships must give way to NW going traffic, which must give way SSE going ships that must give way to NNE and NxE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	A close quarters situation between ships at very different speeds converging at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel
	NNE going ships cross NxE going ships at a large aspect angle	NNE going ships must give way to NxE going ships in a crossing situation but see comment		3	2	6	
	SSE going ships cross SE going traffic at larges aspect angle	SSE going ships must give way to SE going traffic in a crossing situation but see comment		3	2	6	
	SE going ships can NW going ships end on	NW and SE going ships must both port to port in an end on close quarters situation		3	1	3	

Section B: Inshore Routing (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11o	NxE going traffic for Off Texel from the Maas North TSS passes the edge of an ammunition dump	A ship losing containers or other substantial objects overboard, which subsequently sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	2	10	
11p	NE / SW going vessels pass close to a wreck at a depth of 13.4 m	Vessel ground on the wreck	Damage, pollution , possible loss of the vessel and lives	3	2	6	Ships on this route are usually ferries drawing less than 8 m
			Inshore routes' risk score			**569**	

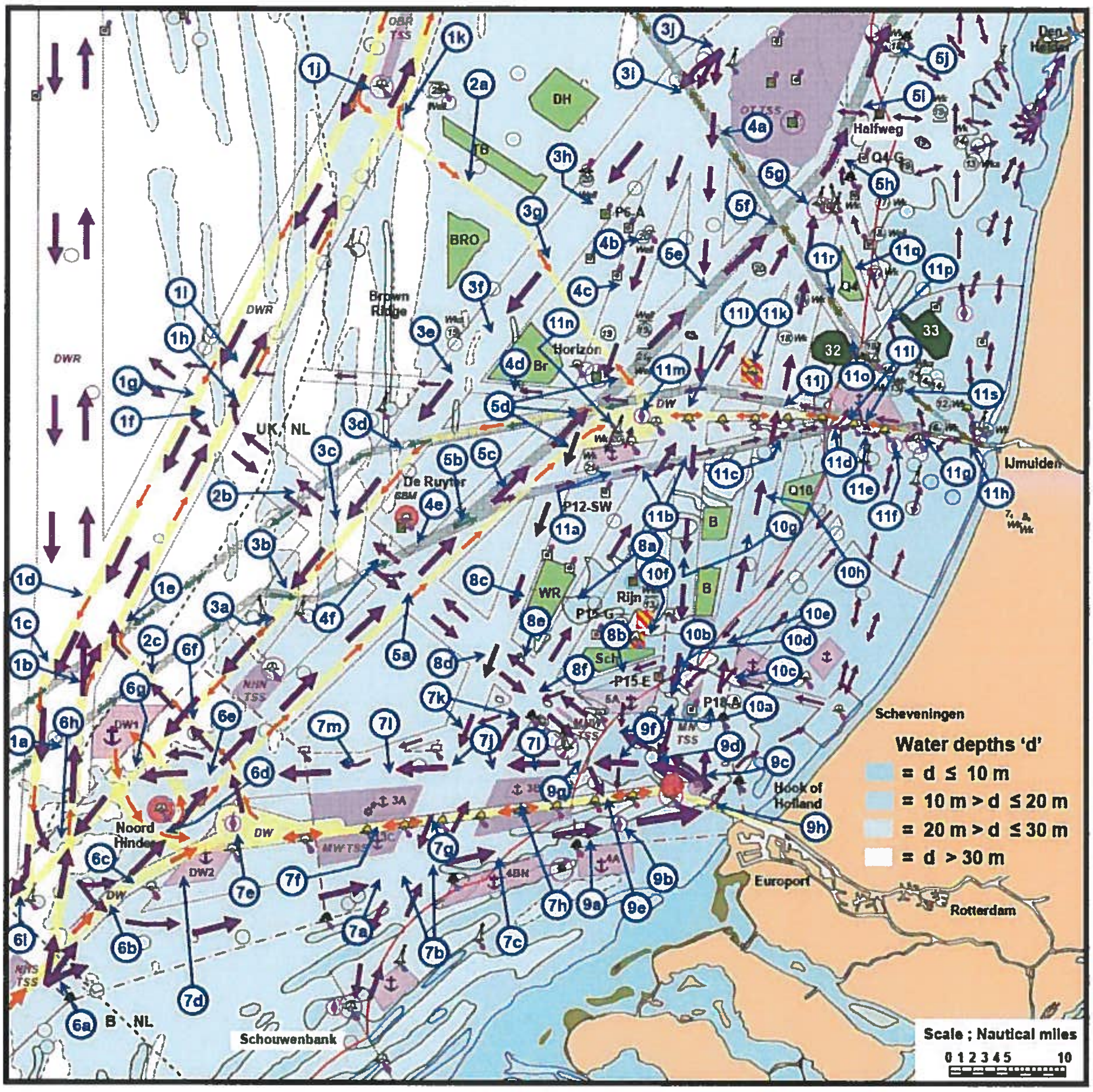
Section C: Secondary Traffic (present situation)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
12 – Hook of Holland to IJmuiden port area							
12a	Scheveningen	Encountering crossing traffic in and out of the port	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Construction work on the wind park Q10 will increase the marine activity and Scheveningen is likely to be the most suitable base for supporting the work
13 –IJmuiden to Texel							
13a	IJmuiden as a fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Most of the traffic in these regions consists of smaller vessels moving at slower speeds than the larger ships but they are vulnerable to sinking quite quickly if involved in a serious collision, especially with a larger ships
13b	Den Helder naval base	Encountering naval vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
13c	Den Helder fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
			Secondary traffic's risk score			**27**	

Hazard Score for the Present Situation	
Offshore Routes	**658**
Inshore Routes	**569**
Secondary Traffic	**27**
Total	**1254**

9. Appendix 2 – Variant 1 Traffic Routing Worksheet

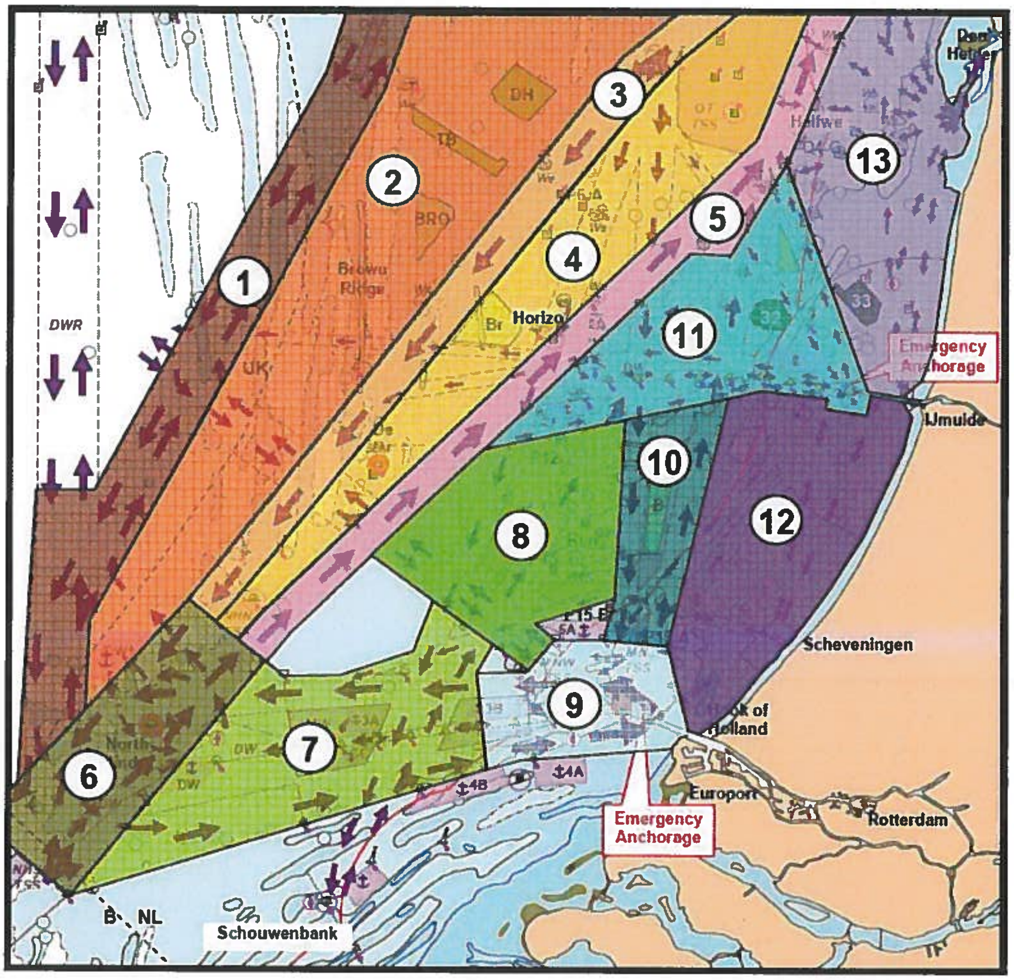
9.1 Variant 1 with all the Round 2 Wind Parks developed (02.02.10)



= Current wind parks, = Completed new wind parks, = Ammunition dumps

= Sunk East routes, = Tyne routes, = Recommended routes, = Laden tanker routes

9.2 Subdivision Overview of Variant 1 (02.02.10).



Section A : Offshore routes

11 NNE / SSW Offshore deepwater route between Noord Hinder and the Off Brown Ridge TSS.
12 The sea area between the off shore deep water route and the SW going route from the Off Texel TSS to the Noord Hinder Nord TSS
13 SW bound through lane to the North Hinder North TSS from the Off Texel TSS
14 Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's
15 NE going through lane from the North Hinder North TSS to the Off Texel TSS

Section B : Inshore routes

16 The Noord Hinder Junction Precautionary Area
17 Maas West TSS and crossing traffic south of the shipping lanes in and out of the Maas Northwest TSS
18 The sea area between the western edge of the Maas North TSS, the eastern edge of the NE lane from the Noord Hinder North TSS to the Off Texel TSS, the southern edge of the outbound lane from IJmuiden and the southern edge of the Maas Northwest TSS
19 Maas Central Precautionary Area
20 Maas North TSS
11 Routes between IJmuiden inner fairway buoy and the NE going lane between the Noord Hinder North and the Off Texel TSS's

Section C : Secondary traffic

12 Hook of Holland to IJmuiden port area
13 IJmuiden to Texel

9.3 HAZID Worksheet – Variant 1 (02.02.10)

HAZID Worksheet for proposed traffic routing Variant 1 (02-02-2010)

The following Hazid is based on the following assumptions:-

3) The Round 2 wind parks are already in place.
4) Variant 1 does not provide routes between: (i) the Sunk east TSS and IJmuiden or the Off Texel TSS, and (ii) Tyneside and IJmuiden, so these have been added to the accompanying chart. (The Sunk East TSS routes avoid cutting through the North Hinder precautionary area at a poor angle, which complies with the Regulations for the Prevention of Collisions at Sea ***but not*** with MARIN.)

The general control measures applied to reduce the risk of collision and grounding and to minimise the consequences of such accidents when they occur are contained in the relevant parts of the following:-

1) ***"The International Regulations for Preventing Collisions at Sea" (COLREGS)***
2) ***"The International Convention for the Safety of Life at Sea" (SOLAS)***
3) ***"The International Convention for the Prevention of Pollution from Ships" (MARPOL)***
4) ***"The Offshore Installations Regulations"*** issued by the UK and Dutch governments to the offshore oil and gas industry

The control measures to reduce the risk of collision and grounding that are specific to the Variant 1 scheme are the existing traffic routeing measures (traffic separation schemes, precautionary areas etc.) with the recommended routes designed to direct shipping, as shown on the map in the Appendix.

Risk Matrix			Frequency				
			Not Credible	Remote	Low	Medium	High
Consequence		Integrated (Generic Definition)	1 Not expected to occur during activity	2 Unlikely to occur in practice	3 May occur during activity	4 Likely to occur during activity	5 Very likely to occur during activity
Catastrophic	5	Fatality, or severe personal injury, total plant loss, irreversible environmental damage. Severe international publicity/loss of trade.	5	10	15	20	25
Severe	4	Serious/moderate personal injury. Major/ long term equipment damage. Long term environmental damage. Major adverse national publicity/customer reaction	4	8	12	16	20
Significant	3	Minor/Serious injury. Medium term equipment and environmental damage. Considerable impact on trade.	3	6	9	12	15
Minor	2	Minor personal injury. Minor/short term equipment damage. Short term environmental damage. Minor impact on trade.	2	4	6	8	10
Negligible	1	Negligible personal injury/ plant or equipment failure/environmental damage. Slight impact on trade.	1	2	3	4	5

Broadly Acceptable — ALARP — Unacceptable

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	1 - NNE / SSW Offshore deepwater route between North Hinder and the Off Brown Ridge TSS						
1a	NE going ships from the Sunk East TSS cross N / S going traffic in the deep water route	S going deep water traffic must give way to NE going ships, which must give way to N going deep water traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1b	SW ships for the Sunk East TSS cross the deep water route at its southern junction where ships for the NNE going deepwater route diverge from the N going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		N and NNE going ships in the deep water routes must give way to SW going ships		4	2	8	
1c	SW going ships for the Sunk East TSS cross SSW going ships at a large aspect angle where they join the S bound deepwater lane at the southern junction of the two deep water routes	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel
		SSW going ships must give way to SW going ships in a crossing situation but see comment		4	2	8	
1d	SSW going ships for the North Hinder cross N going deep water traffic at the southern junction of the two deep water routes	N going traffic must give way to SSW going ships for the North Hinder	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1e	SW going ships for the Sunk East TSS cross NW going ships from the North Hinder precautionary area where they join NNE going deep water traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		NW going ships must give way to SW going ships		4	2	8	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1f	ESE / WNW traffic in and out of the Maas NW TSS and crosses the offshore deep water route	SSW going the deep water ships must give way to ESE going traffic, which must give way to NNE going deep water ships that must give way to WNW going traffic that must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Deep draft vessels must stay in the deep water route. Ships crossing this route should cross at a 90° aspect, as per the colregs
1g	Ships in the SSW going deep water lane join SE going traffic into the Maas North-west TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	SSW going ships for the Maas Northwest TSS should avoid creating an immediate close quarters situation when they alter course
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
1h	Ships in the NW going lane from the Maas Northwest TSS join NNE going deep water traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
1i	W going ships out of IJmuiden cross NNE / SSW going deep water traffic	NNE going traffic must give way to W going ships, which must give way to SSW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	W going traffic crossing Brown Ridge is quite light

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1j	Tankers and deep draft ships for IJmuiden leave the SSW going stream of the deep water route as they turn SSE and cross NNE going traffic at the end of the Off Brown ridge TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		SSE going ships must give way to NNE going traffic		4	2	8	
1k	NNE going tankers and deep draft ships out of IJmuiden for the North join NNE going traffic in the deep water route at the South end of the Off Brown Ridge TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
2 - NW / SE Deepwater route passing between the Brown Ridge Oost & Tromp Binnen wind parks							
2a	NW and SE going laden tankers and deep draft ships pass between Tromp Binnen and Brown Ridge Oost wind parks with 2 mls clearance	Risk of and end on close quarters encounter in which case ships should pass port to port	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	4	Tanker traffic in and out of IJmuiden is currently light in numbers but this is planned to increase
		Small vessels, such as maintenance craft emerging without warning from one of the wind parks causing a collision *or* a SW going vessel suffering a machinery failure and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision involving a laden tanker	2	2	4	
2b	SW going ships for the Sunk East TSS cross NW / SE going traffic in and out of the Maas Northwest TSS	NW going ships must give way to SW going ships, which must give way to SE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	
2c	NE going ships from the Sunk East TSS cross NW going ships from the North Hinder	NE going ships must give way to NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
3 - SW bound through lane to the North Hinder North TSS from the Off Texel TSS							
3a	SW going traffic pass to starboard a wreck marked by an east cardinal buoy that is 1 ml inside the lane where it is 3 mls wide	Risk of a ship colliding with the buoy	Damage and pollution due to a vessel colliding with the buoy	2	2	**4**	The swept depth over the wreck is 23.5 m, which is similar to the surrounding depths, so the buoy may be a greater threat than the wreck.
3b	NE going ships from the Sunk East TSS cross SW going traffic	SW going traffic must give way to NE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	NE going ships should cross the SW going lane at an angle as close to 90° as possible
3c	NW / SE going ships in and out of the Maas NW TSS cross SW going traffic	WNW going ships t give way to SW going traffic, which give way to ESE going vessels		4	3	**12**	
3d	WSW going ships out of IJmuiden for the South merge with SW going traffic lane south of Brown Ridge.	A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	WSW going ships should not join the SW going traffic too close ahead of a SW going ship
	WSW going ships out of IJmuiden for the Sunk East TSS cross SW going traffic	WSW going ships must give way to SW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
3e	W going ships from IJmuiden cross the SW going traffic close to the Breeveertien wind park site	W going ships must give way to SW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	5	**15**	The wind park will obscure onboard visual, radar and AIS detection of a close quarters situation between SW and W going ships until the range is only about 2 mls

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
3f	SW going traffic pass the Breeveertien wind park site perhaps as close as 600 metres	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	4	**8**	
3g	NNW / SSE going tankers & deep draft ships to and from IJmuiden cross SW going traffic close by a shoal of depth less than 20 m	NNW going ships must give way to SW going traffic, which must give way to SSE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	Traffic crosses at an angle close to 90°
		Tanker and deep draft ships to and from the South alter course around the shoal	Damage and pollution due to a laden tanker going aground	4	1	**4**	The shoal depth is only slightly less than 20 m
3h	SW going traffic passing between the P6-A gas platform to the SE and a buoyed well to the NW	Vessel colliding with the gas platform, a platform servicing rig or a platform support vessel	Damage, pollution and possible loss of life due to a vessel / gas platform collision	5	2	**10**	The gas platform is 0.5 mls inside the traffic lane
		The depth over the well is less than the surrounding water	Damage, pollution. fire and possible loss of life if a ship ruptures the wellhead	5	1	**5**	The well is on the edge of the lane at a swept depth of 20 m
3i	NW / SE going vessels between the Tyne and IJmuiden cross SW and SSW going traffic	NW going vessels must give way to SW and SSW going traffic, both of which must give way to SE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Traffic between the Tyne and IJmuiden is light.
3j	SWxS going traffic diverges as it leaves the Off Texel TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Three streams of traffic going in different directions split off from the SWxS going lane

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	4 – Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's						
4a	NW / SE going vessels between the Tyne and IJmuiden cross S going traffic	NW going vessels must give way to S going traffic that must give way to SE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
	SSE going ships for the IJmuiden inner pilot station diverge from S going traffic at the South end of the Off Texel TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
4b	SSW going traffic passes a gas platform to starboard at the edge of the lane and buoy marking a well at a depth of 20 m in the middle of the lane	A ship colliding with the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	
		A ship colliding with the buoy	Damage and pollution due to a ship / buoy collision	2	2	4	The wellhead is deep enough not to be at risk
4c	SW going traffic passes a gas platform to starboard at the edge of the lane	A ship colliding with the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	
4d	West going ships pass the Breeveertien wind park site as close as 600 metres	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	4	8	
4e	NE going ships from the Sunk East TSS pass the De Ruyter platform 1.5 mls to port	A ship colliding with the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	There is to be a maintenance rig temporarily moored close by the platform
4f	NE going ships from the Sunk East TSS cross NW / Se going traffic in and out of the Maas Northwest TSS	SE going traffic must give way to NE going ships, which must give way to NW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5 - NE going through lane from the North Hinder North TSS to the Off Texel TSS							
5a	NE going traffic from the North Hinder North TSS crosses NW / SE going ships in and out of the Maas Northwest TSS.	SE going ships must give way to NE going traffic, which must give way to NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	
	Ships bound for IJmuiden diverge from SE going ships to join NE going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		4	2	**8**	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	**8**	
5b	ENE going ships from the Sunk East TSS split with ships for the Off Texel TSS joining the join NE going traffic whilst ships for IJmuiden cross NE going traffic	Close quarters situations between merging and crossing traffic at large aspect angles can be either a crossing or an overtaking situation and create doubt as to which is the stand on ship	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	ENE going ships must give way to NE going traffic in a close quarters crossing situation
		Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		4	2	**8**	
5c	Ships for IJmuiden diverge from the NE going traffic as they turn to go ENE	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5d	NW / SE going tankers and deep draft ships, W, WSW and SSW going ships cross NE going traffic close by the Horizon manned oil platform	NE going traffic must give way to NW, W & WSW going ships, NW going ships must give way to W, WSW & SSW going ships, W going ships must give way to WSW, SSW & SE going ships, WSW going ships must give way to SSW & SE going ships, SSW going ships must give way to SE going ships & NE going traffic, SE going ships must give way to NE going traffic in a close quarters crossing situation.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	
	NW and W going ships cross at a large aspect angle	Close quarters situations between crossing traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
	W and WSW going ships cross at a large aspect angle			3	2	**6**	
	WSW and SSW going ships cross at a large aspect angle			3	2	**6**	
	All ships with a W going component give way by altering course towards the oil platform in the middle of the SSW going lane and on the edge of the NE going lane	A ship colliding with the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	2	**10**	
	Laden tankers from the South for IJmuiden diverge from NE going traffic as they turn to E	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5e	S going ships for the Maas North TSS cross NE going traffic	S going ships must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5f	NW / SE going vessels cross NE going traffic south west of entering the Off Texel TSS where NNE going ships from Schouwenbank merge with the NE going lane.	SE going vessels must give way to NE and NNE going traffic, both of which must give way to NW going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Each risk may be acceptable taken on its own but ***the total risk accumulated between '5f' and '5h' is unacceptable***
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	3	**9**	
5g	NxE going ships from the Maas North TSS merge with the NE going lane where the lane width is halved by the wreck marked with a west cardinal buoy	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	The depth over the wreck is only 10.8m and it cannot be removed Each risk may be acceptable taken on its own but ***the total risk accumulated between '5f' and '5h' is unacceptable***
5h	NxW going ships from IJmuiden merge with the NE going lane about 1.5 ml SW of the Q4-G gas platform and 3 ml north of the wreck marked with a west cardinal buoy.	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Smaller ships use this route out of IJmuiden and their point of joining the NE going lane is restricted by the wreck and the platform Each risk may be acceptable taken on its own but ***the total risk accumulated between '5f' and '5h' is unacceptable***

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
5i	Traffic in the NE lane of the Off Texel TSS passes the Halfwig gas platform to starboard on the lane boundary	Vessel colliding with the gas platform, a platform servicing rig or a platform support vessel.	Damage, pollution and possible loss of life due to a vessel / gas platform collision	5	1	5	
		There is also a concentration of crossing offshore support vessel traffic from Den Helder at this location	Damage, pollution and possible loss of life due to a vessel / supply vessel collision	3	2	6	
5j	Traffic in the NE lane of the Off Texel TSS passes a wreck, 0.5 mls inside the lane	Wreck reduced the depth to less than 20 metres	Damage and pollution due to the vessel grounding	2	2	4	The charted depth over the wreck is 18m

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
6 – The North Hinder Junction Precautionary Area between the NHN and NHS TSS's (excluding the Europoort deep water route)							
6a	Traffic leaving the North Hinder South TSS splits for the Maas West TSS, the offshore deepwater routes and the Noord Hinder North TSS diverges	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	
6b	SE going vessels bound for the Maas West TSS cross NE going vessels	SE going vessels bound for the Maas W TSS from the north must give way to NE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6c	Maas inbound deep draft vessels and tankers diverge from NE going traffic to enter the deep water channel	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6d	Ships from the DW 1 anchorage for the deep-water channel cross NE going traffic	Vessels coming from DW1 must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	Ships must keep the Noord Hinder buoy to port
	Ships bound for DW1 from the SW diverge from NE going traffic	A poorly positioned diverging ship can cut across the bow of a ship astern.		4	2	**8**	Traffic in and out of DW1 is infrequent
6e	Vessels out off the Maas deepwater channel and the Maas West TSS bound for the SW or the offshore deepwater channels to the north cross NE going traffic	NE going traffic must give way to vessels outbound from the Maas in a situation where crossing angles can vary	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	Ships must keep at least 1ml distant from the Noord Hinder buoy and leave it to port
6f	NW going vessels bound for the offshore deepwater routes cross SW going traffic	SW going traffic must give way to NW going traffic bound for the offshore deepwater routes	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	

Section A: Offshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
6g	Vessels in and out of the DW1 anchorage cross SW going traffic from the Hinder Noord North TSS where this merges with SW bound vessels from the Maas	Ships entering DQ1 from the south must give way to SW going traffic, which must give way to ships leaving DW1 for the Maas.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Traffic in and out of DW1 is infrequent
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation
6h	SSE going vessels inbound for the Maas from the offshore deepwater route and N going vessels for the offshore deepwater route from crossing SW going traffic.	N going vessels must give way to SW going traffic, which must give way to SSE going vessels.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	12	
6i	SW bound vessels from the offshore deep water route merge with SW going traffic for the Noord Hinder South TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	The give way ship must make a large course alteration if it does not reduce speed if this is a *crossing* situation
			Offshore routes' risk score			**581**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	7 – Maas West TSS and crossing traffic south of the shipping lanes in and out of the Maas Northwest TSS						
7a	Main E going inbound traffic lane abeam anchorage 3C to port	S going ships leaving the anchorage to join the inbound lane must give way to E going inbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
7b	NNE /SSW going ships to and from Schouwenbank cross the main E going inbound traffic lane	SSW going ships must give way to E going inbound traffic, which must give way to NNE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	4	3	12	Ships cross at a poor aspect angle
	Ships for the Maas from Schouwenbank diverge from the NNE stream as they turn to go E	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
7c	Main E going inbound traffic lane abeam anchorage 4BN to starboard	E going inbound traffic must give way to N going ships leaving the anchorage but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
	Ships for the Maas from Schouwenbank merge with inbound E going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	Give way ships must be able to reduce speed in congested in merging traffic situations
7d	Deep water channel by the outer anchorage	Possible collision at reduced speed between an outbound vessel in the deep water channel and a vessel proceeding to pick up a pilot from the anchorage	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a laden tanker	3	2	6	The anchorage should be entered be the approach channel to the south to keep vessels about to anchor clear of the deep water channel

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
7e	Deep water area by the pilot station	Possible collision between an outbound vessel in the deep water channel and a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by helicopter (or launch)	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a laden tanker	3	2	**6**	
7f	Deep water channel between anchorages 3A and 3C	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3A. Ships leaving the anchorage must not impede deep draft vessels in the channel.	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel in a narrow channel that is restricted by its draft' means taking early action to avoid a close quarters situation such as reducing speed (Rules 8, 9 & 18)
7g	Deep water channel crosses NNE / SSW going ships to and from Schouwenbank	Possible collision between a vessel in the deep water channel and a ship crossing the channel. NNE / SSW going	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	NxE / SxW going ships must not impede E / W going deep draft ships confined to the channel
7h	Deep water channel by anchorage 3B to the north.	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3B.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	Ships leaving the anchorage must not impede deep draft vessels confined to the channel.

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
7i	Main W going outbound traffic lane abeam anchorage 3B to port	N going ships leaving the anchorage must give way to W going outbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	
7j	NNE /SSW going ships to and from Schouwenbank cross the main W going outbound traffic lane	NNE going ships must give way to W going outbound traffic, which must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	4	3	12	Ships cross at a poor aspect angle
	Ships for Schouwenbank from the Maas leave the W going lane to join SSW going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
7k	West bound ships from Scheveningen cross NNE /SSW traffic to and from Schouwenbank	NNE going traffic must give way to west bound ships, which must give way to SSW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	
7l	Main W going outbound lane traffic abeam anchorage 3A to port	N going ships leaving the anchorage must give way to W going outbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	
7m	West bound ships from Scheveningen merge with the main outbound traffic lane.	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
8 – The sea area between the western edge of the Maas North TSS, the eastern edge of the NE lane from the Noord Hinder North TSS to the Off Texel TSS, the southern edge of the outbound lane from IJmuiden and the southern edge of the Maas Northwest TSS							
8a	NNE going ships from Schouwenbank passing West Rijn wind park about 600 m to port	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	5	**10**	
8b	WSW going ships out of Scheveningen passing Scheveningen wind park about 600 m to stbd.			2	5	**10**	
8c	SSW going ships for Schouwenbank pass West Rijn wind park about 600 m to stbd.			2	5	**10**	
8d	SSW going ships for Schouwenbank cross NW / SE going traffic in and out of the Maas Northwest TSS	NW going traffic must give way to SSW going ships, which must give way to SE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	5	**15**	The West Rijn wind park will obscure onboard visual, radar and AIS detection of a close quarters situation between NW and SSW going ships until the range between them is only about 4 mls
8e	NW going traffic out of the Maas Northwest TSS passes the West Rijn wind park 1 ml to stbd	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	3	**6**	See hazard '8d' above
8f	NNE going ships from Schouwenbank and WSW going ships out of Scheveningen cross NW / SE going traffic in and out of the Maas Northwest TSS	NW going traffic must give way to WSW going ships, which must give way to SE going traffic that must give way to NNE going ships, which must give way to NW & WSW going ships.	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	**12**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
		9 – Maas Central Precautionary Area					
9a	Main inbound lane abeam anchorage 4A to starboard	Possible collision with a vessel leaving the anchorage to join the inbound lane	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Ships leaving an anchorage should avoid creating an immediate close quarters situation
9b	Maas inner pilot station	Inbound vessels requiring a pilot converge at the pilot station from different directions	Damage, pollution and possible loss of life due to slow moving vessels colliding	2	4	**8**	
9c	North of the Maas Centre buoy. Vessels bound for the Maas North TSS diverge from the main outbound traffic flow.	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	2	2	**4**	
9d	W going outbound traffic crosses S going ships from the Maas North TSS for the pilot station	W going traffic must give way to S going ships.	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	
9e	S going ships from the Maas North TSS and SW going ships from the Maas Northwest TSS for the pilot station cross the deep water channel	Possible collision between a vessel in the deep water channel and a vessel crossing the channel. The S and SW going vessels should not *impede* an inbound or outbound deep draft vessel whilst also avoiding each other.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel in a narrow channel that is restricted by its draft' means taking early action to avoid a close quarters situation (Rules 8, 9 & 18)
9f	S going ships for the pilot station from anchorage 5A cross both NW and W going traffic	Both NW and W going traffic must give way to S going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
9g	ESE going ships from the Maas Northwest TSS cross W going traffic outbound for the Maas West TSS	W going traffic must give way to ESE going ships crossing with a small aspect angle	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	**12**	
9h	Southeast corner of the Maas Central Precautionary Area	Inbound traffic for Scheveningen crosses in and outbound traffic in the approach channel to Europoort	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	Variant 1 provides a route for west bound vessels *out* of Scheveningen but does not specify a route into Scheveningen from the west

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
10 – Maas North TSS and its lanes up to the Southern boundary of the IJmuiden deep water route							
10a	NxE and S going traffic pass the P18-A gas platform in the separation zone with clearances of 0.7 mls 0.5 mls respectively	Collision with the platform due to a loss of control over the vessel	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	
10b	SW going smaller ships for the Maas from Scheveningen & IJmuiden merge with S going traffic from starboard	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel. SW going ships should not merge with S going traffic too close ahead of S going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Traffic in and out of Scheveningen is relatively light The two streams of traffic merge just north of the P18-A gas platform
10c	W going smaller ships out of Scheveningen cross N going traffic	N going traffic must give way to W going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Traffic in and out of Scheveningen is relatively light
	Smaller ships for IJmuiden from the Maas diverge from the N going lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	
10d	W going smaller ships out of IJmuiden & Scheveningen cross S going traffic 1 ml north of the P15-E gas platform	W going ships must give way to S going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	5	2	10	W going ships alter course to starboard away from the platform when they give way to S going traffic Traffic in and out of Scheveningen is relatively light
		Collision with the platform due to a loss of control over the vessel	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	
10e	SSW going smaller ships out of IJmuiden cross the N going traffic with a small aspect angle	N going traffic must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	Variant I directs ships to cross the Maas North TSS at its southern end

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
10f	S going traffic pass explosives dump areas about 1 ml west of the lane boundary	A ship sinking over the dump, or anchoring on top of the dump, or losing containers or other substantial objects overboard that then sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	2	**10**	Supply vessels supporting the manned Rijn platform also pass over these dumps and there will also be considerable activity during the erection of the Scheveningen wind park
10g	N and S going traffic pass the Beaufort wind park in the separating are between the lanes with clearances of 900m and 400 m respectively	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	5	**10**	
10h	N going traffic passes wind park Q10 to starboard with a clearance of 900 m	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	2	3	**6**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11 – Routes between IJmuiden inner fairway buoy and the NE going lane between the Noord Hinder North and the Off Texel TSS's							
11a	Inbound ENE going vessels passing the outer anchorage to port	Possible collision with a vessel leaving the anchorage to join the inbound lane	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	1	**4**	The outer anchorage is used mainly by deep draft vessels that enter the port by the deepwater channel
11b	Inbound ENE going ships cross NNE going traffic from Schouwenbank and S going traffic for the Maas North TSS	S going traffic must give way to ENE going ships, which must give way to NNE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	The congestion at this crossing increases the level of risk
	Ships bound for IJmuiden from Schouwenbank diverge from the NNE going traffic to join the ENE inbound lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	**6**	
		merging with ENE going ships creates confusion as to which vessel should give way in a close quarters situation		3	3	**9**	
11c	Inbound ENE going ships cross NxE going traffic from the Maas North TSS	ENE going ships must give way to NxE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	The congestion at this crossing increases the level of risk
	Ships bound for IJmuiden from the Maas North TSS diverge from the NNE going traffic to join the ENE inbound lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	**6**	
		Merging with ENE going ships creates confusion as to which vessel should give way in a close quarters situation		3	3	**9**	
11d	Ships bound for the inner anchorage diverge to port where inbound going ships turn east	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a ship / ship collision	3	2	**6**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11e	Inbound ships pass the inner anchorage to starboard	Vessels may join the inbound lane from the anchorage from the port side	Damage, pollution and possible loss of life due to a ship / ship collision	3	2	6	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this would not be in the practice of good seamanship (Rule 2)
11f	Inner pilot station 2 mls west of the inner fairway buoy	Possible collision with a ship hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch	Damage, pollution and possible loss of life due to a ship / ship collision	3	3	9	
11g	NxE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	ExS going traffic must allow NxE going ships to join the inbound channel ahead of them in a close quarters situation	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Ships in such confined waters should be at a reduced speed ('Colregs' Rule 6) to both to reduce their turning diameter and provide more time to avert a collision whilst also reducing ship / ship interaction effects in shallow water
	ENE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	3	12	
	All outbound WxN going traffic meets with all inbound ExS going traffic just East of the inner fairway buoy	Inbound and outbound traffic can meet in an end on situation, so they should keep to the starboard side of the channel		4	2	8	Most ships will be under pilotage here allowing ship movements to be coordinated
11h	The ExS / WxN channel between the inner fairway buoy and the port breakwaters	Risk of collision between ExS / NxW going traffic and outbound / inbound ships not under pilotage leaving and joining the channel to and from the North and South	Damage, pollution and possible loss of life due to a ship / ship collision involving a loaded tanker	4	2	8	Ships must not impede other vessels restricted in their ability to manoeuvre due to their size and draft
11i	N going ships for the inner anchorage and S going ships inbound from the anchorage cross E / W going deep draft traffic and W going traffic in the main outbound channel	N going ships must give way to all W going traffic, which should give way to S going ships (but S going ships must not *impede* a W going deep draft ship in the channel). S going ships must give way to E going deep draft traffic.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	12	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this would not be in the practice of good seamanship (Rule 2)

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11j	NxW going ships from the Maas North TSS cross all inbound E'ly going traffic and outbound W'ly going deep draft traffic	Inbound E'ly going traffic must give way to NxW going ships that must give way to all outbound W'ly going traffic but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	NxW going ships must not impede SxE going deep draft vessels, as these are restricted in their ability to manoeuvre
11k	W going, NE going and NNE going ships all pass the edge of an ammunition dump area	A ship losing containers or other substantial objects overboard, which subsequently sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	2	**10**	
11l	S going ships for the Maas North TSS and NNE going ships from Schouwenbank cross all E / W going deep draft vessels and other outbound W'ly going traffic	NNE going ships must give way to outbound W'ly going traffic, which must give way to S going ships, which must give way to inbound E'ly going traffic that must give way to NNE going ships but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	NNE and S going ships must not impede W or E going vessels in the deep water channel, as these are restricted in their ability to manoeuvre
	Ships for the Maas North TSS turn to go S as they diverge from W-going ships to join the SxW going traffic lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
		A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	**6**	
11m	At the outer pilot station	Possible collision between with a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch or helicopter	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11n	At the manoeuvring area west of the outer pilot station where outbound WxS going ships for the South cross the E / W going deep draft traffic	E'ly going ships must pass W going traffic port to port in end on close quarters situations but WxS going ships must avoid passing too close ahead of E going deep draft traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Deep draft vessels are beyond the channel and are no longer restricted in their ability to manoeuvre due to their draft
	Laden inbound tankers from the South may encounter outbound and inbound deep draft ships for and from the offshore deep water route	Ships must pass port to port in end on close quarters situations. Tankers from the South should expect to give way to inbound ships from the North as their tracks merge		4	2	8	
	S going deep draft ships for the anchorage may cross the track of NE going inbound tankers from the South and W going outbound tankers for the deep water route	W going ships must give way to S going ships. Which must give way to NE going ships		4	2	8	
	A buoyed wreck lies on the Northern edge of the deep water anchorage at a depth of 20.5 m and an unmarked wreck at a depth 21.5 m lies at the anchorage's SW corner	A ship could go aground on the wreck if it dragged its anchor	Damage and pollution if a tanker grounds on the wreck	3	2	6	
		A ship could drop its anchor on the wreck	Damage and delay due to a tanker fouling its anchor on the wreck or hitting the buoy	2	2	4	
11o	NE / SW going vessels pass the existing wind park 32 to starboard with no clearance	Small vessels, such as maintenance craft emerging without warning from the wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / vessel collision or a vessel / turbine collision	4	4	16	A collision between a ro-ro passenger ferry and a wind turbine could have severe consequences
11p	NNW outbound traffic for the Off Texel TSS passes the existing wind park 33 to starboard with about 500 m clearance			4	3	12	
11q	NNW outbound traffic for the Off Texel TSS passes the wind park Q4 to port with about 0.5 mls clearance			4	3	12	

Section B: Inshore Routing (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11r	NE / SW going vessels pass the wind park Q4 to port with about 0.5 mls clearance			4	3	12	
11s	NE / SW going vessels pass close to a wreck at a depth of 13.4 m	Vessel ground on the wreck	Damage, pollution , p0ssible los of the vessel and lives	3	2	6	Ships on this route are usually ferries drawing less than 8 m
			Inshore routes' risk score			**621**	

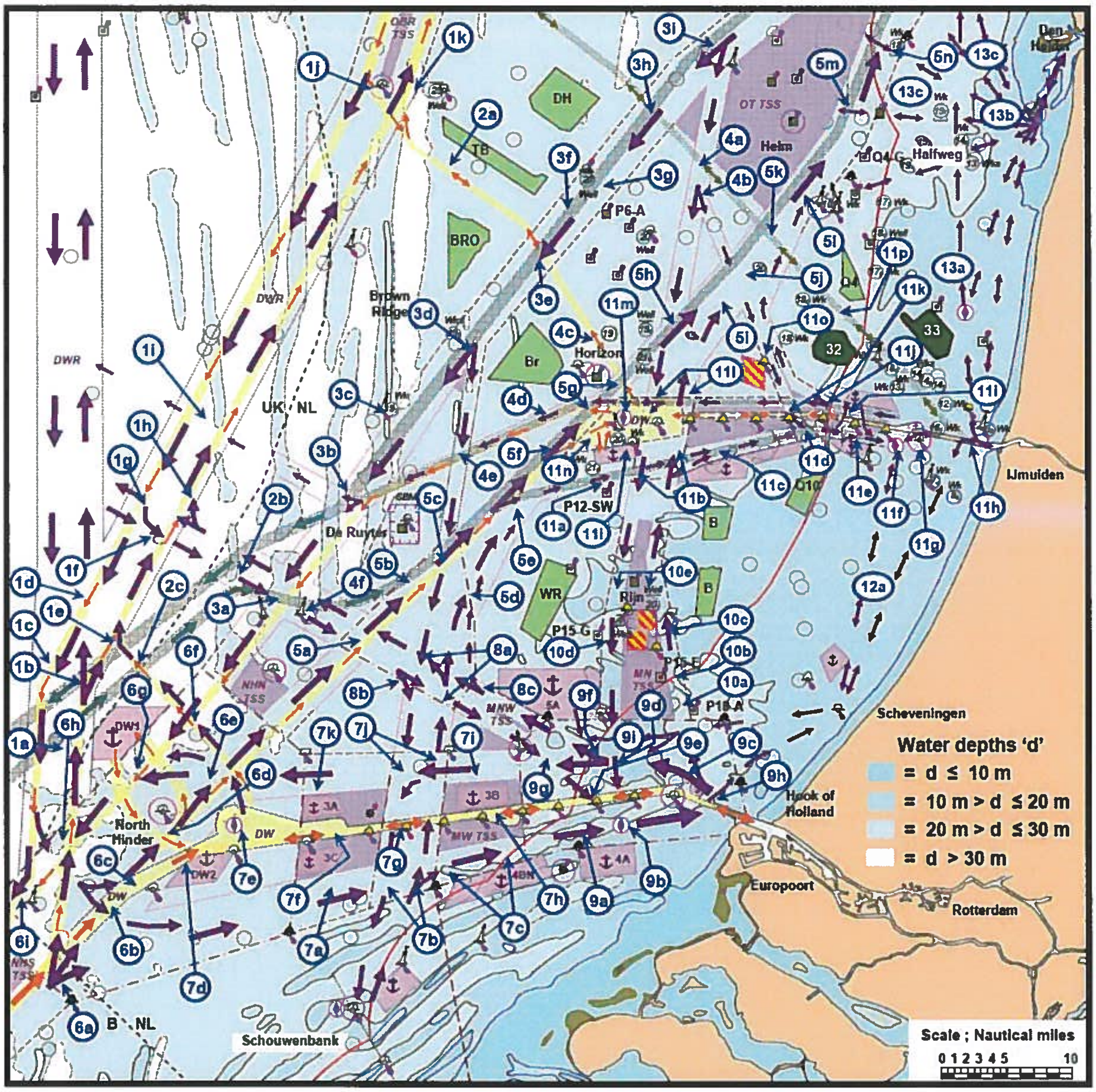
Section C: Secondary Traffic (Variant 1)

No	Variant 1 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
		12 – Hook of Holland to IJmuiden port area					
12a	Scheveningen	Encountering crossing traffic in and out of the port	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		13 –IJmuiden to Texel					
13a	IJmuiden as a fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Most of the traffic in this region consists of smaller vessels moving at slower speeds than the larger ships but they are vulnerable to sinking quite quickly if involved in a serious collision, especially with a larger ships
13b	Den Helder naval base	Encountering naval vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
13c	Den Helder fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
			Secondary traffic's risk score			24	

Hazard Score for Variant 1	
Offshore Routes	581
Inshore Routes	621
Secondary Traffic	24
Total	1226

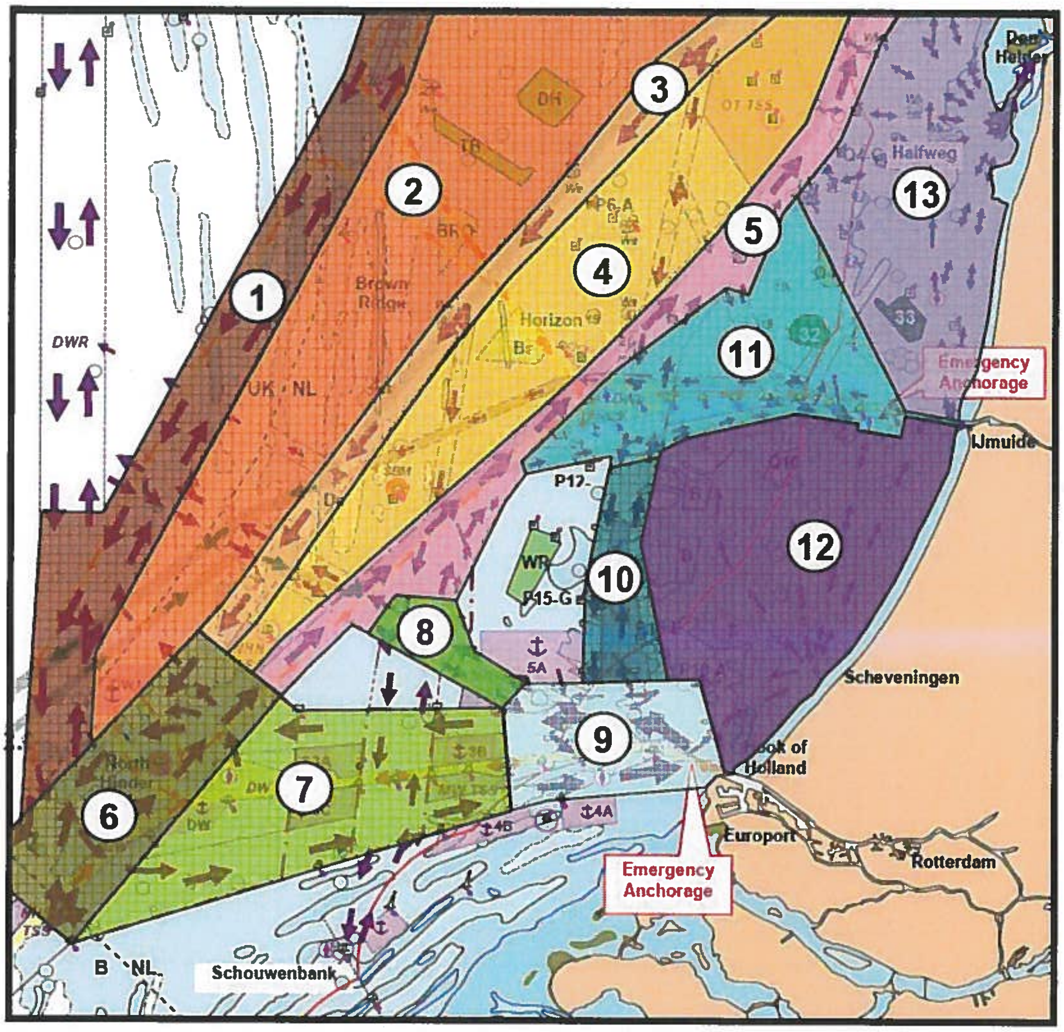
10. Appendix 3 – IMO Variant Traffic Routing Worksheet

10.1 IMO Variant with all Round 2 Wind Parks except Scheveningen WP.



= Current wind parks, = Completed new wind parks, = Ammunition dumps
= Sunk East TSS routes, = Tyneside routes, = Laden tanker routes

10.2 Subdivision Overview of IMO Variant.



Section A : Offshore routes

21 NNE / SSW Offshore deepwater route between Noord Hinder and the Off Brown Ridge TSS.
22 The sea area between the off shore deep water route and the SW going route from the Off Texel TSS to the Noord Hinder Nord TSS
23 SW bound through lane to the North Hinder North TSS from the Off Texel TSS
24 Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's
25 NE going through lane from the North Hinder North TSS to the Off Texel TSS

Section B : Inshore routes

26 The Noord Hinder Junction Precautionary Area (excluding the Europort deep water route)
27 Maas West TSS and crossing traffic south of the shipping lanes in and out of the Maas Northwest TSS
28 The sea area between the western edge of the Maas North TSS, the eastern edge of the NE lane from the Noord Hinder North TSS to the Off Texel TSS, the southern edge of the outbound lane from IJmuiden and the southern edge of the Maas Northwest TSS
29 Maas Central Precautionary Area
30 Maas North TSS and its lanes up to the Southern boundary of the IJmuiden deep water route
11 Routes between IJmuiden inner fairway buoy and the NE going lane between the Noord Hinder North and the Off Texel TSS's

Section C : Secondary traffic

12 Hook of Holland to IJmuiden port area
13 IJmuiden to Texel

10.3 HAZID Worksheet – IMO Variant (12.12.2011)

HAZID Worksheet for proposed traffic routing IMO Variant (12.12.11)

The following Hazid is based on the following assumptions:-

5) The Round 2 wind parks are already in place ***except*** for the Scheveningen wind park, which will not be built.
6) The IMO Variant does not provide routes between: (i) the Sunk east TSS and IJmuiden or the Off Texel TSS, and (ii) Tyneside and IJmuiden, so these have been added to the accompanying chart. (The Sunk East TSS routes avoid cutting through the North Hinder precautionary area at a poor angle, which complies with the Regulations for the Prevention of Collisions at Sea ***but not*** with MARIN.)

The general control measures applied to reduce the risk of collision and grounding and to minimise the consequences of such accidents when they occur are contained in the relevant parts of the following:-

1) ***"The International Regulations for Preventing Collisions at Sea" (COLREGS)***
2) ***"The International Convention for the Safety of Life at Sea" (SOLAS)***
3) ***"The International Convention for the Prevention of Pollution from Ships" (MARPOL)***
4) ***"The Offshore Installations Regulations"*** issued by the UK and Dutch governments to the offshore oil and gas industry

The control measures to reduce the risk of collision and grounding that are specific to the IMO Variant scheme are the proposed traffic routeing measures (traffic separation schemes, precautionary areas etc.) that are designed to direct shipping along the traffic flows shown on the map in the Appendix.

Risk Matrix			Frequency				
			Not Credible	Remote	Low	Medium	High
			1	2	3	4	5
Consequence		Integrated (Generic Definition)	Not expected to occur during activity	Unlikely to occur in practice	May occur during activity	Likely to occur during activity	Very likely to occur during activity
Catastrophic	5	Fatality, or severe personal injury, total plant loss, irreversible environmental damage. Severe international publicity/loss of trade.	5	10	15	20	25
Severe	4	Serious/moderate personal injury. Major/ long term equipment damage. Long term environmental damage. Major adverse national publicity/customer reaction	4	8	12	16	20
Significant	3	Minor/Serious injury. Medium term equipment and environmental damage. Considerable impact on trade.	3	6	9	12	15
Minor	2	Minor personal injury. Minor/short term equipment damage. Short term environmental damage. Minor impact on trade.	2	4	6	8	10
Negligible	1	Negligible personal injury/ plant or equipment failure/environmental damage. Slight impact on trade.	1	2	3	4	5

Broadly Acceptable   ALARP   Unacceptable

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1 - NNE / SSW Offshore deepwater route between North Hinder and the Off Brown Ridge TSS							
1a	NE going ships from the Sunk East TSS cross N / S going traffic in the deep water route	S going deep water traffic must give way to NE going ships, which must give way to N going deep water traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1b	SW ships for the Sunk East TSS cross the deep water route at its southern junction where ships for the NNE going deepwater route diverge from the N going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		N and NNE going ships in the deep water routes must give way to SW going ships		4	2	8	
1c	SW going ships for the Sunk East TSS cross SSW going ships at a large aspect angle where they join the S bound deepwater lane at the southern junction of the two deep water routes	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel
		SSW going ships must give way to SW going ships in a crossing situation but see comment		4	2	8	
1d	SSW going ships for the North Hinder cross N going deep water traffic at the southern junction of the two deep water routes	N going traffic must give way to SSW going ships for the North Hinder	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
1e	SW going ships for the Sunk East TSS cross NW going ships from the North Hinder precautionary area where they join NNE going deep water traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		NW going ships must give way to SW going ships		4	2	8	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
1f	ESE / WNW traffic in and out of the Maas Northwest TSS and crosses the offshore deep water route	SSW going the deep water ships must give way to ESE going traffic, which must give way to NNE going deep water ships that must give way to WNW going traffic that must give way to SSW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Deep draft vessels must stay in the deep water route. Ships crossing this route cross at a 90° aspect angle, as per the colregs
1g	Ships in the SSW going deep water lane join ESE going traffic into the Maas North-west TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	SSW going ships for the Maas Northwest TSS should avoid creating an immediate close quarters situation when they alter course
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
1h	Ships in the NW going lane from the Maas Northwest TSS join NNE going deep water traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	8	
1i	NW going ships out of IJmuiden cross NNE / SSW going deep water traffic	NNE going traffic must give way to NW going ships, which must give way to SSW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	NW going traffic crossing Brown Ridge is quite light
1j	Tankers and deep draft ships for IJmuiden leave the SSW going stream of the deep water route as they turn SSE and cross NNE going traffic at the end of the Off Brown ridge TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	
		SSE going ships must give way to NNE going traffic		4	2	8	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
1k	NNE going tankers and deep draft ships out of IJmuiden for the North join NNE going traffic in the deep water route at the South end of the Off Brown Ridge TSS.	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
2 – Sea Area bounded by the NNE / SSW Offshore route and the SW going route between the North Hinder North & Off Texel TSS							
2a	NW and SE going laden tankers and deep draft ships pass between Tromp Binnen and Brown Ridge Oost wind parks with 2 mls clearance	Risk of and end on close quarters encounter in which case ships should pass port to port	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	**4**	Tanker traffic in and out of IJmuiden is currently light in numbers but this is planned to increase
		Small vessels, such as maintenance craft emerging without warning from one of the wind parks causing a collision *or* a SW going vessel suffering a machinery failure and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision	2	2	**4**	
2b	SWxS going ships for the Sunk East TSS cross WNW / ESE going traffic in and out of the Maas Northwest TSS	WNW going traffic must give way to SWxS going ships, which must give way to ESE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
	NExN going ships from the Sunk East TSS join SE going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	**6**	ESE going traffic should give way to NExN ships joining the lane
2c	NExN going ships from the Sunk East TSS cross NW going ships from the North Hinder	NExN going ships must give way to NW going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	3 - SSW bound through lane to the North Hinder North TSS from the Off Texel TSS						
3a	WNW / ESE going ships in and out of the Maas Northwest TSS cross SSW going traffic just north of the North Hinder North TSS by a wreck and buoy 1 ml inside the SW going lane	WNW going ships must give way to SSW going traffic, which must give way to ESE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	SSW going traffic may have to alter course towards the buoy when giving way to NE going ships
		Risk of a ship colliding with the buoy	Damage and pollution due to a vessel colliding with the buoy	2	2	**4**	The swept depth over the wreck is 23.5 metres.
3b	WSW going ships out of IJmuiden for the South merge with SSW going traffic south of Brown Ridge West of the De Ruyter gas platform	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	4	2	**8**	WSW going ships that turn to go SSW must give way to SSW going ships to starboard
	SSW going traffic is crossed by ships from IJmuiden for Northeastern UK ports turning to go NW and ships for the Sunk East TSS continuing to go WSW	NW going ships must give way to WSW and SSW going traffic, WSW going ships must give way to SSW going traffic		3	2	**6**	
3c	SSW going traffic pass a buoyed wreck at a depth of 19.3 m on the western edge of the lane at the south end of Brown Ridge, where the lane is 2 mls wide.	A ship grounding on the wreck	Damage and pollution due to a vessel going aground	3	1	**3**	The wreck is deep enough not to be a threat to ships using this route but they are passing the wrong side of the buoy

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
3d	Ships for Schouwenbank turn to go S and diverge from SSW going traffic where wrecks lies inside the lane at a depth of 19.2 m	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	The wrecks are deep enough not to be a threat to ships using this route
		A ship grounding on the wreck	Damage and pollution due to a vessel going aground	3	1	3	
	The s going ships pass the Breeveertien wind park at 1000 metres	Small vessels, such as maintenance craft emerging without warning from a wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision	2	3	6	There should be no crossing traffic obscured by the wind park
3e	NNW / SSE going laden tankers and deep draft ships cross SSW going traffic	NNW going ships must give way to SSW going traffic, which must give way to SSE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	1	4	Tanker traffic in and out of IJmuiden is currently very light and this area is very open and without the wind parks
3f	SSW going traffic pass Tromp Binnen wind park to starboard with a minimum clearance of 1.8 mls	Small vessels, such as maintenance craft emerging without warning from a wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision	2	2	4	
3g	SW going traffic passing between the P6-A gas platform to the SE and a buoyed well to the NW	Vessel colliding with the gas platform, a platform servicing rig or a platform support vessel	Damage, fire, pollution and possible loss of life due to a vessel / platform collision	5	1	5	The gas platform is y 0.5 mls clear of the traffic lane where the lane width is 3 mls
		The depth over the well is less than the surrounding water	Damage, fire, pollution and possible loss of life if the well is ruptured by a ship going aground on it	5	1	5	The well is 0.5 mls inside the lane but at a swept depth of 20 m
3h	NW / SE going vessels between the Tyne and IJmuiden cross SW going traffic	NW going vessels must give way to SW going traffic that must give way to SE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Traffic between the Tyne and IJmuiden is light and the crossing angle is near 90°

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
3i	Traffic for IJmuiden and the Maas North TSS turns to go S and diverges from the SSW going traffic at the Off Texel TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	4 – Sea area between the SW and NE going routes between the North Hinder North and the Texel TSS's						
4a	NW / SE going vessels between the Tyne and IJmuiden cross SxW going traffic	NW going vessels must give way to SxW going traffic that must give way to SE going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Traffic between the Tyne and IJmuiden is light
4b	Ships for IJmuiden turn to go SxE as they diverge from S going traffic for the Maas North TSS	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	The traffic lane to IJmuiden is 1 mile wide
4c	Deep draft vessels and tankers pass south-west of a shoal with a charted depth of 19 metres	A ship grounding on the wreck	Damage and pollution due to a vessel going aground	4	1	**4**	
4d	WSW going traffic pass the Breeveertien wind park 2 miles to port	Small vessels, such as maintenance craft emerging without warning from a wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision	2	2	**4**	
4e	SxW going traffic for Schouwenbank cross WSW going ships out of IJmuiden	WSW going ships must give way to SxW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
4f	Traffic in and out of the Maas Northwest TSS passes the west cardinal buoy NE of the North Hinder North TSS	The wreck buoy limits sea room in a major crossing area, which increases the risk of collision between vessels as they attempt to navigate around the buoy	Damage, pollution and possible loss of life due to a vessel / vessel or vessel / buoy collision	3	2	**6**	The charted depth over the wreck is 24 m, so the buoy may be a greater threat than the wreck.
	Ships for IJmuiden leave SE going traffic to turn o the NE and cross NW going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Ships turning to the NE should avoid creating an immediate close quarters situation with NW going traffic
		NW going traffic must give way to NE going ships but see note		3	2	**6**	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk			Comment
				C	L	R	
	5 - NE going through lane from the North Hinder North TSS to the Off Texel TSS						
5a	NE going traffic crosses WNW / ESE going ships in and out of Maas Northwest TSS.	ESE going ships must give way to NW going traffic, which must give way to WNW going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5b	Ships for IJmuiden and Off Texel from the northwest merge with NE going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5c	NE going traffic cross S going ships for the Maas and Schouwenbank south of the De Ruyter platform	S going ships must give way to NE going traffic in a small aspect angle crossing situation	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5d	Ships from the Maas Northwest TSS and Schouwenbank join NE going traffic west of the West Rijn wind park	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	Minimum clearance from the wind park is 2.9 n. mls
5e	Ships for IJmuiden leave the NE going lane south of the IJmuiden outer pilot station	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
5f	Laden tankers for IJmuiden turn to go ENE as they diverge from the NE going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5g	NW / SE & W going tankers and deep draft ships in and out of IJmuiden and W going ships out of IJmuiden cross NE going traffic close by the Horizon manned oil platform	NW going deep draft ships must give way to W going ships, which must give way to SE going deep draft ships that must give way to NE going traffic, which must give way to NW going deep draft ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	12	The Horizon platform is 1 ml outside of the NE going lane, as compared with being on the lane boundary in Variant 1, but this is because the track from the North Hinder North TSS to the Off Texel TSS is not a rhumb line, as there is a slight alter course at the platform that reduces the lane width, o the IMO variant does not provide more sea room
		NW going deep draft ships must pass SE going deep draft ships port to port in an end on close quarters situation		4	2	8	
		W and NW going ships alter course towards the platform when giving way	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	2	10	
5h	NE going traffic crosses SSW going ships for the Maas North TSS at a 45° aspect angle	SSW going ships must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	1	3	Moving the Maas North TSS about 4 mls west has moved this crossing away from the Horizon platform and so reduced the risk at '5f' compared with Variant 1
5i	NNE going ships out of Maas North TSS joins the NE going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	NE going traffic must give way to NNE going ships in a close quarters crossing situation
5j	SSE going vessels for IJmuiden cross NE going traffic	SSE going vessels must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
5k	NW / SE going vessels between the Tyne and IJmuiden cross NE going traffic	SE going vessels must give way to SW going traffic that must give way to NW going vessels	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Traffic between the Tyne and IJmuiden is light and the crossing angle is near 90°

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
5l	Traffic out of IJmuiden merge with NE going traffic by a wreck, depth10.8 m. at the entrance to the Off Texel TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	Changing the approach to the Off Texel TSS moves the lane clear of the wreck
5m	Traffic in the NE going lane of the Off Texel TSS passes the Halfwig gas platform on the lane boundary to starboard	Vessel colliding with the gas platform, a platform servicing rig or a platform support vessel.	Damage, fire, pollution and possible loss of life due to a vessel / platform collision	5	1	5	
		There is also a concentration of crossing offshore support vessel traffic from Den Helder at this location	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
5n	Traffic in the NE lane of the Off Texel TSS passes a wreck, swept depth 18 m, 0.5 mls inside the lane boundary	Wreck reduced the depth to less than 20 metres	Damage and pollution due to the vessel grounding	2	2	4	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
	6 – The North Hinder Junction Precautionary Area between the NHN and NHS TSS's (excluding the Europoort deep water route)						
6a	Traffic leaving the North Hinder South TSS splits for the Maas West TSS, the offshore deepwater routes and the Noord Hinder North TSS diverges	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	
6b	SE going vessels bound for the Maas West TSS cross NE going vessels	SE going vessels bound for the Maas W TSS from the north must give way to NE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6c	Maas inbound deep draft vessels and tankers diverge from NE going traffic to enter the deep water channel	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6d	Ships from the DW 1 anchorage for the deep-water channel cross NE going traffic	Vessels coming from DW1 must give way to NE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	Ships must leave the North Hinder buoy to port
	Ships bound for DW1 from the SW diverge from NE going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		4	2	**8**	Traffic in and out of DW1 is infrequent
6e	Vessels out off the Maas deepwater channel and the Maas West TSS bound for the SW or the offshore deepwater channels to the north cross NE going traffic	NE going traffic must give way to vessels outbound from the Maas in a situation where crossing angles can vary	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	Ships must leave the North Hinder buoy to port
6f	NW going vessels bound for the offshore deepwater routes cross SW going traffic	SW going traffic must give way to NW going traffic bound for the offshore deepwater routes	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	

Section A: Offshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
6g	Vessels in and out of the DW1 anchorage cross SW going traffic from the Hinder Noord North TSS where this merges with SW bound vessels from the Maas	Ships entering DQ1 from the south must give way to SW going traffic, which must give way to ships leaving DW1 for the Maas.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	Traffic in and out of DW1 is infrequent
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	2	**8**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation
6h	SSE going vessels inbound for the Maas from the offshore deepwater route and N going vessels for the offshore deepwater route from crossing SW going traffic.	N going vessels must give way to SW going traffic, which must give way to SSE going vessels.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	
6i	SW bound vessels from the offshore deep water route merge with SW going traffic for the Noord Hinder South TSS	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	The give way ship must make a large course alteration if it does not reduce speed in a large aspect angle close quarters *crossing* situation
			Level of risk for Offshore Routing			**513**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
		7 – Maas West TSS					
7a	Main E going inbound traffic lane abeam anchorage 3C to port	S going ships leaving the anchorage to join the inbound lane must give way to E going inbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
7b	N /S going ships to and from Schouwen-bank cross the main E going inbound traffic lane	S going ships gives way to E going inbound traffic, which give way to N going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	The proposed change to the TSS improves the crossing angle
	Ships for the Maas from Schouwenbank diverge from the N going stream as they turn to go E	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	**6**	
7c	Main E going inbound traffic lane abeam anchorage 4BN to starboard	E going inbound traffic must give way to N going ships leaving the anchorage but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2)
	Ships for the Maas from Schouwenbank merge with inbound E going traffic	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	**6**	Give way ships must be able to reduce speed in congested in merging traffic situations
7d	Deep water channel by the outer anchorage	Possible collision at reduced speed between an outbound vessel in the deep water channel and a vessel proceeding to pick up a pilot from the anchorage	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a laden tanker	3	2	**6**	The anchorage should be entered be the approach channel to the south to keep vessels about to anchor clear of the deep water channel

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
7e	Deep water area by the pilot station	Possible collision between a vessel in the deep water channel and a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by helicopter (or launch)	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	3	2	**6**	Variant 12-12-2011 makes no significant change to the level of risk.
7f	Deep water channel between anchorages 3A and 3C	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3A. Ships leaving the anchorage must not impede deep draft vessels in the channel.	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel in a narrow channel that is restricted by its draft' means taking early action to avoid a close quarters situation such as reducing speed (Rules 8, 9 & 18)
7g	Deep water channel crosses NxE / SxW going ships to and from Schouwenbank	Possible collision between a vessel in the deep water channel and a ship crossing the channel. NNE / SSW going	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	NxE / SxW going ships must not impede E / W going deep draft ships confined to the channel
7h	Deep water channel by anchorage 3B to the north	Possible collision between vessel in the deep water channel and a ship crossing the channel to the main inbound lane from anchorage 3B.	Damage, pollution and possible loss of life due to a slow speed vessel / vessel collision involving a tanker	4	3	**12**	Ships leaving the anchorage must not impede deep draft vessels confined to the channel.
7i	Main W going outbound traffic lane abeam anchorage 3B to port	N going ships leaving the anchorage to join the west bound lane must give way to W going outbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
7j	N /S going ships to and from Schouwen-bank cross the main W going outbound traffic lane	N going ships must give way to W going outbound traffic, which must give way to S going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	The proposed change to the TSS improves the crossing angle
	Ships for Schouwenbank from the Maas leave the W going lane to join S going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
7k	Main W going outbound lane traffic abeam anchorage 3A to port	N going ships leaving the anchorage to join the west bound lane must give way to W going outbound traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
8 – Maas Northwest TSS from the NE going lane between the Noord Hinder North and the Off Texel TSS's							
8a	SE / NW going ships cross N / S going traffic to and from Schouwenbank.	SE going ships must give way to N going traffic that must give way to NW going ships that must give way to S going traffic that must give way SE going ships	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	9	This is now a precautionary area
	Ships for the NW diverge from N going traffic after to join NW going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	6	Traffic to and from the north by the offshore deepwater route is relatively light
		Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
8b	Ships bound for Schouwenbank leave the SE going lane to merge with the S going traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	6	
8c	NW going traffic from the Maas Northwest TSS diverges as ships for the Off Texel TSS turn to go N	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
		9 – Maas Central Precautionary Area					
9a	Main inbound E going traffic lane abeam anchorage 4A to starboard	E going traffic should give way to ships leaving the anchorage but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2).
9b	Maas inner pilot station	Inbound vessels requiring a pilot converge at the pilot station from different directions	Damage, pollution and possible loss of life due to slow moving vessels colliding	2	4	**8**	
9c	North of the Maas Centre buoy. Vessels bound for the Maas North TSS diverge from the main outbound traffic flow.	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
9d	W going outbound traffic crosses S going ships from the Maas North TSS for the pilot station	W going traffic must give way to S going ships.	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	
9e	S going ships from the Maas North TSS and SW going ships from the Maas Northwest TSS for the pilot station cross the deep water channel	Possible collision between a vessel in the deep water channel and a vessel crossing the channel. The S and SW going vessels should not *impede* an inbound or outbound deep draft vessel whilst also avoiding each other.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a tanker	4	3	**12**	'Not impeding a vessel in a narrow channel that is restricted by its draft' means taking early action to avoid a close quarters situation (Rules 8, 9 & 18)
9f	Vessels for the Maas Northwest TSS leave the main W-going outbound traffic	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
	S going ships for the pilot station from anchorage 5A cross NW & W going traffic	Both NW and W going traffic must give way to S going vessels		3	2	**6**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
9g	ESE going ships inbound from the Maas Northwest TSS cross W going traffic outbound for the Maas West TSS at the junction between the two TSS's	W going traffic must give way to ESE going vessels crossing with a small aspect angle	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	4	**12**	
9h	Southeast corner of the Maas Central Precautionary Area	Inbound traffic for Scheveningen crosses in and outbound traffic in the approach channel to Europoort	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	**8**	
9i	Northern part of the Maas Central Precautionary Area	Vessels from Scheveningen for the West and Northwest joins traffic in the Maas West and Northwest TSS's	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
10 – Maas North TSS and its lanes up to the Southern boundary of the IJmuiden deep water route							
10a	N going traffic in the Maas North TSS pass the gas platform P18-A 500 metres east of the lane boundary	Collision with the platform due to a loss of control	Damage, fire, pollution and possible loss of life due to a vessel / platform collision	5	1	5	
10b	N going ships in the Maas North TSS pass the gas platform P15-E in the separation zone 500 metres west of the lane boundary	A ship sinking over the dump, or anchoring on top of the dump, or losing containers or other substantial objects overboard that then sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	1	5	
10c	N going ships in the Maas North TSS pass ammunition dumping grounds in the separation zone.	A ship sinking over the dump, or anchoring on top of the dump, or losing containers or other substantial objects overboard that then sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	1	5	The N going lane is 1.25 mls wide at this point
10d	N and S going traffic in the Maas North TSS pass between the gas platform P15-G 500 metres west of the lane boundary and N going traffic in the Maas North TSS pass the gas platform P18-A 500 metres east of the lane boundary	Collision with the platform due to a loss of control	Damage, fire, pollution and possible loss of life due to a vessel / platform collision	5	1	5	
		A ship sinking over the dump, or anchoring on top of the dump, or losing containers or other substantial objects overboard that then sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	1	5	
10e	N and S going traffic pass the Rijn main platform in the separation zone 0.5 mls from the lane boundaries	Collision with the platform due to a loss of control or collision with a vessel supporting the platform	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	5	Damage to the Rijn platform could cut off the gas supply to a large part of the Netherlands.

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11 – Routes between IJmuiden inner fairway buoy and the NE going lane between the Noord Hinder North and the Off Texel TSS's							
11a	Inbound E going ships passing gas platform P12 –SW 0.5 mls clear of the lane boundary to starboard	The platform is 1.5 ml before the crossing with the S bound traffic for Maas North TSS and could be threatened by a S going ship giving way for inbound IJmuiden vessels	Damage, pollution, fire and possible loss of life due to a vessel / platform collision	5	1	**5**	
11b	Inbound ExN going ships from the southwest *and* the west cross the NxE / SxW going traffic in and out of the Maas North TSS	SxW going traffic must give way to ExN going ships that must give way to NxE going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	3	**9**	Altering the separation zones provides more sea room for give way vessels
	Ships bound for IJmuiden from the Maas North TSS diverge from the N going traffic to join the E going inbound lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	**6**	
11c	Inbound ExN going ships pass an anchorage to starboard.	Inbound E going traffic should give way to N going ships leaving the anchorage but see comment	Damage, pollution and possible loss of life due to a ship / ship collision	3	2	**6**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2).
	Ships from the west and the Maas North TSS merge with the main E going inbound traffic lane	A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	3	**9**	
11d	Inbound ships from the north join E going traffic from port	A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel	Damage, pollution and possible loss of life due to a ship / ship collision	3	3	**9**	
	Ships bound for the north inner anchorage diverge to port where inbound going ships turn east	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern		3	2	**6**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11e	Inbound ExN going ships pass the south inner anchorage to starboard and the north inner anchorage to starboard	Inbound E going traffic should give way to N going inbound ships leaving the south anchorage but see comment	Damage, pollution and possible loss of life due to a ship / ship collision	3	2	6	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this is not good seamanship (Rule 2).
		S going inbound ships leaving the north inner anchorage must give way to inbound E going traffic		3	2	6	
11f	Inner pilot station 2 mls west of the inner fairway buoy	Possible collision with a ship hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch	Damage, pollution and possible loss of life due to a ship / ship collision	3	3	9	
11g	NxE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	ExS going traffic must allow NxE going ships to join the inbound channel ahead of them in a close quarters situation	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	8	Ships in such confined waters should be at a reduced speed ('Colregs' Rule 6) to both to reduce their turning diameter and provide more time to avert a collision whilst also reducing ship / ship interaction effects in shallow water
	ENE going inbound ships merge with all ExS going inbound traffic just East of the inner fairway buoy	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel		4	3	12	
	All outbound WxN going traffic meets with all inbound ExS going traffic just East of the inner fairway buoy	Inbound and outbound traffic must pass port to port in an end on close quarters situation		4	2	8	Most ships will be under pilotage here allowing ship movements to be coordinated
11h	The ExS / WxN channel between the inner fairway buoy and the port breakwaters	Risk of collision between ExS / NxW going traffic and outbound / inbound ships not under pilotage leaving and joining the channel to and from the North and South	Damage, pollution and possible loss of life due to a ship / ship collision involving a loaded tanker	4	2	8	Ships must not impede other vessels restricted in their ability to manoeuvre due to their size and draft

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11i	N going ships for the inner anchorage and S going ships inbound from the anchorage cross E / W going deep draft traffic and W going traffic in the main outbound channel	N going ships must give way to all W going traffic, which should give way to S going ships (but S going ships must not *impede* a W going deep draft ship in the channel). S going ships must give way to E going deep draft traffic.	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	3	**12**	Ships manoeuvring to leave the anchorage should avoid creating an immediate close quarters situation as this would not be in the practice of good seamanship (Rule 2)
11j	Ships for the Off Texel TSS diverge from the outbound traffic in the W going lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
11k	SSE going ships inbound from the Off Texel TSS cross the W going outbound lane and the E / W going deep water route	W going outbound traffic must give way to SSE going inbound vessels , which must not impede deep draft ships in the narrow channel	Damage, pollution and possible loss of life due to a vessel / vessel collision	4	3	**12**	The collision could include a laden tanker
11l	NxE and SxW going traffic lanes cross W going ships outbound from IJmuiden	NxE going traffic must give way to W going vessels that must give way to SxW going traffic	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	3	**12**	This congested crossing is close to the deep water area. Vessels can very easily get involved with deep draft ships whilst giving way to other traffic. The likelihood of a collision occurring will increase if the tanker and deep draft traffic rises to any great extent.
	Ships for the Maas North TSS turn to go S as they diverge from W-going ships to join the SxW going traffic lane	Diverging traffic can lead to a poorly positioned vessel cutting across ahead of a ship astern	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	**6**	
		A close quarters situation between converging ships can cause confusion as to whether it is a crossing or an overtaking situation and which is the stand on vessel		3	2	**6**	
11m	At the outer pilot station	Possible collision between with a vessel hampered in its ability to manoeuvre whilst it is picking up or disembarking a pilot by launch or helicopter	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a loaded tanker	4	2	**8**	

Section B: Inshore Routing (IMO variant)

No	Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
11n	At the manoeuvring area and outer anchorage west of the outer pilot station where ENE going inbound tankers from the South encounter E / W going deep draft ships for and out of IJmuiden.	W going tankers must give way to ENE going ships, which must give way to E going tankers in a close quarters crossing situation but see comment	Damage, pollution and possible loss of life due to a vessel / vessel collision involving a laden tanker	4	2	8	Close quarters situations between merging traffic at large aspect angles can cause doubt as to whether it is a crossing or an overtaking situation and which is the stand on vessel
	E going inbound tankers may also encounter w going outbound tankers	Inbound and outbound traffic must pass port to port in an end on close quarters situation		4	2	8	
	ENE going inbound tankers cross N / S going deep draft ships to and from the anchorage	N going ships must give way to ENE going tankers, which must give way to S draft ships		4	2	8	
	A buoyed wreck lies on the northern edge of the deep water anchorage at a depth of 20.5 m and an unmarked wreck at a depth 21.5 m lies at the anchorage's SW corner	A ship could go aground on the wreck if it dragged its anchor	Damage and pollution if a ship grounds on the wreck	3	2	6	
		A ship could drop its anchor on the wreck	Delay due a fouled anchor or hitting the buoy	2	2	4	
11o	SSE going ships inbound for IJmuiden from the Off Texel TSS pass the edge of an ammunition dump.	A ship losing containers or other substantial objects overboard, which subsequently sink on top of the dump	Damage, pollution and loss of life due to an explosion (up to 10 tonnes of TNT)	5	1	5	
11p	NW / SE going vessels between the Tyne and IJmuiden pass between wind parks "32" and "Q4"with a minimum clearance of 0.8 miles	Small vessels, such as maintenance craft emerging without warning from a wind park causing a collision *or* a ship breaking down and drifting into a wind turbine	Damage, pollution and possible loss of life due to a vessel / small craft or vessel / wind turbine collision	2	3	6	
			Level of risk for Inshore Routing			**491**	

Section C: Secondary Traffic (IMO variant)

No	IMO Variant 12-12-2011 location	Hazardous situation	Outcome to be avoided	Risk C	Risk L	Risk R	Comment
		12 – Hook of Holland to IJmuiden port area					
12a	Scheveningen	Encountering crossing traffic in and out of the port	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
		13 –IJmuiden to Texel					
13a	IJmuiden as a fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
13b	Den Helder naval base	Encountering naval vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
13c	Den Helder fishing port	Encountering fishing vessels in a crossing situation in any of the main shipping lanes	Damage, pollution and possible loss of life due to a vessel / vessel collision	3	2	6	
			Level of risk for Secondary traffic			**24**	

Hazard Score for IMO Variant (12.12.11)	
Offshore Routes	**513**
Inshore Routes	**491**
Secondary Traffic	**24**
Total	**1028**

11. Appendix 4 - Hazid Navigation Rationale

The following rationale has been applied to each Variant when assessing hazards.

11.1 Rule of the Road (The 'Highway Code' of the Sea)

The internationally accepted rules governing the behaviour of ships at sea in order to avoid collisions are given in *"The International Regulations for Preventing Collisions at Sea"*, which is often referred to as *"The Colregs"* or, in the past, as *"The Rules of the Road"*. The following notes explain Rules 1 – 19, as these are the rules directly concerned with how vessels should avoid collision and so are particularly pertinent to the assessing the risk of collision to vessels in the traffic lanes shown in the different wind park variants, *relative* to the current situation (i.e. with no the wind parks).

Part A (General Rules 1 – 3)

Rule 1 - Application
This Rule states that all the regulations apply to all vessels on the high seas and in waters connected to the sea that are navigable by seagoing ships. However the Rule allows for competent local authorities to apply special regulations to harbours, their approaches and inland waterways, provided that these comply as closely as possible with the international regulations. Traffic separation schemes (TSS's) can be submitted to the IMO for approval and incorporation into the regulations.

Rule 2 - Responsibility
Rule 2 states that nothing in the regulations can be used to as a reason for failing to follow the practice of good seamanship. This is an important point as it demands that the regulations are taken by ships' officers in the spirit of co-operating with other seamen to avoid collisions in all possible circumstances, so officers of the watch must apply the rules in the light of factors such as the size of the other vessel and the sea room available for it to manoeuvre. Defining what is actually meant by failing to apply the practice of good seamanship in any particular situation is often left to the courts when proportioning blame and hence liability for the damage costs between vessels involved in a collision. However, altering course and/or speed in such a way as to create a risk of collision with another nearby ship would be example of poor seamanship in most circumstances. It is perhaps worth noting that, of all the cases of collision brought before the British Admiralty Courts, there has only been a single case in which one vessel was found to be solely to blame.

Rule 3 - Definitions
Rule 3 defines terms used in the regulations, including the different categories that a vessel can be considered belonging to with respect to the regulations. The feature that determines which category a vessel belongs to is the extent to which the vessel's ability to take immediate action to avoid collision is restricted by what it is doing at the time. So, for example, ships engaged in towing have limited manoeuvrability due to their tow, which might also be seen as a separate vessel unless they are displaying the lights and daylight shapes prescribed in the regulations.

The other categories are:-

- Power driven vessel – Any vessel propelled by machinery (i.e. its speed can be altered and it can be steered in any direction).
- Sailing vessel – A vessel under sail that is not also using any auxiliary engine (i.e. it can only be steered in the directions that the wind allows).
- Vessel engaged in fishing – Any vessel *actively fishing* with nets, trawls, lines or any other gear that restricts its manoeuvrability but not vessels fishing with troll lines, as these do not limit manoeuvrability.
- Seaplane – Any aircraft that is designed to manoeuvre on the water, so this includes flying boats as well as what are normally termed as seaplanes.
- Vessel not under command – A vessel that for exceptional reasons is unable to manoeuvre, such as in the case of an engine breakdown or a jammed rudder.
- Vessel restricted in her ability to manoeuvre – Any vessel engaged in work that restricts manoeuvrability, such as dredging, underwater surveying, pipe or cable laying, launching or recovering aircraft, replenishing another ship at sea, mine clearance etc.
- Vessel constrained by her draught – A power driven vessel restricted in its manoeuvrability by the depth of water.*and* width of navigable channel, *relative* to the vessel's draught and size.

The regulations prescribe the lights and daylight shapes that the different categories of vessel must show and how they must respond to each other in the various collision risk situations. *Note that a fishing vessel moving from one fishing ground to another, or a sailing boat under engine power as well as sail are all just power driven vessels as far as the regulations are concerned.*

Part B (Steering and Sailing Rules 4 -19)

Section I – Conduct of vessels in any condition of visibility.

Rule 4 - Application
This Rule simply states that all the rules in section 1 apply to any condition of visibility.

Rule 5 - Lookout
This very important rule demands that all vessels at sea maintain an effective visual and audible lookout at all times whilst also using whatever additional aids, such as radar, appropriate to the vessel's circumstances, such as dense traffic, restricted visibility, proximity to the coast etc. Although the Rule does not specify it, an effective lookout must cover a full 360° and regularly look around any visual obstructions, such as masts, cranes and sails.

Rule 6 – Safe speed
This rule requires vessels to proceed at a speed that allows proper and effective action to be taken to avoid collision and for the vessel to stop within a distance appropriate to its situation. The Rule lists the factors to be considered when deciding what is a safe speed, which includes:-

- The ship's manoeuvring characteristics, such as turning diameter and stopping distance.
- The extent to which the ability to detect of other vessels is hampered by the prevailing conditions. This relates to weather conditions, such as fog, rain snow and spray from heavy seas *but* also includes the difficulty in sighting vessels at night against a backdrop of shore lights *and* the masking effect of offshore structures, such as wind turbines, on *both* radar signals *and* the AIS (Automatic Identification Signal) transmissions, which include ships' positions as well as their identifying signals.
- The density of traffic and/or concentration of fishing vessels.
- The proximity to a shore line, shoal or any other navigational hazard.

Unfortunately, Rule 6 is frequently more honoured in the breach than complied with, one reason being that most large ships run at 'full away' speed on long passages with the main engine and auxiliary machinery, such as electrical generators, set to work at maximum efficiency. Adjustments must be made in the engine room before the machinery is suitable for reducing speed, which may take fifteen to twenty minutes to complete. Examples of this are:-

- The ship's electric power may be being supplied by a generator on the propeller shaft, in which case there would be a risk of an electrical blackout if engine speed were reduced before starting an auxiliary diesel generator and 'putting it on the board' (i.e. its electrical output synchronised with the shaft generator and connected up to the main supply board).
- Many ships are powered by large slow running diesel engines using a highly viscous low grade fuel oil that burns most effectively when the engine is running at full power, which is only limited by the seawater temperature (the colder the water is, the more effective is its cooling and so the higher is the engine's power output). Reducing engine power output before making certain adjustments to its turbo blowers reduces the engine temperature and results in less than complete combustion. This, in turn, deposits soot on the turbo blower blades that reduces their effectiveness at pushing fresh air into the cylinders on the exhaust strokes so the incomplete combustion gets worse. (In the past, ships with such engines used to have to be switched over to run on a higher grade of diesel oil fuel whenever they were being manoeuvred at reduced speeds.)

- The high temperatures of large diesel engines running at maximum power should not be reduced too suddenly by immediately slowing down, as this can cause unnecessary stress to some of its component parts.
- It is often necessary to start a second steering motor if the vessel is to respond adequately to the helm at reduced speeds.
- The engine room should be manned if a series of changes in speed are to be made.

If the speed of a ship cannot be altered immediately, then arguably the vessel is not strictly speaking fully under command but running at 'full away' speed is such common practice that few recognise this point. *However, the inability or reluctance to slow down makes avoiding collision difficult in certain situations and is in breach of this regulation in such circumstances.*

Rule 7 – Risk of collision
This Rule explains how a risk of collision is identified, which can be taken to exist when another vessel is viewed on a compass bearing that is not significantly changing whilst its range is closing. This can be determined by either a series of visual sightings using a bridge wing compass repeater or properly made observations taken from a compass stabilised radar.

Rule 8 – Action to avoid collision
Rule 8 states the general principles of how actions should be carried out to avoid collision (the specific actions to avoid collision are stated for all the different scenarios in rules 11 – 19). The first part of the Rule requires the appropriate alteration of course *and/or* speed to avert collision to be taken in ample time and to be immediately obvious to the other vessel. 'Ample time' must relate to the size of the vessels involved because in many of the scenarios one ship must give way to the other (known as the 'stand on' vessel) which is required by the rules to maintain its course and speed unless any action by the give way vessel alone is insufficient to avoid the collision. The officer on watch on a large tanker that is the stand on vessel will get distinctly nervous if a give vessel has not altered course by the time the range between the two ships is down to around 4 miles. (Some yachtsmen, however, only start to worry when they can just about read the name on the other ship's bow.) Judging what actually ample time is requires the application of good seamanship to whatever the situation the particular vessels are in.

The requirement that the give way vessel's actions are immediately apparent to the other vessel favours altering course to avoid collision rather than slowing down and this can be problematic when in heavy traffic that is moving roughly in the same direction but converging, such as when approaching a traffic separation scheme. This is similar in many ways to a car joining a motorway from a slip road where the joining vehicle is equivalent to the give way vessel and must adjust its speed in the slip road so that it can merge with the traffic moving along the main carriage way without causing a potential collision situation. Ships require much greater distances and longer times than road vehicles for a change in speed to take effect but the principle is basically the same and, *if ships' officers are not prepared to alter speed to merge safely with converging traffic, then avoiding risk of collision situations becomes more difficult.*
The last part of Rule 8 rather confusingly requires vessels to take early and positive action to avoid *impeding* the safe passage of other vessels. What this part of the Rule addresses is the

situation of a vessel is crossing the course of larger ships in recognisably restricted waters, such as a recognised deep water channel or traffic separation scheme *or* possibly heavy traffic. The Rule requires the crossing vessel to arrange to do so in a way that is clearly not going to create a risk of collision situation with a ship passing through the recognisable route, which is restricted in manoeuvrability by its size. This is just common sense and the Rule is simply reinforcing the demand for the practice of good seamanship. Avoiding impeding another vessel means that all ships should be navigated as much as possible in a way that does create risk of imminent collision with other vessels *but* the Rule states further that where this cannot be avoided, *vessels must still take the actions specified by rules 11 – 19, to avert collision.*

Rule 9 – Narrow channels

A vessel proceeding along a narrow channel or fairway should comply with the following:-

- Keep as near as is safe to the edge of the channel that is on the vessel's starboard side.
- If overtaking another vessel is only made possible by the other vessel taking action to provide adequate sea room, then the overtaking vessel must make its intentions clear by making the appropriate sound signal. If the vessel to be overtaken agrees to comply, then it should respond with its appropriate sound signal (see Rule 34 for sound signals). However, nothing in this communication by signals relieves the overtaking vessel of its obligations to obey Rule 13.
- Vessels approaching a bend in a narrow channel should navigate with caution and sound the appropriate signal where some obstruction obscures the view around the bend (This usually only applies to river and canal passages).

Sound signals in open waters are rarely used in open waters except in dense fog and to draw the attention of another vessel which is not taking evasive action to prevent a collision. Requests for co-operation in overtaking are most likely to be made by VHF but this is prone to all kinds of misunderstandings, not in the least as to whether or not the ships involved have properly identified each other. (see UK-MCA Notice MGN 167.)

Rule 9 also requires the following to be obeyed in narrow channels or fairways:-

- Vessels less than 20 metres in length and sailing vessels shall not impede the passage of vessels that can only navigate safely in the channel.
- Vessels engaged in fishing shall not impede the passage of vessels navigating the channel.
- Vessels crossing the channel shall not impede the passage of vessels that can only navigate safely in the channel (This is repeating Rule 8).
- Vessels shall not anchor in a narrow channel or fairway unless this is unavoidable (such as in the case of a breakdown).

Rule 10 – Traffic separation schemes (TSS's)

TSS's are a means of separating vessels moving in opposite directions into two distinct lanes with a separation zone between them. They are used in coastal waters where traffic is heavily concentrated and Rule 10 applies to TSS's adopted by the International Maritime Organisation (IMO) *but nothing within the Rule overrides any other rule in the regulations.*

The Rule requires through traffic to comply with the following:-

- Proceed in the TSS along the appropriate lane in the general direction of its traffic flow.
- Avoid the separation zone as far as is practical.
- Normally join or leave the appropriate lane at the ends of the scheme but when joining or leaving from the side, they should do so at as shallow angle as is practical.
- All through traffic that can safely navigate through a TSS, other than those transiting between ports directly inshore of a TSS, or vessels less than 20 metres in length, or sailing vessels or vessels engaged in fishing, should *not use the inshore zone of the TSS* except in an emergency, such as to avoid collision.
- Through traffic not intending to pass through the TSS should stay well to seaward of it.

Vessels other than through traffic should comply with the following:-

- Vessels crossing a TSS must do so at a heading as close as practical to 90° to the flows of the traffic in the through lanes.
- Vessels, as far as possible, should avoid anchoring in a TSS or near its ends.
- Vessels of less than 20 metres in length, or sailing vessels or vessels engaged in fishing should not impede the passage of any through traffic vessel.
- Vessels other than those joining, leaving or crossing a TSS should not enter the separation zone except for the purpose of fishing, or to avoid immediate danger.
- Vessels navigating near the ends of TSS should do so with caution.

Vessels engaged in operations that restrict their manoeuvrability, such as cable or pipe laying or carrying out maintenance work on buoys are exempt from the above rules *but only* in so far as is absolutely necessary for their work to be done.

Section II – Conduct of vessels in sight of one another

Rule 11 - Application
The Rules in this section concern vessels in sight of one another. This may seem self evident but it is worth pointing out that the regulations developed long before radar was in widespread use and so they made a large distinction between reacting to other visually vessels detected and the response to only being made aware of their presence nearby by their sound signals in fog.

Rule 12- Sailing vessels
This Rule only applies to sailing vessels in sight of one another so it need not concern us.

Rule 13 – Overtaking
This important Rule states that *any vessel* overtaking another must keep clear of the vessel being overtaken, regardless of the categories of the vessels involved (see Rule 3), so a sailing yacht overtaking a power driven vessel must keep clear of it. Overtaking situations between two cargo ships or tankers often lasts a long time as the speed differential may only be one or two knots. Consequently, the vessel being overtaken may have to alter course during this period to avoid collision with a third vessel crossing its path or for navigational reasons, in which case,

the overtaking vessel must allow it sea room to do so. This should be remembered because, although the Rule does not specify which way the overtaking vessel should alter course to keep clear, many watch keeping officers seem to believe altering to starboard is the practice of good seamanship. *However*, this will depend on the circumstances, as blocking the other vessel from also altering course to starboard could put it in an awkward situation with crossing traffic, as will become evident with Rules 14 and 15. If the faster ship cannot overtake without putting the slower vessel in hazard, then it *must slow down*.

The Rule defines an overtaking vessel as one that is closing its range with another vessel from a direction of more than 22.5° *abaft* the slower vessel's beam. It should always be appreciated that ships can encounter each other from any direction in open waters but, nevertheless, it seems strange that another vessel approaching one's own ship from abaft the beam, but by less than 22.5 °, is regarded as crossing rather than overtaking, as it will be the faster ship if there is a risk of collision. The origin of the 22.5 ° abaft the beam seems to be lost in the mists of time. Rules 13 also states that if the watch keeper of a vessel is in any doubt that his ship is overtaking another, then he should assume that it is and keep clear. No subsequent change in the relative bearing between the two vessels can relieve the obligation of overtaking vessel to keep clear until it well past the overtaken vessel.

Rule 14 – head on situation
If two vessels on reciprocal or near reciprocal courses encounter each other so as to create a risk of collision, then each shall alter course to starboard so that they pass on the port side of each other. 'Near reciprocal' is usually taken to mean that each vessel sees the other within about 3° off right ahead with masts almost aligned or both its red and green sidelights in view.

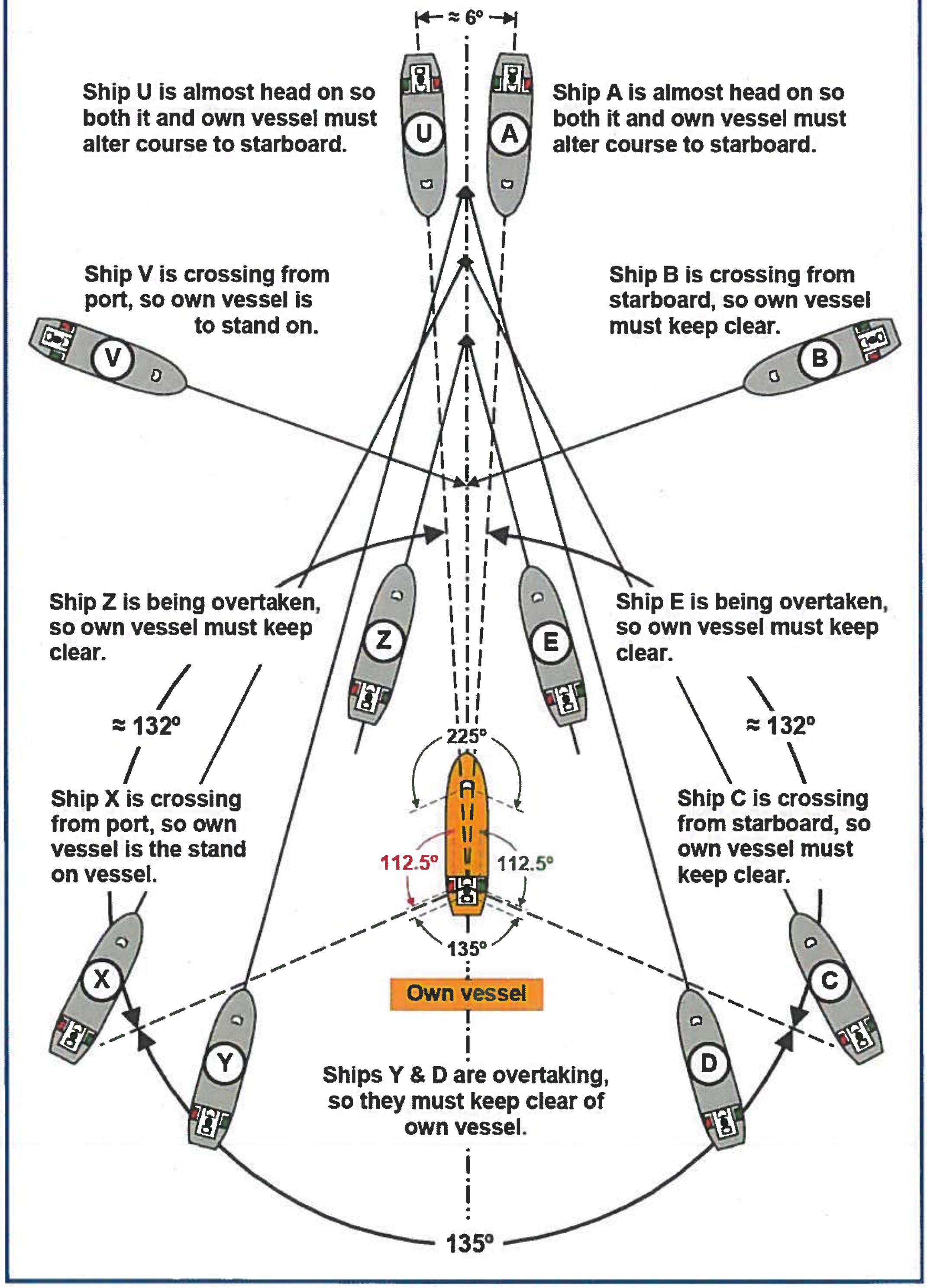
Rule 15 – Crossing situation
If two power driven vessels are crossing with a risk of collision, then the vessel with the other on its starboard side shall keep clear and, as far as possible, avoid passing ahead of the other vessel. Vessels are deemed to be crossing if each sees the other from a direction of about 3° off the bow (if in doubt, assume a head on situation and obey Rule 14) to 22.5 ° *abaft* the beam.

Rule 16 – Action of the give way vessel
This Rule states that to avoid collision, the give way vessel shall, as far as possible, take early and substantial action that is easily observable from the stand on vessel. This is usually interpreted as altering course to starboard to put the stand vessel on the port side and then, as the bearing of the stand on vessel opens to port (i.e. it is seen moving further around from the give way vessel's bow), then the give way vessel can come back slowly to its original course whilst clearing the stand on vessel's stern to port at a reasonable distance. This is fine in crossing situations where the stand vessel is viewed well forward of the beam, particular in open seas because the stand on vessel clearly sees the action as safe. However, if the stand on crossing vessel is viewed close to abeam, then the alter course required is large and initially involves aiming almost at the stand on vessel, which can be somewhat alarming in confined waters, particularly if there is heavy traffic about. The alternative of slowing down to allow the stand on vessel to pass ahead is less immediately obvious to a visual observer, but it may be the

better option in confined and congested waters and ARPA radar and/or AIS displays should pick up a substantial speed reduction (e.g. 15 knots to 10 knots) of a target reasonably quickly.

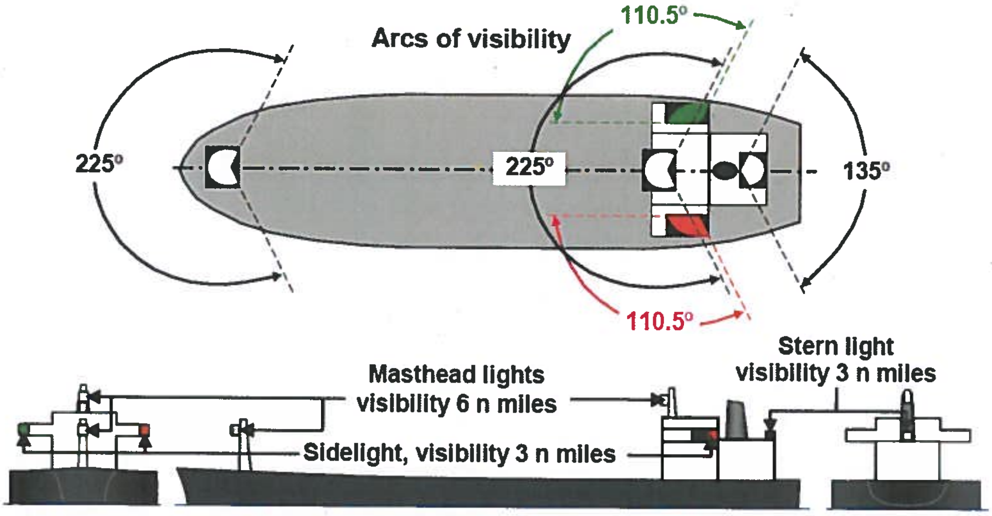
Rule 17 – Action of the stand on vessel
Whenever a risk of collision exists, the stand on vessel shall maintain its course and speed until it considers that collision cannot be averted by the give way vessel's actions alone, at which point it can take action but shall, wherever possible, *not alter course to port*. Although altering course to port may seem an attractive action for the stand on vessel in risk of colliding with the give vessel in a crossing situation, *it is extremely dangerous at close quarters* because the give vessel may suddenly wake up to the risk and alter to starboard, which will almost certainly result in it ramming the stand vessel side on. If the stand on vessel makes a large alteration to starboard it will pass through moving in the same direction as the give way vessel and this greatly increases the time available to avert collision. This is really the only option available to the stand on vessel and the action taken by most watch keepers in this situation is turn hard to starboard and continue the turn through a full 360° if the non compliant give way vessel takes no action, in which case it will have passed clear by the time the stand on vessel resumes its original track. Making the a full 360° turn does require the necessary sea room to be available and clear of other vessels and putting the helm hard over at full speed is a violent manoeuvre, as it will greatly increase the engine load (thus sending exhaust temperatures sky high) whilst also heeling the vessel over to an extent that depends on its stability state. However, slowing down is *not* an option for the stand on vessel at this late stage in events, as there is insufficient time for it to take effect and even if there were, it could make the collision more likely to occur if the give way vessel simultaneously alters course to starboard.

Figure 1 - The different risk of collision situations between power driven vessels.



The arcs of visibility of the navigation lights match the boundary between a crossing and an overtaking vessel, as shown in figure 2.

Figure 2 - The lights displayed by a power driven vessel when underway.

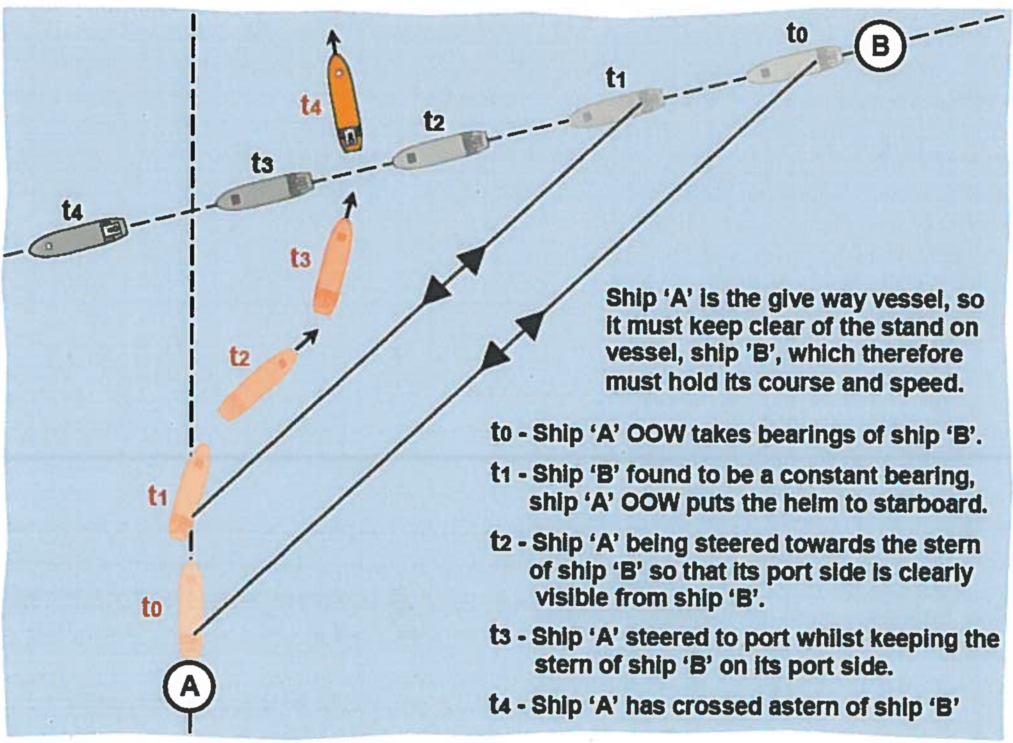


Vessels of 50 metres in length or more display two masthead lights on the centreline with the forward light distinctly lower than the after one. Vessels less than 50 metres in length need only display a single masthead light but can display two.

The stern light can only be seen from directions at which the other lights are not visible.

The lights are used at night to provide the first indication of the *possibility* of a risk of collision.

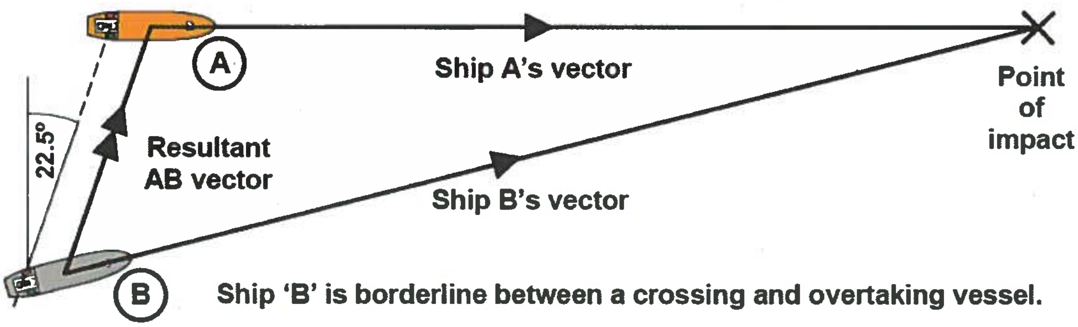
Figure 3 - The usual action to avoid collision in a crossing situation
(The size of the vessels is exaggerated)



In figure 3, the officer on watch on ship 'A' initially sees the port side (or its red side light at night) of ship 'B' on his starboard side and so he will be aware of the possible risk of collision in which his ship must act to avoid. On seeing the starboard side of ship 'A' on his port side, the officer on the bridge of ship 'B' will similarly realise that there is a possible risk of collision situation in which his ship is the stand on vessel. On the risk of collision being confirmed to both officers by observing that each other's vessel remains on a steady compass bearing, the officer on ship 'A' turns his vessel to starboard and steers to a point just aft of ship 'B's stern. The officer on ship 'B' sees the green sidelight of ship 'A' disappear as the red sidelight comes into view, so he is immediately re-assured that the give way ship has taken appropriate action and that a collision is no longer possible. The alternative course of action available to the officer on ship 'A' would be to slow down to allow ship 'B' to pass ahead. This can be equally effective at avoiding a collision and requires less sea room *but* it not immediately obvious to the officer on the stand on ship and whether or not the risk of a collision still exists can only be determined by taking a further series of compass bearings.

The above paragraph explains why altering course to go around a crossing vessel's stern, rather than slowing down is so much the preferred action by officers on a give way vessel in crossing situations, as it complies so well with Rules 8 & 16 in most cases. However, the circumstances shown in figure 4 are an example of a case in which the view of the other vessel's lights does not always provide such a clear indication of the situation.

Figure 4 - The lights visible in an overtaking/crossing situation with a risk of collision. (The size of the vessels is exaggerated)



It is not clear to the officer on the bridge of ship 'A' as to whether his ship is a give way vessel in a crossing situation or the stand on vessel in an overtaking situation. On the other hand, at night the officer on ship 'B' will assume he is overtaking if he sees the stern light of ship 'A' or that his is the stand on vessel in a crossing situation if he sees ship 'A's green sidelight and masthead lights.

Rule 13 states that; *"When a vessel is any doubt as to whether she is overtaking another, she shall assume that this is the case and act accordingly"* (i.e. keep clear of the other vessel). A problem arises when this situation occurs during the night, as the officer on the bridge of ship 'B' in figure 4 will feel quite certain of his vessel's status because he will assume *either* that he is overtaking if he sees the stern light of ship 'A' *or* his ship is the stand on vessel in a crossing situation if he sees ship 'A's sidelights and masthead lights. It is the officer on ship 'A' who has no immediate indication from the lights of ship 'B' as to whether it is an overtaking or crossing vessel and, if the latter is the case, then he will have to take evasive action if a risk of collision exists. It is quite easy for him to think that ship 'B' is overtaking, as he will see the red side light and masthead lights of a faster ship abaft his starboard beam with the vessel appearing approximately sideways on to him.

The fact that neither the range nor the bearing of ship 'B' are changing very quickly would also fit in with ship 'B' being the overtaking vessel, as overtaking situations can be quite prolonged. If the officer on ship 'B' in figure 4 believes that his is the stand on vessel in a crossing situation whilst the officer on the bridge of ship 'A' thinks that he is being overtaken by ship 'B', then neither will take any action until the range between two ships has reduced to the extent that it becomes obvious that they are going to run into each other. If ship 'A' were to alter course to starboard, it would have to turn through nearly 120 ° to clear the stern of ship 'B', which is a daunting prospect when the other ship is so close. The only action that ship 'A' could possibly take to avert collision would be to drastically reduce speed *but* the easiest solution by far would be for ship 'B' to make a relatively small course alteration to starboard. This is what Rule 13 would oblige it do in daylight, as the situation would then not be clear to the officers on *either* ship, so the officer on ship 'B' should act as if his ship was overtaking the other vessel by keeping clear of it.

Situations like that shown in figure 4 are likely to arise where vessels converge from slightly different directions to join a lane in a traffic separation scheme, though in these cases, the ability to alter course can be restricted by the proximity of other vessels and the width of the lane. *Watch keeping officers must think ahead and be prepared to make adjustments to their ships' speed, as well its course, to avoid as far as possible a risk of collision arising.*

Rule 18 – Responsibility between vessels
This Rule lists which categories of vessel defined in Rule 3 should keep clear of others in *crossing* and *head on* risk of collision situations, not withstanding the demands of Rules 9 & 10 with regard to not impeding large vessels in narrow channels or traffic separation schemes.

So, a power driven vessel under way should keep clear of:-

- A vessel not under command,
- A vessel restricted in her ability to manoeuvre,
- A vessel engaged in fishing,
- A sailing vessel.

A sailing vessel under way should keep clear of:-

- A vessel not under command,
- A vessel restricted in her ability to manoeuvre,
- A vessel engaged in fishing.

A vessel engaged in fishing when under way should, as far as possible, keep clear of:-

- A vessel not under command,
- A vessel restricted in her ability to manoeuvre.

All vessels other than those that are either not under command or restricted in their ability to manoeuvre should not impede the passage of a vessel showing the lights or day time signals to indicate that she is constrained in manoeuvrability by her draught, relative to the depth of water that she is in, However, the Rule does require such vessels to be navigated with caution.

There is no specific requirement as to how a vessel with a lowing position on the priority list should keep clear of on that is higher up on the list. If a power driven vessel is in risk of colliding with a fishing vessel crossing from port to starboard, then it is free to alter course to port and pass around the fishing vessel's stern or alter to starboard to pass well ahead of the fishing vessel.
In fact it is probably better to pass ahead of a vessel trawling rather than go around its stern, as the trawler will be towing its nets. Rules 24-27 detail the lights and day time shapes that the different

categories and sub-categories of vessels show to indicate any feature relevant to the clearance it should be given, such as the direction and the extent of fishing gear that may be deployed close to the surface.

Section III – Conduct of vessels in restricted visibility.

Rule 19 – Conduct of vessels in restricted visibility
This Rule requires vessels in or near an area of restricted visibility (e.g. a fog bank, a rain/snow squall, etc.) to proceed at a safe speed with regard to the prevailing circumstances (see Rule 6) but, in any case, power driven vessels should have their engines ready for immediate manoeuvre. The master should be informed and measures appropriate to the circumstances should be taken, such as putting a man on the wheel, posting an extra lookout and/or having an extra officer on the bridge so that the radar can be continually monitored. *(SOLAS regulations require every vessel of 500 gross tonnage or more and built after 1st September 1984 to be equipped with one radar set, whilst vessels of 10,000 gross tonnage or more must have two radar sets and, if a vessel was built after 1st September 1984, then the radars must be fitted with ARPA (automatic radar plotting).*

Use of the vessel's whistle is not specifically mentioned in this Rule but vessels in or near areas of restricted visibility must make the appropriate sound signal, as given by Rule 35. (Power driven vessels under way and making way must make one prolonged blast at intervals of not more than 2 minutes and two prolonged blasts at the same interval when stopped in the water.) The whistle on even the largest vessel is unlikely to be heard at a range greater than 2 nautical miles, which reduces to 1.5 miles for vessels between 200 & 75 metres in length and to 1 mile for vessels between 75 & 20 metres in length. Consequently, there is little point in sounding the whistle if the visibility is known to be greater than the whistle's audible range.

The Rule also stipulates that if a vessel is detected by radar alone, then its compass bearing and range must be recorded at regular intervals to determine whether or not a risk of collision exists. If such a risk does exist, then early and substantial action should be taken to avert the collision, providing that, as far as possible, the action does not involve the following:-

- Altering course to port for a vessel ahead of the beam, other than one being overtaken.
- Altering course towards a vessel abeam or abaft the beam.

Radar targets are to be observed in the same way as if the targets were visible, so that a risk of collision can be identified, but the only way to determine a target's true course and speed, and hence decide on the appropriate actions to take, is to plot it and construct a vector triangle from the target's relative course and speed and own vessel's course and speed. This used to be done manually on a paper plotting sheet and then the invention of a reflection plotter allowed for the plot to be done directly onto the radar display with a china graph pencil. However, most vessels of significant size are now equipped with ARPA radars, so targets simply have to be selected and radar's computer does the rest, though the accuracy of the plot depends upon the accuracy of the own ship's speed input, which may be manual, or from a log, or from the ship's electronic navigation, such as GPS. Early and substantial evasive action is necessary for the action to be easily observable on the radar of the target vessel, so a series of small course alterations should be avoided as much as is possible. Speed alterations are less immediately obvious than course alterations but if a significant change in speed is made in good time, then it will be observable on the target's radar.
Speed can be reduced quicker than it can be increased (if it can be significantly increased at all) and reducing speed early will allow more time to resolve a collision situation in most circumstances.

The final part of this Rule requires vessels to slow down to their minimum steerage speed if a fog signal from another vessel has been heard to apparently come from forward of the beam, except in cases where it has been determined that no risk of collision exists. If necessary, the vessel should stop in the water and proceed with extreme care until the danger has past. (The Rule does not say how to determine that there is no risk of collision because, even if a target on the radar is passing clear, it cannot be identified for certain as the source of the fog signal.)
In my opinion, the final part of this Rule does not take the advances in navigational equipment (such as ARPA and AIS) sufficiently into account and I would question the wisdom of following it in most circumstances other than when a vessel's radar is not functioning. Reducing a vessel's speed in fog from 16 to 12 knots is one thing but to stop or creep along at a very slow speed in the middle of a busy traffic lane is something different altogether and I would not advise it unless the radar shows that all the other targets have also slowed down to similar speeds.

Concluding comment

The Rules of the Road are drilled into all navigating officers from the moment they start their training to when they sit for their final certificate of competency examination. In the past, it was common practice by college lecturers to encourage their students to memorise them so that they could be quoted word for word in the oral examinations (and this may still be the case in some parts of the World). However, the rules are not totally prescriptive because they cannot lay down precise instructions to deal with every conceivable situation, so they often contain phrases such as "the practice of good seamanship" and "as far as possible". Consequently, they should be taken in the spirit of co-operating with fellow mariners to avoid collision (though the spirit of self preservation can be a useful motivator as well) and applied with common sense. For example, small alterations of course and/or speed should not be made if a risk of collision exists but they are quite acceptable to avoid getting into such a situation, so ships converging at the entrance of a traffic separation lane can usually adjust their courses *and speeds* to merge in a way that does not create a collision risk (this is an example of ships not impeding each other).

If the rules have a failing at all, it is the slight reluctance to openly acknowledge the need to rely upon navigational equipment, such as radar, AIS and electronic charts, that are now so necessary in areas of high density traffic in which ships can be encountered coming from all directions. These pieces of equipment have often been described as 'just aids to navigation' with a suggestion that they should not be fully trusted but everything used to navigate a ship, from the charts (paper or otherwise) to the watch keeper's own eyes and the compass, is an aid to navigation. It is certainly true that officers on the bridge must know how to use the equipment and fully understand what it is showing them, as there is an unfortunate history of this not being the case when a new piece of equipment is first introduced (As testified by the number of 'radar assisted collisions that occurred in the 1950's and 1960's when radar on merchant ships became widely used.) However, properly set up radar and AIS plots can provide more precise and readily available information about ship movements in both clear and reduced visibility situations than visual observations alone. This can allow traffic to merge and for ships to cross main traffic flows without creating unnecessary collision risks in highly congested waters, such as off the Dutch Coast between the North Hinder light and the Off Texel traffic separation scheme where the proposed wind parks are to be built. As regards to the wind parks themselves, it is believed that if they are *properly sited* in such a congested area, they can actually *lower the risk of collisions occurring* by imposing greater regulation on the directions of traffic flow in much the same way as roundabouts and traffic islands do on the road. There was much said at the meeting in Den Haag regarding the questionable competency of the bridge officers on some of the ships navigating these waters but it is still likely that even the most incompetent officer will alter course to avoid running into a wind turbine. It is also believed that some of the problems arise because some watch keepers feel unable to slow down, *either* because the ships' engines are set at full away speed and not adjusted to be slowed down without setting off alarms and possibly causing a blackout *or* the ship's owners have an ethos of not slowing down (the two reasons are not mutually exclusive). *Rule 6 (safe speed) is not new and it should be reinforced by the marine authorities in whatever ways are available to them.*

11.2 Ship Manoeuvrability. (The IMO minimum manoeuvrability standards)

The 'International Maritime Organisation' (or 'IMO') requires vessels 100 metres or more in length and *all* tankers and gas carriers, regardless of length, constructed after *January 1st 2004* to comply with the set of minimum manoeuvrability criteria given in the IMO Resolution MSC.137 (76). The manoeuvrability characteristics are to be measured by conducting specified tests during the full scale trials, which are explained in more detail in MSC/Circ.1053. Broadly speaking, the minimum required standards measure the ship's steering and emergency stopping capabilities under the test conditions of the trials.

The conditions required for the test manoeuvres

The trials should be conducted in following conditions:-

1) Unrestricted sheltered waters, the depth of which should exceed 4 times the ship's draft.
2) Calm seas with a wind force no greater than Beaufort force 5 (21 knots at 6 metres above sea level) and waves no greater than sea state 4 (wave height not to exceed 2.5 metres).
3) Any current should remain constant throughout each of the separate test manoeuvres so that its effect on the ship's performance can be subtracted from the measured results.
4) The ship is to be at even keel and loaded to within 5% of its summer draft displacement with adequate stability to counter the heeling moment due to turning at full helm.
5) The ship should be on a steady course heading into the wind and moving at the trial speed for at least two minutes before the start of each test manoeuvre.
6) The ship's engine should be at 85% of its maximum power output and providing a speed through the water that is at least 90% of the vessel's maximum design speed.

The environmental conditions, the ship's loaded state and the initial engine revolutions is to be noted for each test as well as the ship's heading and position at significant points of the tests.

The steering test manoeuvres

The turning circle test

This test is carried out to measure a ship's full circle turning ability. The helm is put and kept hard over at 35° whilst the vessel, head turns through 360° to come back onto its initial heading. The test must be repeated with the helm put hard over in the opposite way so that any steering bias to port or starboard can be detected after taking the effects of any current into account. In both cases, the ship's turning circle must comply with the following distances, as measured from its position when the helm was first put hard over:-

1) The ship should not have advanced in the direction of its original heading more than 4.5 times its length by the time its heading has changed through 90°
2) The transverse distance between the ship's start position and its position after the heading has changed through 180°, which is known as the 'tactical diameter', must not exceed 5 times the ship's length.

The initial turning test

This test is carried out to measure a ship's course altering ability. The helm is put over 10° and kept there until the vessel's has altered through 10 ° at which time it must not have advanced more than 2.5 times its length in the direction of its initial heading. As with the turning circle test, the initial turning test must be repeated with the helm put hard over in the opposite way to detect any steering bias to port or starboard after taking the effects of any current into account.

Figure 5 – The turning circle manoeuvre

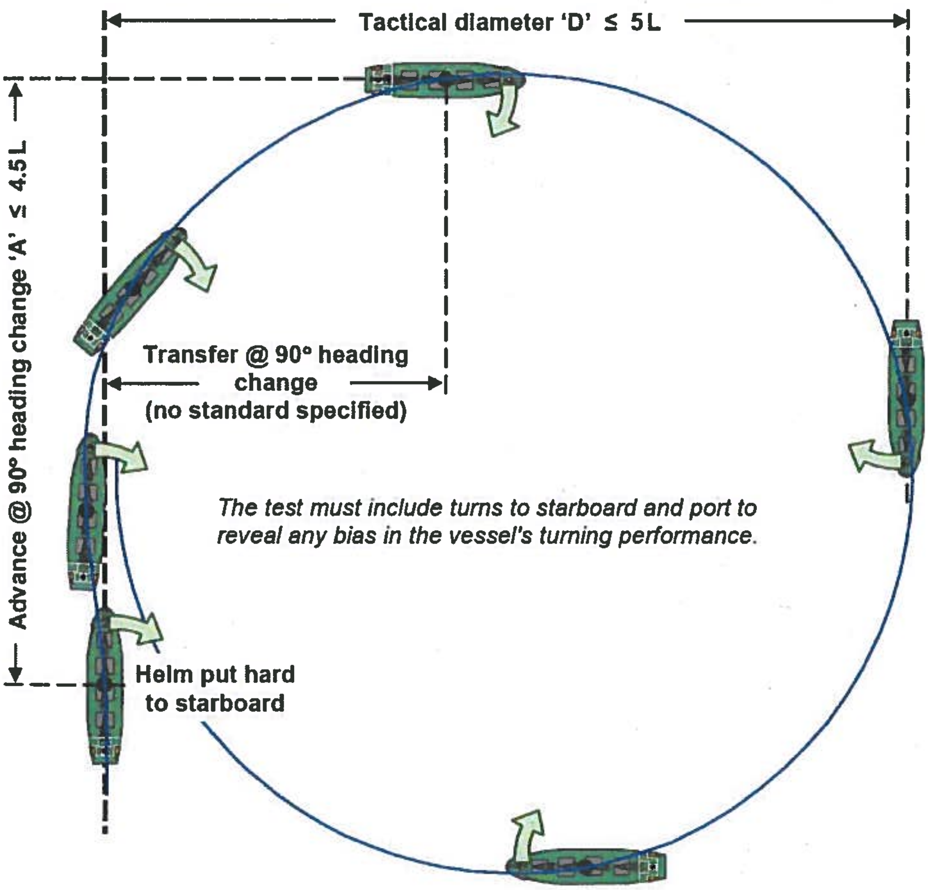
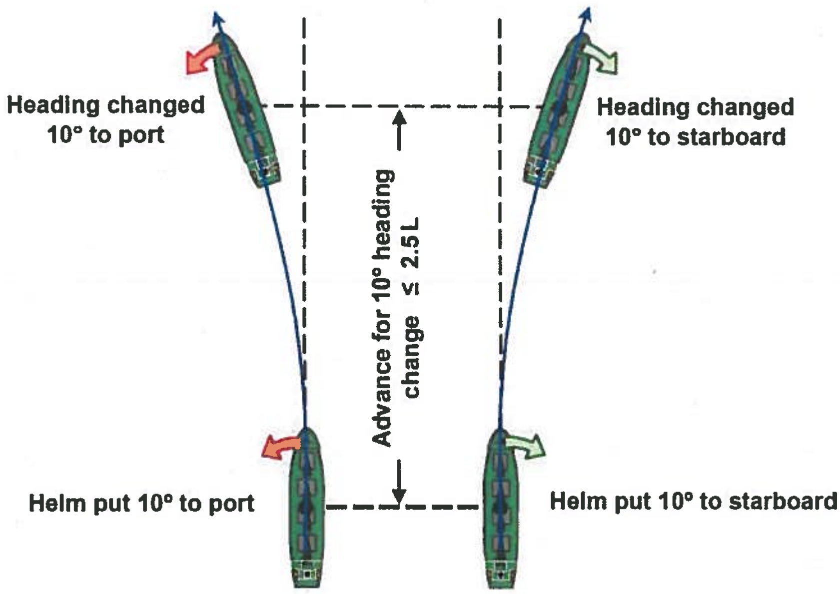


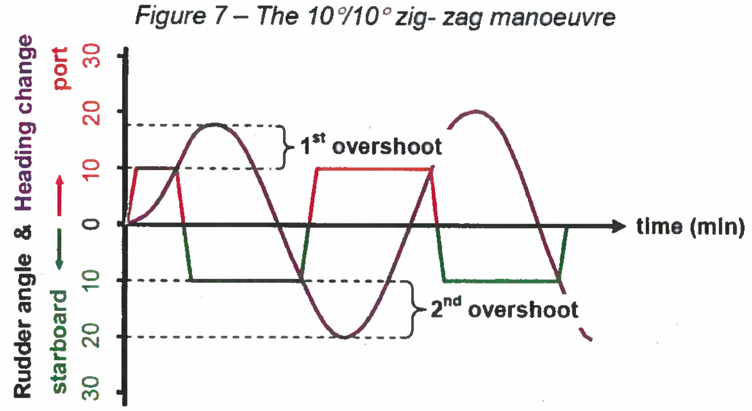
Figure 6 – The initial turning manoeuvre



The zig-zag tests

These tests are conducted to measure a vessel's yaw checking ability and directional stability. In the 10°/10° zig-zag test, the helm is put at port 10 and held until the ship deviates 10° off course to port at which point the helm is reversed to starboard 10 until the heading is 10° to starboard of its initial course when the rudder is put back to port 10. The cycle is repeated several times and the 1st and 2nd overshoot angles beyond the initial heading are measured. The 20°/20° zig-zag test applies an initial 20° rudder angle, which is reversed when the ship's heading alters by 20° to measure the 1st overshoot angle.

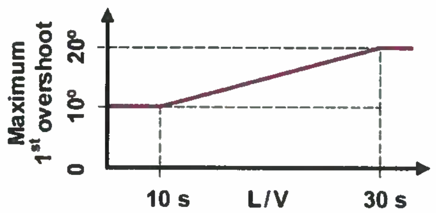
Figure 7 – The 10°/10° zig- zag manoeuvre



1^{st} overshoot $\leq 5° + 0.5(L/V)$ but $10° \leq 1^{st}$ overshoot $\leq 20°$

Where $L/V = \dfrac{\text{Ship's length 'L' measured in metres}}{\text{Ship's speed 'V' measured in metres/second}}$ seconds

2^{nd} overshoot $\leq 17.5° + 0.75(L/V)$ but $25° \leq 2^{nd}$ overshoot $\leq 40°$



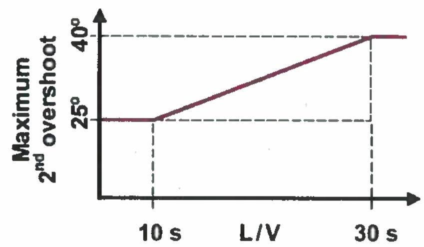
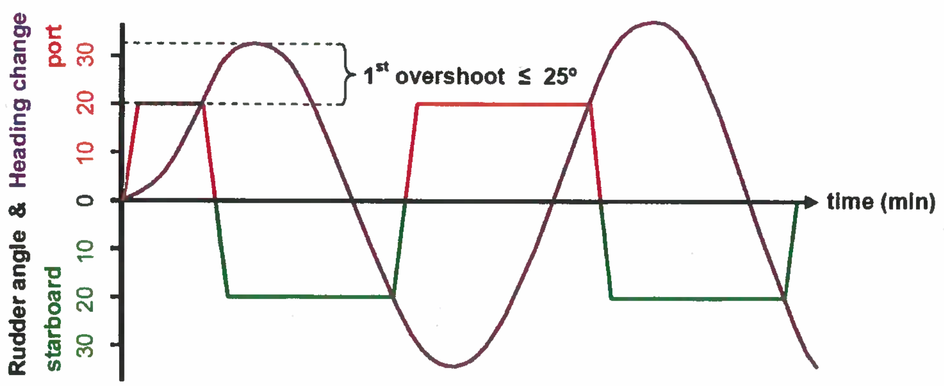


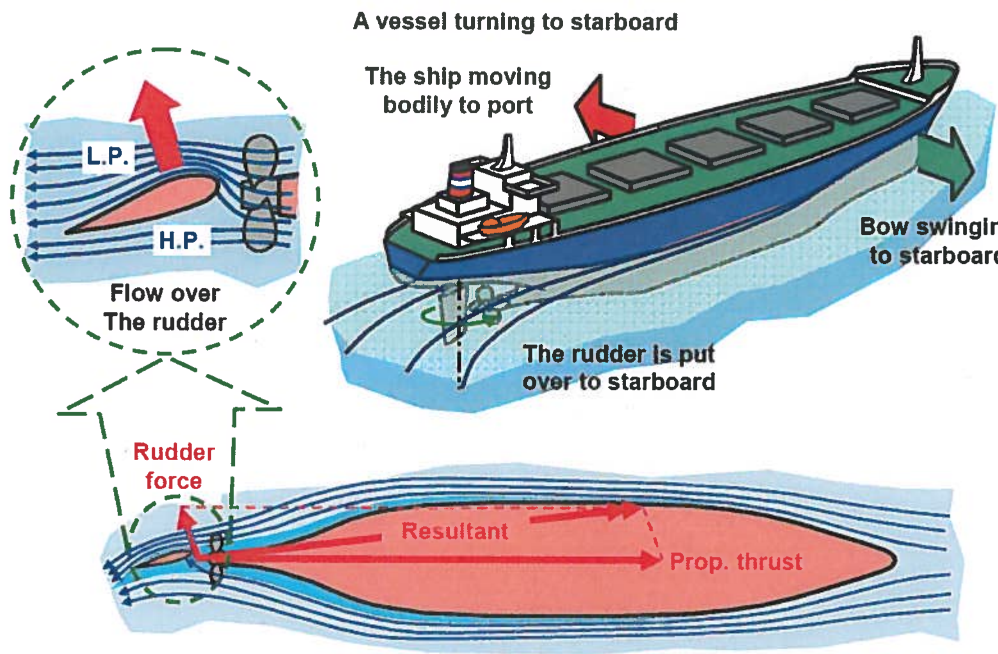
Figure 8 – The 20°/20° zig- zag manoeuvre



Directional Stability

Directional stability is the ability of a ship to settle on a new steady heading in calm seas with the rudder amidships after being knocked off course by a transient force. There is no inherent imbalance of forces to return the ship to its original heading, though if a wave crest striking the bow obliquely yaws the ship off its set heading, then the wave will tend to yaw a directionally stable ship back again as it passes along the vessel's length. To understand directional stability further, it is necessary to examine how a ship is steered by the action of the rudder.

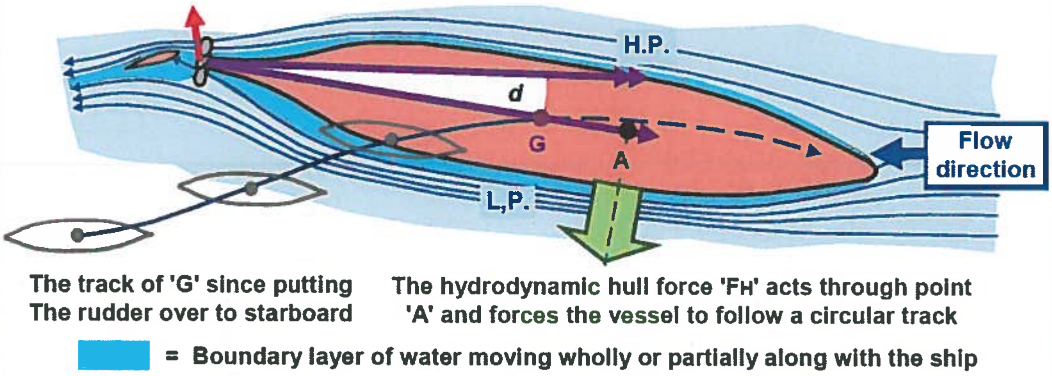
Figure 8 – The action of a rudder in altering a ship's course



The propeller directs flow asymmetrically around the rudder to produce a force to port on the stern, swinging the bow to starboard. The resultant of propeller thrust and the rudder force is deflected to port of the centreline.

The vessel is following a circular track

As the vessel drifts bodily out to port and the bow swings to starboard, the flow begins to divide asymmetrically around the immersed hull.

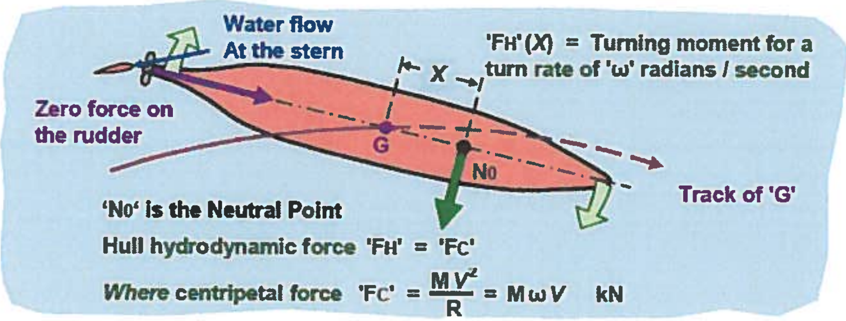


The hull now moves through the water making a drift angle 'd' to the streamlines. Low pressure is created on to starboard due to the accelerated flow whilst high pressure is produced to port. A centripetal force acts to starboard of the vessel's c of g. so the ship follows an arc of a circle.

When the ship's rudder is put over to starboard, it makes an angle of attack with the water flow and so acts as foil to generate a sideways force to port that swings the ship's head to *starboard* whilst the ship simultaneously moves bodily, or *'drifts'*, out to *port.* The pressure increases on the port side whilst the hull develops an angle of attack, known as the *'drift or yaw angle'*, with the water flow. Asymmetrical flow develops with the immersed hullform acting as a vertical hydrofoil to reduce the pressure on the starboard side and so create a pressure difference across the hull sides, which produces the centripetal force that makes the ship follow a curved track to starboard. The curved track becomes an arc of a circle when the rate of yaw in degrees / second equals the angular rate at which the vessel moves along the track.

The effective point through which the hydrodynamic hull force acts is invariably forward of amidships because the boundary layer of disturbed water increases in thickness towards the stern and so reduces the effectiveness of the aft half of the hull acting as an hydrofoil. The hydrodynamic hull force consequently also creates a yawing moment to reinforce that of the rudder. How far forward of amidships the hydrodynamic hull force acts depends on the shape of the underwater hull but, if it acts through a point aft of the bow, known as the 'neutral point', then its moment is sufficient to maintain the yaw required to follow the circular track for that particular rudder angle and the force on the rudder disappears. This condition is known as neutral directional stability and the neutral point moves closer to the bow as the rudder angle in increased. A ship is directionally stable if the hydrodynamic hull force acts aft of the neutral point but directionally unstable if the hull force acts forward of the neutral point.

Figure 9 – The condition of neutral directional stability



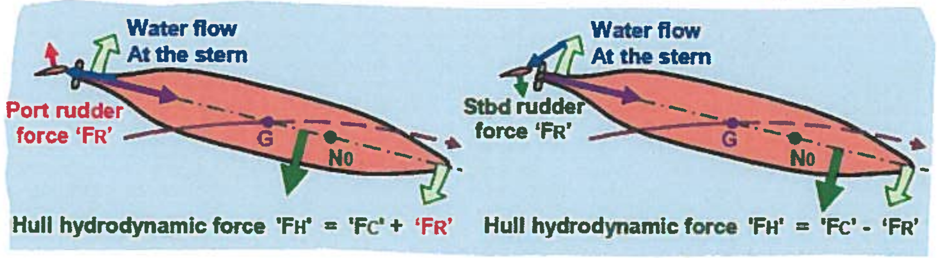
'M' = The ship's mass in tonnes, 'R' = Turn radius in metres & V = The ship's speed in m / s
The drift angle at the stern produces a zero angle of attack on the rudder the athwartships rudder force is zero with the rudder remaining hard over.

Directional Stability

The hull force 'FH' acts aft of neutral point 'No' and is greater than the centripetal force 'FC', as it must counter the port rudder force 'FR'.

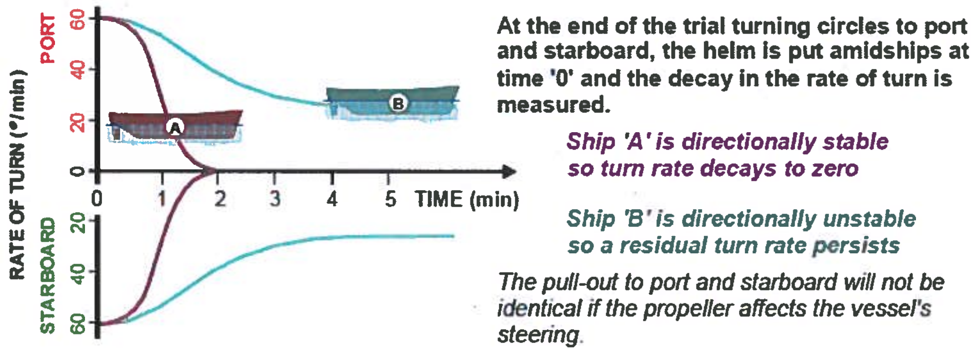
Directional Instability

The hull force 'FH' acts fwd of neutral point 'No' and is less than the centripetal force 'FC', as it is now re-inforced by the stbd rudder force 'FR'.



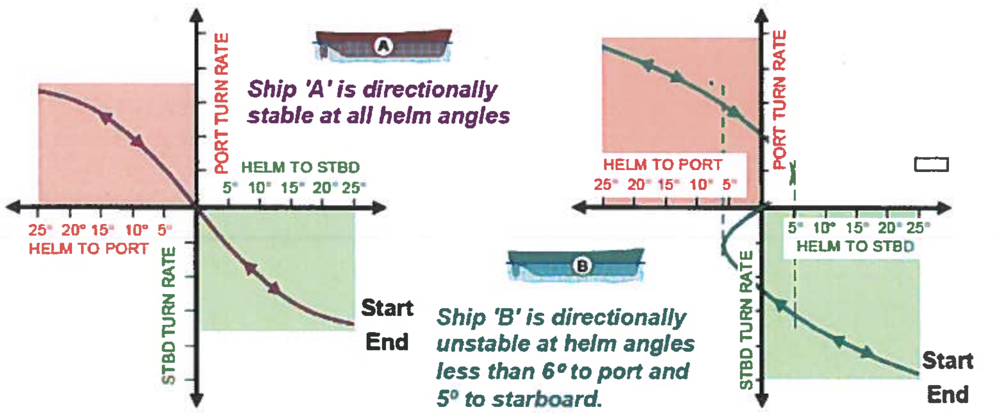
MSC/Circ. 1053 suggests further tests that can define directional stability more precisely, such as the *'pull out'* manoeuvre that consists of putting the ship's helm to amidships at the end of the turning circle manoeuvre (see figure 5) and then measuring the decay of the rate of yaw. A directionally stable vessel will settle on a steady heading in calm conditions but a directionally unstable ship will retain a residual constant yaw rate for as long as the rudder stays amidships.

Figure 10 – The pull-out manoeuvre for directionally stable and unstable ships



The yawing moment required for a *steady* rate of turn increases more than the centripetal force with the rudder angle, so the neutral point moves closer to the bow as applied helm is increased and the steering control of a directionally unstable ship is regained at larger rudder angles. This is measured by the *'spiral test'*, which applies helm to port or starboard by a pre-determined amount, say 25°, and records the resulting *steady* rate of turn. When this is completed, the helm is reduced by 5° and the new *steady* rate of turn is recorded after which the helm is reduced by a further 5° and, again the *steady* rate of turn is recorded before a further reduction of helm is made. The process is repeated until the helm is 25° in reverse direction at which point, the helm sequence is again reversed in 5° steps with the *steady* rate of turn being recorded for each step until the helm is returned to its initial value and the ship has followed a double spiral track.

Figure 11 – Results of the spiral test for directionally stable and unstable ships



*When a ship is directionally unstable below a critical helm angle, then the steady rates and direction of turn at smaller helm angles are determined by the ship's rate of turn when the rudder angle is reduced. This is known as **'steering hysteresis'**.*

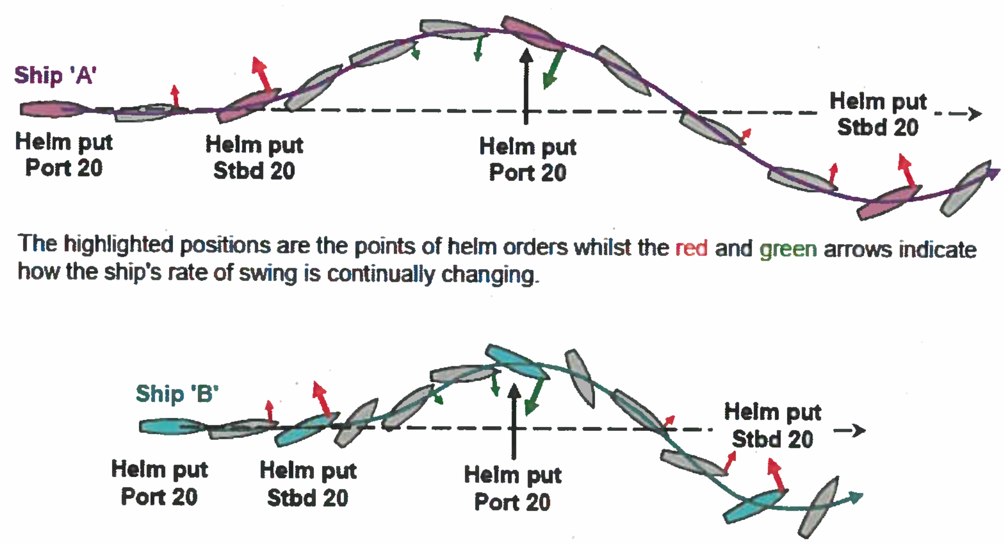
MSC 137 does not require the spiral or pull out manoeuvres to be carried out and so it does not specify minimum standards for the two tests. However, a vessel that is directionally unstable up to rudder angles of 10° or more would fail the 10°/10° zig-zag test because applying 10° of helm to counter the initial rate of yaw produced by the rudder being put over in the opposite direction would be insufficient to reverse the ship's yaw or even just stop it.

Directional stability is *reduced* by the following features of the immersed hullform:-

1) The ship has a relatively small length to beam ratio, as this increases the thickness of the boundary layer in the aft part of the hull.
2) The ship has a bluff rounded stem, as this increases the pressure difference between the port and starboard sides of the hull's fore part, particularly if the vessel is fitted with a bulbous bow and is at a draft that ensures the bulb is totally submerged.
3) The ship is trimmed by the bow, as this increases the forward area of the submerged hull whilst reducing the area of the aft part of the hull.

Directional *in*stability is not necessarily a totally negative hull characteristic, as it does produce a faster turn rate than occurs in a directionally stable ship of the same size and large full bodied ships, such as bulk carriers and VLCC's would not be able to turn in five times their length if they were designed to be directionally stable. However, steering a directionally unstable vessel requires continually applying small short alternating helm actions to ensure that the full rate of turn for the applied rudder angle is not allowed to develop. The rapid build up of rate of turn with any prolonged rudder angle can take the unwary by surprise and control of the steering is easily lost, which sometimes can only be regained by allowing the ship to complete a 360° turn. If a ship is being steered by an autopilot, then the 'counter helm' should be at a relatively high setting, as this responds to the rate of change of heading and so will check the rate of turn. The difference between the behaviour of a directionally stable ship compared to one that is unstable is shown in figure 12.

Figure 12 – The behaviour in the 20°/ 20° zig-zag test of a directionally stable ship compared to one that is directionally unstable



Ship 'A' is directionally stable, so it takes more time to respond to the helm reversals and its track more closely follows the changes in the ship's heading than ship 'B', which is directionally unstable.

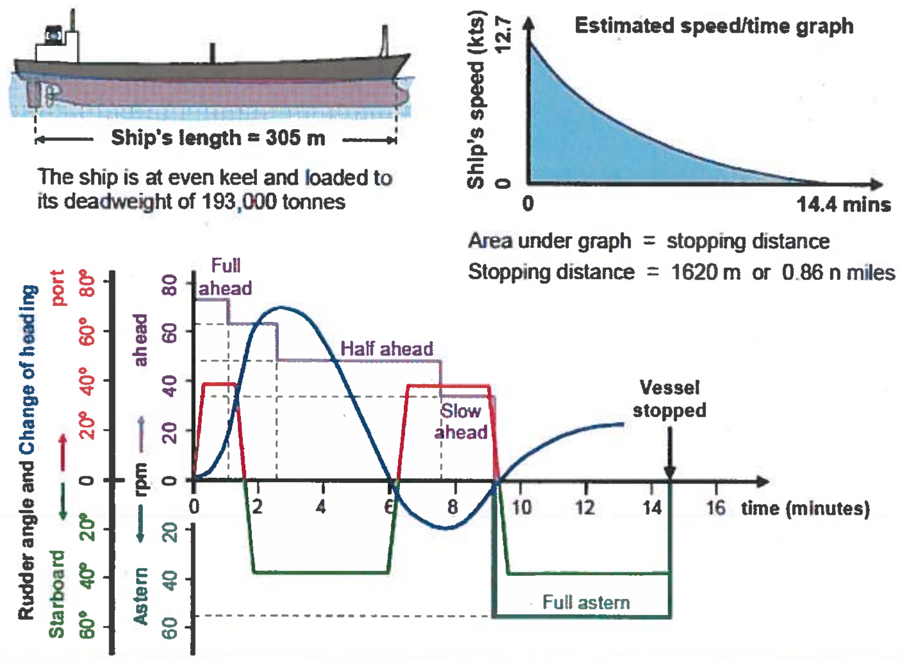
A ship's emergency stopping capability

The full astern stopping manoeuvre

The ship should come to a stop from its full speed in no more than 15 times its length, though this may be increased for very large displacement vessels, such as ULCC's but in any case it should not exceed 20 times the vessel's length. The stopping distance is to be measured from the ship's position when the full astern order is given to when it is stopped in the water. This is a very generous allowance, as manoeuvring trials carried out on the 193,000 dwt, 305 metre long steam turbine tanker 'Esso Bernicia' showed that even a ship of this size could be stopped in a considerably shorter distance than 15 times its own length. Paper 19 presented to the Royal Institute of Naval Architects' 1972 spring meetings showed that the 20°/20° zig-zag manoeuvre combined with progressive reductions in the propeller's rpm for each reversal of the helm could bring the ship to a stop from 12.7 knots after only advancing 1620 metres (5.3 times its length) in the direction of its original track and with a lateral deviation of 365 metre to port of the track. However, the builder's full astern stopping test from the faster speed of 16.6 knots for the ship in the loaded condition showed the vessel to have advanced 5250 metres (17.2 times the ship's length) before coming to a stop with a similar lateral deviation of 320 metres to port. The two results are not directly compatible as the initial speeds differ but the paper estimates that, if the simple full astern stopping test had been carried out at 12.7 knots, then the advance reached by the time the ship was stopped would have been about 3000 metres (9.8 times the ship's length).

Figure 13 – Results of the 'rudder cycling' stop procedure carried out on the 'Esso Bernicia'

(The test was started with the ship moving at approximately its full manoeuvring speed)

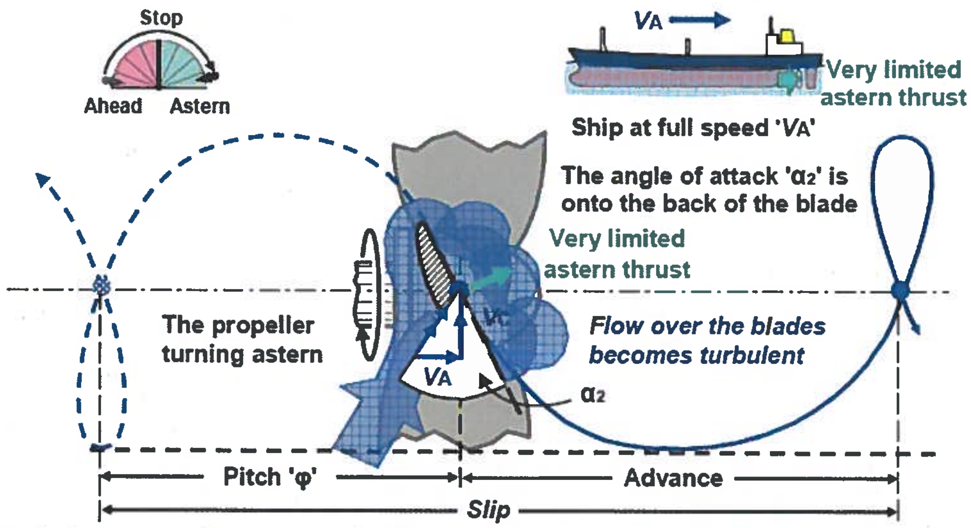


The stopping distance is about 5.3 ship's lengths with 1.3 ship's lengths lateral deviation

Spiral manoeuvres carried out on the ship during its trials indicate that it was directionally unstable up to 4° rudder angle to port and 2° to starboard in the fully loaded condition.

Putting a ship's engines to a setting that is significantly lower than the vessel's actual speed is a more effective way of reducing its speed than going full astern at the earliest moment that the machinery allows because flow is maintained over the propeller but directed onto the back of the blades rather than their face, so the ship's ahead motion is driving the propeller rather than the other way around. How effective the procedure is depends on the machinery's ability to absorb the energy delivered by the propeller shaft, diesel engines being much better at this than steam turbines. Keeping water flowing over the rudder also maintains steering control.

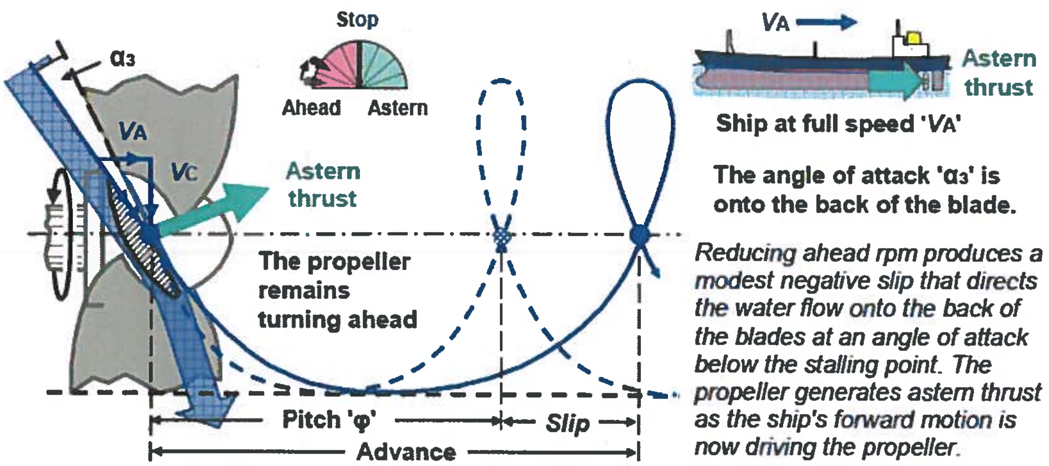
Figure 14 – Engine put astern whilst the ship is moving ahead at full speed



Reducing the rpm increases the time taken per revolution and so also increases the advance.

Turning the propeller astern whilst the ship is still moving ahead at full speed creates an excessive angle of attack, so the blades to stall and relatively little astern thrust is produced whilst flow over the rudder is disrupted. Steering control is consequently lost.

Figure 15 – Engine put at half ahead whilst the ship is moving ahead at full speed



Reducing ahead rpm produces a modest negative slip that directs the water flow onto the back of the blades at an angle of attack below the stalling point. The propeller generates astern thrust as the ship's forward motion is now driving the propeller.

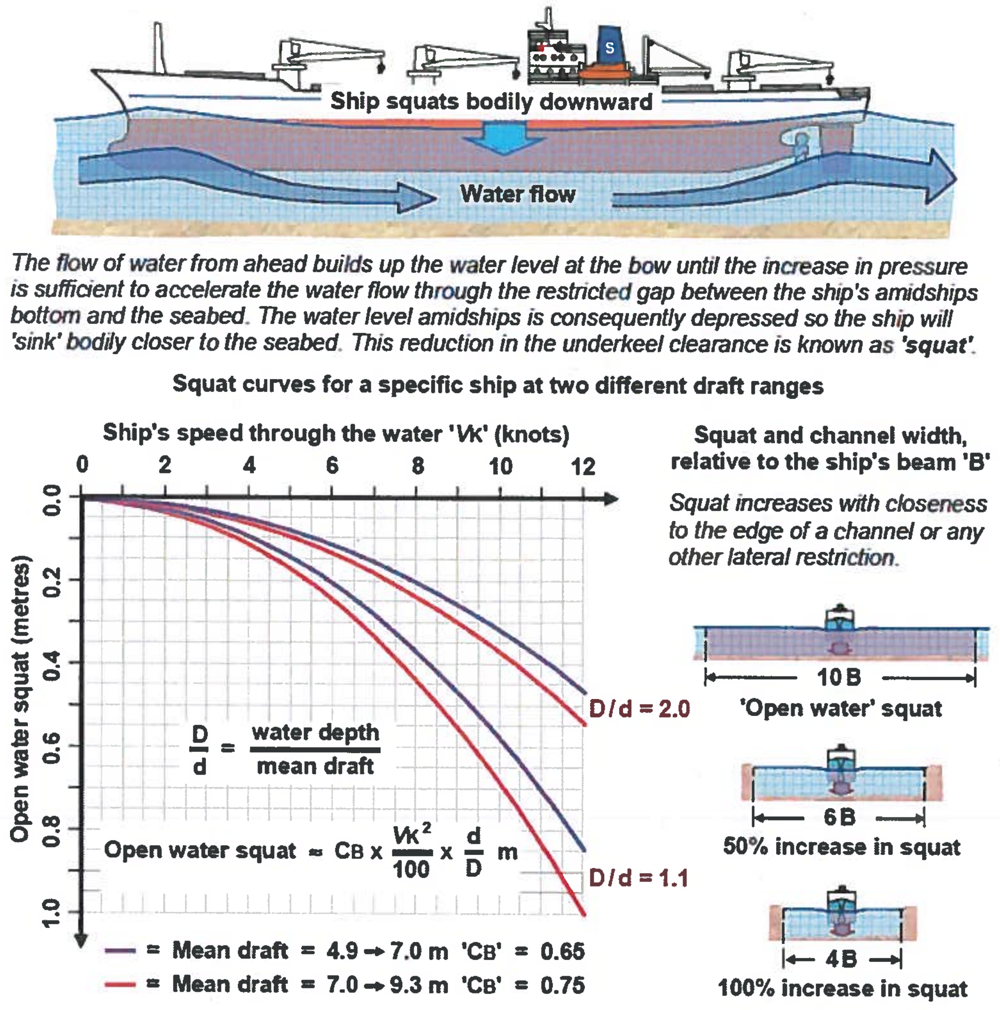
Reducing the rpm to slow ahead when a ship is at full speed produces astern thrust by directing the flow onto the blades' backs without blocking flow to the rudder, so steering is maintained.

Shallow water effects on manoeuvrability

When a ship is moving in shallow water, the restriction of water flowing between the hull and the seabed creates a venturi effect that increases the difference between the high pressure at the ends of the hull and the low pressure amidships. Water is sucked down into the midships flow region below the hull, so the mean water level around the hull is depressed, which results in a significant reduction of the under keel clearance that is known as '*squat*'. Squat increases with the following factors:-

1) Squat effects increase roughly with the *square* of flow velocity past the ship.
2) Squat effects increase with the ship's draft to still water depth ratio.
3) Squat effects increase with the ship's block coefficient.
4) Squat effects increase with the proximity of obstacles such as shoals and passing ships.

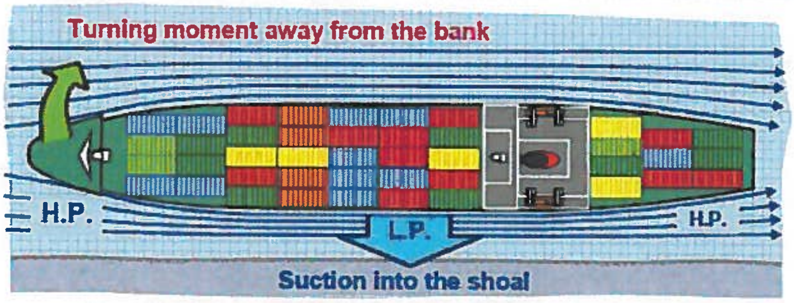
Figure 16 – The shallow water effect of 'squat'



A vessel passing a nearby shoal can suddenly veer off course towards the shoal and squat will amplify this effect if the ship is in relatively shallow water.

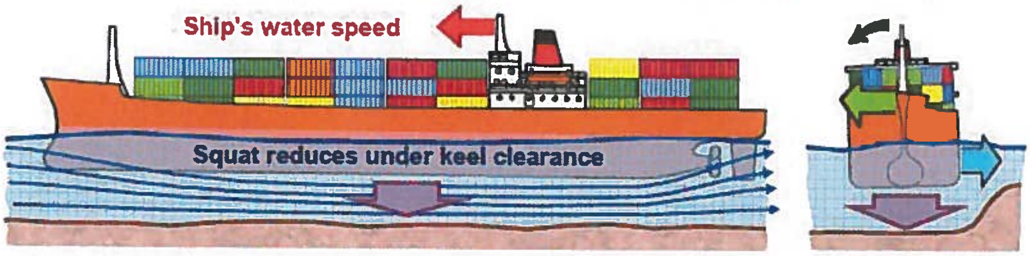
Squat increases a ship's minimum turning diameter for a given engine rpm whilst reducing the vessel's speed. The trials carried out on the 'Esso Bernicia' showed that the ship's turning diameter at a speed of 10 knots was approximately doubled when the average water depth was reduced from about 4.5 times the vessel's draft to 1.4 times its draft. Shallow water also increases the interaction effects between vessels passing at close quarters, which can lead to a smaller ship veering into a larger one, if the larger vessel is suffering significantly from squat.

Figure 17 – Interaction between a ship at moving at speed and shoal water to port



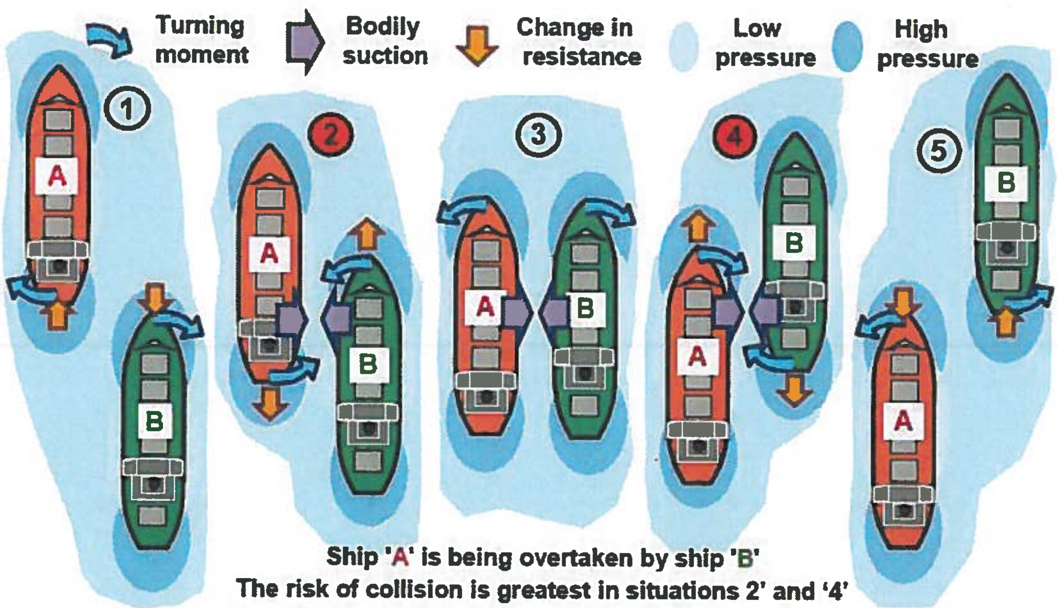
The high pressure region at the stern is much less developed than that at the bow due to friction losses in the flow along the hull.

The ship' will swing its stern into the shoal and heel outwards if helm is amidships



Port helm must be applied as if to steer the ship towards the shoal for the vessel to maintain a course parallel to the edge of the shoal.

Figure 18 – Interaction between two similar sized ships in an overtaking situation



Interaction and its accompanying risk of collision increase with the ***square*** *of the two ships' speeds through the water, their closeness to each other and squat.*

11.3 Guidance on the Impact of Wind Parks[14]

MGN 371 requires developers of offshore renewable energy installations, or 'OREI's' to carry out a survey of *all* the marine activity that occurs within and close by the proposed options for siting such installations and lists the factors that the must be taken into account when choosing the final sites. The notice includes the template shown below as guidance for assessing the risk to vessels using shipping lanes that pass by wind parks.

Distance between the turbine boundary and the shipping route	Factors	Risk	Tolerability
< 0.25 n. miles (500 m)	Only small craft are to be allowed this close	VERY HIGH	INTOLERABLE
0.25 n. miles	X-band radar interference	VERY HIGH	INTOLERABLE
0.45 n. miles (800 m)	Vessels may generate multiple echoes on shore based radars	VERY HIGH	INTOLERABLE
0.50 n. miles (926 m)	Mariners' high traffic density domain	HIGH	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
0.80 n. miles (1481 m)	Mariners' ship domain	HIGH	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
1.0 n. miles (1852 m)	Minimum distance to parallel TSS boundary	MEDIUM	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
1.5 n. miles (2778 m)	S-band radar interference, ARPA affected	MEDIUM	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
2.0 n. miles (3704 m)	Compliance with 'COLREGS' becomes less challenging	MEDIUM	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
> 2.0 n. miles	But not near a TSS	LOW	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
3.5 n. miles (3704 m)	Minimum separation between turbines on opposite sides of a route	LOW	TOLERABLE IF ALARP (i.e. risks are as low as reasonably practical)
5.0 n. miles (9260 m)	Adjacent wind park introduces cumulative effect. Distance from TSS entry/exit	VERY LOW	BROADLY TOLERABLE
10.0 n. miles (18520 m)	No other wind parks	VERY LOW	BROADLY TOLERABLE

MGN 371 also requires the risk assessment to define the position of the interactive boundary between the wind park and an adjacent shipping route.

[14] Marine Guidance Notes MGN 371 & 372

MGN 371 describes the risk assessment template as *'not a prescriptive tool but in need of intelligent application'*. The term 'domain', would seem to mean the minimum comfortable distance between ships encountering each other, as many bridge watchkeeping officers would wish to keep at least 0.8 nautical miles clear of other ships in open ocean but accept 0.5 nautical miles in dense traffic. On the other hand, watchkeepers of large tankers and bulk carriers would normally want to double these clearances, especially when navigating in water depths less than twice their ship's draft, as squat at such limited under keel clearances will significantly reduce the vessels' manoeuvrability and increase any interaction with other ships passing close by. The traffic lanes off the Dutch Coast include deep water routes to the west of the most seaward of the proposed wind park sites and so such ships should be clear of the most congested areas when they are just transiting the coast but water depths are still less than 30 metres where a deep water route passes adjacent to the proposed wind park site. Consequently, a clearance of between 1.5 and 2.0 nautical miles from the turbine boundary to the edge of the deep water route would be more appropriate than 0.8 nautical miles.
MGN 371 provides examples of the practical measures that may reduce the high to medium navigational risks to a tolerable level and these include:-

1) IMO routing measures. The IMO can approve mandatory routes for specified categories of vessel, (e.g. ships over a certain tonnage, or ships of certain types, such as tankers and gas carriers), provided the Organisation is persuaded by the argument for such proposals.

2) Vessel Traffic Services (VTS). An effective VTS that both monitors and advices traffic in the area of the wind parks may require fixed radar platforms offshore of each wind park to send data ashore via submarine cable links and so overcome the blanking effect of the turbine arrays on the radar signals from the shore based monitoring stations.

3) Aids to navigation. The wind parks themselves constitute an aid to navigation if they are equipped with distinguishing lights and identifying marks on specified individual turbine units, the positions of which appear on the appropriate scale charts. Turbines at the corners of a wind park perimeter must carry synchronised flashing yellow lights visible over a distance of at least 5 nautical miles. Selected intermediate turbines on the perimeter must carry yellow lights visible for at least 2 miles that flash with a different characteristic to that of the corner lights. Selected perimeter turbines may also be fitted with a sound signal audible at a range of at least 2 miles, racons emitting the Morse characteristic 'U' and AIS. Every turbine must have a unique identifying mark on its base, visible at least 150 metres and discretely lit from above for reading in the dark. *(Although the turbines are regarded as navigational aids, they can obstruct detecting other vessels visually, by radar and by AIS. It may be especially difficult to detect other ships at night if their navigation lights are seen against the back drop of a wind park.)*

4) Safety Zones. Wind park sites can be temporarily made an exclusion zone during their construction but it is unlikely that all craft can be permanently excluded from within the site. The exclusion zone around either an entire wind park site or its individual turbines is decided by the appropriate state authority on a case by case basis. The UK authority currently uses a nominal safety zone of 50 metres in radius around each turbine, which are spaced at intervals of 500 metres, though the larger units of the proposed Dutch wind parks are spaced 1000 metres apart. Consequently, the wind parks can be transited by smaller vessels such as recreational craft, fishing vessels passing between a port and the fishing grounds, survey vessels inspecting oil pipelines within the site, small coasters and possibly

even ro-ro ferries. However, certain activities, such as commercial fishing (though not necessarily recreational rod and line fishing) and dredging are prohibited, *as submarine power cables and pipelines are protected by seabed exclusion zones that extend 500 metres either side of their routes*. The risk assessments for the proposed wind park developments assume that small vessels can enter and leave the wind park sites.

34A

Rijkswaterstaat
Ministerie van Infrastructuur en Milieu

Herziening routering Noordzee

25 augustus 2011

Organisatie

- Opdrachtgever DGLM
- Gedelegeerd opdrachtgever [redacted]

Projectteam

- [redacted] (projectmanager)
- [redacted] (technisch manager)
- [redacted] (omgevingsmanager)

Aanleidingen

- Mediation over verlenging vergunningen ronde 2
  - Overeenkomst tussen wind- en scheepvaartsector
- Verbetering veiligheid scheepvaart rondom Horizon Platform
- Verbetering veiligheid op de rede van Ijmuiden
- Extra ankercapaciteit bij Ijmuiden

BELANG

- Politiek: toezegging Atsma voor proces verlenging vergunning

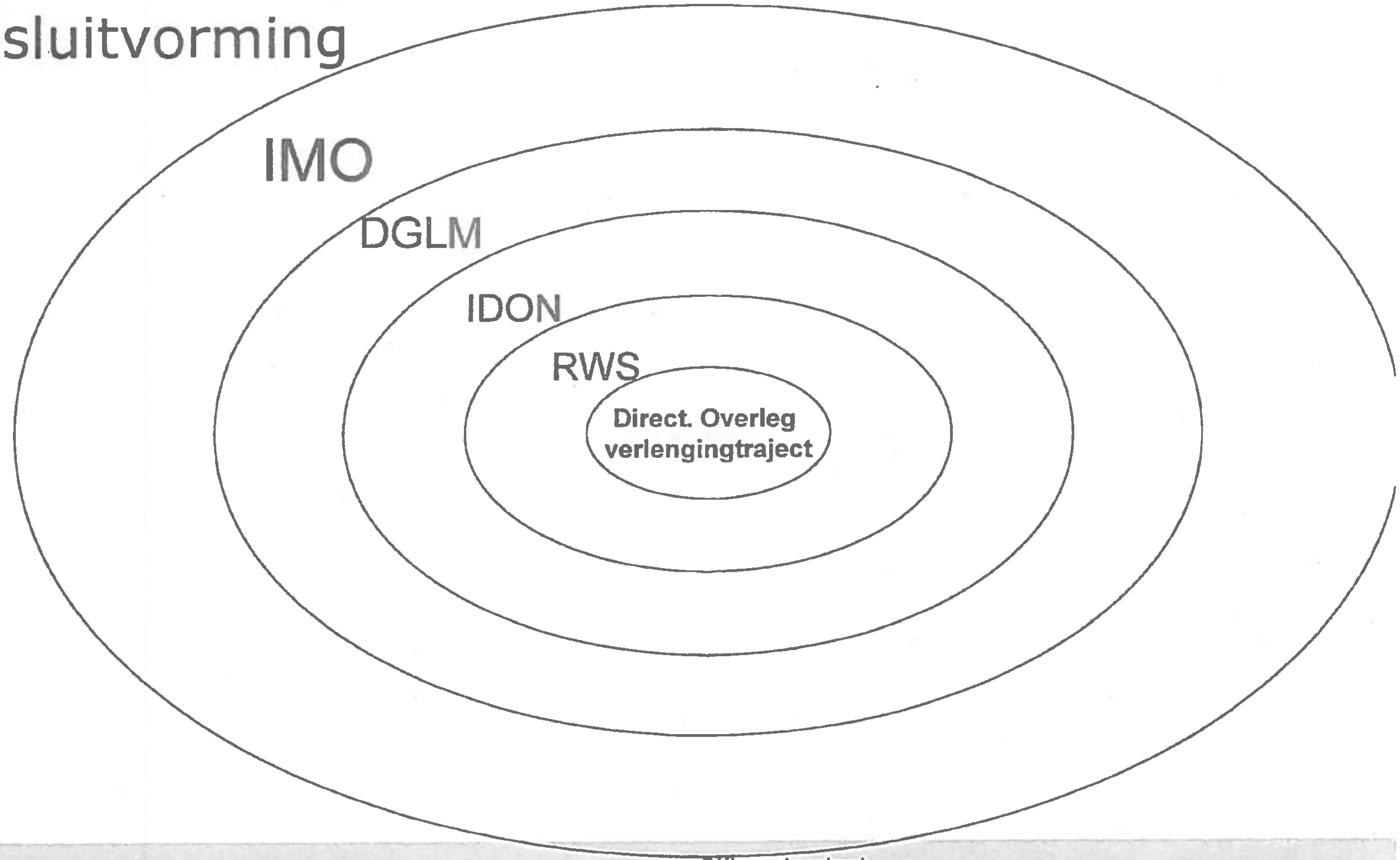
Kritische Factoren

- Slagen mediation vergt uitzicht op realisatie
- IMO deadline feb 2012; volgende kans 1 jaar later pas!

Risico's

Risico	Beheersmaatregel
2e schil levert aanzienlijke noodzaak tot wijziging ontwerp	Eerste gesprekken al in Augustus
Toetsacties (munitie, wrakken, surveys, commissie Stolk etc.) leveren aanzienlijke noodzaak tot wijziging ontwerp	Indicatief beeld voor September klaar.
Belgen gaan niet akkoord	Zo vroeg mogelijk gesprekken (September), betrekken DGLM als expert, vroegtijdig opschalen evt. politiek niveau.
FSA gekleurd	Aansturing van de FSA blijft een gezamenlijke verantwoordelijkheid van de schil 1 partijen, aangevuld met DGLM
Wijziging mijnbouwwet, zeekaarten en markeringen niet tijdig af	Al in 2011 werkplan opstellen met bevoegde overheden.
Onvoldoende capaciteit binnen RWS beschikbaar	**Managementgesprekken in Augustus om prioritering te waarborgen.**

Besluitvorming



3 Hoofdlijnen uitvoeringsprogramma

- **ONTWERP** Ontwerp routering opstellen met 1e schil betrokkenen
- **TOETS** Ontwerp routering toetsten
  - » met 2e schil betrokkenen; en
  - » op technische haalbaarheid
- **IMPLEMENTATIE**

Stand van zaken

- Initieel ontwerp nu 98% versie
- Toets op ontwerp in volle gang
- Plan van aanpak en planning voor implementatiefase


ENGLAND
INTERNATIONAL
CHART SERIES

Wat moet er gebeuren I

- Toets ontwerp
  - Schil 2 check: olie & gas, visserij, natuur, zand, kabels en leidingen → PT/NieuwScript (nagenoeg gereed)
  - Belgie (!) en UK → PT
  - Munitiestortplaatsen onder routes → PT/TNO/Deltares
  - Formal Safety Assessment & Quantitative Risk Analyses → PT/Arcadis/MARIN
  - Onderwater wells → **WSM (gereed)**

Wat moet er gebeuren II

- Implementatie ontwerp
  - IMO goedkeuring → PT
  - Bodemsurveys en verwerking– enorme achterstanden lodingen in ontwerpgebieden! → **WSH/WSM**/HYD
  - Evt. opruimingsacties wrakken/ obstakels → **MDB/WSH**
  - Markeringen → **MDZ/N**
  - Zeekaarten → PT/**WSH/**HYD
  - Communicatiestrategie- en plan → PT/KWC/HYD/BHID
  - Wijziging Mijnbouwbesluit → PT/ EL&I
  - Ankergebieden instellen → **WSP/WSH**
  - Markeerdieptekaarten → **WSH**
  - Aanpassingen in Beheer en Onderhoud → **WSH**

Inschatting capaciteit & kosten tot feb 2012

	fte	Uitbestedingen	Toelichting uitbestedingen/ taken
PT	1	k€20 k€25 k€75	Munitie QRA verkeer FSA
WSH	0,5	-	-
WSM	0,5	k€20	RA surveying irt scheepvaartveiligheid
MDB	0,01 fte (voorbereidend) Mogelijk	-	Heeft effect op Nomo berging
MDN/Z	0,01 fte (voorbereidend)	-	Vaarwegmarkerings-plan

Inschatting capaciteit & kosten feb 2012 - 2013

	Benodigde Capaciteit	Toelichting
PT	1 fte?	- Zeekaarten - Overig communicatie - Wijziging mijnbouwbesluit - Instelling ankergebieden
WSH	0.5-1 fte???? Vooral effecten en accenten op bestaand in ontwikkeling zijnde documenten?	- Opruimen obstakels & wrakken - planning - Ankergebieden instellen - Markeerdieptekaarten - Aanpassingen in Beheer en Onderhoud
WSM	**Max 1920 achterstallige uren meten van HYD, afhankelijk van QRA surveys (incl. verwerking = meeturen x 2) → range kosten:** kosten uitbestedingen kunnen oplopen tot ca 300.000 k€ (excl eigen werk) indien kwart achterstallig onderhoud geprioriteerd voor routeringsproject.	
MDB	Nog niet bekend, is afhankelijk van risicoonderzoeken, range: 0 € tot miljoenen € (wrakkenberging). Kan in lopende ontwikkelingen meegenomen worden?	Opruimen obstakels & wrakken - uitvoering
MDN/Z	Kan in normale planning meegenomen worden?	Markeringen leggen/verplaatsen

Vragen

- Bovenstaande vraagtekens invullen
- Hebben we deze capaciteit intern?
- Wat is nodig aan prioritering? Hoe kan PT hierbij helpen?
- Wat is nodig om capaciteit beschikbaar te krijgen?
- Redelijke kostenverdeling DGLM/RWS?

3QA

De referentie situatie voor het uitvoeren van een FSA op basis van de nieuwe overeenkomst ivm het mogelijk verlengen van de vergunningsduur voor de ronde twee windparken tussen scheepvaartsector en IenM (RWS/DNZ)

Een nieuw ontworpen verkeerscheidingstelsel zal moeten goedgekeurd door de IMO. Daartoe moet het voldoen aan de eisen die aan een nieuw worden gesteld en die zijn vastgelegd in regulation SOLAS V/10 en de General Provisions for Ships' Routeing (GPSR).

Daarbij is van belang dat het uitgangspunt van ships' routeing is het **verbeteren van de veiligheid** van de navigatie in gebieden:

- waar schepen elkaar naderen van verschillende kanten
- met een hoge dichtheid van scheepvaart
- waar de navigatie belemmerd wordt door:
    - een beperkte manoeuvreerruimte,
    - het voorkomen van obstakels voor de navigatie,
    - een beperkte waterdiepte of
    - ongunstige weersomstandigheden.

Daarnaast kan ships' routeing gebruikt worden ter voorkoming van, of terugdringen van het risico op, milieuvervuiling of andere schade aan het mariene milieu die veroorzaakt wordt door aanvaringen tussen of stranding van schepen in of nabij een PSSA.

IMO beslist over het al dan niet goedkeuren van een nieuw of gewijzigd routesysteem op basis van een aantal criteria, waarbij in dit geval het meest van belang is dat er gekeken zal worden naar het aanwezig zijn van behoorlijke en voldoende gronden voor het ingediende voorstel. Daarbij zal ook aandacht worden besteed aan de rechten van derden waar het gaat om de exploitatie van de levende rijkdommen van de zee en de exploitatie van de aanwezige minerale reserves.

Bij het ontwerp van het totale systeem moet bijzonder aandacht worden besteed aan de vereisten uit hoofdstuk 6 van de GPSR en ten allen tijde moet worden voldaan aan de bepalingen inzake ship's routeing die in het Zeerechtverdrag zijn vastgelegd.

Van belang zijn nu de vereisten vervat in paragraaf 3.12 en 3.13 van de GPSR.

Paragraaf 3.12 stelt dat er geen installaties mogen worden opgericht binnen de banen van een verkeersscheidingstelsel (VSS); als dat toch tijdelijk onvermijdelijk is moet het stelsel tijdelijk worden omgelegd.

Paragraaf 3.1.3 stelt dat als het onvermijdelijk is dat er toch permanente installaties worden gebouwd binnen de banen van een VSS er een voorstel bij IMO moet worden ingediend voor een permanente wijziging van het onderhavige VSS.

Aangezien er geen sprake is van de situaties in beide paragrafen kan als argument voor het wijzigen van een VSS enkel en alleen de verbetering van de veiligheid dienen.

39A

Summary

The Dutch Ministry of Infrastructure and Environment (Rijkswaterstaat) has advanced plans for adjustment of the current traffic lanes for shipping on the North Sea. On their request TNO has undertaken an assessment of the risks of ship traffic across or near the munition dump sites off IJmuiden and Hook of Holland.

Scope of the risk assessment

The risk assessment:

- Is performed for:
  - The present route structure;
  - The proposed route structure in which the dumping areas off Hook of Holland will be located in the separation zone of the Maas North Traffic Separation Scheme (TSS);
  - The alternative route structure with the dumping areas off Hook of Holland located in the northbound lane of the TSS;
- Is based on the following incident scenarios:
  - ship sinks;
  - ship anchors;
  - drifter drags anchor;
  - fishing boat drags bottom trawling gear;
  - ship loses container or other deck cargo;
  - vibration of ship movement disturbs seabed;
  - water turbulence due to propeller wash disturbs seabed;
  - ship strikes seabed with keel or propeller;
- Incorporates:
  - fishing boats,
  - small to largest category container ships;
  - ships with polluting cargo (oil, chemicals);
  - ships with explosive cargo (gasoline, LPG);
- Is limited by ships with a maximum draught of 15 m, which relates to the water depths in the area.

Desk study and input

Since both the likelihood and effects of an underwater detonation depend on the amount and types of dumped munition and the applied dumping methods, the latter are of prime importance to the risk assessment. For this reason, a comprehensive search was performed of the archives of the Netherlands Institute for Military History (NIMH), the Explosive Ordnance Disposal unit of the Ministry of Defence (EODD), the National Archives and several other sources. This survey shows that:

- 30,000 and 20,000 tons of munition have been dumped at IJmuiden and Hook of Holland respectively (conservative estimate);
- The dump sites are likely to consist for the greater part of munition for fire arms of all calibres. Fuzed munitions may be present. Aircraft bombs are unlikely to have been dumped in large numbers. Mines, sea mines, depth charges and torpedoes were not dumped, or have been dumped in very small numbers. Chemical weapons are very unlikely to have been dumped;

- Dumping of munition was mainly performed using Landing Craft Tanks (LCTs) with an average load of about 220 ton. Dumping started after the vessel had anchored and stabilized in the current, consequently resulting in roughly 150 piles of dumped munition at IJmuiden and 100 piles at Hook of Holland; since the munition articles are accordingly in close proximity within one pile, sympathetic detonation within one pile (not between piles) may occur.

A study of the areas shows that the munition dump sites off IJmuiden and Hook of Holland are situated some 30 to 40 kilometres off shore. The water depth at the munition dump site IJmuiden is between 21 to 23 m, and at Hook of Holland 19 to 26 m. The bottom morphology comprises soft seabeds, sand waves with a wave length of a few hundred meters and a typical height of several meters, with smaller waves in between. Sonar plots demonstrate that only a tiny fraction of the munition is not covered by sand. Based on local sand wave heights, the munition lies at a depth of at least 23 and 25 m at the dump sites of IJmuiden and Hook of Holland respectively. The distance between the keel of the vessel and the munition is about 10 meters when the vessel is situated above the munition. For the scenarios bottom trawling and dragging of anchor, the distance between the keel and the munition increases to about 100 m.

Risk assessment methodology

The risk is quantified qualitatively by multiplying likelihood and effect per scenario. The overall likelihood of an underwater detonation is composed of the likelihood of exposure of shipping related incidents to the munition dump area, the likelihood of interaction with munition and the likelihood of a munition reaction:

- The exposure is based on probability calculations of shipping incidents at or near the dumping areas by the Marine Research Institute (MARIN);
- The likelihood of interaction with munition is assessed:
  - for direct impact by relating the areal density of the munition piles with the dimensions of the ship, anchor, trawling gear or dropped cargo;
  - for indirect contact via vibration or turbulence on the basis of the distance between ship/propeller and seabed and propeller characteristics;
- The likelihood of munition reaction is assessed:
  - for munition deformation scenarios by comparing these against known initiation thresholds for impulse per unit area and energy per unit area;
  - for initiation of fuze systems in view of safety regulations for transport and handling at the time of dumping.

The effects of an underwater explosion are quantitatively assessed based on the size of the explosion and its distance to the vessel, the type of ship and type of cargo. The effects per scenario are determined based on a maximum credible threat in the order of **10,000 kg TNT.** This threat is conservatively estimated by assuming that two-thirds of a single munition pile sympathetically detonates in high order in case one munition item is initiated.

All risks assessments are categorized in line with the Fine & Kinney method using qualitative terms. The above-water effects of the explosion such as air blast, fragmentation and tidal wave, are negligible compared to the underwater effects of the explosion.

Deliverables and rationale of risk assessment

The purpose of the risk analyses is to determine whether the safety of shipping in the area of the munition dumps could be hazardous, to recommend appropriate risk mitigating measures and to relate these measures to corresponding levels of risk. The overall likelihood and effects are therefore assessed and compared for the above mentioned different route structure scenarios, incident scenarios and a number of risk mitigating policies.

Recommended risk mitigating measures

The risk analyses have lead TNO to recommend the following risk mitigation measures for the dump sites off IJmuiden and Hook of Holland (or similar nautical measures):

- Selection of the "proposed route structure";
- The munition dump areas should be clearly marked out by buoys with relevant indications;
- The munition dump areas should be clearly marked on nautical charts as *Prohibited Areas* for ships with explosive cargo and vessels with a draught of more than 15m and *Restricted Areas* for all other ships. Within the restricted area, anchoring, bottom trawling, dredging or any other underwater operation should be prohibited as a minimum;
- Continuous surveillance of the dump areas is advised to verify whether ships are in compliance with regulations.

Overview of risk assessment results

The risk assessment including the mitigating measures is given in Table i for the three route structures. The residual risks are comparable for the present and proposed route structure and largely identified as "low" and "very low". The risk for ships carrying explosives is identified as "moderate". In contrast, the risks are classified up to the "high" level for the alternative route structure.

It is concluded that with the implementation of the aforementioned mitigating measures, the risks for the present and proposed route structures are (presumably) acceptable. Attention is indicated to guarantee that ships with explosive cargo stay away from the dump areas. Note that the recommended measures are a consolidation and extension of the "restricted areas" that are presently already indicated above the munition dump sites on the nautical charts.

Table i Risk matrix for all scenarios and route structures including mitigating measures.

Risk (including mitigating measures)				
Scenario		Route structure		
		Present	Proposed	Alternative
Ship sinks	normal cargo	Very low (acceptable)	Very low (acceptable)	Moderate (attention indicated)
	polluting cargo (oil, chemicals)	Low (presumably acceptable)	Low (presumably acceptable)	[illegible]
	explosive cargo (LPG, LNG)	Moderate (attention indicated)	Moderate (attention indicated)	[illegible]
Ship anchors	normal cargo	Very low (acceptable)	Very low (acceptable)	Low (presumably acceptable)
	polluting cargo (oil, chemicals)	Low (presumably acceptable)	Low (presumably acceptable)	Moderate (attention indicated)
	explosive cargo (LPG, LNG)	Moderate (attention indicated)	Moderate (attention indicated)	[illegible]
Drifter drags anchor		Very low (acceptable)	Very low (acceptable)	Very low (acceptable)
Fishing boat drags bottom trawling gear		Low (presumably acceptable)	Very low (acceptable)	Low (presumably acceptable)
Ship loses container / deck cargo	Container	Very low (acceptable)	Nonexistent	Very low (acceptable)
	Deck cargo	Very low (acceptable)	Very low (acceptable)	Very low (acceptable)
Vibration of ship movement disturbs seabed	normal cargo	Very low (acceptable)	Very low (acceptable)	Moderate (attention indicated)
	polluting cargo (oil, chemicals)	Low (presumably acceptable)	Low (presumably acceptable)	[illegible]
	explosive cargo (LPG, LNG)	Moderate (attention indicated)	Moderate (attention indicated)	[illegible]
Water turbulence due to propellor wash disturbs seabed	normal cargo	Nonexistent	Nonexistent	Nonexistent
	polluting cargo (oil, chemicals)	Nonexistent	Nonexistent	Nonexistent
	explosive cargo (LPG, LNG)	Nonexistent	Nonexistent	Nonexistent
Ship strikes seabed with keel or propeller	normal cargo	Nonexistent	Nonexistent	Nonexistent
	polluting cargo (oil, chemicals)	Nonexistent	Nonexistent	Nonexistent
	explosive cargo (LPG, LNG)	Nonexistent	Nonexistent	Nonexistent

It is seen that the risks for the present and proposed route structure are comparable and that the highest risk is qualified as "moderate", which is identified for ships that carry explosive cargo. The alternative route structure presents risks up to the "high" level. The overall risk for the alternative route structure is accordingly higher than for the present and proposed route structures.

As a reference, the risk levels without mitigating measures are presented in Table ii. Tables iii and iv respectively display the underlying overall likelihoods for an underwater explosion including and without mitigating measures. The effects in case of an underwater explosion are displayed in Table v.

Table ii Risk matrix for all scenarios and route structures without mitigating measures.

Risk (without mitigating measures)				
Scenario		Route structure		
		Present	Proposed	Alternative
Ship sinks	normal cargo	Low (presumably acceptable)	Low (presumably acceptable)	Moderate (attention indicated)
	polluting cargo (oil, chemicals)	Moderate (attention indicated)	Moderate (attention indicated)	[illegible]
	explosive cargo (LPG, LNG)	[illegible]	[illegible]	[illegible]
Ship anchors	normal cargo	Moderate (attention indicated)	Moderate (attention indicated)	Moderate (attention indicated)
	polluting cargo (oil, chemicals)	[illegible]	[illegible]	[illegible]
	explosive cargo (LPG, LNG)	[illegible]	[illegible]	[illegible]
Drifter drags anchor		Very low (acceptable)	Very low (acceptable)	Very low (acceptable)
Fishing boat drags bottom trawling gear		Moderate (attention indicated)	Moderate (attention indicated)	Moderate (attention indicated)
Ship loses container / deck cargo	Container	Very low (acceptable)	Nonexistent	Very low (acceptable)
	Deck cargo	Very low (acceptable)	Very low (acceptable)	Very low (acceptable)
Vibration of ship movement disturbs seabed	normal cargo	Low (presumably acceptable)	Low (presumably acceptable)	Moderate (attention indicated)
	polluting cargo (oil, chemicals)	Moderate (attention indicated)	Moderate (attention indicated)	[illegible]
	explosive cargo (LPG, LNG)	[illegible]	[illegible]	[illegible]
Water turbulence due to propellor wash disturbs seabed	normal cargo	Nonexistent	Nonexistent	Nonexistent
	polluting cargo (oil, chemicals)	Nonexistent	Nonexistent	Nonexistent
	explosive cargo (LPG, LNG)	Nonexistent	Nonexistent	Nonexistent
Ship strikes seabed with keel or propeller	normal cargo	Nonexistent	Nonexistent	Nonexistent
	polluting cargo (oil, chemicals)	Nonexistent	Nonexistent	Nonexistent
	explosive cargo (LPG, LNG)	Nonexistent	Nonexistent	Nonexistent

Table iii Overall likelihood of an underwater explosion for present, proposed and alternative route structure including mitigating measures.

Route Structure Scenario	Present	Proposed	Alternative
Ship sinks	Conceivable but very unlikely	Conceivable but very unlikely	Unusual but possible
Ship anchors	Conceivable but very unlikely	Conceivable but very unlikely	Only remotely possible
Drifter drags anchor	Conceivable but very unlikely	Conceivable but very unlikely	Only remotely possible
Fishing boat drags bottom trawling gear	Only remotely possible	Conceivable but very unlikely	Only remotely possible
Ship loses containers	Conceivable but very unlikely	Impossible	Only remotely possible
Ship loses deck cargo	Conceivable but very unlikely	Conceivable but very unlikely	Only remotely possible
Vibration of ship movement disturbs seabed	Conceivable but very unlikely	Conceivable but very unlikely	Unusual but possible
Water turbulence due to propeller wash disturbs seabed	Impossible	Impossible	Impossible
Ship strikes seabed with keel or propeller	Impossible	Impossible	Impossible

Table iv Overall likelihood of an underwater explosion for present, proposed and alternative route structure without mitigating measures.

Route Structure Scenario	Present	Proposed	Alternative
Ship sinks	Only remotely possible	Only remotely possible	Unusual but possible
Ship anchors	Unusual but possible	Unusual but possible	Unusual but possible
Drifter drags anchor	Conceivable but very unlikely	Only remotely possible	Only remotely possible
Fishing boat drags bottom trawling gear	Unusual but possible	Unusual but possible	Unusual but possible
Ship loses containers	Conceivable but very unlikely	Impossible	Only remotely possible
Ship loses deck cargo	Conceivable but very unlikely	Conceivable but very unlikely	Only remotely possible
Vibration of ship movement disturbs seabed	Only remotely possible	Only remotely possible	Unusual but possible
Water turbulence due to propeller wash disturbs seabed	Impossible	Impossible	Impossible
Ship strikes seabed with keel or propeller	Impossible	Impossible	Impossible

Table v Effects in case of an 10,000 kg TNT underwater explosion.

Scenario		Effect (when UndEx occurs)
Ship sinks	normal cargo	Very serious (sinking of ship, injuries, spill of bunker oil)
	polluting cargo (oil, chemicals)	[redacted]
	explosive cargo (LPG, LNG)	[redacted]
Ship anchors	normal cargo	Very serious (sinking of ship, injuries, spill of bunker oil)
	polluting cargo (oil, chemicals)	[redacted]
	explosive cargo (LPG, LNG)	[redacted]
Drifter drags anchor		Very serious (sinking of ship, injuries spill of bunker oil)
Fishing boat drags bottom trawling gear		Very serious (sinking of ship injuries, spill of bunker oil)
Ship loses container / deck cargo	Container Deck cargo	Very serious (sinking of ship, injuries spill of bunker oil)
Vibration of ship movement disturbs seabed	normal cargo	Very serious (sinking of ship, injuries, spill of bunker oil)
	polluting cargo (oil, chemicals)	[redacted]
	explosive cargo (LPG, LNG)	[redacted]
Water turbulence due to propellor wash disturbs seabed	normal cargo	Very serious (sinking of ship, injuries, spill of bunker oil)
	polluting cargo (oil, chemicals)	[redacted]
	explosive cargo (LPG, LNG)	[redacted]
Ship strikes seabed with keel or propeller	normal cargo	Very serious (sinking of ship, injuries, spill of bunker oil)
	polluting cargo (oil, chemicals)	[redacted]
	explosive cargo (LPG, LNG)	[redacted]

It is noted that the risk assessment is based on a conservatively estimated 10,000 kg TNT maximum credible threat and that the final risk assessment and the decision to allow shipping across or near the munition dump sites is not the responsibility of TNO.

40A

Offerteaanvraag

Aanvrager: Rijkswaterstaat Noordzee
Aanbieder: TNO Defensie

Projectnummer RWS:
Projectnaam RWS: Risico's munitie voor routering Noordzee

Contactpersoon RWS: [redacted] (bij afwezigheid: [redacted]

Probleemstelling
In het verleden is munitie gestort op meerdere locaties op de Noordzee (IJmuiden en Hoek van Holland). De stortplaatsen zijn mogelijk een risico voor de scheepvaart en om die reden zijn diverse Berichten Aan Zeevarenden (BAZ) uitgegeven waarin de scheepvaart wordt verzocht de betreffende locaties te mijden. Ook zijn de locaties in de nautische zeekaart en publicaties opgenomen. Het ministerie van I&M heeft vergevorderde plannen om de scheepvaartroutering op de Noordzee aan te passen. Zowel bij Hoek van Holland (het verkeerscheidingstelsel Maas Noord) als bij IJmuiden liggen de voorgenomen routes (soms gedeeltelijk) over de munitiestortplaatsen.

Onderzoeksvragen
Wat zijn de risico's (kans x gevolg) van het varen over munitiestortplaasten voor de scheepvaart en zijn die risico's acceptabel? Zo nee, wat dient er te gebeuren om dit risico acceptabel te maken?

- → Beschouw hierbij de diverse mogelijke "gebeurtenissen" die naar aanleiding van het toenemende gebruik van het gebied kunnen optreden, zoals hieronder beschreven.
- → Beschouw hierbij de soort schepen die gebruik maken van de routes over de stortplaatsen, inclusief de bewegingen die dit soort schepen maken en de mogelijke gevaarlijke lading/stoffen die aan boord van deze schepen kan zijn, zoals hieronder beschreven.
- → Maak een kwalitatieve inschatting van de kans op deze gebeurtenissen.
- → Maak een kwantitatieve inschatting/berekening van het gevolg van deze gebeurtenissen (aangenomen dat de gebeurtenis daadwerkelijk plaatsvindt).

Omschrijving gebeurtenissen

- → schip zinkt bovenop de munitie
- → schip beroert munitie met de kiel
- → schip ankert op de munitie
- → drifter sleept met anker over de munitie
- → vissers slepen met bodemberoerende tuig over/door de munitie
- → schip verliest ....
  - anker
  - kettingen
  - netten
  - container
  - deklading
- → trillingen van een (diepstekend)schip beroeren de munitie/ turbulentie in het water als gevolg van bewegingen van de schroef.

Omschrijving soort schepen, hun lading, diepgangen en bodemdieptes in omgeving munitiestortplaatsen
Rijkswaterstaat zal TNO voorzien van de benodigde informatie met betrekking tot de omgeving van de munitiestortplaatsen, te weten:

- → soort schepen;

- → soort lading;
- → diepgang van deze schepen; en
- → bodemdieptes.

Rijkswaterstaat zal de benodigde zeekaarten met bodemdieptes verstrekken t.b.v. het onderzoek.

Hieronder volgt een beknopt voorlopig overzicht. Rijkswaterstaat verneemt graag zo snel mogelijk van TNO welke (aanvullende) informatie nodig is voor het onderzoek.

- → Ga in de vaarbaan over de munitiestort Hoek van Holland uit van een maximale diepgang van 15m.
- → Ga in de vaarbaan over de munitiestort Ijmuiden *voorlopig* ook uit van een maximale diepgang van 15m.
- → **Olietankers** In de omgeving van beide munitiestortplaatsen kunnen kleine olietankers varen.
- → **Containerschepen** In de omgeving van beide munitiestortplaatsen kunnen containerschepen van de kleinste tot de grootste categorie met gevaarlijke stoffen aan boord varen.
- → **Gevaarlijke stoffen** deze gevaarlijke stoffen kunnen betrekking hebben op alle mogelijke IMO klassen, inclusief benzine, chemicaliën en andere materialen die explosie gevoelig zijn of bij aanraking met het milieu een gezondheidsrisico herbergen.
- → **Vissersschepen** Ook visserschepen met bodemberoerend tuig vereisen nadere beschouwing.
- → De tabel hieronder toont een specificatie van schepen in het Maas Noord stelsel (de route over de munitiestortplaats Hoek van Holland) uit 1996.

Aantal schepen dat lijn 15 (Maas Noord) kruist per jaar

		Grootteklasse								
Type	Totaal	onbekend	1	2	3	4	5	6	7	8
Bulker	566				189	31	283	63		
Chemical	1627		55	16	911	393	244	8		
Container	2389				204	935	354	432	464	
GDC	4966		141	849	3190	621	165			
LNG										
LPG	291			8	275		8			
Miscellaneous	63		8	8		8	24		8	8
OBO	8				8					
Oil	519		16	16	165	71	94	71	86	
Pass/Ferry										
RoRo	432				39	79	134	181		
Tug/supply	8				8					
Unknown	1273	1273								
Totaal	12140	1273	220	896	4990	2137	1304	754	558	8

Indeling scheepsgrootteklassen (GT = Gross tonnage ≈ gewicht schip zonder lading)

Grootteklasse	GT	
	Min.	Max.
1	100	1,000
2	1,000	1,600
3	1,600	5,000
4	5,000	10,000
5	10,000	30,000
6	30,000	60,000
7	60,000	10,000
8	>100,000	

Omschrijving van de te leveren producten en diensten
Rapportage met risico's zoals geformuleerd in de onderzoeksvraag en korte beschrijving van de munitiedepots, inclusief soort munitie aanwezig, spreiding van de munitie, staat van de munitie, eventuele risico's op automatische ontsteking/ontploffing, eventuele gerapporteerde (bijna)incidenten uit het verleden irt deze munitie.

Lever- en betalingstermijnen
Voorlopige uitkomsten per half November 2011
Eindrapportage eind December 2011

Verzoeken m.b.t. de offerte
→ Specificatie/indicatie van de te leveren berekeningen en dan met name de soort grootheden die zullen worden aangeleverd (of een andere wijze waarop de resultaten zullen worden uitgedrukt).
→ Specificatie van de betrokken medewerkers/ onderzoekers, inclusief hun curriculum Vitae
→ Indicatie van relatieve inzet per deelvraag/deelopdracht

43A

NAV 58/4 – Amendment to the General Provisions on Ships' Routeing

Thank you Mr. Chairman

Mr Chairman, with the introduction of this document in plenary, we tried to be as clear and concise as necessary with regard to this straightforward proposal. For the time being I have nothing to add to our introduction in plenary.

While of course we're in your hands Mr. Chairman, as far as the Netherlands is concerned we are inclined to consider comments on the proposal, if any, and consider the proposed draft amendment to the GPSR in the annex to this document, with a view to approval by this working group and the sub-committee.

TY Mr. Chairman

44A

Speaking note on Nav 58/3/2

Thank you mister Chairman,

Mister Chairman, distinguished delegates,

First of all I would like to point out some discrepancies which we discovered in the published documents an which have already been communicated to the secretariat.

In document NAV /58/3/7 position 21 should be amended to 52^{0} 29'.03 North and 004^{0} 21'.70 East and in NAV/58/3/8 position 1(a) should be amended to 52^{0} 19'.28 North and 003^{0} 50'.38 East ; in this document also the second position numbered 48 should be amended to position 49.

The Netherlands welcomes this opportunity to briefly introduce to the Subcommittee the large number of papers submitted by us on ship's routeing in the Dutch part of the North Sea.

The present routeing system in the Dutch part of the North Sea has been in operation for a substantial period of time and can be said to have contributed to the safety of navigation in the area concerned; however some shortcomings were recently indicated which necessitated a review of some of the present measures.

Apart from that we are faced with a growing demand for use of the area by others than shipping.

In order to not only improve the safety of navigation, but also accommodate the use of the Dutch part of the North Sea by others than shipping without jeopardizing safety of navigation, the Netherlands carried out a comprehensive safety study through a Formal Safety Assessment (FSA), the results of which are presented in our paper NAV 58/INF. 2

On the basis of this study the major part of the existing routeing measures has been redesigned, whilst at the same time a whole new TSS was developed in the approaches to IJmuiden.

The results of this process can be found in our papers NAV 58/3/3 to NAV 58/3/10, whilst the process itself is briefly explained in our document NAV 58/3/2.

The substantial documents forming the foundation of the FSA have been made available to the Sub-Committee through our paper NAV 58/INF.2; because of the large amount of texts and graphics and not to further burden the secretariat of the Organization we created a special website where those documents are available to all those concerned or interested.

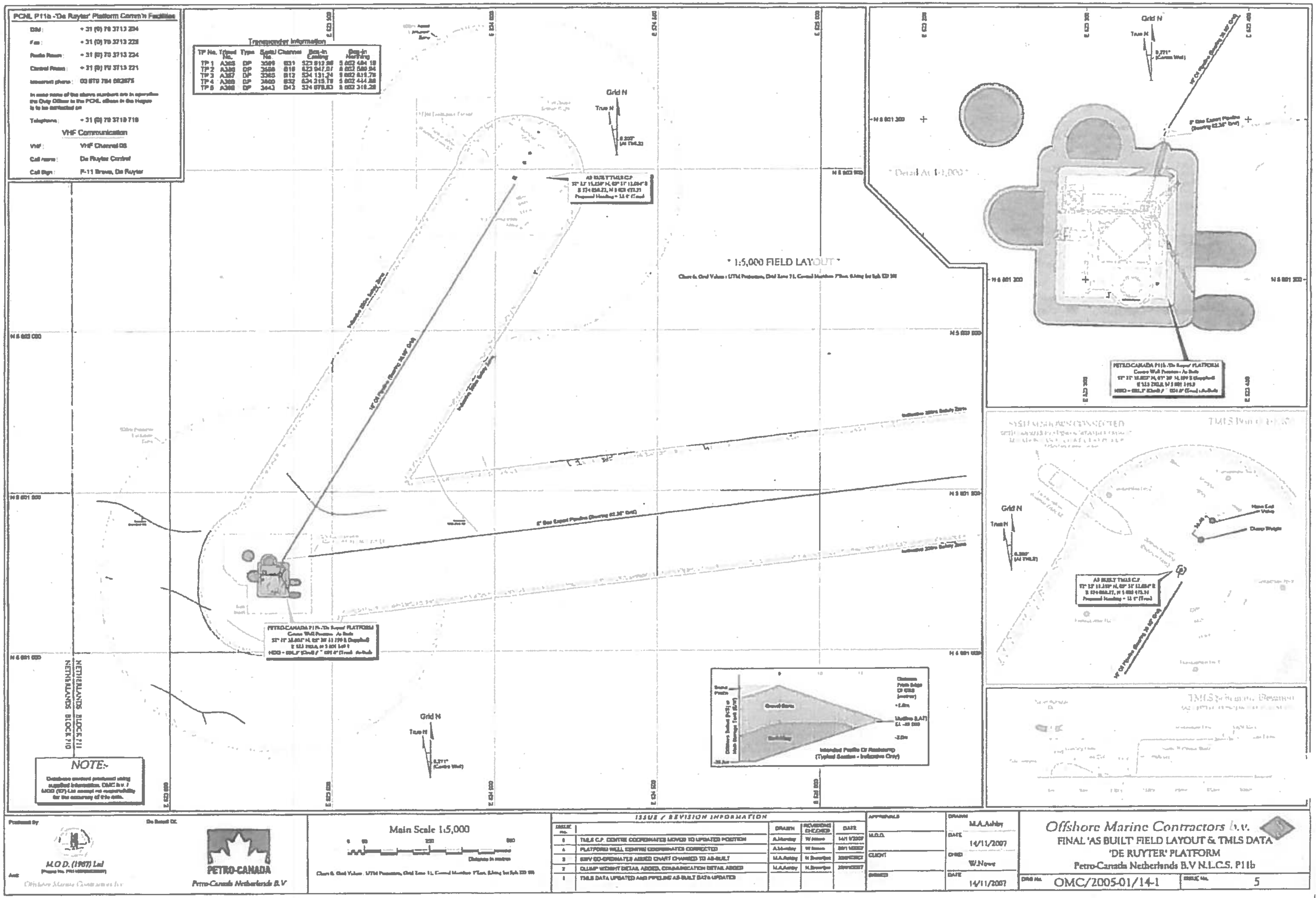
Since our proposals not only contain new routeing measures, but also amendments to existing traffic separation systems and new and amended measures other than routeing measures and deepwater routes, and because they are interrelated, the Netherlands wishes to emphasize that it is imperative that the whole package of proposals is seen as an integral part.

Mister Chairman distinguished delegates

The Netherlands proposes to present its separate submissions in the working group on ships' routeing for which we have prepared a presentation in which we will go into the whole process and the results of the Formal Safety Assessment aimed at giving our distinguished fellow delegates to opportunity to address the total review of routeing measures in the Dutch part of the North Sea in detail before going into the assessment of the separate submissions presented by the Netherlands.

Thank you mister Chairman.

45A


PCNL P11b -'De Ruyter' Platform Comm'n Facilities
VHF Communication
Transponder Information
" 1:5,000 FIELD LAYOUT "
" Detail At 1:1,000 "
Grid N
True N
NETHERLANDS BLOCK P11
NETHERLANDS BLOCK P10
NOTE:-
Main Scale 1:5,000
ISSUE / REVISION INFORMATION
M.O.D. (1987) Ltd
PETRO-CANADA
Petro-Canada Netherlands B.V
M.A.Ashby
14/11/2007
W.Nowe
14/11/2007
Offshore Marine Contractors b.v.
FINAL 'AS BUILT' FIELD LAYOUT & TMLS DATA
'DE RUYTER' PLATFORM
Petro-Canada Netherlands B.V N.L.C.S. P11b
OMC/2005-01/14-1
5

1 DUMPING AREAS

Three dumping areas for explosive material are located in the area with the proposed route structure. These three areas can be found in Figure 1-1. The areas are filled in with dots, being the positions of ship that have crossed the area in 2010. The location of the dumping area near IJmuiden will be improved, because this area will come in an area cleared of shipping for the proposed route structure, see Figure 1-2. However, the two dumping areas near Rotterdam will come into the north going traffic lane of the moved Maas North TSS, see Figure 0-1. Therefore, the probabilities of incidents are quantified that can lead to a dangerous situation due to the explosive material in the dumping area.

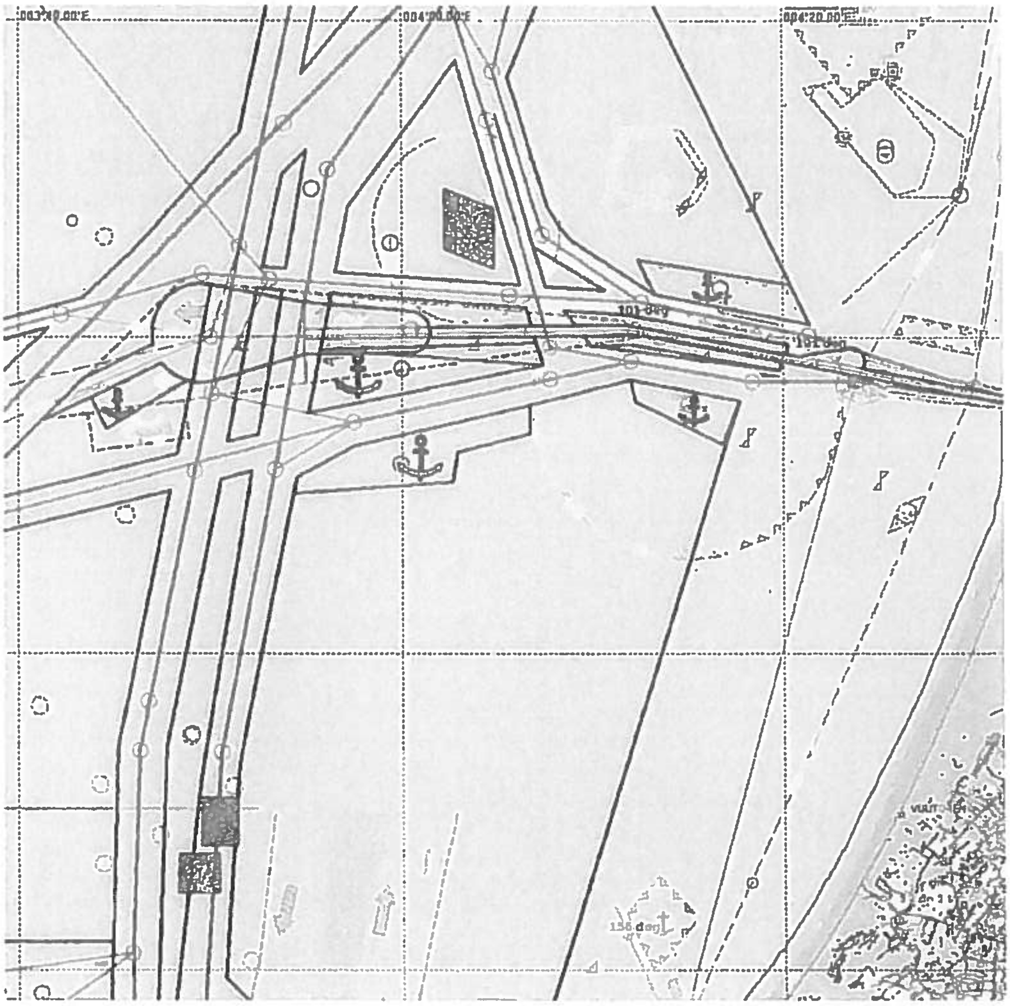


Figure 1-1 Three dumping areas with the proposed route structure

The AIS data of 2010 is used to acquaint insight in how many ships cross the dumping areas and to search for ships that have anchored in these areas. Each 2 minutes an observation has been performed. The positions of all ships with AIS are plotted in Figure 1-2 and Figure 0-1. These contain many fictive AIS messages, made from radar observations. These radar observations are not included in the analysis. These echoes belong to small unidentified ships, under which small fishing ships not yet obliged to have an AIS transponder. The larger fishing vessels are included because they have an AIS transponder

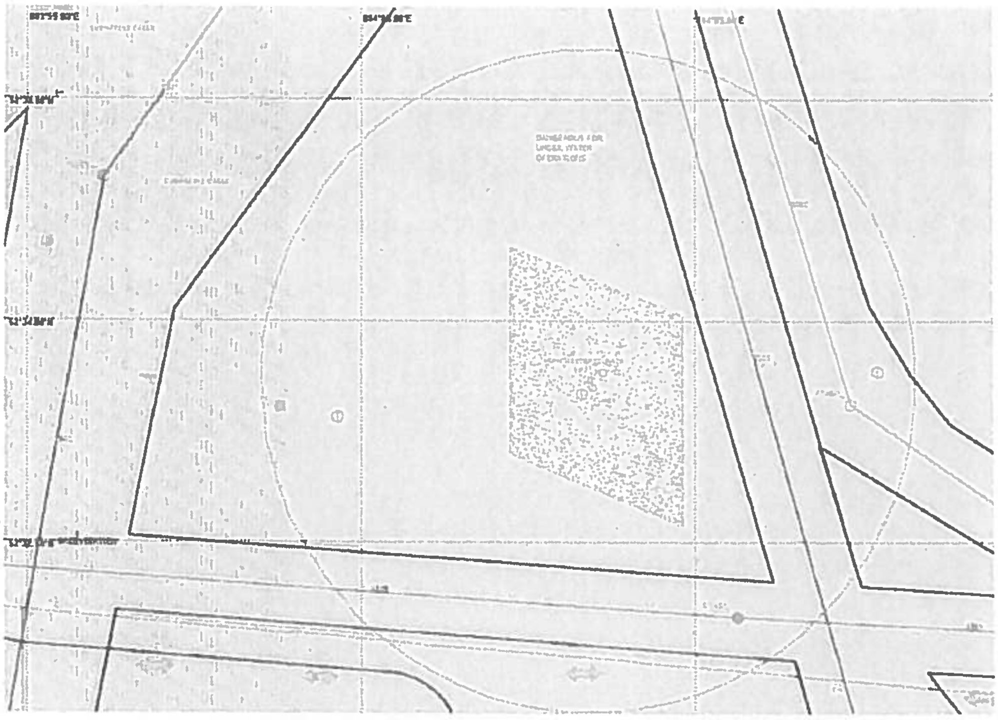


Figure 1-2 Dumping area near IJmuiden with the proposed route structure

Figure 0-1 Dumping areas near Rotterdam with the proposed route structure

Table 0-1 contains the result of the analysis of the ships that have crossed the area. The dumping area of IJmuiden has been crossed most frequently in 2010. In total, 720 voyages of ships through the area were counted. Some ships have performed several voyages. 57 voyages were made by a fishing ship. In 25 cases the speed was smaller than 5 knots, which means that the fishing vessel was fishing during crossing the dumping area. These 25 crossings were performed by 12 different fishing vessels. In nearly all cases the navigation state of the fishing vessels was 7, meaning that the ship was busy with fishing. By the fishing activity and the number of different fishing vessels that were active in the dumping areas, it can be concluded that the dumping area is not avoided by fishing vessels.

Table 0-1 Ships that have crossed the dumping area in 2010

<table>
<tr><th colspan="2" rowspan="2"></th><th colspan="3">Dumping area</th></tr>
<tr><th>IJmuiden</th><th>Rotterdam North</th><th>Rotterdam South</th></tr>
<tr><td colspan="2">Crossings by ships with AIS</td><td>720</td><td>402</td><td>240</td></tr>
<tr><td rowspan="4">Only fishing vessels</td><td>Crossings</td><td>57</td><td>35</td><td>29</td></tr>
<tr><td>fishing during crossing</td><td>25</td><td>16</td><td>11</td></tr>
<tr><td>different vessels</td><td>12</td><td>9</td><td>7</td></tr>
<tr><td>observations of fishing (speed over ground < 5 knots), each observation means 2 minutes fishing</td><td>748</td><td>394</td><td>240</td></tr>
<tr><td colspan="2">Ships anchoring</td><td>0</td><td>0</td><td>0</td></tr>
</table>

The following incidents can happen in dumping area:

- ship sinks;
- ship has a contact with the bottom;
- ship anchors;
- fishing vessels that have contact with the bottom by fishing gear;
- Loss of cargo as container or other deck cargo.

The probabilities of above incidents will be quantified for the three dumping areas, for the proposed route structure, which means that the route-bound traffic will disappear from the dumping area near IJmuiden, because this dumping area comes into an area that is cleared of shipping. Further it is expected that the non-route-bound activities as fishing will disappear from the dumping areas near Rotterdam because these areas come into a busy traffic lane of the moved Maas-North TSS.

Probability of sinking

A ship can sink as single incident by overwhelming by the sea, which is called a foundering or after a collision by another ship. The first incident has a larger probability than the second. Because, the probability that a ship will sink after a collision in an one-way traffic lane is very unlikely. Therefore, only the incident foundering is used for the estimation of the probability that a ship will sink in the dumping area.

Probability of a container or other deck cargo overboard

The probability of loss of a container or deck cargo is used in several studies of MARIN with respect to the risk for a cable or pipeline. The probability of losing a container is refreshed based on new data. Some sources estimate that 10000 containers are lost per year at sea, while other estimates are between 3000 and 4000 containers. For the refreshment of the probability a

container is lost per mile, the estimate of 10000 lost per year is used. This number is related to the number of miles travelled by container vessels per year, calculated from the shipping characteristic database, using an average speed of 80% of the forward speed, ship for 50% loaded, 70% of the time at sea. Further it is assumed that the probability that a large ship losses a container is larger than for a small container ship. A relationship with the (TEU capacity)$^{(1/3)}$ is used which means roughly that the probability is related with the length of the ship. When using this rate for the NCS this delivers 67 containers overboard in the NCS per year. This number is checked with the number from the publication [2], in which was published that 217 containers were lost from 2006-2009 by 11 incidents. This means, in average 54 containers per year by 2,75 incidents per year and in average 20 containers per incident. Thus the container_falling_rate_per_nm corresponds with what is observed in the NCS. This rate has been applied to the ships that cross the dumping areas near Rotterdam.
The probability of deck cargo overboard per nautical mile is not refreshed because data is not available, but the probability is much lower than for a container overboard.

Probability of anchoring
From the AIS-data of 2010 it can be concluded that the dumping areas are not used for anchoring, as was expected, because there was no reason to do that just there. However, that might change for the proposed route structure because then the dumping areas of Rotterdam will be crossed by all north going ships using the moved Maas North TSS. The reason is that ships can meet technical failures after which some ships anchor for repairing. An extensive study to the behaviour of shipping that have anchored close to and within the TSSs near the Wadden is researched in [3]. The results of that study are summarized in Table 0-2.

Table 0-2 Number of observed ships that anchor in TSSs near Wadden

anchoring	2008	2009	Average 2008-2009	Coastguard involved		Captain's decision	Factor for erroneous anchoring: bad seamanship	Erroneous anchoring per year	fraction of initial rate of 24,75 per year
				total	about anchor position				
in traffic lanes of TSSs	3,00	4,00	3,50	3	75%	1,25	0,05	0,0625	0,0025
separation zone	5,00	3,00	4,00	2	75%	2,5	0,05	0,1250	0,0051
just outside	20,50	14,00	17,25	4,5	75%	13,875	0,05	0,6938	0,0280
total/year	28,50	21,00	24,75			17,63	0,05	0,8813	0,0356

Table 0-2 tells that in average 24,75 incidents per year will occur in which the ship presents the anchor after a technical failure. In a limited number of incidents the Coastguard was informed and there was discussed about the location where to anchor. These cases were considered as not resulting in anchoring above a pipeline. In all other cases the decision and location to anchor were taken by the captain. The last column of the table contains the fraction of the initial number of failures that results in an anchoring in the traffic lane, in the separation zone and just outside the traffic lane. These fractions have been applied on the failures that will occur in the dumping areas.

The percentage of 5% erroneous anchoring is applied to the cases of Table 0-2, namely to the cases without intervention of the Coastguard and to the (on average) 25% of the cases in which the Coastguard was not or too late involved. For example, for the cases "in traffic lanes of TSS" this leads to (3,5 (total cases) – 3 (Coastguard involved)) + 3 (Coastguard involved) x (1-0,75) (no communication about anchoring) = 1,25 cases in which the captain has made the decision of where to anchor, thus subject of erroneous anchoring.

Overview of probabilities of incidents

The above probabilities have been applied to the dumping areas, which results in the probabilities of Table 0-3.

Table 0-3 Probabilities of an incident in the dumping ground areas

	Dumping area		
	IJmuiden	Rotterdam North	Rotterdam South
number of containers overboard (not included in total probability)	0,000000	0,067746	0,037938
incidents with containers overboard	0,000000	0,003387	0,001897
deck cargo overboard	0,000000	0,000925	0,000518
anchoring in lane	0,000000	0,000178	0,000100
anchoring in separation zone	0,000000	0,000000	0,000102
anchoring outside	0,000040	0,000053	0,000000
foundered	0,000000	0,000420	0,000235
Probability of incident per year	0,000040	0,004963	0,002851

(the 0,000040 is a first estimate for this moment)

REFERENCES

[1] Quantitative risk assessment for offshore wind farms in the North Sea
MARIN, Report 23601.621/4, May 3, 2010

[2] Havenbedrijf Rotterdam, Inspectie Verkeer en Waterstaat
IVW/Scheepvaart, 30 augustus 2010

[3] Update Marine Hazard Study for the BBL pipeline
MARIN, Report 24052.620/5, December 10, 2010

47A

Informatieve bijeenkomst
‘ronde-2-vergunningen voor windparken op zee

16 september 2011

Gastheren: Rijkswaterstaat DN, Havenbedrijf Rotterdam, Havenmeester van Amsterdam, NUON Duurzame Energie, ENECO, SSE Renewables Netherlands, RWE Offshore Wind Nederland

Doel

- Informeren over proces
- Delen van integrale oplossing die nu voorligt
- Afspraken maken om in gesprek te blijven
- Commitment voor vertrouwelijkheid herbevestigen

Aanleiding

- TK-motie Van Veldhoven
- Staatssecretaris: draagvlak en zicht op realisatie
- Aantal beroepen en hogere beroepen

MOTIE VAN HET LID VAN VELDHOVEN

Voorgesteld tijdens het Notaoverleg van 13 december 2010

De Kamer,

gehoord de beraadslaging,

constaterende, dat naar verwachting slechts drie van de twaalf uitgegeven vergunningen voor windenergieparken op zee zullen worden gebruikt als gevolg van de uitkomsten van de tender in verband met Ronde 2 windenergie op zee;

overwegende, dat de bedrijven die meegedaan hebben aan de tenderprocedure geld en tijd hebben gestopt in de voorbereidingen voor de vergunningaanvraag, wat verloren dreigt te gaan wanneer deze vergunningen verlopen;

verzoekt de regering om de levensduur van de vergunningen in kwestie te verlengen tot 2020 en deze verhandelbaar te maken tussen marktpartijen,

en gaat over tot de orde van de dag.

Van Veldhoven

Proces

- Direct betrokkenen in mediation bijeen
  - Zomer 2011: overeenkomst
- Augustus – oktober 2011: uitwerken
  - Gesprekken met andere belangenhebbers (wie?)
  - Onderzoeken ter voorbereiding van IMO-aanvraag routering
  - Verlenging vergunningen voorbereiden
- Oktober – januari 2012: voorbereiden implementatie
  - Nadere gesprekken + 2^{e} bijeenkomst (17 nov)
- Begin 2012: finaal moment voor start implementatie
  - Oplossing OK? Draagvlak? Zicht op realisatie?

Proces

- Onderschrijven van vertrouwelijkheid
- Betreft nadrukkelijk ‘ronde 2’
- Aantal discussies vindt aan andere tafels plaats
- Dialoog

Kaart integrale oplossing

Huidig beeld

Vragen en hoe in gesprek blijven

- Discussie
- Afspraken

408A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/INF.2
March 2012
ENGLISH ONLY

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Report on the safety assessments for the proposed route structure on the North Sea off the Coast of the Netherlands

Submitted by the Netherlands

SUMMARY	
Executive summary:	This document provides background information for the separate proposals to amend existing and establish new routeing measures off the coast of the Netherlands (NAV 58/3/2 to NAV 58/3/10)
Strategic Direction:	5.2
High Level Action:	5.2.4
Planned output:	5.2.4.2
Action to be taken:	Paragraph 4
Related documents:	IMO Ships' Routeing 2010 part B section II, Part C section II, part D section I; MSC/Circ.1060, MSC.1/Circ.1060/Add.1, SN/Circ.129; NAV 58/3/2 to NAV 58/3/10

Introduction

1 The Netherland's Ministry of Infrastructure and the Environment and the Port of Rotterdam commissioned three safety assessments for the routeing system off the Netherlands' coast. The report in Annex to this document summarizes the three assessment studies, thus providing background information for consideration of the proposals submitted as documents NAV 58/3/2 to NAV 58/3/10.

2 The three safety assessment studies included:

.1 A Formal Safety Assessment (FSA), i.e. a qualitative risk assessment, for the proposed route structure in the North Sea;

.2 A Quantitative Risk Assessment (QRA) for the proposed route structure in the North Sea;

.3 A Munitions Risk Assessment (MRA) of North Sea Shipping Routes with regard to existing munition dump sites.

E 49A

INTERNATIONAL MARITIME ORGANIZATION

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/10
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Amendments to the Deep-water route leading to Europoort

Submitted by Belgium and the Netherlands

SUMMARY	
Executive summary:	This document details a proposal for amending the existing Deep-water route leading to Europoort, as part of the revision of the routeing system "In the Approaches to Hook of Holland and at North Hinder".
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 13
Related documents:	IMO Ships' Routeing, Part C section II/4-1 "Deep-water route leading to Europoort"; MSC/Circ.1060, MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 The present "Deep-water route leading to Europoort" (see Annex 1), consisting of a 30.8 nautical miles deep-water channel (the "Eurogeul") preceded by a deep-water approach area west of the channel (the Eurogeul approach area), was adopted by MSC 83 in October 2007 and was implemented on 1 July 2008.

3 The Netherlands has undertaken infrastructural changes in the Rotterdam deep water approach area by deepening and extending the deep-water channel at its inshore end whilst also deepening part of the existing approach area to the channel. Consequently, the following proposed amendments to the Deep-water route are now considered to be necessary.

50A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/9
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Amendments to routeing measures other than traffic separation schemes "In the Approaches to Hook of Holland and at North Hinder"

Submitted by Belgium and the Netherlands

SUMMARY

Executive summary:	This document details a proposal for amending routeing measures other than traffic separation schemes, as part of the revision of the routeing system "In the Approaches to Hook of Holland and at North Hinder"
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 15
Related documents:	IMO Ships' Routeing, Part B section II/10; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 The present routeing system "In the Approaches to Hook of Holland and at North Hinder" consists of the traffic separation schemes "Maas North", "Maas Northwest", "Maas West Inner", "Maas West Outer", "North Hinder North" and "North Hinder South", an inshore traffic zone, the precautionary areas "Maas Centre", "Maas Junction" and "North Hinder Junction", the "Deep-water route leading to Europoort" and the Areas to be Avoided "At Maas Centre" and "At North Hinder Junction" (see Annexes 1(a) and 1(b)).

3 The current traffic flows in the area are shown in Annex 2.

4 The proposed amendments to existing routeing measures other than traffic separation schemes and their aims are explained in the following sections whilst a plan of the proposed schemes and their defining positions are given in annexes 3, 4(a), 4(b) and 5

51A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/8
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Amendments to the traffic separation schemes "In the Approaches to Hook of Holland and at North Hinder"

Submitted by Belgium and the Netherlands

SUMMARY

Executive summary:	This document details a proposal for amendments to the existing traffic separation schemes "Maas North", "Maas Northwest", "Maas West Inner", "Maas West Outer" and "North Hinder North" as part of the revision of the routeing system "In the Approaches to Hook of Holland and at North Hinder".
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 19
Related documents:	IMO Ships' Routeing, Part B section II/10, "In the Approaches to Hook of Holland and at North Hinder"; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 The present routeing system (see Annexes 1(a) and 1(b)) "In the Approaches to Hook of Holland and at North Hinder" consists of the traffic separation schemes "Maas North", "Maas Northwest", "Maas West Inner", "Maas West Outer", "North Hinder North" and "North Hinder South", an inshore traffic zone, the precautionary areas "Maas Centre", "Maas Junction" and "North Hinder Junction", the "Deep-water route leading to Europoort" and the Areas to be Avoided "At Maas Centre" and "At the North Hinder Junction".

3 The current traffic flows are shown in Annex 2.

52A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/7
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Amendment to the Deep-water route leading to IJmuiden

Submitted by the Netherlands

SUMMARY	
Executive summary:	This document details a proposal for amendments to the "Deep-water route leading to IJmuiden".
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 10
Related documents:	IMO Ships' Routeing, Part B section II, Part C section II/5-1 "Deep-water route leading to IJmuiden"; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

Proposal

2 The Government of the Netherlands proposes to further amend the existing "Deep-water route leading to IJmuiden" that was adopted by the Organization on 1 December 2010 (see Annex 1).

Aims of the proposal

3 In order to provide more manoeuvring space for deep draught vessels adjusting their heading and speed when embarking or disembarking a pilot by helicopter the proposal aims:

.1 to alter the northern boundary of the deep-water approach area so that it is aligned with the outbound lane of the proposed TSS "IJmuiden West Outer" (see

539

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/6
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Establishment of new routeing measures other than traffic separation schemes in the area "West of Rijnveld".

Submitted by the Netherlands

SUMMARY

Executive summary:	This document details a proposal for establishing a new precautionary area, a new recommended route and a new Area to be Avoided as part of establishing a new routeing system in the area "West of Rijnveld".
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 15
Related documents:	IMO Ships' Routeing, Part E; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 The existing traffic flows in the concerned area are shown in Annexes 1(a) and 1(b).

Proposal

3 The Netherlands proposes:

.1 To establish a precautionary area "Rijnveld" in order to regulate traffic coming from the northeast bound lane of the traffic separation scheme "North Hinder North", the northwest and southeast bound lanes in and out of the TSS "Maas Northwest" and the north and south bound traffic to and from the precautionary area "Maas Junction";

54A

INTERNATIONAL
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ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/5
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Establishment of new routeing measures other than traffic separation schemes "In the Approaches to IJmuiden".

Submitted by the Netherlands

SUMMARY	
Executive summary:	This document details a proposal for establishing two new precautionary areas and an area to be avoided as part of establishing a new routeing system "In the approaches to IJmuiden"
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 13
Related documents:	IMO Ships' Routeing, Part B section II and Part D section I; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 Currently there are no traffic separation schemes for the routes to and from IJmuiden (see the current traffic flows in Annex 1), which creates unnecessary risks to shipping for the following reasons:

.1 Ships are joining and leaving the existing approach channel from both the north and the south at various locations along the channel, which can make it difficult to anticipate ships' intentions in close quarters encounters;

.2 North and southbound traffic between the traffic separation schemes "Maas North" and "Off Texel" currently cross inbound and outbound vessels at various locations along the deep-water channel shoreward of its approach area where deep draught

55A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/4
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Amendment to the Traffic Separation Scheme "Off Texel"

Submitted by the Netherlands

SUMMARY	
Executive summary:	This document details a proposal for amendments to the existing traffic separation scheme "Off Texel".
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 12
Related documents:	IMO Ships' Routeing, Part B section II "Off Texel", page II/11; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder" that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 The present situation in the area around "Off Texel" is shown in Annex 1 together with the current traffic flows at the traffic separation scheme "Off Texel".

The proposal

3 The Netherlands proposes the following amendments to the existing TSS "Off Texel":

.1 To re-orientate the northeast bound lane slightly and extend it southwestward by modifying the southeast corner of the separation zone;

.2 To establish a southern branch lane for traffic bound for the TSS Maas North and IJmuiden North by establishing an additional small triangular separation zone at the end of the southwest bound lane so that the branch lane passes between the main separation zone and the above mentioned small triangular separation zone;

5 6A

INTERNATIONAL
MARITIME
ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/3
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

Establishment of new traffic separation schemes "In the Approaches to IJmuiden"

Submitted by the Netherlands

SUMMARY	
Executive summary:	This document details a proposal for establishing a new system of traffic separation schemes as part of establishing a new routeing system "In the approaches to IJmuiden"
Strategic Direction:	5.2
High-level Action:	5.2.4
Planned Output:	5.2.4.1
Action to be taken:	Paragraph 13
Related documents:	IMO Ships' Routeing, Part B section II; MSC/Circ.1060, MSC.1/Circ.1060/Add.1; SN/Circ.129; NAV 58/3/2

Introduction

1 Reference is made to document NAV 58/3/2 "General introduction to the proposals to amend the routeing measures off the Coast of the Netherlands between Texel and North Hinder", that outlines the overall intent of the Netherlands' proposals to amend existing traffic measures and to establish new measures at different locations off the coast of the Netherlands.

2 There are currently no traffic separation schemes for the routes to and from IJmuiden (see the current traffic flows in Annex 1), which creates unnecessary risks to shipping for the following reasons:

.1 Ships are joining and leaving the existing approach channel from both the north and the south at various locations along it, which can make it difficult to anticipate ships' intentions in close quarters encounters;

.2 North and southbound traffic between the traffic separation schemes "Maas North" and "Off Texel" currently cross inbound and outbound vessels at various locations along the deep-water channel inshore of its approach area where deep draught vessels are restricted in their ability to take the appropriate evasive action when in risk of collision encounter;

57A

INTERNATIONAL MARITIME ORGANIZATION

E

SUB-COMMITTEE ON SAFETY OF NAVIGATION
58th session
Agenda item 3

NAV 58/3/2
March 2012
Original: ENGLISH

ROUTEING OF SHIPS, SHIP REPORTING AND RELATED MATTERS

General introduction to the proposals for new and amended routeing measures off the Coast of the Netherlands between Texel and North Hinder

Submitted by the Netherlands

SUMMARY

Executive summary:	This document outlines the overall intent of eight separate proposals to amend existing traffic measures and to establish new measures at different locations within the sea area between the North Hinder area and the traffic separation scheme "Off Texel" off the coast of the Netherlands. This general introduction is to be used in conjunction with the eight separate proposals submitted to NAV 58 and explains the interrelation of the separate proposals.
Strategic Direction:	5.2
High Level Action:	5.2.4
Planned output:	5.2.4.1
Action to be taken:	Paragraph 32
Related documents:	Ships' Routeing part B section II, Part C section II, part D section I; MSC/Circ.1060 and MSC.1/Circ.1060/Add.1, SN/Circ.129; NAV 58/3/3 to NAV 58/3/10, NAV 58/INF. 2

Introduction

1 The aim of this document is to outline the overall intent of the specific proposals to amend existing traffic measures and to establish new measures at different locations within the sea area between the North Hinder area and the traffic separation scheme Off Texel off the coast of the Netherlands. This general introduction is to be used in conjunction with eight separate submissions and explains the interrelation of the separate proposals.

2 The general purpose of the proposals is to improve safety of navigation and safety of offshore oil and gas production platforms off the Netherlands' Coast where freedom of movement of shipping is inhibited by restricted sea room and the existence of obstructions to navigation, such as present and future developments of large scale renewable energy (wind).

1

VERSLAG DIRECTEURENOVERLEG VOOR WERKGROEP VEILIGE AFSTANDEN

9 juli 2013, RWSZD, Lange Kleiweg, Rijswijk.

Deelnemers: [redacted] (directie maritieme zaken DGB), [redacted] (Rijkswaterstaat Zee en Delta), [redacted] (Havenbedrijf Amsterdam), [redacted] (Havenbedrijf Rotterdam), [redacted] (Kustwacht), [redacted] (vz / verslag).

De volgende documenten vormen de input voor het directeurenoverleg:

- Concept afwegingskader (versie 9 juli 2013), inclusief bijlagen
- Brief van de directeur maritieme zaken van DGB (kenmerk IENM/BSK-2013/142335 van 8 juli 2013), waarin zij uiteenzet op welke manier zij het afwegingskader gaat toepassen.

---

1. Opening

De voorzitter opent de vergadering, heet ieder welkom en licht toe hoe de Werkgroep het behaalde resultaat ziet op basis van het afwegingskader en de beleidskeuze van DGB:

1. Een (advies voor een) afwegingskader waarmee vanuit de invalshoek veiligheid maatwerk inhoudelijk onderbouwd wordt en dat dient als heldere basis voor een beleidskader. Maatwerk kan in de kaart worden ingetekend. De contramal van het maatwerk is beschikbaar voor andere functies, specifiek: aanwijsgebied wind.
2. Duidelijkheid over de toepassing ervan bij het vormgeven van het beleidskader (maatwerk), en het aanwijsgebied en kaveluitgifte (wind).
3. Bereidheid bij de deelnemende organisaties van de Werkgroep om:
   - In internationale fora het afwegingskader te presenteren als de bijdrage van ons land en dit verder te ontwikkelen.
   - Wanneer dit relevant wordt: maatwerk c.q. afwijken van de 2nM afstand tussen scheepvaartroutes en (toekomstige) windmolenparken gezamenlijk in IMO-commissies te presenteren en onderbouwen.
   - Wanneer dit relevant wordt: verkeersbanen (paden) aan te passen / te versmallen, bijvoorbeeld om de gewenste veiligheidsmarges te creëren.

2. Vaststellen afwegingskader

Aanvullingen op het concept afwegingskader en actiepunten n.a.v. bespreking:

- Correctie: toevoegen 'niet' op pagina 15.
- Het afwegingskader is een technische benadering. Hoewel dit de enige manier is om een afweging over maatwerk te maken valt, betekent toepassing ervan niet dat de Noordzee per se veiliger wordt. Daarvoor zijn ook opleiding en training nodig, en dat ligt voor een groot deel buiten onze macht (opm. Kustwacht).

- Aanvullingen bij drift (p. 7, 16) en mitigerende maatregelen (p. 15, 17), op suggestie van Kustwacht:
    1. Bij drift: toevoegen van windkracht en windrichting,
    2. Bij mitigerende maatregelen: een opmerking over extra verkeer en het grotere benodigd areaal voor veilig navigeren bij de bouwperiode van windmolenparken, afspraken over het opleggen van bepalingen en maatregelen aan de bouwer van windmolenparken, afspraken over monitoring tijdens de bouw.

    Actiepunt 1: De Werkgroep levert het afwegingskader met de gemaakte aanvullingen op als advies aan DGB en voegt daarbij een korte uitleg / redeneerlijn in de vorm van een oplegvel (n.a.v. verzoek Rijkswaterstaat).

    Actiepunt 2: Rijkswaterstaat, Kustwacht en havenbedrijven maken nadere afspraken over operationele samenwerking tijdens de bouw van windmolenparken. Dit gezien de besproken aandachtspunten over extra verkeer en de behoefte aan een groter areaal voor veilig navigeren tijdens de bouw van windmolenparken, en maatregelen die aan bouwers van parken worden opgelegd.

Besluit: vaststellen van het afwegingskader

Het directeurenoverleg besluit om het Afwegingskader en bijlagen vast te stellen, met inbegrip van de besproken aanvullingen. De Werkgroep kan het Afwegingskader als advies aanbieden aan de directeur maritieme zaken van DGB.

3. Brief van DMZ van DGB

De directeur maritieme zaken licht de beleidskeuze toe die zij in haar brief heeft uiteengezet. Door het afwegingskader en de genomen beleidskeuze, ontstaat duidelijkheid over onderbouwing van maatwerk voor afstanden tussen scheepvaartroutes en windmolenparken.

De verwachting van DGB is dat de nu ontstane duidelijkheid over maatwerk ook bijdraagt aan doelstellingen van DGRW en het ministerie van EZ. Enkele belangrijke argumenten die pleiten voor toepassing van het afwegingskader inclusief de gemaakte beleidskeuze van DGB, zijn:

- Er is draagvlak voor het maatwerk bij de betrokken organisaties. Het ontbreken van draagvlak is een blokkade voor tempo. Tempo zou nu wel mogelijk moeten zijn.
- Er ontstaat duidelijkheid voor de windsector: op basis van maatwerk kan een 'aanwijsgebied' voor windmolenparken aangeduid worden, waarbij sprake is van transparante procedures. Business cases voor windmolenparken worden hierdoor robuuster. De windsector heeft zijn waardering voor het afwegingskader uitgesproken.
- Er is aandacht voor de economische gevolgschade bij een stremming van de scheepvaartroutes van en naar Nederlandse zeehavens. In het afwegingskader is alleen rekening gehouden met onderbouwing van maatwerk op basis van veiligheidscriteria. Door de beleidskeuze van DGB wordt ook rekening gehouden met de economische schade en de schade aan het imago van Nederlandse havens in geval van een stremming.

De directeur maritieme zaken licht haar inzet toe bij het ontwikkelen van een beleidskader op basis van het afwegingskader en de genomen beleidskeuze. Het IDON (Interdepartementaal Overleg Noordzee) in september is hierbij een belangrijk moment. De voorbereidende stuurgroep vindt begin september plaats.

Besluit: De organisaties stemmen van harte in met de beleidskeuze van de directeur maritieme zaken en zeggen verder ondersteuning toe bij het vormgeven van het beleidskader.

4. Het proces van de totstandkoming van het afwegingskader

5. Afronding

Actiepunt 5: de Werkgroep informeert de organisaties en personen waarmee de afgelopen tijd contact is geweest over het behaalde resultaat en het proces dat volgt. Men zal voor verdere berichtgeving en contact worden verwezen naar DGB.

Actiepunt 6: Nadat de actiepunten zijn uitgevoerd zal de Werkgroep zich opheffen; de opdracht is vervuld.

Bij de sluiting van het directeurenoverleg dankt de voorzitter ieder voor zijn betrokkenheid en inzet, en feliciteert hij ieder met het behaalde resultaat.

2

E-mailbericht

Van:	[redacted] MTP[redacted]@nieuw-script.nl]
Instellen op:	[redacted] [SMTP:[redacted]portofrotterdam.com], [redacted] DGLM [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=DGG/cn [redacted] [SMTP:[redacted]portofamsterdam.nl], [redacted] DGLM [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=DGG/cn=[redacted]NZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=sievalm01]
Cc:	
Verzonden:	7-5-2012 om 14:55
Ontvangen:	7-5-2012 om 14:55
Onderwerp:	VEILIGE AFSTANDEN NOTITIE 7 MEI
Bijlagen:	image002.jpg Veilige afstanden_ 7 mei 2012.docx

Best Werkgroeplid,

Helaas [redacted] is het me niet heel vroeg gelukt, maar hierbij notitie aangevuld met opmerkingen van NWEA / SAN en onze werkgroep.

Veranderd is:
- inleiding en legitimatie
- toegevoegd: paragraaf 2.3: de criteria die we in de redeneerlijn hebben besproken met stakeholders
- verankering in beleidslijn 2.4.: dat zijn nu alleen nog losse opmerkingen

We hebben het volgende afgesproken:
- loop er doorheen en vul aan / verander waar nodig (veranderingen bijhouden)
- kijk vooral naar paragraaf 2.3: op basis waarvan doen we uitspraken over afstanden? Welke afstanden worden in onderzoeken en rapporten genoemd?
- stuur terug zsm, ik maak er 1 document van.

Verder:
- maak ik nog kort verslag richting /IDON (stuur ik naar ter afstemming)
- hoop ik dat (Eneco) me nog iets laat weten over vervolggesprek met NWEA, bv op 21/5
- zoek ik contact met Ingrid Klein over juridische vragen.

Tot snel.

Groet

http://www.nieuw-script.nl/

E-mailbericht

Van:	[SMTP: @nieuw-script.nl]
Instellen op:	- DGLM [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=DGG/cn=[redacted], Marco (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=eemanm] [redacted]@portofamsterdam.nl [SMTP:[redacted]@portofamsterdam.nl], [redacted]ies@portofrotterdam.com [SMTP:rene.de.vries@portofrotterdam.com]
Cc:	[redacted] SMTP:BRJ portofrotterdam.com], [redacted] (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=[redacted]1], [redacted] - DGLM [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=DGG/cn=[redacted] - DGLM [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=DGG/cn=[redacted] [SMTP:[redacted]@portofamsterdam.nl], (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=[redacted] (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=[redacted] - DGMo [EX:/O=Min. V&W/ou=VW-BSK/cn=Recipients/cn=[redacted] (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=[redacted]2], [redacted] (DNZ) [EX:/O=SSO - ICT/OU=First Administrative Group/cn=Recipients/cn=[redacted]
Verzonden:	8-5-2012 om 16:02
Ontvangen:	8-5-2012 om 16:03
Onderwerp:	2e voortgangsbericht Veilige afstanden

Geachte directeur,

[redacted]

Hierbij ontvang je het 2e voortgangsbericht van de werkgroep Veilige afstanden. Op 22/3 verscheen het 1e bericht.

De werkgroep heeft de opdracht gekregen om een instrumentarium te ontwikkelen voor het (objectief) bepalen van 'maatwerk' voor veilige afstanden vanuit de invalshoek van nautische veiligheid, die de toets der kritiek van de Nederlandse rechtbank en International Maritime Organization (IMO) kan weerstaan, op instemming kan rekenen van stakeholders, ingesteld kan worden als beleidslijn waar de vergunningverlener zich op zal baseren bij een vergunningaanvraag voor een windpark.

Naar aanleiding van alle reacties op het 1e voortgangsbericht in maart, is de volgende actie ondernomen:

1) We richten ons op een transparante en aanvaarde methodiek ten behoeve van de vergunningverlener (RWS) cq de kaveluitgifte (EL&I). Voorheen koppelden we advies (aan vergunningaanvrager) en vergunningverlening aan elkaar. Dat is losgelaten. Vergunningaanvrager wordt voorafgaand aan het vergunningtraject dringend gevraagd om met andere belanghebbenden af te stemmen.

2) Er is een intensief traject met belangenhebbers opgestart (NWEA, SAN-leden), om 3 redenen: (a) verkrijgen van inzichten in criteria voor veilige afstanden, (b) versterken van het gevraagde draagvlak bij stakeholders en (c) onderbouwing van de legitimiteit van een instrument om veilige afstanden op zee te ontwikkelen, mede vanuit de belangen van stakeholders (wind, Noordzeegebruikers).

3) Er is afstemming met IWO (Interdepartementaal Wind Overleg) en de manier waarop een instrument past op beleid (oa kaveluitgifte, behoefte om eventueel scheepvaartveiligheid mee te nemen in MER).

4) Er is een aantal juridische vragen uitgezet bij RWS DN.

Resultaten tot nu:

- De structuur van de methodiek is helder, afgestemd op internationaal erkende richtlijnen (GPRS en PIANC) en alle stakeholders onderschrijven de behoefte en structuur van de methodiek.

- De Werkgroep is bezig met de 'invulling van criteria'; stakeholders willen daarbij input leveren

- We bereiden een pilot voor om de methodiek te beproeven.

Vooruitblik op advies in juni:

- Door de wijzigingen in aanpak en de extra overleggen met stakeholders verwachten we in juni een voorlopig advies te kunnen opleveren, voorafgaand aan de pilot. De pilot wordt voorbereid en zal wellicht in juni starten. In juni verwachten we in een (voorlopig) advies aan de directeur Maritieme Zaken duidelijkheid te hebben over de methodiek, de te hanteren criteria, de legitimiteit van het instrument, de eventuele verankering in een beleidslijn.

- Door de wijzigingen en extra afstemming met stakeholders is extra tijdinzet gepleegd door alle werkgroepleden. Het betreft ook mijn inzet, in overleg met de werkgroepleden. Ik ga ervan uit dat belasting van deze inzet geen probleem oplevert.

- Het tijdpad van de werkgroep is als volgt:

April 2012

- Bespreking eerste voorzet met IWO (17/4), windsector (24/4), SAN (4/5) en anders specifieke stakeholders
- Voeren van internationaal overleg
- Formuleren en uitzetten aantal (juridische) vragen

Leidt tot concept 7 mei (tb voorafgaand aan IDON)

Mei
2012

- Eerste concept bespreken met specifieke stakeholders tijdens vervolggesprekken in mei
- Uitwerken juridische status van beleidslijn, passend op overige beleidsontwikkelingen. Verslag aan IWO (29 mei)
- Eerste concept afstemmen internationaal (datum ntb)
- Voortgangsverslag aan opdrachtgevers (15 mei IDON)
- Voorbereiden uitvoeren pilot

Leidt tot aangepast concept

Juni 2012

- Toelichten tijdens breed stakeholderoverleg door RWS DN
- Start uitvoeren pilot
- Antwoorden op (juridische) vragen in ontwerp
- Verslag aan IWO (19 juni)
- Opleveren advies aan directeuren RWS, HBA, HBR en DGB (2e helft juni; datum ntb)
- Eventueel plan voor nadere uitwerking
- Kortsluiten met anderen, onder andere PIANC werkgroep EU Marine spatial planning.

Advies

Vriendelijke groet,

Namens de Werkgroep Veilige afstanden

[redacted]

Haven Amsterdam

3

Memo

Aan	[redacted] RWS Directie Noordzee
	[redacted] HbR
	[redacted] HA
	[redacted], HbR
	[redacted]
Van	[redacted]
Afdeling	Nautische Sector
Doorkiesnummer	020 523 4754
Datum	30 november 2011
Onderwerp	Veilige afstanden, projectopdracht

In de bijeenkomst van 24 november zijn wij overeengekomen om de project opdracht: veilige afstanden als volgt te formuleren.

Voor half juni 2012 levert de werkgroep een advies over veilige afstanden op zee aan de opdrachtgever: namens het departement [redacted]. Het advies gaat de status krijgen van een 'advies aan het IDON'.

De projectgroep krijgt de volgende kaders mee:

- Leg de basis: welke belangen worden meegenomen:
  - Op basis van de wettelijke kaders.
  - Klanteninput. Welke belangen nemen we mee? Is er een hiërarchie tussen waterbelangen en overig? Welke criteria levert dit op?
- Stel objectiveerbare criteria op die eventueel maatwerk onderbouwen.
  - Criteria tussentijds vaststellen zodat uitkomsten van simulaties worden geaccepteerd.
- Stel een onderbouwde methode op voor de simulatie waarin de werkelijkheid zo realistisch mogelijk wordt nagebootst.
- Laat de simulaties uitvoeren
- Zorg voor integrale toetsing van de resultaten op haalbaarheid en juridische uitvoerbaarheid.
- Breng het advies uit.

De projectgroep krijgt de suggestie mee om vergelijkingen te maken met andere sectoren: hoe pakt men dit elders op?

De projectgroep bestaat uit: [redacted]. De leden van de werkgroep wordt gevraagd dit onderwerp als nieuw te behandelen en 'te beginnen met een schone lei'..

Resultaten kunnen tussentijds worden voorgelegd aan [redacted].

Tekstvoorstellen voor Criterium:

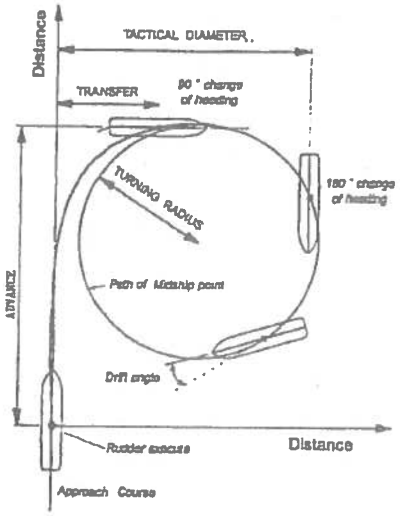
1. Ruimte voor een noodmanoeuvre: rondtorn; en
2. Ruimte voor uitwijken niet routegebonden verkeer uit parken indien wel/niet doorvaarbaar zijn.

Noot: nieuwe/gewijzigde tekst geef ik aan in 'geel'

A. Ruimte voor een noodmanoeuvre: rondtorn

Kolom: ***Uitspraken, onderzoeken en instituten om (waarde van) criteria op te baseren***

Noot:
1. in welke kolom je 't plaatje plaatst laat ik even aan jouw over



1. IMO normen voor manoeuvreerbaarheid schepen – '*Para. 5.3.1: Turning ability: The advance should not exceed 4.5 ship lengths (L) and the tactical diameter should not exceed 5 ship lengths in the turning circle manoeuvre. – Para. 1.2.3.5: Turning ability: Turning ability is the measure of the ability to turn the ship using hard-over rudder.*' (zie resp. Resolutie MSC.137(76) en MSC/Circ.1053)
2. Netwerkanalyse 2007 (studie 10)

Kolom: ***Aanvaarde waarde van criterium en effecten op afstanden***

IMO normen voor manoeuvreerbaarheid schepen + 20% veiligheidsmarge ivm '*worst case*'.
Betekent: 5 x lengte schip* + 20% = totaal 6 scheepslengtes
- 'lengte schip'= lengte schip maatvoerend schip

Uitleg waarom '20% veiligheidsmarge':
1. Niet alle schepen voldoen aan de vigerende IMO normen, zijn namelijk vast van toepassing op schepen gebouwd op of na 1 januari 2004. Deze 'oudere' schepen kunnen een grotere draaicirkel hebben;
   Noot: gemiddelde leeftijd wereldvloot: 19 jaar (bron: *Lloyd's Register/Fairplay - World Fleet Statistics 2011)*
2. De 'ideale' manoeuvre zal hoogwaarschijnlijk in de praktijk niet worden uitgevoerd - wordt oa op startpunt manoeuvre wel daadwerkelijk 'hard roer' gegeven – in het bijzonder bij

schepen met een hoge vaart zal men geneigd zijn dit niet direct te doen. Hierdoor zal draaicirkel groter worden.

De noodzaak tot het maken van een rondtorn doet zich voor in een tweetal gevallen:

a. Bij een uitwijkplichtig schip van bakboord in dat niet aan zijn uitwijkplicht voldoet; in dat geval moet een aanvaring worden voorkomen waarbij een rondtorn overstuurboord noodzakelijk kan zijn;
b. Als wordt uitgeweken voor een schip van stuurboord dat vervolgens géén koers en vaart houdt en naar bakboord uitwijkt; in dat geval rest slechts het maken van een rondtorn om een aanvaring te voorkomen.

Overigens maakt het voor de ruimte benodigd voor het maken van een rondtorn niet uit of deze situatie zich in open water dan wel in een VSS voordoen.

Noot: bij VSS situatie wordt de 500 meter veiligheidszone rondom objecten wordt niet bevaren. Indien de 500 m veiligheidszone namelijk niet wordt meegerekend in benodigde ruimte voor een rondtorn is er een significant risico op alsnog aanvaring schip en object.

B. Ruimte voor uitwijken niet routegebonden verkeer uit parken indien wel doorvaarbaar zijn

Kolom: ***Aanvaarde waarde van criterium en effecten op afstanden***

In deze situatie wordt uitgegaan van slecht zicht waardoor detectie plaats vindt d.m.v. radar.

In het geval van een klein schip ontstaat pas een reële detectie kans als het ruim vrij is van het windmolenpark; dit heeft te maken met de negatieve effecten op radarbeeld van het collission avoiding system (CAS), voor koopvaardij schepen bijna altijd een 10cm radar, door de intensieve echo's die het park veroorzaakt. De reden daarvan is dat niet alleen de hoofdbundel maar ook de zijbundels van het uitgezonden radarsignaal ten gevolge van het grote reflecterende oppervlak van de windmolens voldoende sterkte hebben om echo's van de windmolens te veroorzaken op het radarbeeld; dit betekent dat niet 1 maar 3 echo's worden terugontvangen van een enkele windmolen waardoor in het radarbeeld echo's van kleine schepen dicht bij het park dusdanig worden onderdrukt dat de plotsystemen de terug signalen niet permanent detecteren. Op een afstand van ca. 0,5 mijl vanaf het windpark zal het signaal van een klein schip pas voldoende onderscheidend zijn van die van de windmolens dat permanente detectie mogelijk is.

AIS is geen systeem voor collission avoiding. AIS is gebaseerd op GPS en dat registreert de snelheid over de grond. Voor collission avoiding is snelheid door het water benodigd, en het CAS rekent hier ook mee. AIS, op die schepen die hiermee zijn uitgerust, is echter wel beschikbaar en deze zijn dan ook zichtbaar~~. Je kunt de schepen dus wel zien als ze uitgerust zijn met AIS~~.

Voor de benodigde afstand zijn de volgende aannames gehanteerd:

- Vaart van verkeer uit park: 10 knopen
- Afstand van verkeer tot eerste paal voordat target te plotten is: 0,5 NM
- Tijd nodig voor een betrouwbare plot: 6 minuten (conform rule 7C van International Regulations for Preventing Collisions at Sea)
- Afstand die verkeer in de scheepvaartbaan aflegt in deze 6 minuten: 1,0 NM
- Verkeer is dan 1,5 NM verwijderd van eerste paal van het windturbinepark
- Minimale afstand nodig om voor klein verkeer nog uit te wijken: 0,5 NM of Ruimte voor een noodmanoeuvre: rondtorn – 6L. [keuze in deze 2 opties?]
- Conclusie: totaal benodigde ruimte [2] of [2,8] NM

Noot: moet de 0,5NM niet 0,3NM zijn?

C. Ruimte voor uitwijken niet routegebonden verkeer uit parken indien niet doorvaarbaar zijn

Kolom: ***Aanvaarde waarde van criterium en effecten op afstanden***

Wordt geen rekening mee gehouden in model. Parken zijn immers verboden gebied voor alle schepen tenzij parkbeheerder toestemming heeft gegeven. Betreft voornamelijk onderhoudsverkeer. Via mitigerende maatregelen in afspraken (laten) opnemen op welke plek onderhoudsverkeer windparken mag in- en uitvaren.
Opmerking: indien géén mitigerende maatregelen dan wordt uitgegaan van situatie van slecht zicht waardoor detectie plaats vindt d.m.v. radar. Dus wordt de situatie identiek als die bij "Ruimte voor uitwijken niet routegebonden verkeer uit parken indien wel doorvaarbaar zijn" en met bijbehorende benodigde ruimte voor uitwijken.

6

Ministerie van Infrastructuur en Milieu

Dir. Gebieden en Projecten DGRW

Bestuurskern
Dir.Maritieme Zaken
Afd. Zeevaart en Security
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Contactpersoon
drs. [redacted]
Senior [redacted]werker

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Datum
12 augustus 2014

memo

veilige scheepvaart bij precautionary area Westrijn

Beste [redacted]

In september 2013 heeft het IDON het afwegingskader veilige afstanden tussen scheepvaartroutes en windparken op zee geaccordeerd. Dit afwegingskader is inmiddels in de Rijksstructuurvisie wind op zee opgenomen. In dit afwegingskader is sprake van veilige afstanden in een aantal verkeerssituaties waar veel windgebieden gepland zouden worden, namelijk bij verkeersscheidingstelsels, ankergebieden en clearways.

Bij de studie inzake de aanwijzing van windgebieden binnen de 12 mijlszone eind 2013 werd onder andere de focus gelegd hoe om te gaan met een precautionary area, een nog niet in het afwegingskader opgenomen verkeerssituatie. Een precautionary area is een gebied waar voorzichtigheid gevraagd wordt (hiervoor staat ook een speciaal symbool in de zeekaart) omdat hier meerdere scheepvaartroutes bij elkaar komen.
De scheepvaartdeskundigen van de Kustwacht, de havenbedrijven Amsterdam en Rotterdam en DGB zijn het met elkaar eens dat ook hier het afwegingskader van toepassing zou moeten zijn, omdat ook langs deze areas alle manoeuvres gemaakt moeten kunnen worden om zo veilig mogelijk te varen.

Bij de meeste precautionary areas heeft dit geen consequenties voor het ruimtebeslag en windgebieden, voor twee locaties wel: Maasvlakte en Westrijn. Maasvlakte komt bij de haalbaarheidsstudie terug, dus die laat ik nu buiten beschouwing. Bij Westrijn zou, bij toepassing van het aangepaste afwegingskader, het zoekgebied voor wind op zee met 15 km2 verkleind worden. Dit gebied is momenteel bruto 190 km2. Het zou geen gevolgen hebben voor de huidige vergunning die in dit gebied ligt.

Bij de (eerdere) opstelling van het afwegingskader is de specifieke precautionary area bij de windlocatie Westrijn, door alle hectiek waarin het kader tot stand is gekomen, over het hoofd gezien. Toepassing van het afwegingskader incl. de precautionary area vergt bij deze locatie een afstand van 1,87 nm ten opzichte

Bestuurskern
Dir.Maritieme Zaken
Afd. Zeevaart en Security

Datum
12 augustus 2014

van de scheepvaartroutes.

Bovengenoemde zienswijze wordt gedeeld door de meeste partners die het afwegingskader opgesteld en geaccordeerd hebben: de havenbedrijven Amsterdam en Rotterdam, de Kustwacht en DGB. Parallel aan de beleidsbeslissing inzake het afwegingskader veilige afstanden van 8 juli 2013, geaccordeerd door het IDON in september 2013, acht ik het vanuit beleidsoogpunt noodzakelijk dat dit ook op de precautionary area Westrijn wordt toegepast om redenen als eerder aangegeven:

. het creeren van duidelijkheid op korte termijn voor alle actoren waardoor bij kaveluitgifte ook gelijk duidelijkheid bestaat welk gebied voor wind op zee beschikbaar is vanuit deze scheepvaartoptiek
. de mate van draagvlak
. een duidelijk en consistent standpunt ten behoeve van internationale discussies

Met vriendelijke groet,

[redacted]

Directeur Maritieme Zaken

Ministerie van Infrastructuur en Milieu

Minister

Directoraat-Generaal Ruimte en Water
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Contactpersoon

nota ter informatie

Advies Commissie voor de m.e.r. op planMER'en ontwerp-Rijksstructuurvisie Windenergie op Zee

Datum
19 maart 2014

Kenmerk
IENM/BSK-2014/65625

Bijlage(n)
1

Inleiding
De Commissie voor de milieueffectrapportage (hierna: de Commissie) is per brief van 9 januari 2014 gevraagd om advies uit te brengen op de milieueffectrapporten behorende bij de ontwerp-Rijksstructuurvisie Windenergie op Zee (hierna: het ontwerp). Met het ontwerp worden de windenergiegebieden Hollandse Kust en Ten Noorden van de Waddeneilanden aangewezen. Beide gebieden liggen buiten de 12-mijlszone.

Op 10 maart 2014 vond het eindgesprek plaats met de Commissie over het advies (zie bijlage). De Commissie is voornemens het advies op maandag 24 maart uit te brengen als een voorlopig advies, eventueel met een persbericht.

Samenvatting, kern of boodschap

paraaf
DGRW-GP

Ad 1, ad 2 en ad 4 (zie toelichting)

Ad 3.

DIRECTEUR-GENERAAL RUIMTE EN WATER,

Toelichting Commissie benoemde tekortkomingen

Notitie Reikwijdte en Detailniveau

Ministerie van Infrastructuur en Milieu

> Retouradres Postbus 20901 2500 EX Den Haag

Commissie voor de milieueffectrapportage
Werkgroep Windenergie op Zee
T.a.v. de heer drs. L.H.J. Verheijen
Postbus 2345
3500 GH UTRECHT

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Contactpersoon

Ons kenmerk
IENM/BSK-2014/1153

Uw kenmerk
Rapportnummer 2775-37

Bijlage(n)
11

Datum 9 januari 2014
Betreft Onderwerp: Advies milieueffectrapporten ontwerp-Rijksstructuurvisie Windenergie op Zee

Geachte heer Verheijen,

Op 20 december 2013 heeft het kabinet - op voorstel van de minister van Infrastructuur en Milieu (IenM) en de minister en staatssecretaris van Economische Zaken (EZ) - ingestemd met de ontwerp-Rijksstructuurvisie Windenergie op Zee (WoZ), zijnde een partiële herziening van het Nationaal Waterplan (NWP) 2009-2015. In de Structuurvisie worden in de Nederlandse Exclusieve Economische Zone gebieden aangewezen waar grootschalige windenergie op zee mogelijk is. Concreet gaat het om het aanwijzen van de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden.

In het Energieakkoord voor duurzame groei (september 2013) is met de betrokken partijen afgesproken dat 4.450 MW aan windvermogen op zee operationeel is in 2023. Dit betekent dat er vanaf 2015 nog voor in totaal 3.450 MW dient te worden aanbesteed. Het kabinet streeft hierbij naar een zo kosteneffectief mogelijk opgesteld vermogen. Dit is een belangrijk uitgangspunt bij de belangenafweging en de uitvoering van Europeesrechtelijk verplichtingen. Hierbij wordt een afweging gemaakt tussen de in het Nationaal Waterplan reeds aangewezen gebieden 'Borssele' en 'IJmuiden Ver', de in deze Structuurvisie aangewezen gebieden 'Hollandse Kust' en 'Ten Noorden van de Waddeneilanden' alsmede de eventueel aan te wijzen gebieden binnen de 12-mijlszone.

Middels deze brief wil ik de Commissie voor de milieueffectrapportage (hierna 'de Commissie') verzoeken om een advies uit te brengen over de Ontwerp-Rijksstructuurvisie WoZ en de milieueffectrapporten (inclusief de Passende beoordelingen) voor de aan te wijzen gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden.

De Commissie heeft, op verzoek van het ministerie van IenM, advies uitgebracht over de Notitie Reikwijdte en Detailniveau (NRD). Met deze brief geef ik aan op welke wijze met uw advies rekening is gehouden bij het opstellen van het ontwerp-plan en de milieueffectrapporten. Tevens is deze brief bedoeld om u te informeren over het vervolgproces.

Advies Notitie Reikwijdte en Detailniveau
Op 2 april 2013 is de 'kennisgeving' gepubliceerd van het 'voornemen' om een

Rijksstructuurvisie voor Windenergie op Zee op te stellen (Staatscourant, nr. 8764). Tevens is de NRD ten behoeve van de planmilieueffectrapportage (planMER) gepubliceerd en zijn adviseurs en bestuursorganen hierover geraadpleegd. In totaal hebben 39 bedrijven, particulieren,.organisaties en overheden gereageerd op de kennisgeving of raadpleging met een zienswijze op het voornemen en de NRD.

Vanwege de gevoeligheid en complexiteit van windenergie op zee is de Commissie per brief van 29 maart (kenmerk IENM/BSK-2013/32093) verzocht om advies uit te brengen over de NRD. Zoals aangeven maakten de ontvangen zienswijzen geen onderdeel uit van de adviesaanvraag. Het advies van de Commissie is per brief van 4 juni 2013 (rapportnummer 2775-37) aangeboden aan het ministerie. In bijlage 1 wordt op hoofdlijnen aangegeven op welke wijze met uw advies rekening is gehouden bij het opstellen van het ontwerp-plan en de milieueffectrapporten.

Adviesaanvraag milieueffectrapporten

Conform artikel 7.12 Wet milieubeheer wil ik de Commissie verzoeken advies uit te brengen over de milieueffectrapporten behorende bij de ontwerp-Structuurvisie.

Het ontwerp wordt openbaar aangekondigd. De openbare kennisgeving wordt gepubliceerd in de Staatscourant en diverse kranten. Publicatie is voorzien op donderdag 9 januari 2014, de zienswijzenperiode loopt van 10 januari tot en met 20 februari 2014. Een ieder heeft de mogelijkheid om zienswijzen in te dienen op het ontwerp en de bijbehorende stukken. Maatschappelijke organisaties en marktpartijen worden via het Overleg Infrastructuur en Milieu betrokken. Hiertoe is een bijeenkomst gepland op dinsdag 14 januari. De omringende landen worden via de zogeheten Espoo-contactpersonen geïnformeerd over het ontwerp.

Bijgevoegd zijn de volgende documenten:

- Ontwerp-Rijksstructuurvisie Windenergie op Zee;
- Kennisgeving besluit ontwerp-Rijksstructuurvisie Windenergie op Zee;
- Brief Tweede Kamer inzake ontwerp-Rijksstructuurvisie Windenergie op Zee, d.d. 20 december 2013.
- Milieueffectrapportage gebied Hollandse Kust (planMER);
- Passende beoordeling gebied Hollandse Kust;
- Scheepvaartrisicoanalyse Hollandse Kust (MARIN rapport);
- Milieueffectrapportage gebied Ten Noorden van de Waddeneilanden (plan-MER);
- Passende beoordeling gebied Ten Noorden van de Waddeneilanden;
- Scheepvaartrisicoanalyse Ten Noorden van de Waddeneilanden (MARIN rap-port);
- Reactiedocument zienswijzen over het voornemen tot het voorbereiden van de Rijksstructuurvisie Windenergie op Zee.

De documenten worden digitaal toegestuurd naar het secretariaat van de Commissie alsmede ook - conform afspraak - meerdere exemplaren van bovenstaande stukken.

De ontvangen zienswijzen op het ontwerp en de bijbehorende stukken maken geen onderdeel uit van de adviesaanvraag.

Vervolgproces

De ontvangen zienswijzen worden, waar mogelijk, betrokken bij de definitieve Rijksstructuurvisie WoZ. In een nota van Antwoord wordt opgenomen of en op

Bijlage 1

1.1. Achtergrond

In het Nationaal Waterplan 2009-2015 zijn de gebieden Borssele en IJmuiden Ver aangewezen. Daarnaast is in het Nationaal Waterplan aangekondigd dat het kabinet door middel van een aanvulling van het Nationaal Waterplan extra windenergiegebieden zal aanwijzen voor de Hollandse Kust en Ten Noorden van de Waddeneilanden. Deze gebieden worden in deze ontwerp-Rijksstructuurvisie Windenergie op Zee (WoZ) aangewezen. De Structuurvisie is daarmee formeel een herziening van het Nationaal Waterplan. Dat wil zeggen dat deze Structuurvisie het Nationaal Waterplan en de bijbehorende Beleidsnota Noordzee op een aantal punten wijzigt en aanvult en dus daarmee in samenhang moet worden gelezen.

In het Energieakkoord voor duurzame groei (september 2013) is afgesproken dat Nederland streeft naar 16% duurzame energie in 2023. Om dit duurzame energiedoel te bereiken zijn forse beleidsinspanningen en investeringen nodig op alle vormen van duurzame energie. Windenergie op zee kan gebruikt worden om een deel van deze doelstelling te halen. In het Energieakkoord is met de betrokken partijen afgesproken dat 4.450 MW aan windvermogen op zee operationeel is in 2023. Het kabinet streeft hierbij naar een zo kosteneffectief mogelijk opgesteld vermogen als een belangrijke randvoorwaarde bij de belangenafweging en de Europese wettelijke verplichtingen. Hierbij wordt een afweging gemaakt tussen de reeds in het Nationaal Waterplan aangewezen gebieden 'Borssele' en 'IJmuiden Ver', de in deze Structuurvisie aan te wijzen gebieden 'Hollandse Kust' en 'Ten Noorden van de Waddeneilanden' alsmede de eventueel aan te wijzen gebieden binnen de 12-mijlszone.

1.2 PlanMERren en Passende beoordelingen HK en TNW

1.2.1. Gebiedskeuze Rijksstructuurvisie Windenergie op Zee

De ontwerp-Rijksstructuurvisie WoZ wijst de gebieden 'Hollandse Kust' en 'Ten Noorden van de Waddeneilanden' concreet aan, conform de zoekopdracht uit het Nationaal Waterplan. Er wordt hierbij niet opnieuw naar andere gebieden gekeken, zoals wordt geadviseerd door de Commissie voor de milieueffectrapportage (hierna 'de Commissie'). Deze afweging is namelijk al gemaakt in het Nationaal Waterplan. In de ontwerp-Structuurvisie en het bijbehorende planMER is ook geen rekening gehouden met windparken binnen de 12-mijlszone anders dan Offshore Windpark Egmond aan Zee. Voor de gebieden binnen de 12-mijlszone loopt momenteel de Haalbaarheidsstudie.

In het kader van de Haalbaarheidsstudie wordt eerst gekeken of er gebieden zijn waar ruimte is voor windenergie bezien vanuit andere belangen en of die gebieden uit oogpunt van kosten en aansluiting op het elektriciteitsnet op het land mogelijkheden kunnen bieden voor windenergie. Het gaat daarbij nog niet om een concreet voornemen om ook daadwerkelijk gebieden aan te wijzen. Op basis van de Haalbaarheidsstudie neemt het kabinet een besluit of en hoe zij verder wil gaan met planvorming voor windenergie binnen de 12-mijlszone. Als windenergie dichter bij de kust een optie blijkt en daartoe wordt beslist, volgt een formeel proces van het aanwijzen van gebieden. Het aanwijzen van extra windenergiegebieden binnen de 12-mijlszone wordt dan ook uitgewerkt in de vorm van een aanvulling op de structuurvisie van het Nationaal Waterplan.

1.2.2. Uitgangspunten planMERren en Passende beoordelingen

Voor de aan te wijzen gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden is een planMER en een Passende beoordeling opgesteld door Royal HaskoningDHV. Voor beide gebieden is ook een scheepvaartrisicoanalyse uitgevoerd door het maritiem onderzoeksinstituut MARIN. De resultaten van deze onderzoeken zijn tevens opgenomen in de planMERren. Er is gekozen om geen aparte *Formal Safety Assessment* uit te voeren. Wij achten de huidige rapportages voor dit moment en voor het huidige abstractieniveau voldoende. In de volgende fase, de uitwerking van aangewezen gebieden naar exacte locaties waarbinnen windparken ontwikkeld zullen worden, zullen aanvullende scheepvaartanalyses noodzakelijk zijn. Deze analyses zullen dan in samenspraak met de sector worden uitgevoerd in lijn met de FSA procedure.

Vanwege de veelheid van effecten en de wens om te komen tot een duurzame ontwikkeling van de Noordzee is gekozen voor de milieubeoordeling op basis van *People, Planet, Profit*. De beide gebieden zijn in het planMER onderzocht op mogelijke effecten voor landschap, recreatie, archeologie, bodem en water, natuur, klimaat, de verschillende gebruikersfuncties en kustveiligheid. Bij de beoordeling van de milieueffecten wordt uitgegaan van het voorzorgbeginsel. Daartoe wordt er rekening gehouden met een worst case benadering. Tevens worden mogelijkheden om de effecten van de aanleg en aanwezigheid van windparken op zee te verzachten in de planMERren beschreven, zoals is geadviseerd door de Commissie. Hierbij kan onder andere gedacht worden aan het beperken van (de effecten van) onderwatergeluid tijdens heien (bv bellenscherm), geluidreducerende funderingstechnieken en maatwerk in ruimte en tijd.

In de planMERren zijn per gebied twee varianten onderzocht, de minimale en maximale variant. Bij de minimale variant wordt een afstand van 2 nautische mijl (NM) aangehouden tussen windparken en scheepvaartroutes en een afstand van 5 NM rondom olie- en gasplatforms. Bij de maximale variant wordt een afstand van 500 meter aangehouden ten opzichte van de scheepvaartroutes en ten opzichte van de olie- en gasplatforms. Op basis van deze twee varianten (minimale en maximale) is per gebied een kwalitatieve effectbeoordeling opgesteld. Op deze manier wordt een 'bandbreedte' onderzocht waarbinnen maatwerk mogelijk is. Tevens is voor elk gebied het Voorkeursalternatief (VKA), het gebied dat wordt aangewezen in de Structuurvisie, beoordeeld. In het VKA is rekening gehouden met het afwegingskader voor veilige afstanden tussen scheepvaartroutes en windparken op zee.

Voor de windenergiegebieden Hollandse Kust en Ten Noorden van de Waddeneilanden is rekening gehouden met relevante actuele Natura 2000 gebieden binnen de Nederlandse EEZ: Vlakte van de Raan, Voordelta, Noordzeekustzone (tussen Bergen en Rottum) en Waddenzee, alsmede de eventueel nog aan te wijzen gebieden Klaverbank, Doggersbank en Friese Front. Daarnaast is, zoals geadviseerd door de Commissie, ook rekening gehouden met gebieden met een zogenaamde hogere ecologische waarde (GBEW's), zoals de Bruine Bank en de Borkumse Stenen, alsmede met in buurlanden aangewezen Natura 2000-gebieden. Omdat naar verwachting ook negatieve effecten zijn te verwachten op Natura 2000-gebieden, zijn voor de gebieden ook Passende beoordelingen opgesteld.

De beoordeling van de milieueffecten gaat over de aanleg, het gebruik en de ontmanteling van windturbines en de aanleg van kabels op de zeebodem tot aan de Noordzeekust. Tijdens de aanleg van windparken zijn drie activiteiten te onderscheiden die fysiek ingrijpen op de omgeving: het transport van de bouw- en restmaterialen, het plaatsen van de pylonen en windturbines én de aanleg (en onderhoud) van kabelnetwerken op de Noordzee. Tijdens het gebruik van windparken zijn de aanwezigheid van turbines voor elektriciteitsproductie, het transport van elektriciteit, én het onderhoud van de windparken van invloed op de omgeving. Daarnaast zijn de windparken als objecten aanwezig. Tijdens de ontmanteling van windparken zijn twee activiteiten te onderscheiden die fysiek ingrijpen op de omgeving: het ontmantelen van de pylonen en windturbines en het transport van materialen.

De beoordeling van de milieueffecten zijn gebaseerd op een windturbine met een individueel vermogen van 6 MW, waarbij voor de as-hoogte en rotordiameter van de turbine wordt uitgegaan van twee verschillende types. De onderlinge afstand tussen windturbines is 1 km, waarbij het hele windenergiegebied wordt gevuld. De beoordeling van de milieueffecten zijn, op basis van advies van ECN, gebaseerd op een vermogensdichtheid van 6 MW/km^2 en niet op de door de Commissie geadviseerde $8MW/km^2$. Om de alternatieven met de referentiesituatie te vergelijken, is gebruik gemaakt van een kwalitatieve waarderingssystematiek op basis van +/- scores. Vanwege het abstractieniveau van de Structuurvisie is er geen vergelijking gemaakt van de gevolgen van de alternatieven gebaseerd op absolute effecten en effecten per eenheid opgewekte energie.

In de planMERren, inclusief de Passende beoordelingen, worden naast de milieueffecten van de windenergiegebieden Hollandse Kust en Ten Noorden van de Waddeneilanden ook de cumulatieve effecten met andere te verwachten activiteiten op de Noordzee beoordeeld. Hierbij is ook rekening gehouden met de plannen in de bij ons omringende landen. In het Verenigd Koninkrijk, Duitsland en België, worden op grote schaal (plannen voor) windparken ontwikkeld, veelal grenzend aan de Nederlandse EEZ. In de planMERren is hierbij geen rekening gehouden met de mogelijke realisatie van een of meer 'stopcontacten op zee,' zoals door de Commissie geadviseerd. In het kader van het Energieakkoord is afgesproken dat, daar waar dit efficiënter is dan een directe aansluiting van windparken op het landelijk hoogspanningsnet, er een net op zee komt. TenneT krijgt hiervoor de verantwoordelijkheid. Over de vormgeving en randvoorwaarden zal op korte termijn een besluit worden genomen door het kabinet. Zo nodig zal dit vervolgens in wetgeving worden verwerkt.

1.2.3. Uitkomsten planMERren en Passende beoordelingen
De planMERren, inclusief de Passende beoordelingen, laten zien dat, met inachtname van voldoende mitigerende maatregelen op het gebied van het beperken en/of in de tijd zorgvuldig plannen van de aanlegfase van windparken en waarbij rekening wordt gehouden met aanvaringsrisico's voor kustbroedvogels en trekvogels, de met deze Rijksstructuurvisie aangewezen gebieden voldoen aan de voor natuur en ecologie geldende wettelijke verplichtingen.

Bij de ontwikkeling van initiatieven voor grootschalige windenergie in de aangewezen gebieden dient rekening te worden gehouden met de in wet- en regelgeving vastgelegde eisen en beperkingen en daarnaast met de inrichtingsprincipes en gebiedsspecifieke aandachtspunten die aan het desbetreffende planMER zijn ontleend. Onder deze omstandigheden vallen bij voorbaat geen delen van de gebieden af, maar zal bij de nadere bepaling van de omvang en de ligging van de locaties voor windparken (die na de aanwijzing van de gebieden zal plaatsvinden) met de inrichtingsprincipes en aandachtspunten rekening moeten worden gehouden.

Op basis van de Passende beoordelingen die voor de beide gebieden zijn uitgevoerd, kunnen significant negatieve effecten voor natuur niet op voorhand worden uitgesloten. Bij iedere individuele voorgenomen ontwikkeling van grootschalige windenergie moet daarom een project-m.e.r.-procedure worden doorlopen, waarbij ook een Passende beoordeling moet worden opgesteld. Voor het geval significant negatieve effecten nog altijd niet zijn uit te sluiten dient een ADC-toets[1] te worden doorlopen. Uit de Passende beoordelingen van deze Rijksstructuurvisie blijkt dat er mogelijkheden zijn om de ADC-toets voor een specifiek project succesvol te doorlopen c.q. dat dit niet op voorhand kansloos is.

1.3 Vervolgproces

De ontwerp-Rijksstructuurvisie wordt samen met het planMER voor het gebied Hollandse Kust en het planMER voor het gebied Ten Noorden van de Waddeneilanden ter inzage gelegd. Tevens worden twee scheepvaartrisico-onderzoeken van maritiem onderzoeksinstituut MARIN voor beide gebieden ter inzage gelegd. De stukken worden ook gepubliceerd op www.ruimtelijkeplannen.nl (plan NL.IMRO.0000.IMsv13WindOpZee-2000). Een ieder kan een zienswijze indienen over de ontwerp-Rijksstructuurvisie, de milieu-effectrapporten en de onderliggende stukken. De zienswijzenperiode loopt van 10 januari tot en met 20 februari 2014. De overheden van de ons omringende landen (Engeland, België, Duitsland en Denemarken) zullen via de Espoo-contactpersonen ook in de gelegenheid worden gesteld om te reageren op de ontwerp-Rijksstructuurvisie.

Mede op basis van de zienswijzen en diverse adviezen, waaronder het toetsingsadvies van de Commissie, stelt de minister van Infrastructuur en Milieu samen met de bewindslieden van Economische Zaken de definitieve Rijksstructuurvisie vast. In een Nota van Antwoord bij de Rijksstructuurvisie wordt opgenomen of en op welke wijze de zienswijzen in de definitieve Rijksstructuurvisie en de planMERren zijn verwerkt. De Rijksstructuurvisie zal op www.ruimtelijkeplannen.nl worden gezet. Van de definitieve Rijksstructuurvisie wordt kennis gegeven in de Staatscourant, een landelijke krant en diverse regionale kranten. De definitieve Rijksstructuurvisie en de onderliggende stukken worden na de vaststelling ter inzage gelegd. Tegen de vaststelling van de Rijksstructuurvisie staat geen mogelijkheid tot beroep open. De Rijksstructuurvisie wordt ook aan de Staten-Generaal aangeboden.

[1] In dat geval kan alleen toestemming voor de activiteit gegeven worden als er geen alternatieven voor de activiteit zijn, er dwingende redenen van groot openbaar belang mee gediend zijn en de negatieve gevolgen gecompenseerd worden.

3

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Minister

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Contactpersoon

Datum
16 december 2013

Kenmerk
IENM/BSK- 2013/296770

Bijlage(n)
-

advies MR / OR / VP

Ontwerp-Rijksstructuurvisie Windenergie op Zee

Inleiding
Aanleiding voor de agendering is het voornemen van de bewindslieden van IenM en EZ om het Nationaal Waterplan (NWP) te wijzigen voor het onderdeel Windenergie op Zee. Het betreft een partiële herziening van het NWP, hierna te noemen: Rijksstructuurvisie Windenergie op Zee (RSV WoZ). Concreet gaat het hierbij om de aanwijzing van de windenergiegebieden Hollandse Kust en Ten Noorden van de Wadden.

In het Energieakkoord voor duurzame groei is met de betrokken partijen afgesproken dat in 2023 4.450 MW aan windvermogen op zee operationeel is. Dit betekent dat er, aanvullend op de bestaande parken en hetgeen in voorbereiding is, vanaf 2015 voor in totaal 3.450 MW dient te worden aanbesteed. Het kabinet streeft hierbij naar een zo kosteneffectief mogelijk opgesteld vermogen. Hierbij wordt een afweging gemaakt tussen de in het NWP en de daarbij behorende Beleidsnota Noordzee al aangewezen gebieden 'Borssele' en 'IJmuiden Ver', de in de RSV WoZ aangewezen gebieden 'Hollandse Kust' en 'Ten Noorden van de Waddeneilanden', alsmede ook de eventueel aan te wijzen gebieden binnen de 12-mijlszone.

Samenvatting van het voorstel
Met de RSV WoZ worden de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden aangewezen als gebieden die geschikt zijn voor grootschalige windenergie.

Advies
-
-

Argumentatie
De RSV WoZ vormt de uitwerking van de zoekopdrachten zoals geformuleerd in het Nationaal Waterplan (NWP) en nader uitgewerkt in de bijbehorende beleidsnota Noordzee om binnen de zoekgebieden Hollandse Kust en Ten Noorden

paraaf
DGRW-GD

van de Waddeneilanden ruimte te vinden voor extra windenergiegebieden. Met de RSV WoZ worden binnen deze zoekgebieden specifieke gebieden voor windenergie aangewezen. De gebieden liggen buiten de 12-mijlszone (dat wil zeggen minimaal 22 km uit de kust). De RSV WoZ vult het NWP aan, maakt daarvan onderdeel uit en moet in samenhang hiermee worden gelezen.

Buiten de aangewezen windenergiegebieden en de zogeheten ronde 2-vergunningen geeft het rijk geen toestemming voor het oprichten van windparken op zee.

Spreektekst

Kader
De RSV WoZ is formeel de 'Partiële herziening van het NWP vanwege de aanwijzing van de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden voor het onderdeel Windenergie op Zee'. Dat wil zeggen dat de Structuurvisie het NWP en de beleidsnota Noordzee op een aantal punten wijzigt en aanvult en dus daarmee in samenhang moet worden gelezen.

Krachtenveld

Afstemming

Hierin zijn vertegenwoordigd: IenM (DGRW, DGB en RWS), EZ (Economie en Natuur&Visserij), Defensie, OC&W, Financiën en de Kustwacht.

Communicatie

- Bij een positief besluit van de Ministerraad zal na afloop een persbericht worden uitgebracht. Deze wordt opgesteld door de Directie Communicatie.

- Van de ontwerp-RSV WoZ wordt kennisgegeven. Deze kennisgeving wordt gedaan door het bevoegd gezag en wordt gepubliceerd in de Staatscourant, De Volkskrant en diverse regionale kranten in de kustregio. Publicatie is voorzien op donderdag 9 januari 2014. De zienswijzeperiode loopt van 10 januari tot en met 20 februari 2014.
  Een ieder heeft de mogelijkheid om zienswijzen in te dienen op de ontwerp-RSV WoZ en de bijbehorende stukken. Het betrekken van de Commissie voor de m.e.r. is in deze fase verplicht. Maatschappelijke organisaties en marktpartijen worden via het Overlegorgaan Infrastructuur en Milieu betrokken. Daarnaast worden, conform de zogeheten 'Espoo afspraken', de bestuursorganen van de ons omliggende landen (Duitsland, België, Denemarken en Groot Brittannië) geïnformeerd over de ontwerp-RSV WoZ.

Haalbaarheidsstudie 12-mijlszone

DIRECTEUR-GENERAAL RUIMTE EN WATER,

Toelichting

Nationaal Waterplan
In het Nationaal Waterplan en de daarbij behorende beleidsnota Noordzee zijn al twee concrete windenergiegebieden aangewezen. Dit zijn de windgebieden 'Borssele' (344 km^2) en 'IJmuiden Ver' (1.170 km^2). De keuze voor deze gebieden is gemaakt op basis van zo 'conflictvrij' mogelijke uitwerking voor zover het de belangen voor scheepvaart, het mariene ecosysteem, olie en gas, Defensie en luchtvaart betreft. De resterende ruimtelijke vraagstukken ten aanzien van de al aangewezen gebieden geven het kabinet echter nog onvoldoende zekerheid dat voor windenergie op zee een netto gebied van minimaal 1.000 km^2 zal resteren. Daarbij vraagt een kosteneffectieve toepassing van windenergie op zee om het realiseren van een substantieel gebied dichterbij de kust. Daarvoor heeft het kabinet in het Nationaal Waterplan ook twee zoekgebieden aangewezen, namelijk 'Hollandse Kust' en gebied 'Ten Noorden van de Waddeneilanden'.

De doelstelling in het Nationaal Waterplan voor het zoekgebied Hollandse Kust is het vinden van ruimte voor één of meerdere grotere windenergiegebieden met een totaaloppervlak van 500 km^2 ten behoeve van 3.000 MW. Ten Noorden van de Waddeneilanden is in het Nationaal Waterplan als zoekgebied benoemd waarbinnen een maatschappelijke afweging zal worden gemaakt tussen een andere vormgeving of eventuele verplaatsing van het aanwezige defensiegebied en de realisering van minimaal 1.000 MW voor 2020 (165 km^2). De keuze voor het gebied Ten Noorden van de Waddeneilanden is mede gemaakt vanuit een spreidingsbehoefte.

Gebied Hollandse Kust

Gebied Ten Noorden van de Waddeneilanden

4

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Datum
5 december 2013

Kenmerk
IENM/BSK-2013/231339

Bijlage(n)
divers

beslisnota

Brief Tweede Kamer inzake ontwerp-Rijksstructuurvisie Windenergie op Zee

Inleiding
Per brief van 12 februari 2013 heeft u de Tweede Kamer geïnformeerd over het voornemen tot het maken van een partiële herziening van het Nationaal Waterplan (NWP), hierna te noemen: Rijksstructuurvisie Windenergie op Zee (RSV WoZ). Per nota van 21 maart 2013 (kenmerk IENM/BSK-2013/39672) bent u geïnformeerd over de 'kennisgeving voornemen / Notitie Reikwijdte en Detailniveau' van de RSV WoZ.

Hierbij treft u het aanbiedingsformulier ministerraad, de brieven aan de Eerste en Tweede Kamer en de ontwerp-RSV WoZ aan, als ook de achterliggende stukken. In de brief aan de beide Kamers wordt – op hoofdlijnen – ingegaan op de uitkomsten van de ontwerp-RSV WoZ, het op 6 september gesloten Energieakkoord voor duurzame energie, de lopende Haalbaarheidsstudie 12-mijlszone en de vervolgstappen.

Ik adviseer u om:

Beslistermijn

paraaf	paraaf	paraaf	paraaf
Bestuursondersteuning	DGRW-GP	RWS	DGB-MZ
	Akkoord 4 dec	*mail 5 dec*	*mail 5 dec*

Toelichting
De RSV WoZ vormt de invulling van de zoekopdrachten zoals geformuleerd in het NWP, en nader uitgewerkt in de bijbehorende beleidsnota Noordzee, om binnen de zoekgebieden Hollandse Kust (HK) en Ten Noorden van de Waddeneilanden (TNW) ruimte te vinden voor extra windenergie. Met de RSV WoZ worden de gebieden HK en TNW aangewezen als gebieden die geschikt zijn voor grootschalige windenergie. De gebieden liggen buiten de 12-mijlszone (dwz minimaal 22 km uit de kust). De RSV WoZ vult het NWP aan en wijzigt deze op een aantal punten, maakt daarvan onderdeel uit en moet in samenhang met het NWP worden gelezen.

- *Zienswijzeperiode voornemen RSV WoZ:* Het voornemen tot het voorbereiden van de RSV WoZ heeft afgelopen april ter inzage gelegen. Hierop zijn 39 reacties ontvangen van bedrijven, particulieren, organisaties en overheden. De volgende onderwerpen stonden centraal: energiebeleid, gebiedskeuze, Haalbaarheidsstudie 12-mijlszone, afwegingskader scheepvaart, olie- en gaswinning, kabels en leidingen en zichtbaarheid (zie Reactiedocument - inleiding). De Commissie voor de milieueffectrapportage (m.e.r.) heeft over de reikwijdte en het detailniveau advies uitgebracht. Met het advies is rekening gehouden bij het opstellen van de planMERren.
- *PlanMER:* Voor de beide gebieden apart zijn planMERren opgesteld. De gebieden zijn in het planMER onderzocht op de kans van effecten op landschap, recreatie, archeologie, bodem en water, natuur, klimaat, de verschillende gebruikersfuncties en kustveiligheid. Voor de beide gebieden zijn ook een Passende beoordeling[1] en een scheepvaartrisicoanalyse opgesteld. De uitkomsten hiervan zijn verwerkt in het desbetreffende planMER.
- *MKBA:* Voor deze Rijksstructuurvisie is geen MKBA opgesteld. Dit omdat er voor beide gebieden maar één alternatief is. Dit alternatief is (mede) gebaseerd op de in het gebied geldende scheepvaartroutes. In het kader van de Haalbaarheidsstudie wordt wel een MKBA.

Krachtenveld
In de week van 11 november heeft een informele consultatieronde plaatsgevonden van de concept ontwerp-RSV WoZ (11e: stakeholders HK, 12e: vertegenwoordigers Duitse overheden, 13e: stakeholders TNW, 14e: vertegenwoordigers Britse overheden). Vanwege de ligging van de beide gebieden heeft Vlaanderen aangegeven geen informele bijeenkomst te willen.

[1] Bij de voorbereiding van het NWP is vast komen te staan dat de duurzame winning van energie op de Noordzee door middel van windparken significante gevolgen kan hebben voor de beschermde natuurwaarden van Natura2000-gebieden op zee en langs de kust. Daarom is voor de tussentijdse herziening naast een planMER ook een Passende beoordeling nodig.

In de Toelichting wordt nader ingegaan op de inhoudelijke aspecten.

Aanwijzing gebieden
Met de (ontwerp) RSV WoZ worden de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden aangewezen als gebieden die geschikt zijn voor grootschalige windenergie. Deze gebieden zijn verbeeld op bijgevoegde kaart.

Gebied Hollandse Kust

Gebied Ten Noorden van de Waddeneilanden

Vervolgacties ontwerp-RSV WoZ

- *Raadpleging en advies*
  Van de ontwerp-RSV WoZ wordt kennisgegeven. Deze kennisgeving wordt gedaan door het bevoegd gezag en wordt gepubliceerd in de Staatscourant, De Volkskrant en diverse

regionale kranten in de kustregio. Publicatie is voorzien op donderdag 9 januari 2014. De zienswijzeperiode loopt van 10 januari tot en met 20 februari 2014 (zie advertentie).
Een ieder heeft de mogelijkheid om zienswijzen in te dienen op de ontwerp-RSV WoZ en de bijbehorende stukken. Het betrekken van de Commissie voor de m.e.r. is in deze fase verplicht. Maatschappelijke organisaties en marktpartijen worden via het Overlegorgaan Infrastructuur en Milieu betrokken. Daarnaast worden, conform de zogeheten 'Espoo afspraken', de bestuursorganen van de ons omliggende landen (Duitsland, België, Denemarken en Groot Brittannië) geïnformeerd over de ontwerp-RSV WoZ.
In tegenstelling tot de zienswijzeperiode m.b.t. de kennisgeving worden in deze fase geen informatiebijeenkomsten gehouden. Dit vanwege de zeer beperkte opkomst tijdens de twee in april gehouden bijeenkomsten.

- *Nota van Antwoord*
  Aan het eind van de zienswijzenperiode worden alle zienswijzen verzameld en, indien relevant, betrokken bij het opstellen van de definitieve Rijksstructuurvisie. In een Nota van Antwoord zullen de zienswijzen van een reactie worden voorzien.

Haalbaarheidsstudie 12-mijlszone

Energieakkoord voor duurzame energie: uitrol windenergie op zee

DIRECTEUR-GENERAAL RUIMTE EN WATER,

Toelichting

Het Nederlandse deel van de Noordzee is een van de meest intensief gebruikte zeeën ter wereld. Het gaat hierbij onder meer om scheepvaart, mijnbouw, defensieoefengebieden, visserij en op de bodem de aanwezigheid van kabels en leidingen en cultureel erfgoed in de vorm van wrakken. Rekening houdend met de benodigde ruimte voor deze functies dient er ruimte te worden gevonden voor windenergie.

- Scheepvaart

In het Nationaal Waterplan en de bijbehorende beleidsnota Noordzee is aangegeven, dat bij de aanwijzing van windenergiegebieden als vertrekpunt een zone van 2 nautische mijl (NM) ten opzichte van de scheepvaartroutes wordt gehanteerd waarbinnen geen permanente bouw mogelijk is. Bij verdere uitwerking kan blijken dat in specifieke situaties maatwerk mogelijk is. Bij dat maatwerk geldt wel dat rond een windpark in ieder geval een zone van 500 meter moet worden vrijgehouden (conform de UNCLOS bevoegdheid aan de kuststaat om rondom installaties een veiligheidszone in te stellen van maximaal 500 meter, waarbij Nederland dat maximum van 500m wettelijk heeft vastgelegd).

Na vaststelling van het Nationaal Waterplan is in overleg met de scheepvaartsector onderzocht hoe voor de Noordzee invulling kan worden gegeven aan de verdere uitwerking. Dit heeft geleid tot een 'Afwegingskader voor veilige afstanden tussen scheepvaartroutes en windparken op zee'. Het afwegingskader is op 8 juli 2013 vastgesteld door de betrokken directeuren en is op 24 september 2013 door het Interdepartementale Directeurenoverleg Noordzee geaccordeerd.

Het afwegingskader is bedoeld om de ruimte te kunnen bepalen die voor de scheepvaart nodig is om vlot en veilig te kunnen varen. Voor de ruimtereservering is het maatgevend schip van belang. Afhankelijk van de route is het maatgevend schip 300 of 400 meter lang.
De grootste manoeuvre die een schip moet kunnen maken en waar dus ruimte voor moet zijn, is de zogenaamde rondtorn. Hiervoor zijn 6 scheepslengtes nodig. Voor stuurboord is 0,3 NM extra uitwijkruimte nodig voordat een schip de rondtorn zal inzetten omdat hij eerst zal proberen een rondtorn te vermijden. De totaal benodigde ruimte aan stuurboord is dan 0,3 NM + 6 scheepslengtes. Aan bakboord zal direct een rondtorn worden ingezet. Bovendien is een veiligheidszone rond het windturbines van 500 meter rond 'single objects' van kracht. In deze zone mag geen scheepvaart komen. De benodigde veilige afstanden voor scheepvaart zijn dan:

- Bij schepen van 400m lengte: 1,87 NM aan stuurboord en 1,57 NM aan bakboord;
- Bij schepen van 300m lengte: 1,54 NM aan stuurboord en 1,24 NM aan bakboord.

Voor de *clearways*, de verbindingsroutes tussen de formele routes, zijn deze afstanden in de breedte van het *clearway*pad meegenomen.

Voor de toepassing op de Rijksstructuurvisie is een beleidskeuze gemaakt voor maximale veiligheidsafstanden op basis van het afwegingskader, het belang van snelle duidelijkheid over de te hanteren afstanden bij de aan te wijzen gebieden voor windenergie, het belang van draagvlak bij de scheepvaartsector en het belang van een duidelijk standpunt voor internationale afstemming. Voor reeds verleende ronde 2 vergunningen blijft de bij vergunningverlening gehanteerde systematiek gelden. Dit geldt ook voor nog lopende procedures van ronde 2 vergunningen.

Het afwegingskader komt bij de aanwijzing van de gebieden in de plaats van het vertrekpunt van het aanhouden van een zone van 2 NM tussen scheepvaartroutes en windparken. Ter voorbereiding op de actualisatie van het Nationaal Waterplan wordt onderzocht wat de effecten zijn van deze toepassing voor de reeds in het Nationaal Waterplan aangewezen gebieden.

- Olie- en gaswinning

- Defensieoefengebieden

- Visserij

In 2012 is de verkenning "varen en vissen in windparken" uitgevoerd. Daarbij zijn vertegenwoordigers van NWEA, het Watersportverbond (KNWV), sportvisserij Nederland, de Vissersbond en VISned betrokken. Momenteel wordt verder onderzocht wat de mogelijkheden zijn om parken (deels) open te stellen voor medegebruik.

- Kabels en leidingen

- Ecologie

De planMERren, inclusief de Passende beoordelingen, voor de beide windenergiegebieden laten zien dat, met inachtname van voldoende mitigerende maatregelen op het gebied van het beperken en/of in de tijd zorgvuldig plannen van de aanlegfase van windparken en op het gebied van rekening houden met aanvaringsrisico's voor kustbroedvogels en trekvogels, de met deze Rijksstructuurvisie aangewezen gebieden voldoen aan de voor natuur en ecologie geldende wettelijke verplichtingen en daarom bij voorbaat hierom geen gebieden afvallen.

Voor de HK is voor de kleine mantelmeeuwen (*Larus fuscus*) een nuancering aangebracht voor de noordelijke gebieden binnen een afstand van 50 km van de kolonie van Texel:

- Er wordt voor het deel van het aan te wijzen gebied buiten een afstand van 50 km van de kolonie van Texel aangeduid dat daar voor individuele windparken voor het aspect 'aanvaringen met kleine mantelmeeuwen van de broedkolonie Texel' geen Passende beoordeling meer hoeft te worden gemaakt, omdat ook bij een complete invulling van het zoekgebied met windturbines (dus maximale cumulatie) een significant effect bij voorbaat is uit te sluiten op een niveau van 1% acceptabele additionele sterfte.
- Voor dat deel (of die delen) van het aan te wijzen gebied die binnen een afstand van 50 km van de Texelse kolonie van kleine mantelmeeuwen is (of zijn) gelegen zal een Passende beoordeling voor een nieuw windinitiatief nog wel op het aspect 'aanvaringen met Texelse kleine mantelmeeuwen' in moeten gaan. Daarbij moet bij de toetsing rekening worden gehouden met de additionele sterfte die er nu, met de reeds vergunde en in procedure zijnde windparken binnen dit gebied, al optreedt (namelijk 0,28%). De additionele sterfte mag daarom nog oplopen met 0,72% voordat het niveau van 1% acceptabele additionele sterfte is bereikt.

5

Ministerie van Infrastructuur en Milieu

Minister

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beslisnota

Brief Tweede Kamer inzake Structuurvisie Windenergie op Zee

Datum
23 januari 2013

Kenmerk
IENM/BSK-2013/4624

Bijlage(n)
-

Inleiding
Naar aanleiding van uw reactie op de nota inzake 'Structuurvisie Wind op Zee: 12 mijlszone' (d.d. 27 december 2012, kenmerk IENM/BSK-2012/231536) treft u bijgevoegd de brief aan de Tweede Kamer.

Met de brief worden het voornemen tot het maken van een Structuurvisie Windenergie op Zee (SV WoZ) en de Haalbaarheidsstudie 'Windenergie binnen 12-mijlszone' bekend gemaakt. In de brief wordt - op hoofdlijnen - ingegaan op de scope, de planning en de wijze waarop de relevante partijen worden betrokken bij de SV WoZ en de Haalbaarheidsstudie.

Geadviseerd besluit

Beslistermijn
In de week van 28 januari 2013. Het streven is de brief voorafgaande aan de bestuurlijke conferentie d.d. 13 februari naar de Tweede Kamer te sturen.

Toelichting
Doel van het kabinet is om 16% duurzame energie in 2020 te realiseren. Het gaat dan onder meer om windenergie, zonne-energie en biomassa. Voor windenergie worden twee structuurvisies opgesteld, de SV WoL (Wind op Land) en de SV WoZ.

De SV WoZ betreft een partiële herziening van het Nationale Waterplan (NWP). In

paraaf	paraaf	paraaf	paraaf
Bestuursondersteuning	DGRW-GP	RWS	DGB-MZ

het NWP zijn twee windenergiegebieden aangewezen "IJmuiden" (opp. circa 1.170 km^2) en "Borssele" (opp. circa 344 km^2). Daarbovenop zijn in het NWP en de bijbehorende Beleidsnota Noordzee de zoekopdrachten voor het aanwijzen van de windenergiegebieden Hollandse Kust (HK, 3.000 MW/500 km^2) en Ten Noorden van de Waddeneilanden (TNW, minimaal 1.000 MW/165 km^2) geformuleerd. Doel van de SV WoZ is om te komen tot de aanwijzing van windenergiegebieden in de zoekgebieden HK en TNW. Deze gebieden liggen buiten de 12-mijlszone. De aanwezige ronde 2 vergunningen[1] maken deel uit van het na te streven oppervlakte en vermogen voor beide gebieden.

Krachtenveld

[1] Zie bijlage: Ronde 1, 2 en 3.

[2] Ministerie van Economische Zaken, Beantwoording schriftelijke vragen inzake de begroting 2013, 16 januari 2013

Bestuurlijke conferentie februari 2013

1. Na ondertekening wordt een **afschrift** van de Kamerbrief gestuurd naar de **relevante partijen**

DIRECTEUR-GENERAAL ... EN WATER,

Toelichting

Bijlage: Ronde 1, 2 en 3
De ontwikkeling van windenergie op de Noordzee is onder te verdelen in drie rondes. De aanwijzingen van de windgebieden HK en TNW vallen onder ronde 3.

In ronde 1 zijn de windgebieden 'Offshore Windpark Egmond aan Zee' (OWEZ), op 8 nautische mijl (NM) afstand (opp. circa 24 km^2, 36 windmolens à 3 MW, totaal 108 MW), en 'Prinses Amaliawindpark' (voorheen Q7), op 12 NM (opp. 17 km^2, 60 windturbines à 2 MW, totaal 120 MW), gerealiseerd. De parken zijn in 2002 vergund en sinds 2007 operationeel.

In ronde 2 zijn in totaal twaalf vergunningen verleend (2009, grootte 3.260 MW). Voor drie vergunningen (TNW: Gemini I en II en HK: Q10/Eneco Luchterduinen) is vervolgens subsidie verleend (2011). Voor de overige negen vergunningen is in de kabinetsreactie (d.d. 30 januari 2012) op de motie Van Veldhoven, waarin verzocht wordt de vergunningen te verlengen tot 2020, aangegeven dat behoud van deze vergunningen tot 2020 mogelijk wordt gemaakt . De formele besluiten hiertoe zijn inmiddels genomen. De uitkomst van het traject ronde 2 is als uitgangspunt bepalend voor de aanwijzing van de windgebieden in ronde 3.

De sturingsfilosofie van ronde 2 was, in lijn met de Nota Ruimte, "het mag overal behalve waar het niet mag" (zijnde 12 mijlszone, scheepvaartroutes, defensiegebieden e.d.) De brede belangenafweging van de aanvragen (80 in 2005) vond destijds plaats op grond van de Wet beheer Rijkswaterstaatwerken. Uitgangspunt was eerst ruimte reserveren en dan subsidie verkrijgen (vergunningen concurreren om subsidie).

Naar aanleiding van de ervaringen met ronde 2 is besloten tot een andere sturingsfilosofie voor ronde 3. De bouw van windparken is alleen mogelijk in die gebieden die zijn aangewezen als windenergiegebied. De belangenafweging over welke gebieden aan te wijzen als windenergiegebied vindt plaats op het niveau van de structuurvisie. Daarnaast is het voorstel om de ten aanzien van de kaveluitgifte door overheid een directe koppeling te maken tussen de ruimte en financiering. Dit moet worden vertaald in een nieuw uitgiftestelsel in 2015. Het voortouw hiervoor ligt bij het ministerie van EZ.

In het NWP zijn reeds de windgebieden 'Borssele' (ca. 344 km^2) en 'IJmuiden Ver' (ca. 1.170 km^2) aangewezen. Voor de gebieden HK en TNW geldt conform het NWP nog een zoekopdracht. Deze is in 2010 stopgezet vanwege de val van het kabinet Balkenende IV en vanwege gebrek aan draagvlak bij met name de scheepvaartsector voor het gebied HK. De scheepvaartsector gaf aan niet in te kunnen stemmen met de voorgestelde routering in combinatie met de aan te wijzen windgebieden. De reden hiertoe was de ligging van de ronde 2 vergunningen, die een voor de scheepvaartsector acceptabele oplossing in de weg stond.

Van de twaalf ronde 2 vergunningen liggen er drie in het gebied 'IJmuiden Ver' , drie in het zoekgebied TNW en zes in het zoekgebied HK.

6

Aanwijzing windenergiegebieden

Inhoud

- Hollandse Kust (HK) (o.b.v. IMO kaart)
- Ten Noorden van de Waddenellanden (TNW)
- Acties:
  - Notitie Reikwijdte en Detailniveau (NRD), planMER en Passende Boordeling (PB)
  - Risicoanalyse (scheepvaartveiligheid)
  - Maatschappelijke Kosteneffectiviteitanalyse (MKEA)
- Planning

Hollandse Kust

- Alternatief n.a.v. uitwerking motie Van Veldhoven => IMO kaart
  - Variant '500 meter': maximale milieueffecten
  - Variant '2 NM': minimale omvang
- Nog wel vanuit milieueffecten, veiligheid, kust ed bekijken
- Opdracht: 500 km2 / 3.000 MW
- Buiten 12 nm-zone (conform IDON)

Ten Noorden van de Waddeneilanden

- Alternatief 'bewindsliedenoverleg 8 dec 2009'
  - Boven: vaargeul
  - Links: Duitsland
  - Onder: defensie
  - Rechts: te ver
- Cie m.e.r. n.a.v. ontwerp-SVIR: onderbouwing van de keuze
- Opdracht: 167 km2 / 1.350 MW

NRD, planMER en PB

- Zoekopdracht 2009:
  - NRD, planMER en PB uitgevoerd voor beide gebieden samen
- Voorstel zoekopdracht 2012:
  -
  -
  -
-
  -
- Voor beide: Shortlist onderzoeken => aanpassing kader PB
- Materiaal 'zoekopdracht 2009', wel update
- Planning: vóór de zomer kennisgeving NRD
  - Vóór 11 juni, anders na de zomer

Risicoanalyse

Hollandse Kust

- Wijziging scheepvaartroutes
- FSA t.b.v. 'IMO kaart: 2 nm': alleen ronde 2 vergunningen
- Voorstel
  -

Ten Noorden van de Waddeneilanden

- Geen wijziging van de scheepvaartroutes
- I.h.k.v. zoekopdracht 2009 risicoanalyse uitgevoerd
- Voorstel
  -

MKEA

- Doel MKEA
  - Onderbouwing keuze alternatieven vanuit kosteneffectiviteit
- Zoekopdracht 2009:
  - MKEA voor 6 varianten HK uitgevoerd
  -
- Zoekopdracht 2012: zowel HK als TNW één alternatief
  - HK: 'IMO - kaart'
  - TNW: 'bewindsliedenoverleg dec 2009'
- Voorstel zoekopdracht 2012:
  -

Participatie

- Opstellen plan van aanpak
  - i.s.m. CPP en OIM
  - stakeholdersanalyse
- Stakeholdersbijeenkomst 'Wind op Zee' (d.d. 7 juni)
  - alle belanghebbenden informeren over lopende trajecten Wind op Zee: inhoud (op hoofdlijnen) en proces, procedure
  - Zie bijgevoegd memo

Planning

- Vóór zomer 2012
  - Brief TK met aankondiging traject Aanwijzing HK en TNW
  - Kennisgeving NRD OPM: vóór 11 juni, anders na de zomer
  - 7 juni: stakeholdersbijeenkomst HK en TNW
- Zomer 2012
  - HK: opstellen planMER (incl. PB) en Risicoanalyse
  - TNW: opstellen planMER (incl. PB)
- Zomer - najaar
  - Opstellen ontwerp partiële herziening NWP
  - Besluit ontwerp partiële herziening NWP
- Najaar – winter
  - Publieksparticipatie
- Voorjaar 2013
  - Definitief partiële herziening NWP

Indien na de zomer, dan alles kwartaal opschuiven!

7

Ministerie van Infrastructuur en Milieu

Voorzitter en IenM-leden CEZIM

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advies MR / OR / VP

Ontwerp Rijksstructuurvisie Windenergie op Zee

Datum
28 november 2013

Kenmerk

Bijlage(n)
-

Inleiding
Aanleiding voor de agendering is het voornemen van de bewindslieden van IenM en EZ om het Nationaal Waterplan (NWP) te wijzigen voor het onderdeel Windenergie op Zee. Het betreft een partiële herziening van het NWP, hierna te noemen: Rijksstructuurvisie Windenergie op Zee (RSV WoZ). Concreet gaat het hierbij om de aanwijzing van de windenergiegebieden Hollandse Kust en Ten Noorden van de Wadden (zie toelichting 1).

Per brief van 12 februari 2013 is de Tweede Kamer geïnformeerd over het voornemen tot het opstellen van de RSV WoZ.

Samenvatting van het voorstel
Met de RSV WoZ worden de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden aangewezen als gebieden die geschikt zijn voor grootschalige windenergie.

Advies

Argumentatie
De RSV WoZ vormt de uitwerking van de zoekopdrachten zoals geformuleerd in het Nationaal Waterplan (NWP) en nader uitgewerkt in de bijbehorende beleidsnota Noordzee om binnen de zoekgebieden Hollandse Kust en Ten Noorden van de Waddeneilanden ruimte te vinden voor extra windenergiegebieden. Met de RSV WoZ worden binnen deze zoekgebieden specifieke gebieden voor windenergie

paraaf
DGB-MZ
mail 28 nov

paraaf
RWS / ZD
mail 27 nov

aangewezen. De gebieden liggen buiten de 12-mijlszone (dat wil zeggen minimaal 22 km uit de kust). De RSV WoZ vult het NWP aan, maakt daarvan onderdeel uit en moet in samenhang hiermee worden gelezen.

Buiten de aangewezen windenergiegebieden en de zogeheten ronde 2-vergunningen geeft het rijk geen toestemming voor het oprichten van windparken op zee.

Spreektekst

Kader
De RSV WoZ is formeel de 'Partiële herziening van het NWP vanwege de aanwijzing van de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden voor het onderdeel Windenergie op Zee'. Dat wil zeggen dat de Structuurvisie het NWP en de beleidsnota Noordzee op een aantal punten wijzigt en aanvult en dus daarmee in samenhang moet worden gelezen.

Krachtenveld
- Met de scheepvaartsector is overeenstemming over de veilige afstanden tussen de scheepvaartroutes en de windparken.

In de Toelichting 2 wordt nader ingegaan op de inhoudelijke aspecten.

Afstemming
Het dossier is besproken in het Interdepartementaal Directeurenoverleg Noordzee (IDON). Hierin zijn vertegenwoordigd: IenM (DGRW, DGB en RWS), EZ (Economie en Natuur&Visserij), Defensie, OC&W, Financiën en de Kustwacht.

Haalbaarheidsstudie 12-mijlszone

Energieakkoord voor duurzame energie: uitrol windenergie op zee
In het Energieakkoord voor duurzame groei is met de betrokken partijen afgesproken dat in 2023 4.450 MW aan windvermogen op zee operationeel is. Dit betekent dat er, aanvullend op de bestaande parken en hetgeen in voorbereiding is, vanaf 2015 voor in totaal 3.450 MW dient te worden aanbesteed. Het kabinet streeft hierbij naar een zo kosteneffectief mogelijk opgesteld vermogen. Hierbij wordt een afweging gemaakt tussen de in het NWP en de daarbij behorende Beleidsnota Noordzee al aangewezen gebieden 'Borssele' en 'IJmuiden Ver', de in de RSV WoZ aangewezen gebieden 'Hollandse Kust' en 'Ten Noorden van de Waddeneilanden', alsmede ook de eventueel aan te wijzen gebieden binnen de 12-mijlszone.

DIRECTEUR GEBIEDEN EN PROJECTEN

Toelichting 1

In het Nationaal Waterplan en de daarbij behorende beleidsnota Noordzee zijn al twee concrete windenergiegebieden aangewezen. Dit zijn de windgebieden 'Borssele' (344 km^2) en 'IJmuiden Ver' (1.170 km^2). De keuze voor deze gebieden is gemaakt op basis van zo 'conflictvrij' mogelijke uitwerking voor zover het de belangen voor scheepvaart, het mariene ecosysteem, olie en gas, Defensie en luchtvaart betreft. De resterende ruimtelijke vraagstukken ten aanzien van de al aangewezen gebieden geven het kabinet echter nog onvoldoende zekerheid dat voor windenergie op zee een netto gebied van minimaal 1.000 km^2 zal resteren. Daarbij vraagt een kosteneffectieve toepassing van windenergie op zee om het realiseren van een substantieel gebied dichterbij de kust. Daarvoor heeft het kabinet in het Nationaal Waterplan ook twee zoekgebieden aangewezen, namelijk 'Hollandse Kust' en gebied 'Ten Noorden van de Waddeneilanden'.

De doelstelling in het Nationaal Waterplan voor het zoekgebied Hollandse Kust is het vinden van ruimte voor één of meerdere grotere windenergiegebieden met een totaaloppervlak van 500 km^2 ten behoeve van 3.000 MW. Ten Noorden van de Waddeneilanden is in het Nationaal Waterplan als zoekgebied benoemd waarbinnen een maatschappelijke afweging zal worden gemaakt tussen een andere vormgeving of eventuele verplaatsing van het aanwezige defensiegebied en de realisering van minimaal 1.000 MW voor 2020 (165 km^2). De keuze voor het gebied Ten Noorden van de Waddeneilanden is mede gemaakt vanuit een spreidingsbehoefte.

Toelichting 2
Het Nederlandse deel van de Noordzee is een van de meest intensief gebruikte zeeën ter wereld. Het gaat hierbij onder meer om scheepvaart, mijnbouw, defensieoefengebieden, visserij en op de bodem de aanwezigheid van kabels en leidingen en cultureel erfgoed in de vorm van wrakken. Rekeninghoudend met de benodigde ruimte voor deze functies dient er ruimte te worden gevonden voor windenergie. Dit betekent dat op bepaalde onderdelen de 'bestaande' functies ruimte moeten inleveren.

- Scheepvaart

In het Nationaal Waterplan en de bijbehorende beleidsnota Noordzee is aangegeven, dat bij de aanwijzing van windenergiegebieden als vertrekpunt een zone van 2 nautische mijl (NM) ten opzichte van de scheepvaartroutes wordt gehanteerd waarbinnen geen permanente bouw mogelijk is. Bij verdere uitwerking kan blijken dat in specifieke situaties maatwerk mogelijk is (2 NM, tenzij). Bij dat maatwerk geldt wel dat rond een windpark in ieder geval een zone van 500 meter moet worden vrijgehouden (conform de UNCLOS bevoegdheid aan de kuststaat om rondom installaties een veiligheidszone in te stellen van maximaal 500 meter, waarbij Nederland dat maximum van 500m wettelijk heeft vastgelegd).

Na vaststelling van het Nationaal Waterplan is in overleg met de scheepvaartsector onderzocht hoe voor de Noordzee invulling kan worden gegeven aan de verdere uitwerking. Dit heeft geleid tot een 'Afwegingskader voor veilige afstanden tussen scheepvaartroutes en windparken op zee'. Het afwegingskader is op 8 juli 2013 vastgesteld door de betrokken directeuren en is op 24 september 2013 door het Interdepartementale Directeurenoverleg Noordzee geaccordeerd.

Het afwegingskader is bedoeld om de ruimte te kunnen bepalen die voor de scheepvaart nodig is om vlot en veilig te kunnen varen. Voor de ruimtereservering is het maatgevend schip van belang. Afhankelijk van de route is het maatgevend schip 300 of 400 meter lang. Afhankelijk van een risico-inschatting dient ook ruimte te worden gereserveerd voor zogenaamde rondtorns. De grootste manoeuvre die een schip moet kunnen maken is de zogenaamde rondtorn. Hiervoor is 6 scheepslengtes nodig. Voor stuurboord is 0,3 nautische mijl extra uitwijk nodig voordat een schip de rondtorn zal inzetten omdat hij eerst zal proberen een rondtorn te vermijden. De totaal benodigde ruimte aan stuurboord is dan 0,3 NM + 6 scheepslengtes. Aan bakboord zal direct een rondtorn worden ingezet. Bovendien is een veiligheidszone rond het windturbines van 500 meter rond single objects van kracht. In deze zone mag geen scheepvaart komen. De benodigde veilige afstanden voor scheepvaart zijn dan:
- Bij schepen van 400m lengte: 1,87 NM aan stuurboord en 1,57 NM aan bakboord;
- Bij schepen van 300m lengte: 1,57 NM aan stuurboord en 1,27 NM aan bakboord.

Voor de *clearways*, de verbindingsroutes tussen de formele routes, zijn deze afstanden in de breedte van het *clearway*pad meegenomen.

Voor de toepassing op de Rijksstructuurvisie is een beleidskeuze gemaakt voor maximale veiligheidsafstanden op basis van het afwegingskader, het belang van snelle duidelijkheid over te hanteren afstanden bij de aan te wijzen gebieden voor windenergie, het belang van draagvlak bij de scheepvaartsector en het belang van een duidelijk standpunt voor internationale afstemming. Voor reeds verleende ronde 2vergunningen blijft de bij vergunningverlening gehanteerde systematiek gelden. Dit geldt ook voor nog lopende procedures van ronde 2 vergunningen.

Het afwegingskader komt bij de aanwijzing van de gebieden in de plaats van het vertrekpunt van het aanhouden van een zone van 2 NM tussen scheepvaartroute en windpark. Ter voorbereiding op de actualisatie van het Nationaal Waterplan wordt onderzocht wat de effecten zijn van deze toepassing voor de reeds in het Nationaal Waterplan aangewezen gebieden.

- Olie- en gaswinning

Uitgangspunt in het NWP is '5 NM, tenzij' (t.o.v. een olie- en gasplatform). In overleg met onder meer de olie- en gassector en luchtvaartsector zal worden bekeken of het mogelijk is een nadere invulling te geven aan het 'tenzij' principe. Bij de nadere bepaling van de omvang en ligging van de windparken (die na de aanwijzing van gebieden zal gaan plaatsvinden) zal de rekening worden gehouden met de afspraken die zijn gemaakt ten aanzien van de verdere uitwerking. Omdat op voorhand niet aan te geven is waar maatwerk mogelijk is, is bij de aanwijzing van de gebieden in het kader van de ontwerp-RSV WoZ geen rekening gehouden met de 5 NM-zone.

- Defensieoefengebieden

Het gebied Ten Noorden van de Waddeneilanden wordt zuidelijk begrensd door een defensiegebied. Na overleg met Defensie is besloten om de zuidelijke begrenzing niet aan te passen. Het Defensieoefengebied is nodig voor de uitvoering van defensietaken in internationaal kader.

NB In het eventuele geval dat het Defensiegebied komt te vervallen, dan betekent dat niet automatisch dat de vrijgekomen ruimte volledig beschikbaar komt voor windenergie. Ook vanuit de olie- en gaswinning is er interesse in deze ruimte.

- Visserij / medegebruik

In 2012 is de verkenning "varen en vissen in windparken" uitgevoerd. Daarbij zijn vertegenwoordigers van NWEA, het Watersportverbond (KNWV), sportvisserij Nederland, de Vissersbond en VISned betrokken. Momenteel wordt verder onderzocht wat de mogelijkheden zijn om parken (deels) open te stellen voor medegebruik.

- Kabels en leidingen

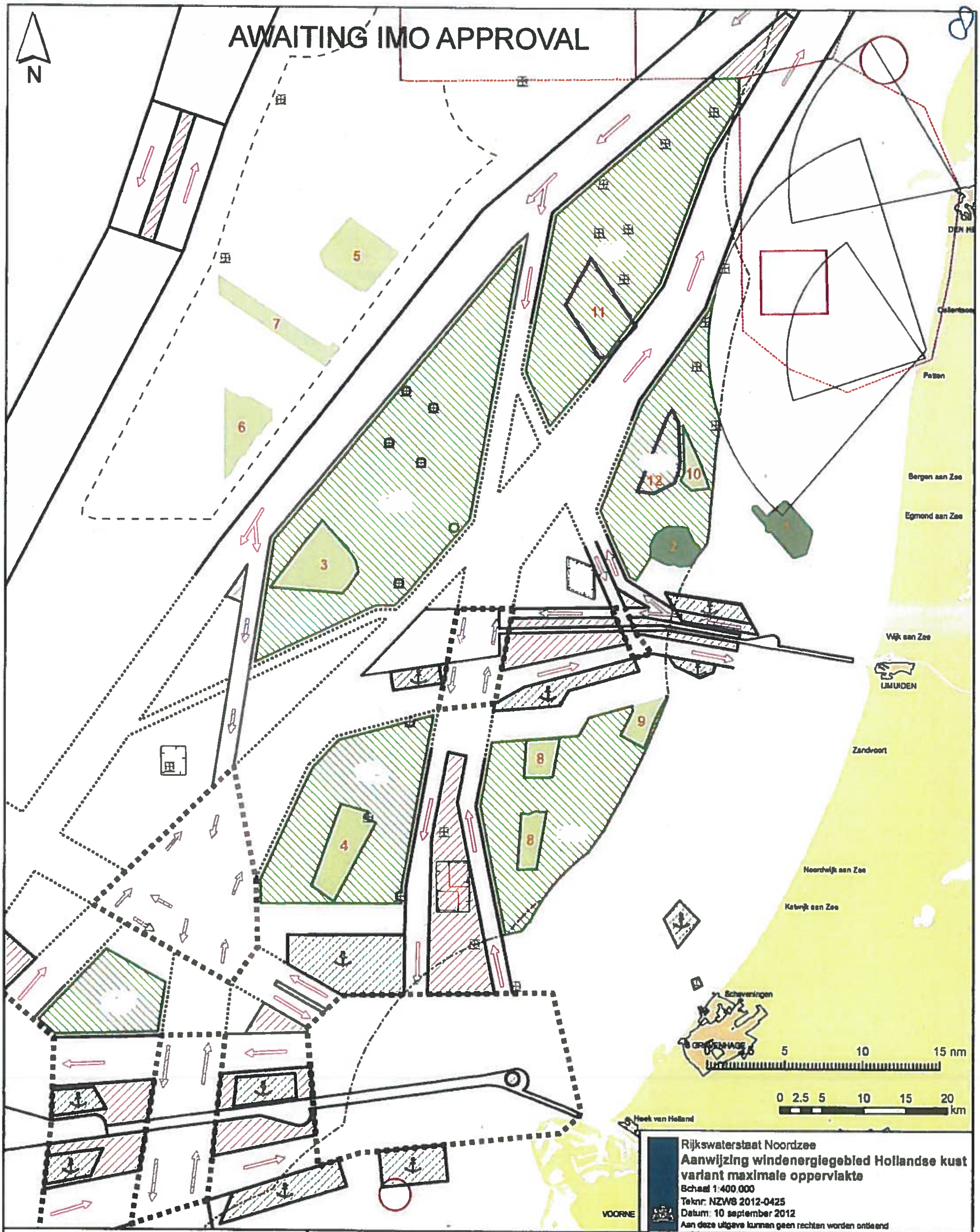
Volgens de Beleidsnota Noordzee is het streven dat kabels en leidingen zoveel mogelijk worden gebundeld. Daarnaast zal in overleg met betrokken partijen worden besproken in welke mate maatwerk mogelijk is met betrekking tot de afstand tot de windparken.

- Ecologie

De planMERren, inclusief de Passende beoordelingen laten zien dat, met inachtname van voldoende mitigerende maatregelen op het gebied van het beperken en/of in de tijd zorgvuldig plannen van de aanlegfase van windparken en op het gebied van rekening houden met aanvaringsrisico's voor kustbroedvogels en trekvogels, de met deze Structuurvisie aangewezen gebieden voldoen aan de voor natuur en ecologie geldende wettelijke verplichtingen.

Binnen het gebied Hollandse Kust is een nuancering aangebracht voor de noordelijke gebieden binnen een afstand van 50 km van de kolonie kleine mantelmeeuwen (*Larus fuscus*) van Texel:

- Er wordt voor het deel van het aan te wijzen gebied buiten een afstand van 50 km van de kolonie kleine mantelmeeuwen van Texel aangeduid dat daar voor individuele windparken voor het aspect 'aanvaringen met kleine mantelmeeuwen van de broedkolonie Texel' geen Passende beoordeling meer hoeft te worden gemaakt, omdat ook bij een complete invulling van het zoekgebied met windturbines (dus maximale cumulatie) een significant effect bij voorbaat is uit te sluiten op een niveau van 1% acceptabele additionele sterfte.
- Voor dat deel (of die delen) van het aan te wijzen gebied die binnen een afstand van 50 km van de Texelse kolonie van kleine mantelmeeuwen is (of zijn) gelegen zal een Passende beoordeling voor een nieuw windinitiatief nog wel op het aspect 'aanvaringen met Texelse kleine mantelmeeuwen' in moeten gaan. Daarbij moet bij de toetsing rekening worden gehouden met de additionele sterfte die er nu, met de reeds vergunde en in procedure zijnde windparken binnen dit gebied, al optreedt (namelijk 0,28%). De additionele sterfte mag daarom nog oplopen met 0,72% voordat het niveau van 1% acceptabele additionele sterfte is bereikt.



1. Offshore Windpark Egmond aan Zee (OWEZ)
2. Prinses Amalia Windpark
3. Breeveertien II
4. West Rijn
5. Den Helder I
6. Brown Ridge Oost
7. Tromp Binnen
8. Beaufort
9. Q10 / Eneco Luchterduinen
10. Q4
11. Subsidiaire vergunningsaanvraag Helmveld in behandeling, definitieve contour nog niet bekend.
12. Q4 West

Legenda

Grenzen
- Nautische 12 mijl
- 500 m

Windparken
- In gebruik
- Vergund
- In procedure
- Aangewezen gebied IJmuiden

Platforms
- Productieplatform

Militaire gebieden
- Munitiegebieden
- Oefengebied militair
- schietterrein
- Vliegegebied militair

Scheepvaart
- Begrenzingen
- clearway
- Diepwaterroute
- Ankergebieden
- AreaToBeAvoided
- Separatiezone
- Special area

9

Ministerie van Infrastructuur en Milieu

IDON

Bestuurskern
Dir. Gebieden en Projecten
Afd. Projecten

Contactpersoon

memo

Windenergie op zee

Datum
9 mei 2014

Bijlage
1

Doel
Doel van het memo is om u te informeren over de stand van zaken betreffende:

1. Rijksstructuurvisie Windenergie op Zee (RSV WoZ)
2. Haalbaarheidstudie windenergie binnen 12-mijlszone (hierna: Haalbaarheidstudie)

Aanleiding
Aanleiding voor deze nottitie is het Algemeen Overleg (AO) Windenergiegebieden op 24 april 2014. Tijdens dit AO is de toezegging gedaan om de definitieve RSV WoZ, de Haalbaarheidsstudie, de routekaart en een besluit inzake net op zee gezamenlijk voor de zomer aan de Kamer te doen toekomen.
Om deze toezegging te volbrengen is een strakke planning noodzaak. Deze notitie betreft de RSV WoZ en de Haalbaarheidsstudie. De onderwerpen routekaart en het besluit inzake net op zee vallen onder EZ.

Toelichting
Ad 1. Rijksstructuurvisie Windenergie op Zee

Proces:

kern

Planning
De voorlopige planning is als volgt:
- 6 mei – vIDON
- 14 mei – versturen stukken IDON
- 20 mei – IDON
- *(28 mei – 5DO WoZ)*
- 16 juni – versturen stukken CEZIM
- *(18 juni – 5DO WoZ)*
- 24 juni – CEZIM
- 1 juli – versturen stukken REZIM
- 8 juli – REZIM

Betrokkenheid van desbetreffende IDON-leden loopt via de regulieren lijnen.

Documenten
Bovenstaande planning betreft de volgende stukken:
- Brief Tweede Kamer (en Eerste Kamer)
- RSV WoZ
  - Definitieve RSV WoZ
  - Nota van Antwoord
  - Aangepaste plan-mer n.a.v. advies Commissie m.e.r (2 x) en onderliggende stukken
- Haalbaarheidstudie
  - Rapport
  - MKBA en andere onderliggende documenten (totaal 5 documenten)

12

Ministerie van Infrastructuur en Milieu

IDON 76-12-4c

IDON

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Contactpersoon

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Datum
10 mei 2012

memo

Stakeholdersbijeenkomst Wind op Zee d.d. 7 juni

DOEL

Het doel van deze notitie is om:

1. uw akkoord te vragen inzake het organiseren van de stakeholdersbijeenkomst Wind op Zee op donderdag 7 juni;
2. uw akkoord te vragen inzake de uitnodigingsmail (bijlage 1) en deze namens het IDON te versturen.

Na akkoord wordt de mail verstuurd.

TOELICHTING

Aanleiding

- Wens om begin juni een bredere groep stakeholders te betrekken bij voorstellen veilige afstanden tussen scheepvaartroutes en windparken (n.b. het betreft dan mijnbouw, visserij en andere overheden. Met de SAN en NWEA heeft al overleg plaatsgevonden);
- Met stakeholders gemaakte afspraak om dit jaar de derde brede stakeholderbijeenkomst te houden over uitvoering motie Van Veldhoven;
- Vele ontwikkelingen die nu spelen, waarbij telkens min of meer dezelfde partijen betrokken zijn. Wens om stakeholders overzicht te geven en input te krijgen op procesvoorstellen.

Het organiseren van een stakeholdersbijeenkomst is een gezamenlijk voorstel van de werkgroep afwegingskader, Rijkswaterstaat en DGRW i.o.m. EL&I.

Doel bijeenkomst

- Alle belanghebbenden informeren over lopende trajecten wind op zee: inhoud (op hoofdlijnen) en proces, procedure;
- opmerkingen, vragen voor vervolgtrajecten verzamelen.

Deelnemers

Vertegenwoordigers van onder meer mijnbouwoperators, NOGEPA, windvergunninghouders, NWEA, kustgemeenten tussen Hoek van Holland en Peten, KIMO, visserijorganisaties, scheepvaartorganisaties, natuur- en milieuorganisaties, St. Noordzee, TenneT, kustprovincies, Gemeenten Schiermonnikoog en Ameland.
In totaal gaat het om 40 à 60 deelnemers.

In bijlage 2 is een voorlopig programma opgenomen.

de eerdere zoekopdracht inmiddels een kabinetsvoorstel, waarbij aansluiting is gezocht bij de reeds verleende vergunningen. Dat kaartje voeg ik eveneens bij. Voor meer informatie over de motie Van Veldhoven verwijs ik naar het Noordzee-loket (http://www.noordzeeloket.nl/nieuws/vergunningen_windparken_op_de_noordzee_behouden_tot_2020.asp). Meer informatie over de Green Deal treft u aan op: http://www.rijksoverheid.nl/documenten-en-publicaties/brochures/2011/09/23/factsheets-31-45-van-green-deals-uit-de-1e-ronde-2011.html

Tot op 7 juni!

Met vriendelijke groet,

voorzitter Interdepartementaal Directeurenoverleg Noordzee (IDON)

Bestuurskern
Dir. Gebieden en Projecten
Afd. MIRT

Datum
10 mei 2012

13

Ministerie van Infrastructuur en Milieu

IDON

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Contactpersoon

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memo

RSV Windenergie op Zee

Datum
30 mei 2013

Bijlage(n)
1

DOEL
Doel van het memo is om u te informeren over de stand van zaken betreffende Rijksstructuurvisie Windenergie op Zee (aanwijzing gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden).

TOELICHTING
Zienswijzen Rijksstructuurvisie
In de periode van 3 april tot en met 1 mei konden via het Centrum Publieksparticipatie zienswijzen worden ingediend op het voornemen. Daarnaast zijn de kustoverheden en de Rijksdienst voor het Cultureel Erfgoed (wettelijke adviseur) aangeschreven om een reactie te geven op de Notitie Reikwijdte en Detailniveau. In totaal hebben we 38 reacties ontvangen. 8 hiervan waren ingediend door particulieren, 2 door maatschappelijke organisaties, 7 door bedrijven en 11 door (semi-) overheden. Van de bestuursorganen en de Rijksdienst ontvingen we 10 reacties (zie bijlage). Het vrijwillig advies van de Commissie voor de m.e.r. is inmiddels ook binnen (zie bijlage). Bespreking van het advies is op 30 mei.

De meeste reacties gingen over de rol die windenergie kan/moet spelen in het energiebeleid om de doelstelling van 16% duurzame energie in 2020 te halen. Er waren vragen en aanbevelingen over de aansluiting op het elektriciteitsnet op het land en over kabels en leidingen. Zichtbaarheid en de waarde van onroerend goed in de kustgemeentes zijn ook onderwerpen waar veel over geschreven werd. Onder andere door twee bewonersgroepen: uit Noordwijk/Zandvoort en uit Kijkduin. Verder waren er ook reacties over hoe het proces naar de RSV er uit moet zien en wat er uiteindelijk in moet komen te staan. Op 22 mei hebben we een eerste analyse gemaakt van de reactie, dit wordt vervolgd op 27 juni.

Specifiek punt met betrekking tot het gebied Ten Noorden van de Waddeneilanden betreft uitbreiding van het gebied naar het westen en richting het defensieoefengebied. Hierover wordt nog contact opgenomen met het ministerie van Defensie.

Informatieavonden april
De opkomst tijdens de tijdens de twee gehouden informatieavonden op 11 (Noordwijkerhout) en 16 april (Egmond aan Zee) was laag. Dit ondanks het bekend maken van het voornemen in de Staatscourant, De Volkskrant, de regionale kranten die in de kuststreek verschijnen en via de kustgemeentes in de lokale bladen. Tijdens de bijeenkomst op 11 april hebben gesproken met

(vertegenwoordigers van) bewoners en strandtenthouders uit Zandvoort en Noordwijk. Op 3 juni is een vervolgafspraak gepland.

Bestuurskern
Dir. Gebieden en Projecten
Afd. Projecten

Datum
30 mei 2013

Voorkeursalternatief gebied Hollandse Kust
In de notitie Reikwijdte en Detailniveau voor de planMER zijn voor het gebied Hollandse Kust twee varianten onderscheiden voor het vinden van ruimte voor windparken:

- een minimum variant, waarbij een afstand van 2 nautische mijl aangehouden wordt ten opzicht van de scheepvaartroutes en een afstand van 5 nautische mijl rondom de mijnbouwplatforms, en;
- een maximum variant waarbij een afstand van 500 meter wordt aangehouden ten opzichte van de scheepvaartroutes en ervan wordt uitgegaan dat in de zone van 5 nautische mijl rond mijnbouwplatforms maatwerk mogelijk is in tijd en ruimte.

Met deze varianten wordt de minimale en maximale ruimte in kaart gebracht. Door het uitwerken van de varianten wordt de bandbreedte aangegeven waarbinnen maatwerk mogelijk is. De minimale en de maximale variant zijn in die zin geen realistische opties; de beschikbare ruimte zal binnen de bandbreedte liggen. De werkelijk beschikbare ruimte wordt bepaald in een voorkeursalternatief waarbij een afweging wordt gemaakt van de verschillende belangen die spelen. Hierover is op 11 juni een bijeenkomst gepland met de scheepvaart-, mijnbouw-, windsector en een aantal kustoverheden (zicht). Tbv het onderwerpecologie is Stichting De Noordzee uitgenodigd.
Het voorkeursalternatief wordt nog apart doorgerekend in het kader van de planMER.

Met vriendelijke groet,

Bijlage: Uitnodigingsmail

Bestuurskern
Dir. Gebieden en Projecten
Afd. MIRT

Datum
10 mei 2012

Geachte heer/mevrouw,

Hierbij nodig ik u uit voor een bijeenkomst over de ontwikkelingen rond Wind op Zee op **donderdag 7 juni a.s. van 12.00 tot 16.30 uur** (inloop inclusief lunch vanaf 12.00 uur). Ik verzoek u om uiterlijk woensdag 30 mei aan (@minienm.nl) door te geven of u bij deze bijeenkomst aanwezig wilt zijn.

Op dit moment spelen er diverse ontwikkelingen in verschillende stadia van planvorming en uitvoering. Het betreft concreet:

- De uitvoering van de motie Van Veldhoven: aanpassing van de scheepvaartroutes, behouden van de ronde 2 windvergunningen en verplaatsen van de vergunning Scheveningen Buiten naar Q4 west (onder verantwoordelijkheid van Rijkswaterstaat)
- Het opstellen van een afwegingskader voor veilige afstanden tussen windparken en scheepvaartroutes (onder verantwoordelijkheid van het ministerie van Infrastructuur en Milieu, DG Bereikbaarheid).
- De herstart van de aanwijzing van de windgebieden Hollandse Kust en Ten Noorden van de Waddeneilanden conform het Nationaal Waterplan (onder verantwoordelijkheid van het ministerie van Infrastructuur en Milieu, DG Ruimte en Water).
- De follow up van de verkenning Varen en Vissen in Windparken: onderzoek naar de mogelijkheid om windparken open te stellen voor medegebruik door kleine scheepvaart en verschillende vormen van visserij (onder verantwoordelijkheid van Rijkswaterstaat).
- De Green Deal tussen NWEA en de rijksoverheid (onder verantwoordelijkheid van het ministerie van Economie, Landbouw en Innovatie).

Doel van de bijeenkomst is om u te informeren over deze ontwikkelingen en uw eventuele opmerkingen voor vervolgtrajecten te verzamelen. Medewerkers van het ministerie van Infrastructuur en Milieu, Rijkswaterstaat en het ministerie van Economische zaken, Landbouw en Innovatie zullen de uitgangspunten, het proces en de procedure van de verschillende trajecten toelichten.

Velen van u zijn eerder betrokken geweest bij de ontwikkelingen rond wind op zee en eind vorig jaar nog rond de motie Van Veldhoven. Toen heeft u kenbaar gemaakt het op prijs te stellen om betrokken te blijven bij de voortgang. Anderen zijn nog niet eerder betrokken geweest, maar wil ik bij deze in de gelegenheid stellen om geïnformeerd te worden.

Locatie en programma worden u ongeveer een week van tevoren toegestuurd (locatie zal omgeving Den Haag zijn). 'an bureau Nieuw Script zal als facilitator van de middag optreden. Mocht u nog vragen hebben, dan kunt u contact opnemen met Wanneer u geen belangstelling (meer) heeft voor bovengenoemde ontwikkelingen dan verzoek ik u om dit eveneens aan haar door te geven.

Bijgevoegd treft u de structuurvisiekaart uit het Nationaal Waterplan met de aangewezen windgebieden en de zoekgebieden Hollandse Kust en Ten Noorden van de Waddeneilanden. Voor het gebied Ten Noorden van de wadden ligt er op basis van

Bijlage: Programma

Bestuurskern
Dir. Gebieden en Projecten
Afd. MIRT

Datum
10 mei 2012

12.00 – 12.30	Inlooplunch	
12.30 – 12.40	Welkom en doel bijeenkomst	
12.40 - 12.45	Toelichting programma	
12.45 – 13.15	Uitvoering motie Van Veldhoven, stand van zaken: Scheepvaartroutering, verlengingsbesluiten, Q4 west.	
13.15 – 14.10	Veilige afstanden[1]	
14.10 – 14.30	Green Deal	
14.30 – 14.50	Pauze	
14.50 – 15.10	Aanwijzing Hollandse Kust en Ten Noorden van de Waddeneilanden	
15.10 – 15.30	Varen en vissen in windparken	
15.30 – 15.50	Shortlist onderzoeken	ntb
15.50 – 16.00	Afronding en conclusies	
16.00 – 16.30	Borrel	

Locatie: Den Haag (actie DGRW)

Verdere uitwerking van het programma komende weken.

[1] Hiervoor is veel tijd ingeruimd omdat hier een inhoudelijke toelichting is voorzien. Dit itt de overige onderwerpen, waarbij het accent meer op de uitgangspunten, proces en procedure ligt.

14

Ministerie van Infrastructuur en Milieu

Minister

Directoraat-Generaal
Ruimte en Water
Algemeen
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Contactpersoon

nota ter informatie

Rijkstructuurvisie Windenergie op Zee: kennisgeving voornemen / Notitie Reikwijdte en Detailniveau

Datum
21 maart 2013

Kenmerk
IENM/BSK-2013/39672

Bijlage(n)
divers

Inleiding
Per brief van 12 februari 2013 heeft u de Tweede Kamer geïnformeerd over het voornemen tot het maken van een partiële herziening van het Nationale Waterplan (NWP) conform artikel 2.3, derde lid, van de Wet ruimtelijke ordening (Wro), hierna te noemen: Rijksstructuurvisie Windenergie op Zee (RSV WoZ). De RSV WoZ vormt de invulling van de zoekopdrachten zoals geformuleerd in het NWP en de bijbehorende Beleidsnota Noordzee om binnen de zoekgebieden Hollandse Kust en Ten Noorden van de Waddeneilanden ruimte te vinden voor windenergie. Met de RSV WoZ worden binnen deze zoekgebieden specifieke gebieden voor windenergie aangewezen. De gebieden liggen buiten de 12-mijlszone (dat wil zeggen minimaal 23 km uit de kust).

Het voornemen om de RSV WoZ op te stellen en de plan-m.e.r.-procedure te doorlopen wordt openbaar aangekondigd. Deze kennisgeving wordt gedaan door het bevoegd gezag. De openbare kennisgeving wordt gepubliceerd in diverse kranten. Publicatie is voorzien op dinsdag 2 april, de zienswijzenperiode loopt van 3 april tot en met 1 mei 2013.

Bijgevoegd treft u ter informatie de volgende documenten aan:
- Notitie Reikwijdte en Detailniveau (inclusief kaarten)
- Publiekversie voornemen (inclusief kaarten)
- Advertentie bekendmaking voornemen

Vervolgacties
Raadpleging en advies
De betrokken bestuursorganen (de kustprovincies Zeeland, Noord-Holland, Zuid-Holland, Friesland en Groningen en alle relevante kustgemeenten) worden geraadpleegd over de Notitie Reikwijdte en Detailniveau (NRD). Het betrekken van de Commissie voor de m.e.r. is in deze fase van de procedure niet verplicht. Vanwege de gevoeligheid en de complexiteit van windenergie op zee is de Commissie voor de m.e.r. verzocht om een vrijwillig advies uit te brengen over de NRD. Ook worden de Inspectie Leefomgeving en Transport en de Rijksdienst voor

paraaf Bestuursondersteuning	paraaf DGRW-GP	paraaf RWS	paraaf DGB MZ
		per mail akkoord.	per mail akkoord.

het Cultureel Erfgoed geraadpleegd. Maatschappelijke organisaties en marktpartijen worden via het Overlegorgaan Infrastructuur en Milieu betrokken. Hiertoe is een bijeenkomst gepland op donderdag 4 april. Daarnaast worden, conform de zogeheten 'Espoo afspraken', de bestuursorganen van de ons omliggende landen (Duitsland, België en Groot Brittannië) geïnformeerd over het voornemen. De bestuursorganen kunnen reageren tot en met 8 mei.

Er worden 2 informatiebijeenkomsten gehouden, te weten op donderdag 11 april te Noordwijkerhout en op dinsdag 16 april te Egmond aan Zee. De bijeenkomsten hebben de vorm van een informatiemarkt. Een ieder heeft de mogelijkheid om zienswijzen in te dienen.

Nota van Antwoord
Aan het eind van de zienswijzenperiode worden alle zienswijzen verzameld en betrokken bij het opstellen van het planMER en de ontwerp-Rijksstructuurvisie. In de Nota van Antwoord wordt aangegeven op welke wijze deze worden betrokken in de op te stellen planMERren en de Rijksstructuurvisie.

Haalbaarheidsstudie 12-mijlszone

AO Noordzee en Wadden
De brief met het voornemen tot het opstellen van de RSV WoZ is geagendeerd voor het AO Noordzee en Wadden op 24 april. In het dossier ter voorbereiding op het AO zal worden ingegaan op de stand van zaken van de RSV WoZ.

Toelichting

- *Zoekgebied Hollandse Kust*

Voor het gebied Hollandse Kust (tussen Hoek van Holland en Texel) wordt buiten de 12-mijlszone 500 km² ruimte gezocht voor 3.000 MW windenergie (zoekopdracht Nationaal Waterplan). Uitgangspunt hierbij vormt de kaart met de aangepaste scheepvaartroutes (ingaande per 1 augustus 2013).
NB. De op de kaarten aangegeven ruimte betreft overigens bruto ruimte, omdat niet de volledige oppervlakte benut kan worden in verband met ander gebruik (bijvoorbeeld kabels en leidingen) en de benodigde afstand tussen parken (zogeffect).

In de planMER worden twee van elkaar te onderscheiden varianten onderzocht:

1. De variant maximale oppervlakte windgebied Hollandse Kust: er wordt een afstand van 500 meter aangehouden ten opzichte van de scheepvaartroutes. en mijnbouwplatforms. Dit is de ruimte die beschikbaar is als overal maatwerk kan worden toegepast. Voor de zone rond mijnbouwplatforms gaat het daarbij om maatwerk in ruimte en tijd (na uitputting van de velden). De totaal geschatte capaciteit voor de minimum variant komt dan uit op ruim 11.000 MW[1].
2. De variant minimale oppervlakte windgebied Hollandse Kust: er wordt een afstand van 2 NM aangehouden ten opzicht van de scheepvaartroutes en een afstand van 5 NM rondom de mijnbouwplatforms. De totaal geschatte ruimte voor capaciteit voor de minimum variant komt dan uit op circa 2.900 MW[2].

Op deze manier wordt een 'bandbreedte' onderzocht waarbinnen maatwerk mogelijk is. In de ontwerp-Rijksstructuurvisie wordt uiteindelijk een voorkeursalternatief opgenomen. Dit wordt onder andere bepaald door de effecten op het milieu en het maatwerk dat mogelijk is binnen de 2 NM en de 5 NM zone. Hierover wordt bij het opstellen van de Rijksstructuurvisie samengewerkt met RWS (vanuit de ervaringen met de vergunningverlening voor windparken) en DGB en wordt afstemming gezocht met de betreffende sectoren.

De afstand die voor de veiligheid nodig is tussen windparken en de scheepvaartroutes is onder andere afhankelijk van de intensiteit en grootte van de schepen in betreffende vaarroute. De afstand ten opzichte van mijnbouwplatforms heeft te maken met de bereikbaarheid voor helikopters, die noodzakelijk is voor de bedrijfsvoering van het betreffende platform. Voor beide geldt dat de benodigde afstand per situatie kan verschillen.

- *Zoekgebied Ten Noorden van de Waddeneilanden*

Ten noorden van de kust van Terschelling, Ameland en Schiermonnikoog wordt op een afstand van circa 80 km 165 km² ruimte gezocht voor minimaal 1.000 MW windenergie (zoekopdracht Nationaal Waterplan).

Voor het zoekgebied is in 2009 al overeenstemming bereikt over de locatie van de windenergiegebieden. Uit eerder onderzoek is gebleken dat het mogelijk is om (bruto) ruimte voor 1.265 MW aan te wijzen. Dat is inclusief de drie aanwezige ronde 2 vergunningen. Het gebied wordt aan de noordzijde begrensd door een scheepvaartroute, aan de oostzijde door Duitsland en aan de zuidzijde door een defensie oefengebied.

---

[1] De in het gebied aanwezige ronde 2 vergunningen (alsmede het bestaande windpark Prinses Amalia en de in procedure zijnde vergunningaanvraag Q4 West, die de vergunning 'Scheveningen Buiten' vervangt) maken deel uit van zowel de maximale als de minimale variant.
[2] Idem.

15

Ministerie van Infrastructuur en Milieu

IDON

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Contactpersoon

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Datum
18 september 2013

Bijlage(n)
1

memo

Ontwerp-Rijksstructuurvisie Windenergie op Zee

DOEL

Doel van het memo is om u:

- enkele beslispunten voor te leggen (voor toelichting zie bijgevoegde presentatie);
- te informeren over de stand van zaken betreffende de Rijksstructuurvisie Windenergie op Zee (RSV WoZ)
- te informeren over de verdere planning.

BESLISPUNTEN

STAND VAN ZAKEN

- Op 11 juni is er een overleg geweest met de stakeholders over het mogelijk voorkeursalternatief voor het gebied Hollandse Kust. Deze bijeenkomst vond plaats op een moment dat er nog geen overeenstemming was tussen DGB, RWS en de scheepvaartsector over het afwegingskader scheepvaart.

- Voor de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden zijn twee aparte planMER'en opgesteld. Hierbij is gewerkt met een minimale en een maximale variant. Op deze manier is een 'bandbreedte' onderzocht waarbinnen maatwerk mogelijk is.
  Voor de beide gebieden is door Marin een scheepvaartanalyse uitgevoerd.

- De afgelopen periode is gewerkt aan het opstellen van de concept ontwerp-RSV. Hierbij is rekening gehouden met de eisen die aan de tekst worden gesteld vanwege de digitalisering van structuurvisies op ruimtelijkeplannen.nl. Dit betekent dat de tekst 'objectgericht' is geschreven.

- Er zijn rond de 40 zienswijzen ontvangen op het voornemen tot het opstellen van de Rijksstructuurvisie. De zienswijzen zijn de afgelopen periode doorgenomen en zijn/worden indien aan de orde meegenomen in de planMER dan wel de ontwerp-Rijksstructuurvisie. De zienswijzen en de reactie hierop worden gebundeld in een zogeheten reactiedocument.

Planning
De voorlopige planning is als volgt:
- Oktober/november: bespreking stakeholders concept
- November: voorleggen bewindslieden
- November/december: CEZIM – REZIM
- December:
  - besluit ontwerp-RSV Windenergie op Zee
  - Start zienswijzeperiode

NB: Haalbaarheid van de planning is mede afhankelijk van de ontwikkelingen inzake het totaal plan van aanpak Windenergie op Zee.

15A

IDON 13-02-08.0

Ministerie van Infrastructuur en Milieu

Concept Ontwerp Rijksstructuurvisie Windenergie op Zee

Aanwijzing Hollandse Kust en Ten Noorden van de Waddeneilanden

IDON 24 september 2013

Inhoud

- Aanleiding en opdracht
- Gebied Hollandse Kust
  - Bepaling ruimte
  - Beslispunten
- Gebied Ten Noorden van de Waddeneilanden
  - Bepaling ruimte
  - Beslispunten
- SER akkoord
- Planning ontwerp-RSV WoZ

Aanleiding en opdracht

- Nationaal Waterplan (NWP)
  - Aangewezen: Borssele (ca 344 km²) en IJmuiden (ca 1.170 km²)
  - Zoekopdrachten: Hollandse Kust en Ten Noorden van de Waddeneilanden
- Partiële wijziging NWP voor het onderdeel WoZ
  => Rijksstructuurvisie Windenergie op Zee (WoZ)
- Tot nu toe
  - Februari 2013: brief TK
  - Mei 2013: zienswijzeperiode Notitie Reikwijdte en Detailniveau (NRD)
  - Juni-juli 2013: eerste analyse zienswijzen
  - November 2012-september 2013: planMER en scheepvaart HK en TNW
  - Juli-september 2013: concept ontwerp-RSV WoZ

Gebied Hollandse Kust

EXTRA ruimte
Tov R2 vergunningen en parken

- Zoekopdracht: 3.000 MW / 500 km2
- Gebied > 12 NM
- Scheepvaartroutes per 1 augustus 2013
- PlanMER: minimale (2 en 5 NM) en maximale variant (500 meter)

Parken en R2 vergunningen	
Prinses Amalia Windpark	120 MW
Voorbereiding bouw: Luchterduinen	129 MW
Ronde 2: Breeveertien II, Q4, West Rijn, Beaufort	1177 MW
Ronde 2 in procedure: Q4 West	210 MW
Ronde 2 in procedure: Helmveld (49 km² x 6 MW)	294 MW
TOTAAL	**1.930 MW**

Gebied Hollandse Kust

Beschikbare ruimte afhankelijk van:

- Mijnbouw
  - 5 nautische mijl (NM), tenzij...
  - Uitfasering bestaande mijnbouwplatforms
  - Prospects
- Kabels en leidingen
  - Veiligheid- en onderhoudszones
- Ecologie (kleine mantelmeeuw)
  - Kolonie Lage Land te Texel
- Scheepvaart
  - Scheepvaartroutes
  - 2 nautische mijl (NM), tenzij...
- Ronde 2 vergunningen

Tijd en ruimte

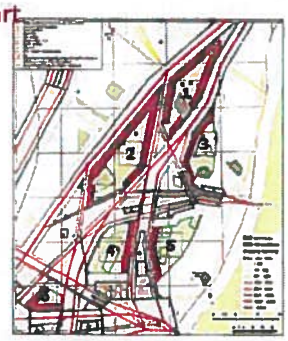
Nationale belangen/opgaven (SVIR)

- Scheepvaart
- Kustfundament
- Natura 2000-gebieden en mariene ecosysteem
- Krijgsmacht
- Vrij zicht op de horizon
- Hoofdnetwerk vervoer via buisleidingen
- Zandwinning
- Windenergie, olie en gas, CO_2 opslag
- Archeologische waarden

Hollandse Kust: scheepvaart

- 2 NM, tenzij => werkgroep
  - Invulling 'tenzij' => maatwerk

	Minimaal (2NM) Km2	/ MW	Maatwerk Km2	/ MW
1	99	594	201	1.206
2	204	1.224	299	1.794
3	95	570	129	774
4	94	564	201	1.206
5	168	1.008	197	1.182
6	15	90	40	240
	TOTAAL	3.960		6.182



Hollandse Kust: mijnbouw

Let op: prospects!

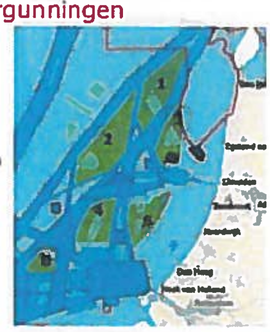
- 5 NM, tenzij...
  - maatwerk
  - tijd en ruimte

	Fasering (indicatief)	Minimaal (5NM) Km2	/ MW	Maximaal (500 m) Km2	/ MW
1	2014-2022	69	414	404	2.424
2	2014-2019	73	438	524	3.144
3	2018-2022	155	930	194	1.164
4	2015-2022	40	240	254	1.524
5	2015?	172	1.032	250	1.500
6	nvt	96	576	96	576
	TOTAAL		3.640		10.332

Hollandse Kust: ronde 2 vergunningen

1. Helmveld (in procedure, 49 km² x 6 MW = 294 MW
2. Breeveertien II (350 MW)
3. Q4 (78 MW) en Q4 West (210 MW, in procedure)
4. West Rijn (260 MW)
5. Beaufort (279 MW)
6. nvt

Ligging kan optimaler!



Hollandse Kust: kabels en leidingen

1. leidingen aanwezige platforms
2. leidingen aanwezige platforms en kabels vergunningen Ijmuiden Ver
3. '(telecom)kabel- en leidingenstraat' => halvering beschikbare ruimte
4. 'kabel- en leidingenstraat': inpassen
5. '(telecom)kabel- en leidingenstraat' => halvering beschikbare ruimte
6. telecomkabels: inpassen

Hollandse Kust: beschikbare ruimte

- Scheepvaart → Circa 6.000 MW
- Ecologie (1 en 3) → Circa 5.000 MW
- Kabels en leidingen (3 en 5) → Circa 4.000 MW
- Mijnbouw: min en max → Min circa 1.000 MW, Max circa 4.000 MW
- En ook: R2 vergunningen, zogeffecten → - 10 à 20 %???

Prospects mijnbouw??? - XX %

Hollandse Kust: ecologie (kleine mantelmeeuw)

Kolonie Lage Land op Texel

- Binnen 50 km (1, deel 3):
  - Beperkt mogelijk (≤1% sterfte)
  - Zo ver mogelijk van kolonie
  - Met Passende Beoordeling (Pb)
- Buiten 50 km (2, deel 3, 4, 5, 6):
  - Geen Pb nodig, omdat significante effecten daar uit te sluiten zijn

Voorstel:

- Alle ruimte aanwijzen
- Bij verkaveling/kavelbesluit nadere invulling kleine mantelmeeuw

Gebied Ten Noorden van de Waddeneilanden

Beschikbare ruimte afhankelijk van:
- **Begrenzing**
  - **Westen**
  - **Zuiden: defensiegebied**
- **Mijnbouw**
  - **5 nautische mijl, tenzij**
  - **Uitfasering bestaande mijnbouwplatforms**
- **Scheepvaart**
  - **Scheepvaartroutes**
  - **2 nautische mijl, tenzij**
- **Kabels en leidingen**
  - **Veiligheid- en onderhoudszones**
- **Ronde 2 vergunningen**

Tijd en ruimte

Hollandse Kust: beschikbare ruimte

- Aanwijzen ruimte gegeven afwegingskader scheepvaart
- Let wel:
  - Gefaseerde beschikbaarheid ivm mijnbouw!
  - Ligging ronde 2 vergunningen
  - Ecologische ruimte (cumulatie)
  - Kabels en leidingen
  - Zogeffecten windparken
  - Prospects mijnbouw!

Ten Noorden van de Waddeneilanden: begrenzing

- Uitbreiding naar het westen
- GEEN uitbreiding naar het zuiden => defensieoefengebied
  - Betreft schietgebieden met uiteenlopende wapensystemen door straalvliegtuigen (Nld en NATO partners)
  - Snel bewegende objecten, veel ruimte nodig
  - Internationale afspraken over gebruik deze ruimte
  - Vanwege onveiligheid niet geschikt voor permanent medegebruik windparken
  - Van belang voor uitrol gebruik buitenlandse oefenterreinen door Nederland

Hollandse Kust: beslispunten

- Akkoord met: aan te wijzen BRUTO ruimte:
  - Ruimte gegeven afwegingskader scheepvaart, met:
    - o Maximale ruimte vanuit mijnbouw
    - o Maximale ruimte vanuit ecologie
    - o Maximale ruimte vanuit kabels en leidingen
- Let wel: NETTO ruimte minder, vanwege:
  - Maatwerk mijnbouw => opdracht EZ: afwegingskader
  - Maatwerk kabels en leidingen => opdracht EZ en RWS: afwegingskader
  - En OOK: cumulatie ecologische effecten, ligging ronde 2 vergunningen en prospects mijnbouw!
- **EN LET OP**: beschikbaarheid in de tijd!

Ten Noorden van de Waddeneilanden: mijnbouw

- 5 NM, tenzij...
  - Maatwerk
  - tijd en ruimte
- Prospects??

	Fasering (indicatief)	Minimaal (5NM) Km2	/ MW	Maximaal Km2	/ MW
1	Circa 2025	87	522	134	884
	TOTAAL		**522**		**884**

Obv scheepvaart: 1,3 NM + 500 m

Gebied Ten Noorden van de Waddeneilanden

- Zoekopdracht: minimaal 1.000 MW / 65 km2
- PlanMER: minimale en maximale variant

Parken en R2 vergunningen	
Voorbereiding bouw (Buitengaats, ZeeEnergie)	600 MW
Ronde 2 (Clearcamp)	275 MW
Totaal	**875 MW**

EXTRA ruimte
Tov vergunningen en parken

TNW: beschikbare ruimte

- Aanwijzen ruimte gegeven afstand scheepvaart obv huidige vergunningen (1,3 NM + 500 m)
  - *BRUTO beschikbare extra ruimte: 804 MW*

Verschil: 138 MW

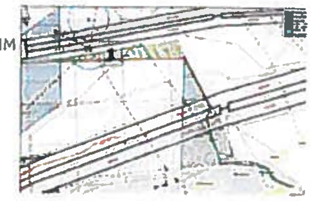
OF

- Aanwijzen ruimte gegeven afwegingskader scheepvaart (1,87 NM incl. 500 m)
  - *BRUTO beschikbare extra ruimte: 666 MW*

- **Let wel:**
  - Gefaseerde beschikbaarheid ivm mijnbouw!
  - Kabels en leidingen
  - Prospects mijnbouw!

Ten Noorden van de Waddeneilanden: scheepvaart

- Afstand tot scheepvaartroute
  - Huidige vergunningen: 1,3 NM + 500 meter
  - Afwegingskader: 1,87 NM (inclusief 500 meter)



- Maximale variant:

	1,3 NM + 500 m		1,87 NM incl. 500 m	
1	134 km2	804 MW	111 km2	666 MW
	Verschil: 138 MW			

TNW: beslispunten

- Besluit afstand scheepvaart:
  - Obv huidige vergunningen (1,3 NM + 500 m) OF
  - Obv afwegingskader scheepvaart (1,87 NM incl. 500 m)

- Akkoord met: aan te wijzen BRUTO ruimte:
  - Ruimte gegeven besluit afstand scheepvaart, met:
    - Maximale ruimte vanuit mijnbouw
    - Maximale ruimte vanuit kabels en leidingen

Minimale ruimte wel tijdig beschikbaar (= 522 MW (obv 1,3 NM + 500m))

- Let wel: NETTO ruimte minder, vanwege:
  - Maatwerk mijnbouw => opdracht EZ: afwegingskader
  - Maatwerk kabels en leidingen => opdracht EZ en RWS: afwegingskader
  - En OOK: prospects mijnbouw!

- **EN LET OP**: beschikbaarheid in de tijd!

TNW: kabels en leidingen

- Leidingen aanwezige platforms en (telecom)kabels: inpassen

SER akkoord

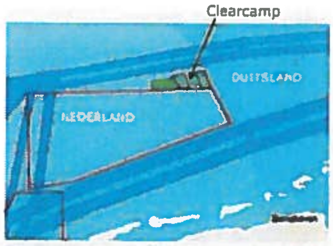
- 2023: 4.450 MW operationeel windvermogen op zee
  - Bestaande parken en pijplijn: circa 1.000 MW (exact: 957 MW)
  - Nieuwe parken: 3.450 MW => gefaseerde aanbesteding vanaf 2015

- Aanbestedingspad wind op zee

Aanbesteden in	Windvermogen	Totaal	Operationeel in
2015	450 MW	*450 MW*	2019
2016	600 MW	*1.050 MW*	2020
2017	700 MW	*1.750 MW*	2021
2018	800 MW	*2.550 MW*	2022
2019	900 MW	*3.450 MW*	2023

Ten Noorden van de Waddeneilanden: ronde 2

- Clearcamp: zelfde eigenaar als Buitengaats en ZeeEnergie (Gemini). Voor deze projecten geldt: bouw in voorbereiding



SER akkoord: bijdrage HK en TNW

- **TIJD: fasering uitgifte deelgebieden vanwege mijnbouwplatforms**
  - **Hollandse Kust: gebieden**
  - **TNW: pas vanaf 2026, tenzij eerst 'minimale ruimte'**
- **NETTO beschikbare ruimte voor kavels**
  - **Kabels en leidingen**
  - **Zogeffecten**
- **Keuze deelgebieden Hollandse Kust i.r.t. eventuele nearshore gebieden Hollandse Kust**
  - **Landzijdige ontsluiting (stopcontact op zee vs kabel per park)**
  - **Gebieden 3 en 5: keuze nearshore <=> offshore**

Planning ontwerp-RSV Windenergie op Zee

- Eind oktober: bespreking stakeholders concept
- November: voorleggen bewindslieden
- November/december: CEZIM – REZIM
- December:
  - besluit ontwerp-RSV Windenergie op Zee
  - Start zienswijzeperiode

DOEN (*documenten*)

- Schrijven ontwerp-RSV Windenergie op Zee
  - Objectgericht schrijven (ivm digitalisering)
  - Kaarten
- Afronden planMER en passende beoordeling (2x)
- Reactiedocument zienswijzen kennisgeving RSV / NRD

NB: haalbaarheid mede afhankelijk van planning/capaciteit totaal WoZ

16

Aanwijzing Windenergiegebieden

Inhoud

- Ronde 1 – 2 - 3
- Nationaal Waterplan (NWP)
- Zoekopdracht 2009
- Ontwikkelingen
- Zoekopdracht 2012

Ronde 1: in bedrijf

- 2002: vergunning
  - Prinses Amalia (120 MW)
  - Windpark Egmond aan Zee (OWEZ, 108 MW)
- 2007: beide parken operationeel

Ronde 2: sturingsfilosofie

- Nota Ruimte: het mag overal behalve waar het niet mag (= 12 mijlszone, scheepvaartroutes, defensiegebieden, ...)
- Brede belangenafweging op grond van de Wet beheer rijkswaterstaatwerken
- Eerst ruimte, dan subsidie (vergunningen concurreren om subsidie)

Ronde 2: uitvoering

- 2005: nieuwe aanvragen mogelijk:
  - 80 startnotities
- 2009: 12 vergunningen
- 2011: 3 parken subsidie
- 2012: vergunningen behouden tot 2020 (motie Van Veldhoven)
- 2013/14: geplande start bouw 3 parken
  - Gemini I en II
  - Q10 / Eneco Luchterduinen
- 2014/15: geplande ingebruikname

Ronde 2: conclusies

- Veel "werk voor niets" door alle partijen
- Nieuwe functie moet zijn plek op de Noordzee "veroveren"
- Veel geleerd over de belangen die een rol spelen. Ook nuttige jurisprudentie opgebouwd.

=> Andere aanpak Ronde 3!

Ronde 3: sturingsfilosofie

- Bouw windparken alleen in aangewezen windgebieden:
  - Belangenafweging vooral op niveau structuurvisie
- Kaveluitgifte door overheid, koppeling ruimte en financiering.
  - Nieuw uitgiftestelsel in 2015.
- Mogelijkheid om TenneT verantwoordelijk te maken voor aansluiting op het net (evt. stopcontact op zee).
  - *Thans niet het geval. Heeft gevolgen voor kostprijs leveranciers.*
- Kostenreductie door innovatie en beleidsmatige optimalisering
  - Green Deal overheid – NWEA (oktober 2011)
  - Doelstelling: 40% goedkoper in 2020

Nationaal Waterplan 2009 - 2015

- **Nationaal belang**
  - **Ruimte voor 6.000 MW windenergie op de Noordzee (minimaal 1.000 km2)**
- **Aangewezen windgebieden:**
  - **Borssele (ca 344 km2)**
  - **IJmuiden (ca 1.170 km2)**
- **Zoekopdrachten => ronde 3**
  - **Ten Noorden van de Wadden (minimaal 1.000 MW: ca. 165 km2)**
  - **Hollandse Kust (3.000 MW: 500 km2)**

Partiële herziening NWP

Zoekopdracht 2009

- Participatieproces met belanghebbenden, waarin partijen zelf varianten mochten inbrengen
- Maatschappelijke Kosteneffectiviteitsanalyse (MKEA), Formal Safety Assessment (FSA), planMER (incl. Notitie Reikwijdte en Detailniveau (NRD) en Passende Beoordeling (PB, ivm Natura2000))
- Val kabinet Balkenende IV (febr. 2010) => wel voorbereiding besluitvorming
- 2010: ligging ronde 2 vergunningen stond oplossing windgebieden in combinatie met scheepvaartroutes in de weg, geen urgentie a.g.v. nieuw kabinetsbeleid.
  => zoekopdracht gestopt

Ontwikkelingen

- Motie Van Veldhoven (notaoverleg Water 2010) => Brief TK 2012
  - Behoud vergunningen tot 2020
  - Voorstel voor wijziging scheepvaartroutes Nederlandse kust (IMO kaart)
- Green Deal (okt. 2011)
  - Voorstel om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie HK
  - Aanzienlijke kostenreductie wind op zee (40%)

Aanpak: inhoud

- Partiële herziening Nationaal Waterplan, onderdeel Noordzee / Windenergie:
  - Notitie Reikwijdte en Detailniveau (NRD)
  - Plan-MER HK (incl. Passende Beoordeling) én plan-MER TNW (incl. Passende Beoordeling)
  - Risicoanalyse scheepvaartveiligheid

  Zoveel mogelijk gebruik maken van materiaal zoekopdracht 2009
- Ontwerp partiële herziening NWP: voorjaar 2013
- Definitief partiële herziening NWP: medio 2013

Invulling zoekopdracht Hollandse Kust (I)

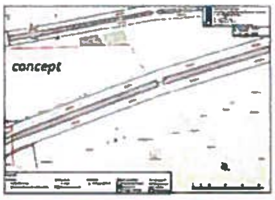
- Uitgangspunt:
  - Overeenstemming partijen over uitwerking motie Van Veldhoven
  - IMO kaart scheepvaartroutes
- Eén alternatief, wel twee varianten die 'speelveld' aangeven
  1. minimale oppervlakte (2 Nautische mijl (NM) en 5 NM platforms)
  2. maximale oppervlakte (500 meter t.o.v. scheepvaartroute)
- Bepaling beschikbare ruimte vanuit:
  - Scheepvaartveiligheid (2 NM, tenzij), milieueffecten, bereikbaarheid platforms mijnbouw (5 NM, tenzij) e.d.
  - Buiten 12 NM-zone!
- Opdracht: 3.000 MW / 500 km2

Invulling zoekopdracht Hollandse Kust (II)

- Variant minimale oppervlakte
- Variant maximale oppervlakte

Invulling zoekopdracht Ten Noorden v.d. Waddeneilanden

- Alternatief 'bewindsliedenoverleg december 2009'
  - Links: aansluitend op bestaande vergunningen ronde 2
  - Boven: vaargeul
  - Rechts: Duitsland
  - Onder: defensie
- Opdracht
  - Minimaal 1.000 MW / 167 km2



Aanpak: participatie

<u>INFORMEEL</u>

- Zomer – najaar
  - 1-op-1 gesprekken stakeholders => input participatieplan
- Najaar
  - Themabijeenkomsten m.b.t. vraagstukken
  - Bestuurlijke bijeenkomst kustgemeenten en -provincies?

<u>FORMEEL</u>

- Aankondiging voornemen partiële herziening NWP (brief TK)
- Kennisgeving => NRD: bespreking OIM, Cie. m.e.r., bestuursorganen
- Bespreking concept Ontwerp SV in OIM
- Zienswijzenprocedure Ontwerp SV

Vraagstukken en belangen

1. Veiligheid scheepvaart
2. Helikopterbereikbaarheid mijnbouwplatforms
3. Daadwerkelijk beschikbare ruimte in aan te wijzen gebieden
4. Ecologie
5. Zicht en beleving

n.b.

- Uitgangspunt: windparken gesloten voor varen en vissen.
- Opdracht NWP om mogelijkheden voor medegebruik te onderzoeken via apart traject.

Ad 1. Veiligheid scheepvaart

afstand scheepvaartroutes en windparken

a. Kwantitatieve analyse (t.b.v. plan-MER)
   a. Opdracht IenM
   b. O.b.v. Samson Model door MARIN

b. Ontwikkeling afwegingskader 'Veilige afstanden'
   - 2 NM, tenzij…
   - Opstellen afwegingskader en toepassen in pilot
   - RWS i.s.m. Havenbedrijven Rotterdam en Amsterdam i.o.v. DGB

- Risico's:
  - Minder dan 3.000 MW beschikbaar
- Participatie
  a. Adviesgroep met stakeholders
  b. Via werkgroep Afwegingskader
- Partijen:
  - vertegenwoordigd in Scheepvaart Adviesgroep Noordzee (SAN): Havenbedrijf Rotterdam, Haven Amsterdam, loodsen, reders, kustwacht, visserijsector

Ad 2. Helikopterbereikbaarheid mijnbouwplatforms

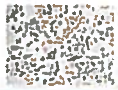
- 5 NM, tenzij….
- Aandachtspunten:
  - Horizon structuurvisie in relatie tot termijn uitputting olie- en gasvelden en eventueel toekomstig gebruik (CO_2)
- Participatie:
  - gesprek met mijnbouwoperators over meenemen maatwerkzones in structuurvisie
- Partijen:
  - NOGEPA, operators (o.a. TAQA, Chevron, Wintershall)

Ad 3. Daadwerkelijk beschikbare ruimte

- 6 MW/km2 als uitgangspunt
  - gemiddelde per oppervlakte
- Ruimte tussen parken iv.m. 'zog' effect
- Inrichting windgebieden in relatie tot bestaande vergunningen
- Minimale omvang park (met name indien ver van de kust)
- Aandachtspunten
  - Hoeveel parken met welke omvang kun je daadwerkelijk bouwen?
  - Bruto versus netto ruimte
- Participatie:
  - werksessie over optimale inrichting windgebieden
- Partijen:
  - vergunninghouders (Eneco, RWE, SSE, Nuon), NWEA

Ad 4. Ecologie

- Minimale en maximale (inclusief 2 NM en 5 NM zones) gebruiksruimte in kaart brengen
- Meest recente onderzoek als basis
- Aandachtspunt
  - Cumulatie met buitenlandse parken
- Participatie
  - vooral informeren
  - (natuurorganisaties zijn betrokken bij onderzoek)
- Partijen
  - Stichting De Noordzee en anderen


Ad 5. Zicht en beleving

- 12 NM als grens (ca. 22 km)
- Zichtbaar: ca 10% van de tijd
  - *bij zeer helder weer*
- Effecten op recreatie en toerisme
- Participatie:
  - Zicht: welke aspecten zijn relevant: afstand tussen parken, hoogte van de turbines, kleur? Wat kun je ervaren op zo'n grote afstand?
  - Windparken als kans versus risico: imago (duurzaamheid), werkgelegenheid, recreatie
  - Ervaringen delen (internationaal)
  - Investeren in relatie
- Partijen
  - Kustoverheden

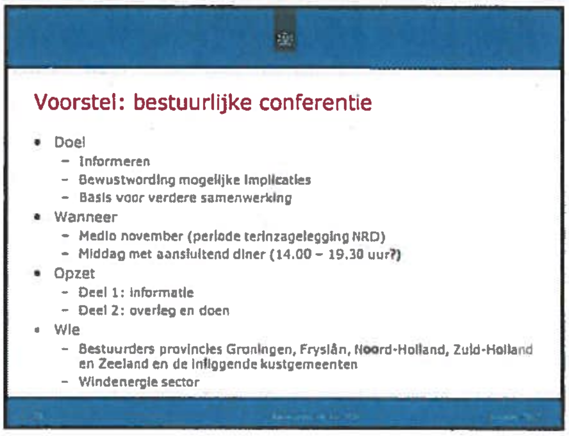
Planning

- Begin oktober 2012
  - Brief TK met aankondiging traject Aanwijzing HK en TNW (voornemen partiële herziening NWP)
- Oktober - december 2012
  - NRD: kennisgeving (inspraak: bespreking OIM, Cie. m.e.r., bestuursorganen)
- September 2012 – januari 2013
  - Participatie: o.a. themabijeenkomsten
  - Analyse scheepvaartveiligheid
  - Opstellen plan-MER'en (incl. PB) voor HK en TNW
- December 2012 – februari 2013
  - Opstellen ontwerp partiële herziening NWP
  - Vaststellen in Ministerraad
- Maart –mei 2013
  - Formele ter inzage legging ontwerp structuurvisie (incl. 2x plan-MER en PB)
- April – juli 2013
  - Opstellen definitief partiële herziening NWP n.a.v. ontvangen reacties
  - Vaststellen door bewindspersoon

Informatie Wind op Zee

- Publicatie kennisgeving
- Internetsite (www.noordzeeloket.nl)
- Brochure
- Formele procedure

<u>Vraag aan kustoverheden</u>:
- Hoe en wanneer informatie richting burgers
- Specifieke belangenorganisaties te betrekken


Voorstel: bestuurlijke conferentie
• Doel
– Informeren
– Bewustwording mogelijke implicaties
– Basis voor verdere samenwerking
• Wanneer
– Medio november (periode terinzagelegging NRD)
– Middag met aansluitend diner (14.00 – 19.30 uur?)
• Opzet
– Deel 1: informatie
– Deel 2: overleg en doen
• Wie
– Bestuurders provincies Groningen, Fryslân, Noord-Holland, Zuid-Holland en Zeeland en de inliggende kustgemeenten
– Windenergie sector


Dank voor uw aandacht.
Vragen?

17

Wind Op Zee

Aanwijzing windenergiegebieden Hollandse Kust en Ten Noorden van de Waddeneilanden

Aanwijzing Windenergiegebieden

- Nationaal Waterplan / Beleidsnota Noordzee (2009)
  - Zoekopdracht 'Hollandse kust' (HK)
  - Zoekopdracht 'Ten Noorden van de Waddeneilanden' (TNW)

=> Partiële herziening NWP (= Structuurvisie

- Zoekopdracht 2009
- Ontwikkelingen
- Zoekopdracht 2012

Nationaal Waterplan/Beleidsnota Noordzee (2009)

- Ronde 1, 2 en 3 vergunningen:
  1. Gerealiseerd: Windpark Egmond aan Zee (108 MW/27 km2) en 'Prinses Amaliawindpark' (120 MW/14 km2)
  2. 12 vergunningen: 3 subsidie, 9 => motie Van Veldhoven
  3. Windgebieden 'Borssele' (1.000 MW) en 'IJmuiden Ver' (5.000 MW)

     EN
     - Zoekopdracht 'Hollandse Kust' (tussen Hoek van Holland en Texel)
       - Ruimte voor 3.000 MW (500 km2 netto)
       - Meest kosteneffectief vanwege relatief ondiep te bouwen
       - OOK: meest drukke deel van de Noordzee
     - Zoekopdracht 'Ten Noorden van de Waddeneilanden'
       - Ruimte voor ten minste 1.000 MW (165 km2 netto)

     EN
     - Nieuw uitgiftestelsel vergunningen (geld en ruimte koppelen)

Zoekopdracht 2009

- Participatie proces met belanghebbenden
  - TNW: 3 varianten
  - HK: 6 varianten (o.a. variant energiesector en variant scheepvaartsector)
- Val kabinet Balkenende IV (febr. 2010), WEL:
  - ✓ Notitie Reikwijdte en Detailniveau: ter inzage gelegd
  - ✓ Maatschappelijke Kosteneffectiviteitsanalyse: second opinion CPB en beschikbaar
  - ✓ PlanMER en Passende Beoordeling: besproken en beschikbaar
  - ✓ Formal Safety Assessment: uitgevoerd
- 2010: geen draagvlak, met name scheepvaartsector
  - Niet instemmen met voorgestelde routering i.c.m. aan te wijzen windgebieden => ligging ronde 2 vergunningen

Ontwikkelingen

- Motie Van Veldhoven (notaoverleg Water dec 2010) => Brief TK 2012
  - ➢ Behoud (9) vergunningen t/m 2020
  - ➢ Voorstel voor wijziging scheepvaartroutes Nederlandse kust
  - ➢ Opstellen 'Afwegingskader 2 NM, tenzij'
- Green Deal (okt. 2011)
  - Voorstel om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie HK
- Structuurvisie Infrastructuur en Ruimte (SVIR)
  - TNW: wel ontwerp SVIR, niet SVIR
  - Cie MER: onderbouwing TNW onvoldoende

Zoekopdracht 2012: risico's

- Aangepaste scheepvaartroutes: besluitvorming IMO
  - behandeling juli, acceptatie november 2012, inwerking augustus 2013
- Werkgroep 'Afwegingskader 2 NM, tenzij': besluitvorming DGB
  - Juni: IDON
- Shortlist onderzoeken => brief Tweede Kamer (juni?)
  - o.a. Kleine Mantelmeeuw (n.a.v. aanvraag Helmveld)
  - MEENEMEN: aanpassing kader Passende Beoordeling!
- Draagvlak kustoverheden
  - Draagvlak: zichtbaarheid/beleving windmolens op zee
  - KIMO
- Variant in planMER
  - O.b.v. beschikbare materiaal of nieuwe planMER?
  - Check HBJZ en cie m.e.r.

Zoekopdracht 2012: aandachtspunten

- Bestaande vergunningen
  - Streven naar optimale inrichting van de aan te wijzen windgebieden
- Netto/bruto ruimte:
  - Om welke ruimte gaat het nu?
- Helikopterbereikbaarheid platforms
  - 5 NM, tenzij: maatwerk
- Vergunningaanvraag Helmveld
  - Wel/niet meenemen in zoekgebied HK
- Aanwezigheid Natura2000 gebieden
- Visserij: varen en vissen windparken
- Medegebruik van windparken, bv zeewierteelt
- Zandwinstrategie
- Uitgiftestelsel (EL&)

Zoekopdracht 2012: aanpak

- Actualisatie NRD, planMER, PB (conform brief TK) en MKEA
  - HK: voorstel variant o.b.v. IMO kaart
  - TNW: voorstel variant 'ontwerp SVIR' (1.350 MW)

- Informeren Tweede Kamer: juni
- Kennisgeving NRD: juni
- Ontwerp partiële herziening NWP: najaar 2012
- Inspraakperiode: najaar 2012
- Besluit tot aanwijzing (2x): begin 2013

18

Concept Ontwerp Rijksstructuurvisie Windenergie op Zee

Aanwijzing Hollandse Kust en Ten Noorden van de Waddeneilanden

Inhoud

- SER akkoord (6 september 2013, Energieakkoord voor duurzame groei)
- Ruimtelijk beleid om hieraan invulling te geven
- Rijksstructuurvisie Windenergie op Zee
  - Dilemma's en keuzen Hollandse Kust
  - Wat levert dit op?
  - Dilemma's en keuzen Ten Noorden van de Wadden
  - Wat levert dit op?
- Vervolg

SER akkoord

- Opgave voor Windenergie op Zee
  - Operationeel windvermogen op zee van 4.450 MW in 2023. (inclusief bestaande en in ontwikkeling zijnde ca. 1.000 MW).
  - Gefaseerde aanbesteding vanaf 2015 in oplopende stappen.

Aanbesteden in	Windvermogen	Totaal	Operationeel in
2015	450 MW	*450 MW*	2019
2016	600 MW	*1.050 MW*	2020
2017	700 MW	*1.750 MW*	2021
2018	800 MW	*2.550 MW*	2022
2019	900 MW	*3.450 MW*	2023

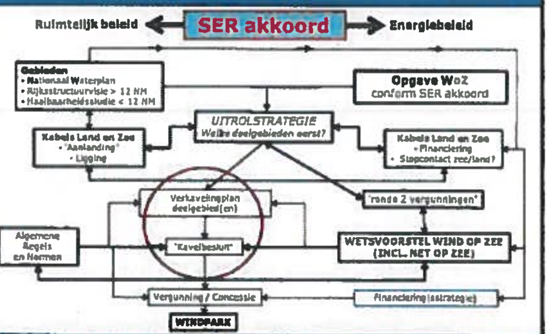
SER akkoord => en ook!

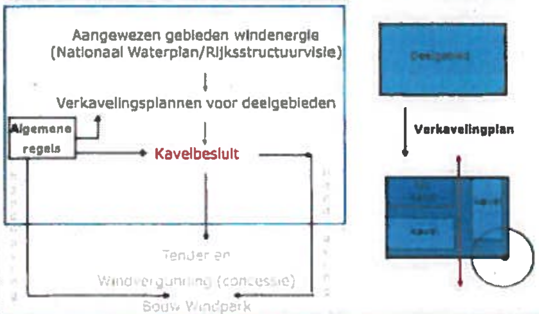
2 pagina's WoZ

- **Op 1 januari 2015** robuust wettelijk kader.
- Allocatie of aparte categorie SDE+.
- Kostenreductie (40%), o.a. door innovatiepark.
- Directe aansluiting park vs aansluiting net op zee.
- Meedoen windparken bestaande vergunning (indien binnen taakstellend kostenreductiepad).
- (Versnelde) aanwijzing van windgebieden in Structuurvisie WoZ, incl. doorlopen benodigde procedures en benodigde netverzwaring zee en land.
- Evenwichtige belangenafweging t.o.v. ander ruimtegebruik NZ.
- Uiterlijk vóór 1 juli 2014 plan van aanpak voor oplossen en implementatie niet financiële barrières.

Wat is er hiervoor nodig?

Hoofdproducten	Deelproducten
1. Aangewezen gebieden	• **NWP + RSV,WoZ > 12 NM** • **Haalbaarheidstudie/RSV < 12 NM**
2. Te gebruiken kavels	• **Ronde 2 vergunningen (?)** **Nieuw aan te geven kavels via:** • **Uitrolstrategie (welke gebieden eerst?)** • **Invulling aangewezen gebieden met kavels voor parken**
3. Aansluitingen op het landelijk netwerk	• **Kabelplan zee** • **Kabelplan land**
4. Financiering	• **Besluit SDE** • **Financieringsstrategie**
5. Juridische kaders	• **Robuust wettelijk kader voor uitgifte gebieden** • **Aanpassing Elektriciteit wet**





Verdere focus op punt 1
Beleid om tot aangewezen gebieden te komen

- Nationaal Waterplan:
  - 2 gebieden aangewezen
  - 2 zoekgebieden
- Uitwerking NWP voor zoekgebieden: Rijksstructuurvisie >12 NM
- Haalbaarheidstudie< 12 NM met mogelijk vervolg

Rijksstructuurvisie Windenergie op zee

Nationaal Waterplan (NWP)
- Aangewezen: Borssele (ca 344 km2) en IJmuiden (ca 1.170 km2)
- Zoekopdrachten: Hollandse Kust en Ten Noorden van de Waddeneilanden
- Partiële wijziging NWP voor het onderdeel WoZ => Rijksstructuurvisie Windenergie op Zee (WoZ)

Tot nu toe:
- Februari 2013: brief Tweede Kamer
- Mei 2013: zienswijze periode Notitie Reikwijdte en Detailniveau (NRD)
- Juni - oktober 2013: analyse zienswijzen
- November 2012-september 2013: planMER en scheepvaart veiligheid studie
- Juli – november 2013: concept ontwerp-RSV WoZ

Gebied Hollandse Kust

EXTRA ruimte
Tov R2 vergunningen en parken

- Zoekopdracht: 3.000 MW / 500 km2
- Gebied > 12 NM
- Scheepvaartroutes per 1 augustus 2013
- PlanMER: minimale (2 en 5 NM) en maximale variant (500 meter)

Parken en R2 vergunningen	
Prinses Amalia Windpark	120 MW
Voorbereiding bouw: Luchterduinen	129 MW
Ronde 2: Breeveertien II, Q4, West Rijn, Beaufort	1.177 MW
Ronde 2 in procedure: Q4 West	210 MW
Ronde 2 in procedure: Helmveld (49 km² x 6 MW)	294 MW
TOTAAL	1.930 MW

Hollandse kust: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot scheepvaart

Dilemma
- Vertrekpunt 2 NM voor veilige afstand kan veel ruimte voor wind kosten

Keuze:
- Ontwikkeling en toepassen van afwegingskader voor invulling van tenzij bij vertrekpunt voor aan te wijzen gebieden
- Voor reeds afgegeven/nog in procedure zijnde vergunningen gelden de afspraken zoals gemaakt in vergunning, ook in het geval dat deze vergunningen worden gewijzigd.

(verduidelijking kaart op volgende sheet)

Veiligheidsmarges (excl 500 m veiligheidszone)

Veiligheidsmarge + vaarroute/pad bij clearways
- B1 = 4,20 NM (schip 400 m)
- B2 = 4,20 NM (schip 400 m)
- B3 = 2,90 NM (schip 300 m)
- D = 4,20 NM (schip 400 m)

Veiligheidsmarges
- A = 1,60 NM (schip 400 m)
- C = 1,30 NM (schip 400 m)
- E = 1,27 NM (schip 300 m)
- F = 1,60 NM (schip 400 m)

Wat levert het op?

- 2 NM, tenzij => werkgroep
  - Invulling 'tenzij' => maatwerk

	Minimaal (2NM) Km2	MW	Maatwerk Km2	MW
1	99	594	189	1.134
2	204	1.224	299	1.794
3	95	570	112	672
4	94	564	190	1.140
5	168	1.008	186	1.116
6	46	90	30	180
	TOTAAL	3.960	976	5.856

Hollandse kust: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot ecologie

Dilemma
- Kleine mantelmeeuw kolonie Texel beperkt gebruik in straal van 50 km

Keuze:
-

Hollandse kust: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot olie-/gaswinning

Dilemma:
- Veiligheidcirkels van 5 NM tbv. obstakelvrije zones voor bereikbaarheid met helikopters onder alle weersomstandigheden
- Prospects

Keuze:
-

Wat levert dit op? olie & gaswinning

Beschikbaar voor windenergie:
- 5 NM of 500 m helikopterveiligheidszone
- Geen uitfasering tot 2023
- Prospects??

5 NM	circa 1.000 MW
500 m	circa 6.000 MW

EXTRA ruimte
Tov R2 vergunningen en parken

Aan te wijzen gebied Hollandse kust

Het aangewezen gebied omvat mede de zogenoemde, reeds afgegeven en de in procedure zijnde, ronde 2 vergunningen en het Prinses Amalia Windpark.

Hollandse Kust: beschikbare ruimte

- Scheepvaart → Circa 6.000 MW
- Ecologie (1 en 3) → Circa 5.000 MW
- Kabels en leidingen (3 en 5) → Circa 4.000 MW
- Mijnbouw: min en max → Min circa 1.000 MW / Max circa 4.000 MW
- En ook: R2 vergunningen, zogeffecten → - 10 à 20 %???

= 800-900 à 3 600-3 200 MW
Prospects mijnbouw??? - XX %

Gebied Ten Noorden van de Waddeneilanden

- Zoekopdracht: minimaal 1.000 MW / 65 km2
- PlanMER: minimale en maximale variant

Parken en R2 vergunningen	
Voorbereiding bouw (Buitengaats, ZeeEnergie)	600 MW
Ronde 2 (Clearcamp)	275 MW
Totaal	875 MW

EXTRA ruimte
Tov vergunningen en parken

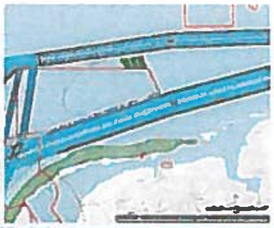
Gebied Ten Noorden van de Waddeneilanden

- Uitbreiding in westelijke richting op basis van inspraak reactie

Ten Noorden van de Waddeneilanden: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot Defensie

Dilemma:
- defensiegebied beperkt mogelijkheden

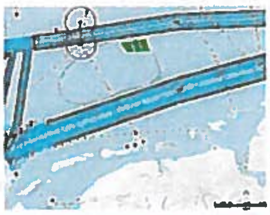
Keuze



Ten Noorden van de Waddeneilanden: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot olie-/ gaswinning

Dilemma:
- Veiligheidcirkels van 5 NM tbv. obstakelvrije zones voor bereikbaarheid met helikopters onder alle weersomstandigheden
- Prospects

Keuze:
-



Ten Noorden van de Waddeneilanden: Dilemma's en keuzen voor aan te wijzen gebieden in relatie tot scheepvaart

Dilemma
- Vertrekpunt 2 NM voor veilige afstand kan veel ruimte voor wind kosten

Keuze:
-
-

Aan te wijzen Ten Noorden van de Waddeneilanden

Het aangewezen gebied omvat mede de zogenoemde ronde 2 vergunningen.

Wat levert dit op ?

Scheepvaart
- Circa 660 MW

EXTRA ruimte
Tov R2 vergunningen en parken

Olie-/gaswinning
- 5 NM of 500 m helikopterveiligheidszone
- Uitfasering niet voor 2023 verwacht
- NB voor prospects

5 NM	circa 300 MW
500 m	circa 660 MW

Planning vervolg

- November: bespreking concept ontwerp met stakeholders
- December: Besluit kabinet over ontwerp RSV WoZ
- Januari/februari: formele zienswijze periode (incl. Plan MER)
- Medio 2014 Besluit Kabinet

Bedankt voor uw aandacht

- Vragen?
- Opmerkingen?

lg

Aanwijzing windenergiegebieden

Hollandse kust en Eemshaven

Inhoud

- Aanleiding
- Partiële herziening NWP (structuurvisie)
- Opdracht 'Hollandse kust'
- Opdracht 'Eemshaven'
  (ten noorden van de Waddeneilanden)
- Participatie
- Planning

Aanleiding

- Nationaal Waterplan (NWP) 2009-2015
- Variant 5b,
- IMO scheepvaartroutes
- Green Deal Offshore Windenergie *(oktober 2011)*
- Uitkomst 'motie Van Veldhoven'

Ronde 3

- Zoekopdracht windenergiegebieden 'Hollandse kust' en 'Eemshaven'

Partiële herziening NWP (structuurvisie)

- Check bestaand materiaal
  - Notitie Reikwijdte en Detailniveau
  - PlanMER
  - Passende beoordeling
  - MKEA
- Shortlist onderzoeken
- Duidelijker effecten Hollandse kust en effecten Eemshaven
  - (n.a.v. cie. MER)
- Overkoepelend hoofdstuk voor gezamenlijke effecten

Opdracht Hollandse kust

- NWP: 3.000 MW (500 km² netto)
  - Geen gebieden binnen 12 zeemijl vanuit kust
  - Uitgangspunt: 6 MW per km²
- Green Deal Offshore Windenergie
  - Voornemen om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie Hollandse kust.
- Omvang huidige vergunningen: 1.450 MW (± 240 km²)
  - Inclusief 'Amalia' (gerealiseerd park)
  - Inclusief 'Breeveertien II' (buiten NWP contour)
- Nog benodigd: 1.550 MW (± 260 km²)

Uitgangspunten

- **Ruimte voor parken met 'realistische' omvang > 17 km2 (100 MW)**
- **Rekening houden met afstand tussen parken (i.v.m. windafvang 1 à 2 km)**
- **2 Nm, tenzij...**
  - **Werkgroep 'Afwegingskader 2 Nm, tenzij...': juni 2012**
- **5 Nm, tenzij...**
- ***(NWP contouren)***

Km² en MW

- Benodigd: 1.550 MW (± 260 km^2)

Opp. en omvang 'gebied vanaf 2 Nm':
371 km^2 = 2.226 MW
(5+3+82+7+177+82+15=371)

Opp. en omvang 'gebied vanaf 500m':
812 km2 = 4.872 MW
(12+8+41+173+211+189+82+96=812)

Opp. en omvang 'gebied 500m- 2Nm':
441 km2 = 2.646 MW
(812-371=441)

Genoeg ruimte,maar...

- Te realiseren: 2.250 MW
  - Huidige vergunningen: 1.450 MW (± 240 km^2)
  - 'Inzetbaar': 800 MW (± 130 km2)
- Niet voldaan aan opdracht: 3.000 MW
  => tekort: 750 MW)
  Opties:
  - tekort 750 MW realiseren later stadium zoeken, of
  - nu de ruimte zoeken binnen bestaande gebieden

Beslispunt A

- [redacted]

Omvang gebieden/park

- Exploitatie parken
  - Minimale omvang
  - Afstand park – aanlandpunt kust

Beslispunt B

- [redacted]

Aandachtspunten

- Afwegingskader '2 Nm, tenzij...'
- Afstand tussen mogelijke parken (windafvang)

Contouren gebied Hollandse kust

- Gebied met vergunning 'Breeveertien II' (41 km^2 = 245 MW)
- Ligt buiten NWP zoekgebied Hollandse kust

Beslispunt C

- [redacted]

Aandachtspunt

- Excl.: opgave 1795 MW (1.550 + 245)
- Incl.: kanttekening windsector

Optimalisatie inrichting gebieden

- Locatie 'West Rijn'

Beslispunt D

- [redacted]

Aandachtspunten

- Start eventuele aanpassing vergunning pas nadat traject 'Vergunning 'Scheveningen Buiten' => Q4-west' is afgerond

Overige gebieden

- Vergunning 'Helmveld': afgewezen
- Subsidiaire aanvraag in procedure
- Locatie windparken: discussie zichtbaarheid vanaf de kust (kustgemeenten)

'Realistische' gebieden

- NWP: '2 Nm, tenzij...'
- NWP: '5 Nm, tenzij...

Beslispunt E

- [redacted]

Aandachtspunt

- Werkgroep 'Afwegingskader 2 Nm, tenzij...': juni 2012
  - Mogelijk gedeelte zones 'niet realistisch'

Participatie Hollandse kust

- (Verlenging) Ronde 2-vergunningen:
  - Intensief traject met stakeholders
  - aandachtspunt: kustgemeenten (zichtbaarheid)
- O.b.v. NWP varianten (nr. 5): één voorstel
  - IMO scheepvaartroutes, 2 Nm (scheepvaart), 5 Nm (gas en olie), munitiestortplaatsen

Beslispunt F

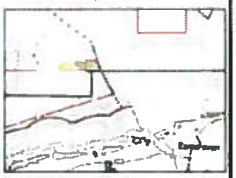
- [redacted]

Aandachtspunt

- Verwachtingenmanagement stakeholders
- Uitkomst Afwegingskader '2 Nm, tenzij...'

Zoekopdracht 'Eemshaven'

- NWP: tenminste 1000 MW realiseren (165 km² netto)
  - telt niet mee in Green Deal
- Mogelijk te realiseren: 1350 MW
  - Groen: ronde 2 vergunningen (870 MW)
  - Geel: ronde 3 (480 MW)



Beslispunt G

- [redacted]

- 2009 (bewindspersonenoverleg): voorkeur voor deze variant
- Afstand windparken – scheepvaartroutes: 1,56 Nm

Planning

- Green Deal (aanwijzen in 2012 resp. 2015)
  - TK Brief 'verlenging ronde 2 vergunningen'

<u>Bepalende factoren</u>

- 'Shortlist' onderzoeken (incl. kleine mantelmeeuw): eind maart 2012
- Werkgroep Afwegingskader '2 Nm, tenzij...': juni 2012 (advies IDON)
- IMO vaststelling scheepvaartroutes: juli/augustus 2012
  - N.a.v. verlenging vergunningen
- Vakantieperiodes
- Traject 'Ministerraad': doorlooptijd circa 1 maand (2x)

Beslispunt H

- [redacted]

20

Wind Op Zee

MT Directie Gebieden & Projecten

Inhoud

- Dossier Wind op Zee in vogelvlucht
- Synergie andere dossiers
- Directieprioriteit: Aanwijzing windenergiegebieden Hollandse Kust (HK) en Ten Noorden van de Waddeneilanden (TNW)
  - Risico's en aandachtpunten: hoe hier mee om te gaan
  - Planning

I. Het dossier: Verdeling verantwoordelijkheden

- IenM verantwoordelijk voor ruimtelijke inrichting Noordzee. Ook voor aanwijzing windgebieden.
  - DGRW primair verantwoordelijk voor opstellen structuurvisie Wind op Zee.
  - Goede afstemming met DGB voor belang veilige scheepvaart.
  - RWS/DNZ verantwoordelijk voor vergunningverlening windparken op basis Waterwet
- EL&I verantwoordelijk voor:
  a. Subsidieverlening windparken
  b. Opstelling uitgiftestelsel binnen aangewezen gebieden.
  c. Beoordeling ecologische effecten windparken op basis van natuurwetgeving
- Goed functionerend interdepartementaal overleg Noordzee (IDON: Noordzee algemeen, IWO: specifiek wind op zee).
- Gezamenlijke financiering ecologisch onderzoek.

Belangrijkste Wind op Zee dossiers

- Aanwijzing windgebieden 'Hollandse Kust' en 'ten Noorden van Wadden' (Dir. GenP directieprioriteit)
- Grensoverschrijdende dossiers: Norther Windpark (Belgie), Borkummer Riff (Duitsland), East Anglia (VK). Werken aan afwegingskader voor bepaling betrokkenheid.
- Green Deal tussen Rijk (minister Verhagen en stas Atsma) en windsector:
  - kostenreductie, stroomlijning regelgeving en innovatie
- Onderzoek ecologische effecten:
  - Vertaling shortlist onderzoek (4 mln) in beleid.
  - Aanvullend 4 jarig onderzoek (1,5 mln).
- Medegebruik windparken: vissen en varen, aquacultuur (nu pilot). Standpuntbepaling.

Relatie andere DGRW dossiers

- Structuurvisie Wind op Land. Is verder in proces. Leren van elkaar. Winst integratie DGRW.
- Kaderrichtlijn Marien (KRM). Goede ecologische toestand Noordzee.
- EU dossier Maritime Spatial Planning. Goede ruimtelijke ordening Noordzee en goede EU interne afstemming.

II. Aanwijzing Windenergiegebieden

- Nationaal Waterplan / Beleidsnota Noordzee (2009)
  => partiële herziening NWP (= structuurvisie)
  - Zoekopdracht 'Hollandse kust' (HK)
  - Zoekopdracht 'Ten Noorden van de Waddeneilanden' (TNW)
- Zoekopdracht 2009
- Ontwikkelingen
- Zoekopdracht 2012
  - Aanpak
  - Risico's
  - Aandachtspunten
  - Planning

Zoekopdracht 2009

- Participatieproces met belanghebbenden, waarin partijen zelf varianten mochten inbrengen
- *Maatschappelijke Kosteneffectiviteitsanalyse* (MKEA), formal safety assessment (FSA), planMER (incl. Notitie Reikwijdte en Detailniveau (NRD) en Passende Beoordeling (PB, ivm Natura2000))
- Val kabinet Balkenende IV (febr. 2010) => wel voorbereiding besluitvorming
- 2010: geen draagvlak, met name scheepvaartsector => zoekopdracht gestopt

Ontwikkelingen

- Motie Van Veldhoven (notaoverleg Water 2010) => Brief TK 2012
  - ➢ Behoud (9) vergunningen tot 2020
  - ➢ Voorstel voor wijziging scheepvaartroutes Nederlandse kust (IMO kaart)
  - ➢ Opstellen 'Afwegingskader 2 NM, tenzij'
- Green Deal (okt. 2011)
  - Voorstel om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie HK
- Structuurvisie Infrastructuur en Ruimte (SVIR)
  - TNW: wel ontwerp SVIR, niet SVIR
  - Cie MER: onvoldoende onderbouwing
- Binnen 12 NM: op basis van noodzaak => voorlopig niet

Zoekopdracht 2012: Hollandse Kust

- Eén alternatief o.b.v. IMO kaart, wel 2 varianten
  - '500 meter': maximale milieueffecten
  - '2 nm': minimale omvang
- Nog wel vanuit milieueffecten, scheepvaarveiligheid, kust ed bekijken
- Buiten 12 nm-zone
- Opdracht: 3.000 MW / 500 km2

Zoekopdracht 2012: Ten Noorden v.d. Waddeneilanden

- Alternatief 'bewindsliedenoverleg dec 2009'
  - Boven: vaargeul
  - Rechts: Duitsland
  - Onder: defensie
  - Links: te ver
- Cie m.e.r. n.a.v. ontwerp-SVIR:
  - onderbouwing van de keuze
- Opdracht: 1.350 MW /167 km2

Zoekopdracht 2012: aanpak

- Notitie Reikwijdte en Detailniveau (NRD), 2x planMER (incl. Passende Beoordeling), risicoanalyse scheepvaartveiligheid, geen MKEA
  - HK: alternatief o.b.v. IMO kaart
  - TNW: alternatief ontwerp SVIR (1.350 MW)
- Ontwerp partiële herziening NWP: najaar 2012
- Definitief partiële herziening NWP: 1e helft 2013
- Komende periode, onder andere:
  - ✓ Brief TK: voornemen aanwijzing HK en TNW
  - ✓ Stakeholdersbijeenkomst Wind op Zee: 7 juni
  - ✓ Kennisgeving NRD (formele start extern)

Zoekopdracht 2012: risico's

- Aangepaste scheepvaartroutes: besluitvorming IMO
  - behandeling juli, acceptatie november 2012, inwerking augustus 2013
- Werkgroep 'Afwegingskader 2 NM, tenzij'
  - Afstand windparken t.o.v scheepvaartroutes
- Shortlist onderzoeken => brief Tweede Kamer (juni?)
  - o.a. Kleine Mantelmeeuw (n.a.v. aanvraag Helmveld)
  - MEENEMEN: aanpassing kader Passende Beoordeling!
- Visserij: varen en vissen windparken
- Draagvlak kustgemeenten
  - KIMO: zichtbaarheid/beleving windmolens op zee

Zoekopdracht 2012: aandachtspunten

- Bestaande vergunningen
  - streven naar een optimale inrichting van de aan te wijzen windgebieden
- Bereikbaarheid platforms: 5 NM
- Bruto/nette ruimte:
  - om welke ruimte gaat het nu?
- Vergunningaanvraag Helmveld
  - Wel/niet meenemen in zoekgebied HK
- Medegebruik
- Zandwinstrategie
- Aanpassing uitgiftestelsel

Zoekopdracht 2012: planning

- Vóór zomer 2012
  - Brief TK met aankondiging traject Aanwijzing HK en TNW
  - Kennisgeving NRD **OPM: vóór 11 juni, anders na de zomer**
  - 7 juni: stakeholdersbijeenkomst HK en TNW
- Zomer 2012
  - HK: opstellen planMER (incl. PB) en Risicoanalyse
  - TNW: opstellen planMER (incl. PB)
- Zomer - najaar
  - Opstellen ontwerp partiële herziening NWP
  - Besluit ontwerp partiële herziening NWP
- Najaar – winter
  - Formele ter inzage legging
- Voorjaar 2013
  - Definitief partiële herziening NWP

Indien na de zomer, dan alles kwartaal opschuiven!

21

Aanwijzing Windenergiegebieden Hollandse Kust en Ten Noorden van de Waddeneilanden

26 juni 2012

[redacted]

Inhoud

- Aanleiding: Nationaal Waterplan (NWP)
  - 'Hollandse Kust' (HK)
  - 'Ten Noorden van de Waddeneilanden' (TNW)
- Zoekopdracht 2009
- Ontwikkelingen
- Zoekopdracht 2012: HK en TNW
  - Aanpak: inhoud
  - Vraagstukken
  - Aanpak: proces
  - Planning

Aanleiding: Nationaal Waterplan (NWP)

- Nationaal belang: Duurzame (wind)energie
  - ruimte voor 6.000 Megawatt windenergie op de Noordzee in 2020 (minimaal 1.000 km2)
- Ronde 1 (2007: operationeel)
  - Prinses Amalia (120 MW) en OWEZ (108 MW)
- Ronde 2: 12 vergunningen
  - 3 parken subsidie
  - 9 parken verlengd tot 2020 (motie Van Veldhoven)
- Ronde 3
  - Zoekgebieden: Borssele (ca 344 km2) en IJmuiden (ca 1.170 km2)
  - Zoekopdrachten: Hollandse Kust (500 km2) en Ten Noorden van de Waddeneilanden (165 km2)

=> Partiële herziening NWP

Zoekopdracht 2009

- Participatieproces met belanghebbenden, waarin partijen zelf varianten mochten inbrengen
- *Maatschappelijke Kosteneffectiviteitsanalyse* (MKEA), formal safety assessment (FSA), planMER (incl. Notitie Reikwijdte en Detailniveau (NRD) en Passende Beoordeling (PB, ivm Natura2000))
- Val kabinet Balkenende IV (febr. 2010) => wel voorbereiding besluitvorming
- 2010: ligging ronde 2 vergunningen stond oplossing met draagvlak in de weg, geen urgentie a.g.v. nieuw kabinetsbeleid => zoekopdracht gestopt

Ontwikkelingen

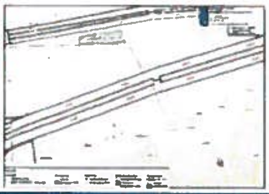
- Motie Van Veldhoven (notaoverleg Water 2010) => Brief TK 2012
  - Behoud (9) vergunningen tot 2020
  - Voorstel voor wijziging scheepvaartroutes Nederlandse kust (IMO kaart)
- Green Deal (okt. 2011)
  - Voorstel om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie HK
- Structuurvisie Infrastructuur en Ruimte (SVIR)
  - TNW: wel ontwerp SVIR, niet SVIR
  - Cie MER: onvoldoende onderbouwing
  - 2020 als streefjaar voor 6000 MW losgelaten
- Binnen 12 NM: op basis van noodzaak => voorlopig niet

Zoekopdracht 2012: Hollandse Kust

- Eén alternatief o.b.v. IMO kaart, wel twee varianten
  - maximale oppervlakte
  - minimale oppervlakte
- Bepaling beschikbare ruimte vanuit scheepvaartveiligheid (2 NM, tenzij), milieueffecten, mijnbouw (5 NM, tenzij) e.d.
- Buiten 12 NM-zone
- Opdracht: 3.000 MW / 500 km2
  - o.b.v. 6 MW/km2

Zoekopdracht 2012: Ten Noorden v.d. Waddeneilanden

- Alternatief 'bewindsliedenoverleg dec 2009'
  - Boven: vaargeul
  - Rechts: Duitsland
  - Onder: defensie
  - Links: te ver
- Cie m.e.r. n.a.v. ontwerp-SVIR:
  - onderbouwing van de keuze
- Opdracht: 1.350 MW /167 km2
  - (3 vergunningen + resterende ruimte)



Zoekopdracht 2012: aanpak (inhoud)

- Partiële herziening Nationaal Waterplan, onderdeel Noordzee / Windenergie:
  - Notitie Reikwijdte en Detailniveau (NRD),
  - PlanMER HK (incl. Passende Beoordeling) én planMER TNW (incl. Passende Beoordeling)
  - Risicoanalyse scheepvaartveiligheid
  - Geen MKEA
- Ontwerp partiële herziening NWP: najaar 2012
- Definitief partiële herziening NWP: 1e helft 2013

Zoekopdracht 2012: vraagstukken

1. Veilige afstanden tussen scheepvaartroutes en windparken
2. Bereikbaarheid mijnbouwplatforms
3. Daadwerkelijk beschikbare ruimte in aan te wijzen gebieden
4. Ecologie
5. Zicht en beleving

n.b.
- Uitgangspunt: windparken gesloten voor varen en vissen.
- Opdracht NWP om mogelijkheden voor medegebruik te onderzoeken via apart traject.

Ad 1. Veilige afstanden

- 2 NM, tenzij...
- Opstellen afwegingskader en toepassen in pilot
- Toepassing op aan te wijzen gebied i.v.m. kwalitatieve risicoanalyse scheepvaartveiligheid (t.b.v. planMER)

Risico's:
- Planning en draagvlak afwegingskader
- Minder dan 3.000 MW beschikbaar

Ad 2. Bereikbaarheid mijnbouwplatforms

- 5 NM, tenzij....
- Gesprek met mijnbouwondernemingen over meenemen maatwerkzones in structuurvisie (zoals bij 2 NM)

Aandachtspunten:
- Bereikbaarheids- en veiligheidsonderzoek vergunningaanvraag Helmveld als casus
- Horizon structuurvisie in relatie tot termijn uitputting velden

Ad 3. Daadwerkelijk beschikbare ruimte

- **5 MW/km2 als uitgangspunt?**
- **Ruimte tussen parken?**
- **Inrichting windgebieden in relatie tot bestaande vergunningen?**

→ Hoeveel parken met welke omvang kun je daadwerkelijk bouwen?

Ad 4. Ecologie

- Minimale en maximale gebruiksruimte in kaart brengen
- Shortlistonderzoeken en update generieke passende beoordeling als uitgangspunt

Aandachtspunt

- Cumulatie met buitenlandse parken

Ad 5. Zicht en beleving

- 12 NM als grens
- Welke aspecten zijn relevant: afstand tussen parken, hoogte van de turbines, kleur?

→ evt. in structuurvisie beleidsuitgangspunten voor inpassing windparken opnemen?

Risico: draagvlak kustoverheden
→ Zijn er ook kansen voor kustoverheden?

Aandachtspunt
→ Betrekken kustoverheden (verwachtingen)

Zoekopdracht 2012: Participatieproces

- Juni – augustus: 1-op-1 gesprekken stakeholders:
  - wind, mijnbouw, scheepvaart, natuur, kustoverheden, visserij
- NRD in Overleg Infrastructuur en Milieu (OIM), consultatie kustoverheden
- Thema bijeenkomsten:
  - Inrichting windgebieden (windsector)
  - Zicht en beleving (kustoverheden en windsector)
  - Evt. bereikbaarheid mijnbouw (mijnbouwoperators en windsector)
  - ......
- Nog verder uitwerken, afhankelijk van 1-op-1 gesprekken.

Overige aandachtspunten en risico's

- Aangepaste scheepvaartroutes: besluitvorming IMO
  - Behandeling juli, acceptatie november 2012, inwerking augustus 2013
- Vergunningaanvraag Helmveld
  - Uitgangspunt dat de vergunning in aangewezen windgebied ligt als deze vergund wordt.
- Idem Q4 West

Planning (o.v.b.)

- Voor TK reces 2012
  - Brief TK met aankondiging traject Aanwijzing HK en TNW
- Zomer – najaar 2012
  - NRD: kennisgeving (inspraak)
- Zomer – najaar 2012
  - Risicoanalyse scheepvaart: a. HK en b. TWN
  - Opstellen planMER (incl. PB): HK en TNW
- Najaar – winter 2012
  - Opstellen ontwerp partiële herziening NWP
  - Besluit ontwerp partiële herziening NWP
- Winter 2012 – 2013
  - Formele ter inzage legging ontwerp structuurvisie, 2x PlanMer en PB's
- Voorjaar 2013
  - Definitief partiële herziening NWP

22

Aanwijzing Windenergiegebieden

25 september 2012

[redacted]

Inhoud

- Aanleiding: Nationaal Waterplan (NWP)
- Zoekopdracht 2009
- Ontwikkelingen
- Zoekopdracht 2012
  - Aanpak: inhoud
    - Invulling Hollandse Kust
    - Invulling Ten Noorden van de Waddeneilanden
  - Aanpak: participatie
  - Vraagstukken en belangen: vijf thema's
  - Planning

Aanleiding: Nationaal Waterplan (NWP)

- **Nationaal belang: Duurzame (wind)energie**
  - **ruimte voor 6.000 Megawatt windenergie op de Noordzee in 2020 (minimaal 1.000 km2)**
- **Ronde 1 (2007: operationeel)**
  - **Prinses Amalia (120 MW) en OWEZ (108 MW)**
- **Ronde 2: 12 vergunningen**
  - **3 parken subsidie**
  - **9 parken verlengd tot 2020 (motie Van Veldhoven)**
- **Ronde 3**
  - **Aangewezen gebieden: Borssele (ca 344 km2) en IJmuiden (ca 1.170 km2)**
  - **Zoekopdrachten: Hollandse Kust (3.000 MW: 500 km2) en Ten Noorden van de Waddeneilanden (1.000 MW: 165 km2)**

=> Partiële herziening NWP

Zoekopdracht 2009

- Participatieproces met belanghebbenden, waarin partijen zelf varianten mochten inbrengen
- Maatschappelijke Kosteneffectiviteitsanalyse (MKEA), formal safety assessment (FSA), plan-MER (incl. Notitie Reikwijdte en Detailniveau (NRD) en Passende Beoordeling (PB, ivm Natura2000))
- Val kabinet Balkenende IV (febr. 2010) => wel voorbereiding besluitvorming
- 2010: ligging ronde 2 vergunningen stond oplossing met draagvlak in de weg, geen urgentie a.g.v. nieuw kabinetsbeleid
  => zoekopdracht gestopt

Ontwikkelingen

- Motie Van Veldhoven (notaoverleg Water 2010) => Brief TK 2012
  - Behoud (9) vergunningen tot 2020
  - Voorstel voor wijziging scheepvaartroutes Nederlandse kust (IMO kaart)
- Green Deal (okt. 2011)
  - Voorstel om 2012 resp. uiterlijk 2015 te kunnen besluiten over aanwijzing van extra ruimte voor windenergie HK
  - Aanzienlijke kostenreductie wind op zee (40%)
- Structuurvisie Infrastructuur en Ruimte (SVIR)
  - TNW: wel ontwerp SVIR, niet SVIR, Cie mer: onvoldoende onderbouwing
  - 2020 als streefjaar voor 6000 MW losgelaten
- Binnen 12 NM: op basis van noodzaak => voorlopig niet

Aanpak: inhoud

- Partiële herziening Nationaal Waterplan, onderdeel Noordzee / Windenergie:
  - Notitie Reikwijdte en Detailniveau (NRD),
  - Plan-MER HK (incl. Passende Beoordeling) én plan-MER TNW (incl. Passende Beoordeling)
  - Risicoanalyse scheepvaartveiligheid voor beide gebieden t.b.v. plan-MER
  - Geen MKEA
- Ontwerp partiële herziening NWP: voorjaar 2013
- Definitief partiële herziening NWP: medio 2013

Invulling zoekopdracht Hollandse Kust (I)

- Uitgangspunt:
  - Overeenstemming partijen over uitwerking motie Van Veldhoven
  - IMO kaart scheepvaartroutes
- Eén alternatief, wel twee varianten die 'speelveld' aangeven
  1. minimale oppervlakte (2 Nautische mijl (NM) en 5 NM platforms)
  2. maximale oppervlakte (500 meter t.o.v. scheepvaartroute)
- Bepaling beschikbare ruimte vanuit:
  - Scheepvaartveiligheid (2 NM, tenzij), milieueffecten, bereikbaarheid platforms mijnbouw (5 NM, tenzij) e.d.
  - Buiten 12 NM-zone!
- Opdracht: 3.000 MW / 500 km2

Invulling zoekopdracht Hollandse Kust (II)

- Variant minimale oppervlakte

- Variant maximale oppervlakte

Invulling zoekopdracht Ten Noorden v.d. Waddeneilanden

- Alternatief 'bewindsliedenoverleg december 2009'
  - Links: aansluitend op bestaande vergunningen ronde 2
  - Boven: vaargeul
  - Rechts: Duitsland
  - Onder: defensie
- Opdracht
  - 1.000 MW /167 km2

Aanpak: participatie

INFORMEEL
- Zomer – najaar
  - 1-op-1 gesprekken stakeholders => input participatieplan
- Najaar
  - Themabijeenkomsten m.b.t. vraagstukken
  - Bestuurlijke bijeenkomst kustgemeenten en –provincies

FORMEEL
- Aankondiging voornemen partiële herziening NWP (brief TK)
- Kennisgeving => NRD: bespreking OIM, Cie. m.e.r., bestuursorganen
- Bespreking concept Ontwerp SV in OIM
- Zienswijzenprocedure Ontwerp SV

Vraagstukken en belangen

1. Veilige afstanden tussen scheepvaartroutes en windparken
2. Helikopterbereikbaarheid mijnbouwplatforms
3. Daadwerkelijk beschikbare ruimte in aan te wijzen gebieden
4. Ecologie
5. Zicht en beleving

n.b.
- Uitgangspunt: windparken gesloten voor varen en vissen.
- Opdracht NWP om mogelijkheden voor medegebruik te onderzoeken via apart traject.

Ad 1. Veiligheid scheepvaart

1a Kwantitatieve analyse van de gebieden Hollandse Kust en Ten Noorden van de Waddeneilanden
- T.b.v. plan-MER (2x)

1b Ontwikkeling afwegingskader veilige afstanden tussen windparken en scheepvaartroutes
- T.b.v. maatwerk bij aanwijzen van gebieden
- Indien tijdig gereed ook toe te passen bij aanwijzing gebieden voor de Hollandse Kust

Ad 1a. Kwantitatieve analyse
scheepvaart veiligheid risico's en afgeleide

- In opdracht van IenM
- Voor gebieden Ten Noorden van de Waddeneilanden en Hollandse Kust (2 varianten)
- Op basis van Samson model door MARIN
- Participatie
  - Adviesgroep met stakeholders
- Partijen:
  - vertegenwoordigd in Scheepvaart Adviesgroep Noordzee (SAN), Nogepa, NWEA

Ad 1b. Veilige afstanden
tussen scheepvaartroutes en windparken

- 2 NM, tenzij...
- Opstellen afwegingskader en toepassen in pilot
- RWS i.s.m. Havenbedrijven Rotterdam en Amsterdam i.o.v. DGB
- Risico's:
  - Planning en draagvlak afwegingskader
  - Minder dan 3.000 MW beschikbaar
- Participatie
  - Via werkgroep Afwegingskader
- Partijen:
  - vertegenwoordigd in Scheepvaart Adviesgroep Noordzee (SAN), zijnde Havenbedrijf Rotterdam, Haven Amsterdam, loodsen, reders, kustwacht visserijsector

Ad 2. Helikopterbereikbaarheid mijnbouwplatforms

- 5 NM, tenzij....
- Aandachtspunten:
  - Horizon structuurvisie in relatie tot termijn uitputting olie- en gasvelden en eventueel toekomstig gebruik (CO_2)
  - Gebrek aan urgentie aanleg windparken maakt het moeilijk om nu harde maatwerkafspraken te maken. Vooral tijdens uitgifte!
- Participatie
  - gesprek met mijnbouwoperators over meenemen maatwerkzones in structuurvisie
- Partijen:
  - NOGEPA, operators (o.a. TAQA, Chevron, Wintershall)

Ad 3. Daadwerkelijk beschikbare ruimte

- 6 MW/km2 als uitgangspunt
  - gemiddelde per oppervlakte
- Ruimte tussen parken iv.m. 'zog' effect
- Inrichting windgebieden in relatie tot bestaande vergunningen
- Minimale omvang park (met name indien ver van de kust)
- Aandachtspunten
  - Hoeveel parken met welke omvang kun je daadwerkelijk bouwen?
  - Bruto versus netto ruimte
- Participatie:
  - werksessie over optimale inrichting windgebieden
- Partijen:
  - vergunninghouders (Eneco, RWE, SSE, Nuon), NWEA

Ad 4. Ecologie

- Minimale en maximale (inclusief 2 NM en 5 NM zones) gebruiksruimte in kaart brengen
- Shortlistonderzoeken en update generieke passende beoordeling als uitgangspunt
- Aandachtspunt
  - Cumulatie met buitenlandse parken
- Participatie
  - vooral informeren!
  - zienswijzen
- Partijen
  - Stichting de Noordzee, Greenpeace? WNF?

Ad 5. Zicht en beleving

- 12 NM als grens (ca. 22 km)
- Zichtbaar: ca 10% van de tijd
  - *bij zeer helder weer*
- Aandachtspunt:
  - nu al uitgangspunten vastleggen beperkt ruimte bij kaveluitgifte
- Participatie:
  - Zicht: welke aspecten zijn relevant: afstand tussen parken, hoogte van de turbines, kleur? Wat kun je ervaren op zo'n grote afstand?
  - Windparken als kans: imago (duurzaamheid),
  - werkgelegenheid, recreatie
  - ervaringen delen (internationaal)
  - Investeren in relatie: excursie of boottocht Met bestuurders
- Partijen
  - Kustoverheden, kustrecreatiesector

Planning

- Eind september 2012
  - Brief TK met aankondiging traject Aanwijzing HK en TNW (voornemen partiële herziening NWP)
- Oktober - december 2012
  - NRD: kennisgeving (inspraak: bespreking OIM, Cie. m.e.r., bestuursorganen)
- September 2012 – januari 2013
  - Participatie: o.a. themabijeenkomsten
  - Analyse scheepvaartveiligheid
  - Opstellen plan-MER'en (incl. PB) voor HK en TNW
- December 2012 – februari 2013
  - Opstellen ontwerp partiële herziening NWP
  - Vaststellen in Ministerraad
- Maart –mei 2013
  - Formele ter inzage legging ontwerp structuurvisie (incl. 2x plan-MER en PB)
- April – juli 2013
  - Opstellen definitief partiële herziening NWP n.a.v. ontvangen reacties
  - Vaststellen door bewindspersoon

23

Ministerie van Infrastructuur en Milieu

vIDON

Bestuurskern
Dir. Gebieden en Projecten
Afd. Projecten

Contactpersoon

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m.nl

Datum
1 mei 2014

Bijlage
1

memo

Windenergie op zee

Doel
Doel van het memo is om u te informeren over de stand van zaken betreffende:

1. Rijksstructuurvisie Windenergie op Zee (RSV WoZ)
2. Haalbaarheidstudie windenergie binnen 12-mijlszone (hierna: Haalbaarheidstudie)

Aanleiding
De aanleiding voor deze nottitie is het Algemeen Overleg (AO) Windenergiegebieden op 24 april 2014. Tijdens dit AO is de toezegging gedaan om de definitieve RSV WoZ, de Haalbaarheidsstudie, de routekaart en een besluit inzake net op zee gezamenlijk voor de zomer aan de Kamer te doen toekomen. Om deze toezegging te volbrengen is een strakke planning noodzaak. Deze notitie betreft de RSV WoZ en de Haalbaarheidsstudie. De onderwerpen routekaart en het besluit inzake net op zee vallen onder EZ.

Toelichting
Ad 1. Rijksstructuurvisie Windenergie op Zee

Proces:

Planning

De voorlopige planning is als volgt:

- 6 mei – vIDON
- 14 mei – versturen stukken IDON
- 20 mei – IDON
- *(28 mei – 5DO WoZ)*
- 16 juni – versturen stukken CEZIM
- *(18 juni – 5DO WoZ)*
- 24 juni – CEZIM
- 1 juli – versturen stukken REZIM
- 8 juli – REZIM

Betrokkenheid van desbetreffende IDON-leden loopt via de regulieren lijnen.

Documenten

Bovenstaande planning betreft de volgende stukken:

- Brief Tweede Kamer (en Eerste Kamer)
- RSV WoZ
  - Definitieve RSV WoZ
  - Nota van Antwoord
  - Aangepaste plan-mer n.a.v. advies Commissie m.e.r (2 x) en onderliggende stukken
- Haalbaarheidstudie
  - Rapport
  - MKBA en andere onderliggende documenten (totaal 5 documenten)

25

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IDON 11-70-2

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Contactpersoon
xxx

Datum 19 januari 2011

Bijlage(n)-
1 - presentatie zandwinstrategie
2 - actielijst

verslag

Verslag van	69e IDON vergadering
Datum bespreking	18 januari 2011
Deelnemers	XXX (Def), XXX (EL&I), XXX (RWS-DNZ), XXX (DGLM), XXX (EL&I), XXX (DGW, vz), XXX (DGW), XXX (I&M), XXX (RWS-DNZ), XXX (DGW, secr.) en XXX (DGW, vs). XXX (RWS-DNZ, ap 3).
Afschrift aan	XXX (EL&I), XXX (Fin), XXX (Kustwacht), contactpersonen IDON.

1. Opening, mededelingen en vaststelling agenda

2. Verslag IDON 16 november 2010

3. 1e bespreking zandwinstrategie

4. Stand van zaken wind op zee

XXX deelt mee dat het verlengen van vergunningen de aandacht heeft. Anticiperend op een nieuw kabinet met meer aandacht voor wind op zee wordt ingezet op een gezamenlijk proces van initiatiefnemers om tot beperktere locaties te komen die langer verlengd kunnen worden, zodat gebieden afvallen waar grote spanning is.

Doordat de twee processen, ronde 2 en 3, in de tijd bij elkaar komen te liggen, kunnen ze meer in elkaar overvloeien.
Wel met regie van uit de overheid waar ruimte is voor windenergie en waar niet.

5. Informatiehuis Marien – planning 1e helft 2011

6. IDON werkprogramma 2011

7. IDON financiën 2011 en verder

8. Uitkomsten onderzoek naar 1 beheerplan in 2015

9. Stand van zaken acties NWP/IDON

10. Nieuw ontwerp Euro/Maas geul

11. Rondvraag en sluiting

Datum
19 januari 2011
Nummer
-

Bijlage:
1 – presentatie zandwinstrategie
2 - actielijst

26

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Contactpersoon
XXX

Datum
21 maart 2011

verslag

Betreft	70e IDON vergadering
Vergaderdatum en tijd	15 maart 2011 13.30 - 15.30 uur
Vergaderplaats	Den Haag
Deelnemers	XXX (Def), XXX (EL&I), XXX (EL&I), XXX (RWS-DNZ), XXX (DGLM), XXX (EL&I), XXX (DGW, vz), XXX (EL&I), XXX (RWS-DNZ), XXX (I&M), XXX (DGW, secr.), XXX (DGW, vs.). XXX (DGW, ap 3), XXX (EL&I, ap 3), XXX (ap. 8), XXX (ap. 10)

1. <u>Opening, mededelingen en vaststelling agenda</u>

2. <u>Verslag IDON 18 januari 2011 en actiepunten</u>

3. <u>Kaderrichtlijn Mariene Strategie (KRM)</u>

4. <u>Actieplan wind op zee 2011</u>

5. <u>Uitwerking motie Van Veldhoven (verlengen ronde 2 vergunningen wind)</u>

XXX licht toe dat de eerste gesprekken met stakeholders gevoerd zijn.

Opmerkingen:

Na de zomer komt dit onderwerp terug in het IDON.

6. Uitwerking zandwinstrategie

7. Integraal beheerplan Noordzee

8. Informatiehuis marien (IHM)

9. Memo voortgang internationale activiteiten

10. Presentatie Caribisch Nederland

11. Rondvraag en sluiting

27

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Datum
18 mei 2011

verslag

Betreft	71e IDON vergadering
Vergaderdatum en tijd	17 mei 2011 13.30 - 15.30 uur
Vergaderplaats	Ministerie I&M, Plesmanweg 1, zaal F00.15
Deelnemers	XXX (DGW, vz), XXX (RWS-DNZ), XXX (RWS-DNZ), XXX (EL&I), XXX (EL&I), XXX (I&M), XXX (I&M), XXX (I&M, secr), XXX (I&M, vs). XXX en XXX (ap. 5, I&M)

1. Opening en mededelingen en vaststelling agenda

2. Verslag IDON 15 maart 2011

3. Terugblik IDON special 20 april

4. Motie rijksbestemmingsplan op zee

5. Actie t.a.v. mogelijke richtlijn MSP/ICZM

6. Wind op zee: stand van zaken verlengen ronde 2 vergunningen

In het IDON van september wordt dit onderwerp opnieuw geagendeerd.

7. **Wind op zee: omgaan met moratorium op nieuwe aanvragen windvergunningen**

8. **Informatiehuis Marien: rol IDON**

9. **Rondvraag en sluiting**

28

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Datum
14 september 2011

verslag

Betreft	72e IDON vergadering
Vergaderdatum en tijd	13 september 2011
Aanwezig	XXX (DGW, vz) XXX (EL&I) XXX (EL&I) XXX (EL&I) XXX (I&M secr.) XXX (I&M) XXX (I&M agendapunt 4) XXX (WD agendapunt 5) XXX (RWS-DNZ) XXX (RWS-DNZ) XXX (Fin) XXX (I&M) XXX (PBL) XXX (Imares) XXX (I&M)

1. Opening, mededelingen en vaststelling van de agenda

2. Verslag IDON 17 mei 2011

3. Presentatie Natuurverkenning

4. Kaderrichtlijn Mariene Strategie (KRM)

5. Wind op zee.

6. Wind op zee – verlenging ronde 2 vergunningen

XXX licht de stand van zaken rond de motie van Van Veldhoven toe en de verlenging van de ronde 2 vergunning.

Eind oktober zal de Staatssecretaris nader worden geïnformeerd.
(*Noot secretaris*: Inmiddels is bekend dat TNO niet eerder dan ultimo november het onderzoek naar de munitieopslagplaats kan afronden.

Het IDON stemt in met de voorgestelde werkwijze van de interdepartementale werkgroep.

7. Wind op zee

8. Wind op zee

9. IDON conferentie op 28 september a.s.

- - -

29

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Datum
16 november 2011

verslag

Betreft	73e vergadering IDON
Vergaderdatum en tijd	15 november 2011 13.30 - 15.30 uur
Vergaderplaats	Ministerie van IenM, Plesmanweg 1, zaal F00.15
Deelnemers	XXX (IenM, vz), XXX (EL&I), XXX (RWS-DNZ), XXX (I&M), XXX (Fin), XXX (EL&I), XXX (RWS-DNZ), XXX (IenM), XXX (I&M), XXX (I&M, vs) XXX (I&M, ap 2), XXX (I&M, ap 2), XXX (EL&I, ap 6)

1. **Opening, mededelingen en vaststelling agenda**

2. **Kaderrichtlijn Mariene Strategie (KRM)**

3. **Wind op zee:** onderzoek binnen 12 mijl, aanwijzing Wadden n.a.v. SVIR bespreking commissie m.e.r.

4. **Reactie advies raden Leefomgeving en Infrastructuur**

Wind op zee stand van zaken verlenging ronde 2 vergunningen

Op 29 november wordt de staatssecretaris geïnformeerd. Medio december volgt uitsluitsel over het risico mbt de munitiestortplaats. Daarna kan hij de resultaten aan de Kamer melden als antwoord op de motie Van Veldhoven. XXX heeft Q&A's

aangeleverd hierover voor het overleg in de Kamer op 5 december.

5. Toekomst CO2 opslag op zee

6. Structuurvisie ondergrond (Strong)

7. Vooruitblik 2012

Verslag IDON 13 september en actiepuntenlijst

8. Afsluiting

Ministerie van Infrastructuur en Milieu

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Contactpersoon
xxx

Datum
18 januari 2012

verslag

Betreft	74e vergadering IDON
Vergaderdatum en tijd	17 januari 2012 13.30 - 15.30 uur
Vergaderplaats	Ministerie van IenM, Plesmanweg 1, zaal F00.15
Deelnemers	XXX (IenM, vz), XXX (Defensie), XXX (EL&I), XXX (RWS-DNZ), XXX (IenM), XXX (EL&I), XXX (IenM), XXX (IenM), XXX (IenM), XXX (IenM, vs) XXX (WD, ap. 2)

1. Opening, mededelingen en vaststelling agenda

2. Informatiehuis Marien (IHM)

3. Wind op zee: stand van zaken motie Van Veldhoven

De conceptbrief aan de Tweede Kamer ligt voor over het verlengen van ronde 2 vergunningen naar aanleiding van de motie Van Veldhoven.

Bij het onderzoek naar het verleggen van de vaarroutes vragen twee munitiestortplaatsen extra aandacht, namelijk bij IJmuiden en bij Hoek van Holland. Aan TNO is advies gevraagd hoe hiermee om te gaan in relatie tot de vaarroutes. TNO heeft aangegeven dat het veilig is als er langs de munitiestortplaats wordt gevaren en er eveneens flankerende maatregelen worden genomen.

In relatie tot de motie betekent dit dat we goede informatie hebben over de gewijzigde vaarroute en dat het wrak Vinca Gorthon niet geborgd hoeft te worden. De minister en stas zullen hierover, en over het doorschuiven van de vergunningen tot 2020 worden geïnformeerd.

XXX vraagt of de gebieden tot en met ronde 2 nu aangewezen gaan worden. XXX meldt dat de wijziging in de scheepvaartroutes via IMO nog moet gebeuren. Verder vraagt hij of TNO het geëigende instituut is voor het advies over de munitiestortplaats. XXX geeft aan dat dit zo is, en dit in overleg met stakeholders

en experts is besloten.
Financiën heeft een wijziging op de tekst van de brief doorgegeven.

DG Water
Directie DGW II
Gebieden

Datum
18 januari 2012

Defensie is akkoord met de voorliggende tekst van de brief. RWS zal de brief aanbieden aan staatssecretaris Atsma (**actie XXX**).

4. Wind op zee: aanwijzing Hollandse Kust en gebied Eemshaven boven Wadden in 2012

XXX geeft een toelichting op dit agendapunt in plaats van XXX.
De vraag aan het IDON is hoe groots het proces opgetuigd moet worden om gebied Hollandse Kust en gebied Eemshaven aan te wijzen voor windenergie. Er is veel informatie beschikbaar uit de vorige fase waar gebruik van gemaakt kan worden. XXX vraagt of er geld beschikbaar is. XXX antwoordt dat er geld is voor beperkt aanvullend onderzoek en de aanwijzingsprocedure, maar niet heel uitgebreid.

XXX doet melding van een artikel deze ochtend in Trouw over windmolens in relatie tot natuur (artikel ter informatie bijgevoegd bij dit verslag). XXX meldt terug aan het projectteam (**actie XXX**).

5. Reactie advies raden Leefomgeving en Infrastructuur

6. Norther windpark België

7. IMSA – Living North Sea Initiative

8. Agenda 2012

9. Verslag en acties IDON 15 november 2011

10. Afsluiting

====

Noot van de secretaris. Het volgende IDON is op 13 maart 2012, stukken voor het overleg worden (indien mogelijk) woensdag daarvoor rondgestuurd. Tijdige aanlevering bij het secretariaat helpt daarbij.

31

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Contactpersoon
xxx

Datum
21 mei 2012

verslag

Betreft	76e vergadering IDON
Vergaderdatum en tijd	15 mei 2012 13.30 - 15.30 uur
Vergaderplaats	Ministerie van IenM, Plesmanweg 1, zaal F00.37
Deelnemers	XXX (IenM, vz), XXX (EL&I), XXX (EL&I), M. Zeeman (RWS-DNZ), XXX (IenM), XXX (IenM), XXX (IenM), XXX (IenM), XXX (IenM, vs) XXX (RWS-DNZ, ap. 3), XXX (IenM, ap. 4)

1. Opening, mededelingen en vaststelling agenda

2. Betekenis demissionaire status kabinet voor Noordzee dossiers

3. Ontwikkelingen in de buurlanden: VK, België en Duitsland

4. Aanwijzing windgebieden op zee ronde 3

XXX geeft een toelichting op de toegestuurde presentatie.
Opmerkingen:
De uitkomst van de werkgroep die zich bezighoudt met het afwegingskader '2 Nautische Mijl tenzij' is van belang voor het optimaliseren van de invulling van de zoekgebieden. XXX vraagt wat van invloed is op het wel/niet voor juni beschikbaar hebben van de Notitie Reikwijdte en Detailniveau. Geantwoord wordt dat dit onder andere het besluit over wel/niet controversieel verklaren van het dossier is. Verder vraagt hij of het verplicht is om een brief aan de Tweede Kamer te sturen over het voornemen van de partiële herziening van het NWP. XXX geeft aan dat een andere optie is om het onderwerp onder te brengen in een verzamelbrief.

Sowieso moet de staatssecretaris geïnformeerd worden over het proces.

Gesproken wordt over het voornemen om een stakeholdersbijeenkomst te organiseren op 7 juni a.s.. De aanleiding is een inhoudelijke bespreking van het afwegingskader in combinatie met de behoefte om in deze periode de stakeholders te informeren over de voortgang van de motie Van Veldhoven. Dit overleg kan tevens benut worden om stakeholders te informeren over andere ontwikkelingen rond wind op zee, zoals het proces rondom de aanwijzing Hollandse kust.

DG Water
Directie DGW II
Gebieden

Datum
21 mei 2012

XXX belt XXX voor overleg hierover en koppelt de uitkomst hiervan terug aan betrokkenen. (**actie** XXX)
(*NB stakeholdersbijeenkomst is komen te vervallen*)

XXX vraagt wat hij naar buiten kan communiceren over de einddatum van dit traject. Geantwoord wordt dat dat voorjaar 2013 is.

5. Verslag en acties IDON 13 maart 2012

6. Rondvraag en afsluiting

====

Noot van de secretaris. Het volgende IDON is gepland op 11 september 2012, stukken voor het overleg worden (indien mogelijk) woensdag daarvoor rondgestuurd. Tijdige aanlevering bij het secretariaat helpt daarbij.

32

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Contactpersoon
xxx

Datum
22 oktober 2012

verslag

Betreft	77e vergadering IDON
Vergaderdatum en tijd	11 september 2012 13.30 - 15.30 uur
Vergaderplaats	Ministerie van IenM, Plesmanweg 1, zaal F00.15
Deelnemers	XXX (IenM, vz), XXX (Defensie), XXX (EL&I), XXX (EL&I), (RWS-DNZ), XXX (IenM), XXX (IenM), XXX (IenM), XXX (IenM) XXX (IenM, ap. 2), XXX (RWS-DNZ, ap. 3), XXX (I&M, ap. 4), XXX (IenM, ap. 5)

1. Opening, mededelingen en vaststelling agenda

2. Aanwijzing windgebieden Ronde 3

XXX licht de stand van zaken met de voorbereiding van de aanwijzing toe, waaronder het voorstel om met een brief aan de TK het aanwijzingsproces formeel te starten. Ook worden voor het aan te wijzen windgebied Hollandse Kust – qua oppervlakte voor windenergie - een maximum- en een minimumvariant onderzocht.

3. Plan van Aanpak Varen en Vissen

4. Omgevingswet

5. Kaderrichtlijn Mariene Strategie

6. Kennisuitwisseling

7. Verslag vorige IDON

8. Rondvraag

6A

TenneT Transmissiesysteem op zee Borssele: Concept overzicht Rolverdeling en betrokkenen RWS

Aanleiding is de kabel(s) plus HUBs van de windparken Borssele 1 tm 4 naar Electriciteitscentrale Borssele op land.

Hiervoor zijn de volgende documenten benodigd:

- MER
- Passende Beoordeling
- RIP (Rijksinpassingsplan)
- Vergunningen (iig Waterwet, NBwet, Ffwet, PM?)

Het project valt onder de RCR-procedure. Dit houdt in dat EZ het RIP met aanvragen coordineert.

De MER en de PB leveren input aan het RIP en de vergunningaanvragen.

RIP

Rijkswaterstaat (RWS) speelt een rol namens het ministerie van IenM bij de voorbereiding van rijksinpassingsplannen voor energieprojecten en bij de planuitwerking waarbij de rijkscoördinatieregeling van toepassing is. Rijkswaterstaat geeft invulling aan de rol van bevoegd gezag (Wro) als adviseur van de minister van IenM voor de rijksinpassingsplannen.

De taak van Rijksinpassingsplannen is belegd bij het directoraat-generaal Ruimte en Water. Hiermee wordt de (mede-)bevoegd gezag rol van de minister van IenM bij energie-, natuur- en waterprojecten van rijksbelang ingevuld. De coördinerende projectverantwoordelijkheid voor de energie- en natuurprojecten ligt bij EZ; IenM werkt vanuit haar ruimtelijke bevoegdheden daarin mee. In 2012 is aan RWS (onderdeel van IenM) de vraag gesteld om ondersteuning te bieden bij de beoordeling van en procesverbetering voor de Rijksinpassingsplannen (RIP's).

Eind maart 2014 hebben de dg Ruimte en Water en de dg Rijkswaterstaat ingestemd met het verleggen van de knip tussen beide DG's per 1 januari 2015. Vanaf deze datum zal het voortouw vanuit IenM voor alle Rijksinpassingsplannen bij RWS (in relatie tot EZ) worden gelegd.

Bij rijksinpassingsplannen voor energieprojecten is de minister van Economische Zaken de aangewezen projectminister[1]. Hij is de eerstverantwoordelijke voor de voorbereiding en vaststelling van het rijksinpassingsplan. De minister van Infrastructuur en Milieu is mede bevoegd gezag (Wro) bij rijksinpassingsplannen voor energieprojecten. Vanuit deze verantwoordelijkheid en de verantwoordelijkheid voor IenM beleidsterreinen, de vergunningverlening vanuit IenM en beheertaken door IenM zijn diverse onderdelen van het Ministerie betrokken bij de uitvoering van de rijkscoördinatieregeling.

Rollen

RWS heeft in dit project meerdere rollen:

1. Toetser van de MER mbt inhoudelijke kwaliteit en volledigheid
2. Projectleider RIP
3. Beheerder: RWS heeft zelf ook belangen
4. Vergunningverlener en Handhaver mbt de Waterwet

Ad1

RWS (WVL) toets in opdracht van EZ/DGRW de MER op inhoudelijke juistheid. [redacted] (WVL) is hiervan de coördinator. Zij vraagt verscheidene experts op verschillende onderdelen binnen WVL, CD en VWM om inhoudelijke toetsing (CD -> Juridisch Algemeen, Juridisch Natuur, [redacted], VWN -> scheepvaart veiligheid, WVL: bodem, etc, . Daarnaast vraagt zij [redacted] (RWS ZD) voor natuur). Voor de regio-input wordt [redacted] gevraagd deze gecoördineerd aan te leveren. [redacted] beoordeeld alles nog een laatste keer. [redacted] levert haar info weer aan aan [redacted].

Ad 2

[1] Memorie van Toelichting, Tweede Kamer, vergaderjaar 2007-2008, 31 326, nr. 3

[redacted] is projectleider RIP namens EZ/DGRW. [redacted] is zijn vervanger. Het RIP wordt door een extern bureau gemaakt, en put grotendeels uit het MER. De belangen van de verschillende partijen, waaronder RWS worden in het RIP verwerkt.

Ad 3
RWS zelf heeft als beheerder belangen, welke zij graag meegenomen ziet in het proces. [redacted] verzamelt de regionale RWS belangen en stuurt deze naar [redacted] of [redacted]
Zie onderstaande tabel voor de contactpersonen.

Overzicht contactpersonen intern ZD Transmissiesysteem Wind op Zee Borssele				
projectmanagement	[redacted]			
omgevingsmanagement				
VV				
Coördinatie	[redacted]	[redacted]		
Vergunning	[redacted]	[redacted]		
juridisch betrokken	[redacted]	[redacted]		
	[redacted]	[redacted]		
RIP				
Coördinatie vooroverlegreactie ZD	[redacted]	[redacted]		
MER				
ZD-RO coordinatie(beheerbelangen)	[redacted]	[redacted]		
ZD-Ecologie	[redacted]			
ZD-VV-MER	[redacted]			
Deskundigen inhoudelijk betrokkenen				
Gebiedscoord.WS/morfologie&beheer	[redacted]			
Scheepvaart	[redacted]			
	[redacted]			
	[redacted]			
	[redacted]			
Ecologie	[redacted]			
Waterveiligheid	[redacted]			
Natura 2000 beheerplannen	[redacted]			
Beheerbelangen:				
relatiemanagers District Zuid	[redacted]	[redacted]		
relatiemanagers District Noord	[redacted]	[redacted]	[redacted]	
Permanente Commissie vd Scheepvaart Vl-Nld				
secr Nld	[redacted]			
voorzitter	[redacted]			
GNB/GNA				
nld	[redacted]			

Ad 4
RWS is vergunningverlener voor de Waterwet. Bij de Waterwet zal er mogelijk een gedeelte bestaan uit zee, Westerschelde en waterschapsdeel, of ipv Westerschelde langs de snelweg.
De MER en PB is integraal onderdeel van de aanvraag voor de waterewetvergunning.
RWS ([redacted]) coördineert dat er een gezamenlijke waterwet komt met alle RWS en waterschapsinput. De Waterwetvergunning valt weer in de RCR.
Voor de vergunning zijn betrokken, [redacted] [redacted] [redacted] en het Waterschap. Verder worden daarbij betrokken voor de inhoud [redacted] en Jes[redacted] en mogelijk nog anderen.
Bij de vergunningverlening zal ook een handhavingstoets en een beheerderstoets uitgevoerd moeten gaan worden. Hiervoor wordne nog contactpersonen gezocht.
Vanuit vergunningverlening wordt ok de MER en PB getoetst, afgesproken is met [redacted] dat het commentaar op de MER, en of deze voldoende info bevat voor een aanvraag, meegenomen wordt in de input welke [redacted] aanlevert aan [redacted].

Omgevingsmanagement

Naast RWS belangen spelen er ook andere belangen, bijvoorbeeld van de PV, de havenbedrijven, etc. Deze worden vooralsnog niet door RWS verzameld. Dit zou een Omgevingsmanager moeten doen ihkv de RCR procedure (lead EZ).

Daarnaast zijn er een aantal wettelijke adviseurs die ook de MER en PB moeten beoordelen. Ook hierin zou de OM een rol kunnen spelen (lead EZ).

Via de OM zouden de verschillende belangen weer bij de waterwetvergunning moeten komen om daarin integraal afgewogen te worden.