

SOCIO-ECONOMIC ENVIRONMENT

MILITARY AREAS

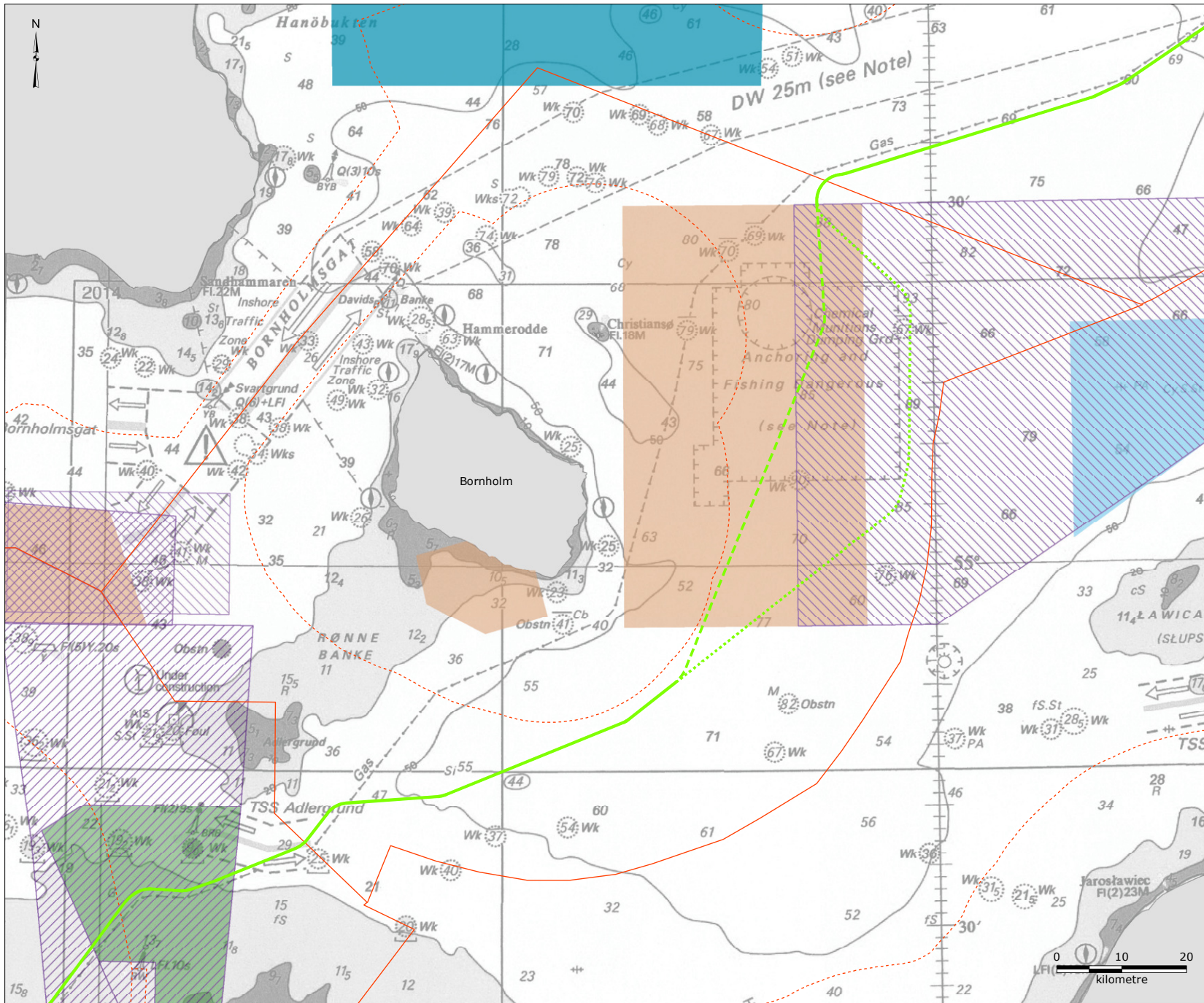
INFRASTRUCTURE

MUNITIONS, CONVENTIONAL/CHEMICAL

FISHERY

SHIP TRAFFIC

TOURISM



Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Other military exercise area
- Submarine exercise area
- Safe Bottoming Areas
- Firing danger area
- Other live firing exercise area
- Artillery firing exercise area

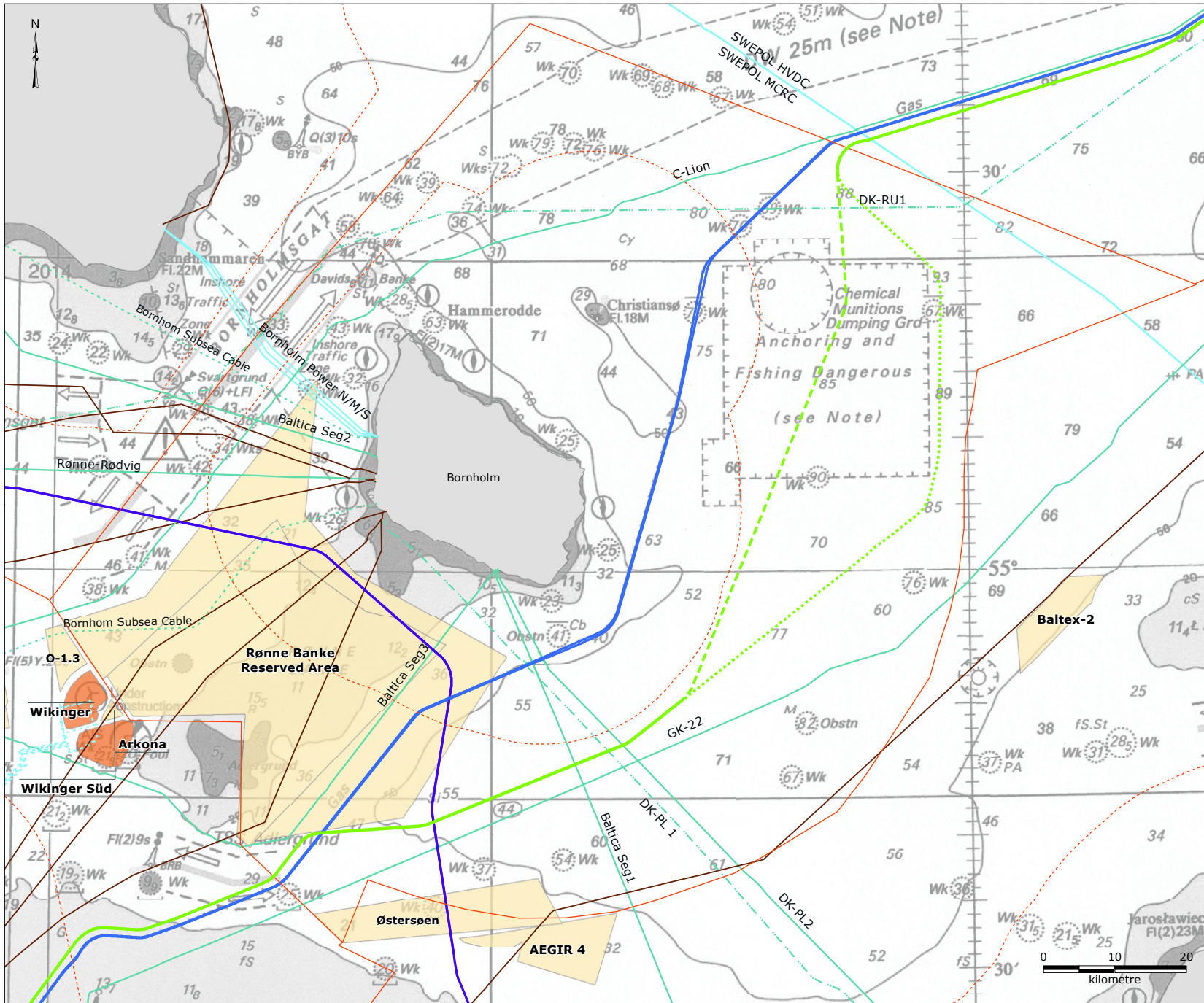
References:
 - Försvarsmakten, 2015, "Redovisning av riksintressen och områden av betydelse för totalförsvarets militära del enligt 3 kap 99 Miljöbalken i Kalmar Län", Sweden
 - Letter from Federal Office for Infrastructure, Environmental Protection and Services of The German Armed Forces, 23 March 2016
 - Ramboll, 2013, "E-mail from Forsvarets Byggnings- & Etablissementstjeneste, Denmark", Received: 2013-06-27
 - Ramboll, 2017, "E-mail from IfAO GmbH, Germany", Received: 2017-03-01
 - UKHO, 2007, "British Admiralty Nautical Chart 2816: Baltic Sea, Southern Sheet", United Kingdom Hydrographic Office

Version: 05
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 Controlled: MIJ/CASO

MI-01-D

Military practice areas





Legend:

- NSP2 route
- NSP2 route V1
- NSP2 route V2
- Territorial water border
- EEZ border

Pipelines:

- Nord Stream Route
- Planned Baltic Pipe route

Cables:

- Power - active
- Power - planned
- Telecom - active
- Telecom - planned
- Telecom - inactive
- Unknown

Wind farms:

- Planned
- Fully Commissioned

References:

- 4C Offshore, <http://www.4coffshore.com/offshorewind/>, Date accessed: 2019-03-03
- Danish Energy Agency, https://ens.dk/sites/ens.dk/files/Vindenergi/10_gw_screening_arealreservationer_27nov2018.pdf, Date accessed: 2019-03-03
- Cable data received from Nord Stream 2 AG 20 January 2017 and 31 July 2018
- Baltic Pipe route data received from Gaz-System.S.A. 01 August 2018
- Bornholm Subsea Cable route as presented in the Danish permit application, prepared by GlobalConnect A/S, 21 January 2019

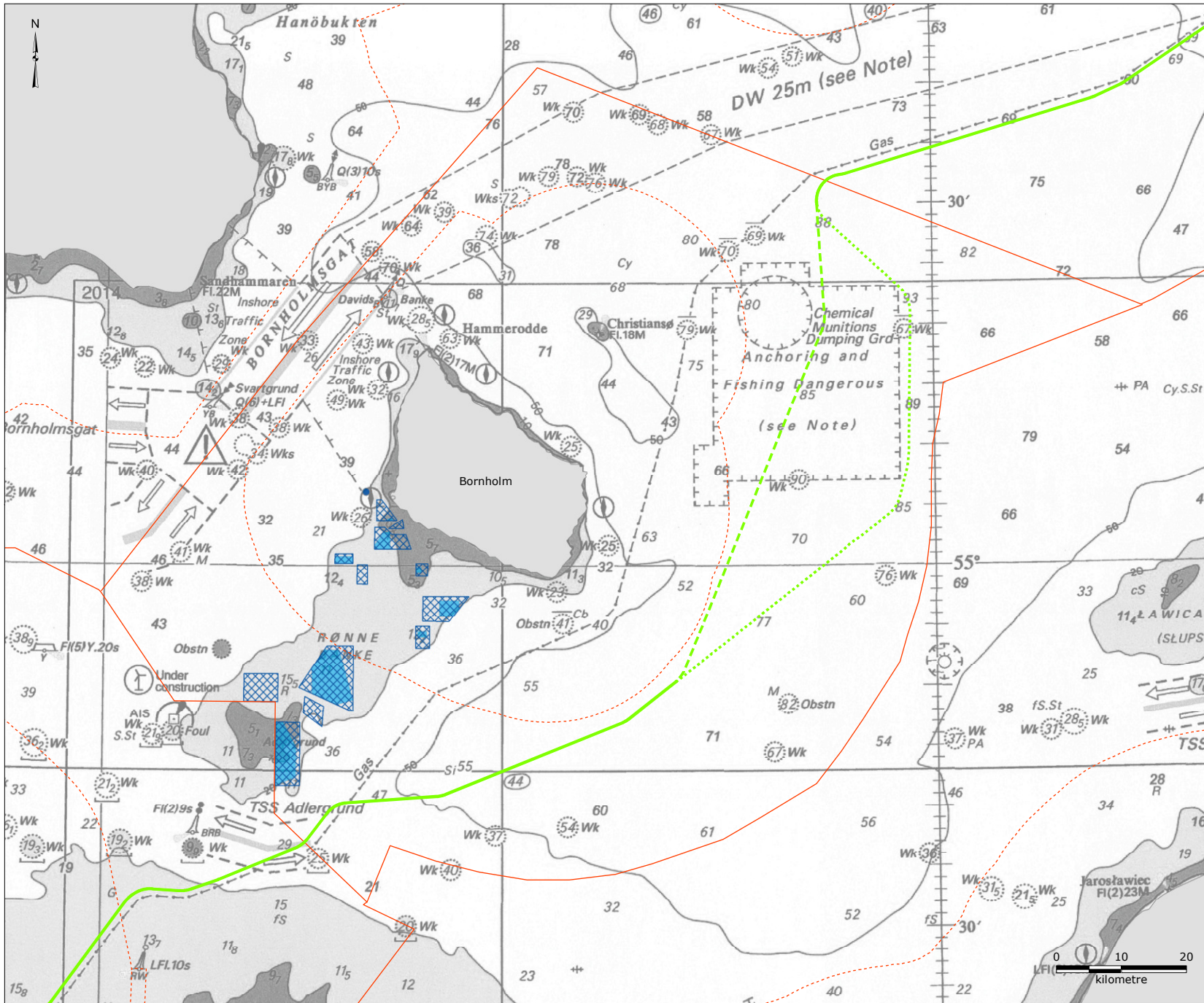
Version: 06
 Date: 2019-04-10
 Prepared: MRIH
 Controlled: MJK/CASO

IN-01-D

Infrastructure, existing and planned

RAMBOLL

0 10 20
kilometre



Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Potential area reserved for extraction of raw materials
- Area reserved for extraction of raw materials
- Sediment dumping site

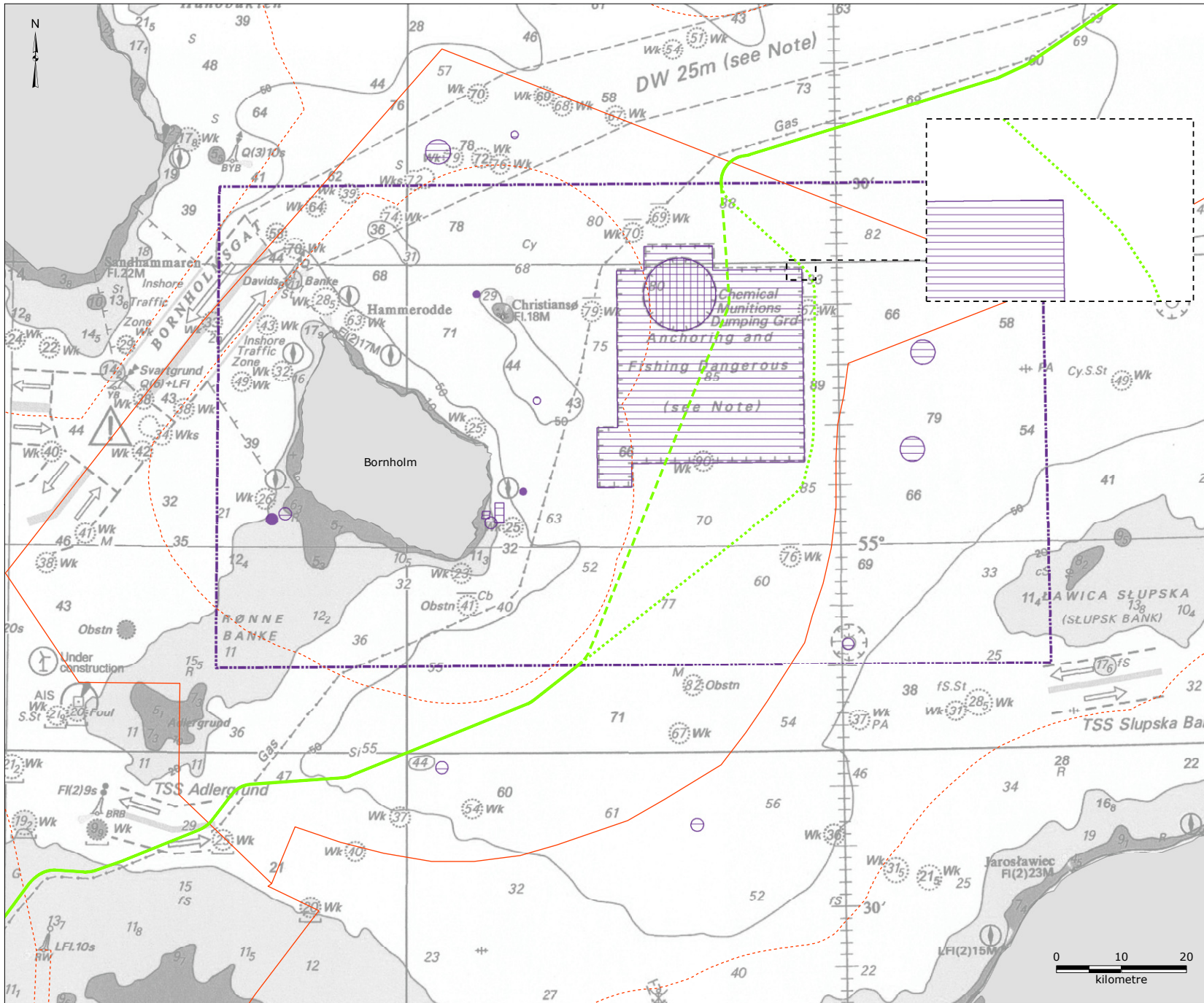
References:
 - Naturstyrelsen, 2019, "Restriktive områder-Klappelser", <http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet>, Miljøministeriet, Date accessed: 2019-03-05
 - Naturstyrelsen, 2019, "Råstofindvinding på havet-Fællesområder", <http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet>, Miljøministeriet, Date accessed: 2019-03-05
 - Naturstyrelsen, 2019, "Råstofindvinding på havet - Potentielle Fællesområder", <http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet>, Miljøministeriet, Date accessed: 2019-03-05

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 Controlled: CASO

IN-02-D

Resource extraction areas





Legend:

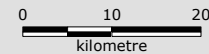
- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Emergency dumping area
- Chemical munitions dumping site
- Bottom trawling, anchoring and seabed intervention works discouraged
- Risk area in which fishing vessels are required to have first aid gas equipment on board

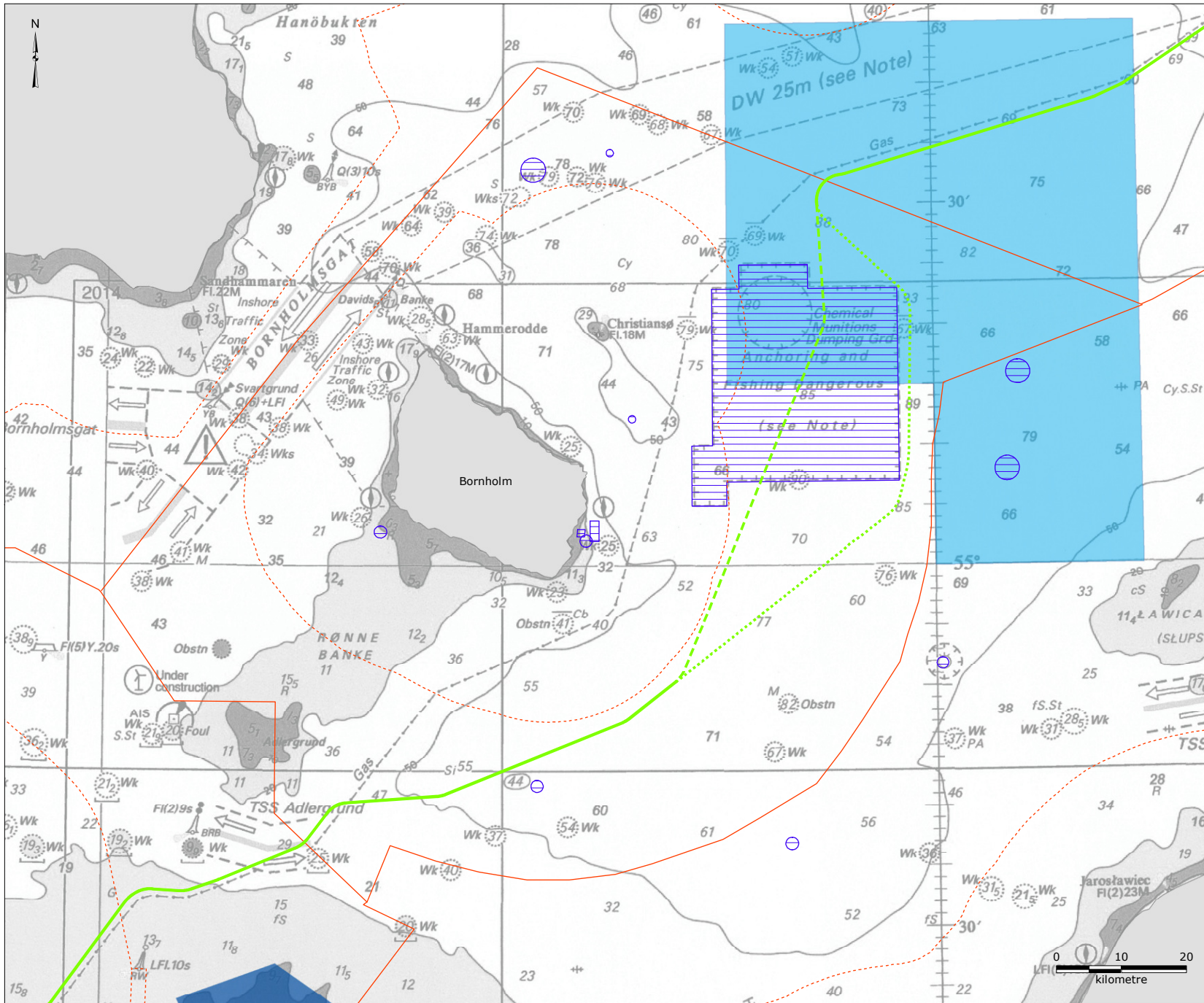
References:
 - Fiskeriministeriet, 2012, "Fiskeriårbogen 2012 (årgang 119)", Iver C. Weilbach & co.
 - Kort og Matrikelstyrelsen, 2010, "Ny udgave af kort 188 - Østersøen omkring Bornholm, 5th edition
 - Ministry of Business and Growth, 2005, "Bekendtgørelse om forbud mod sejlsads, ankring og fiskeri mv. i visse områder i danske farvande", BEK nr. 135 af 04/03/2005

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 Controlled: MJK

MU-01-D

Areas with chemical munitions





Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Bottom trawling, anchoring and seabed intervention works discouraged
- Area closed to cod (*Gadus morhua*) fishery from May 1 to October 31
- Area permanently closed to fisheries with active gear year around

Note:
 - Closed for fishery in order to enable undisturbed spawning conditions for the eastern cod population / ICES 2014/

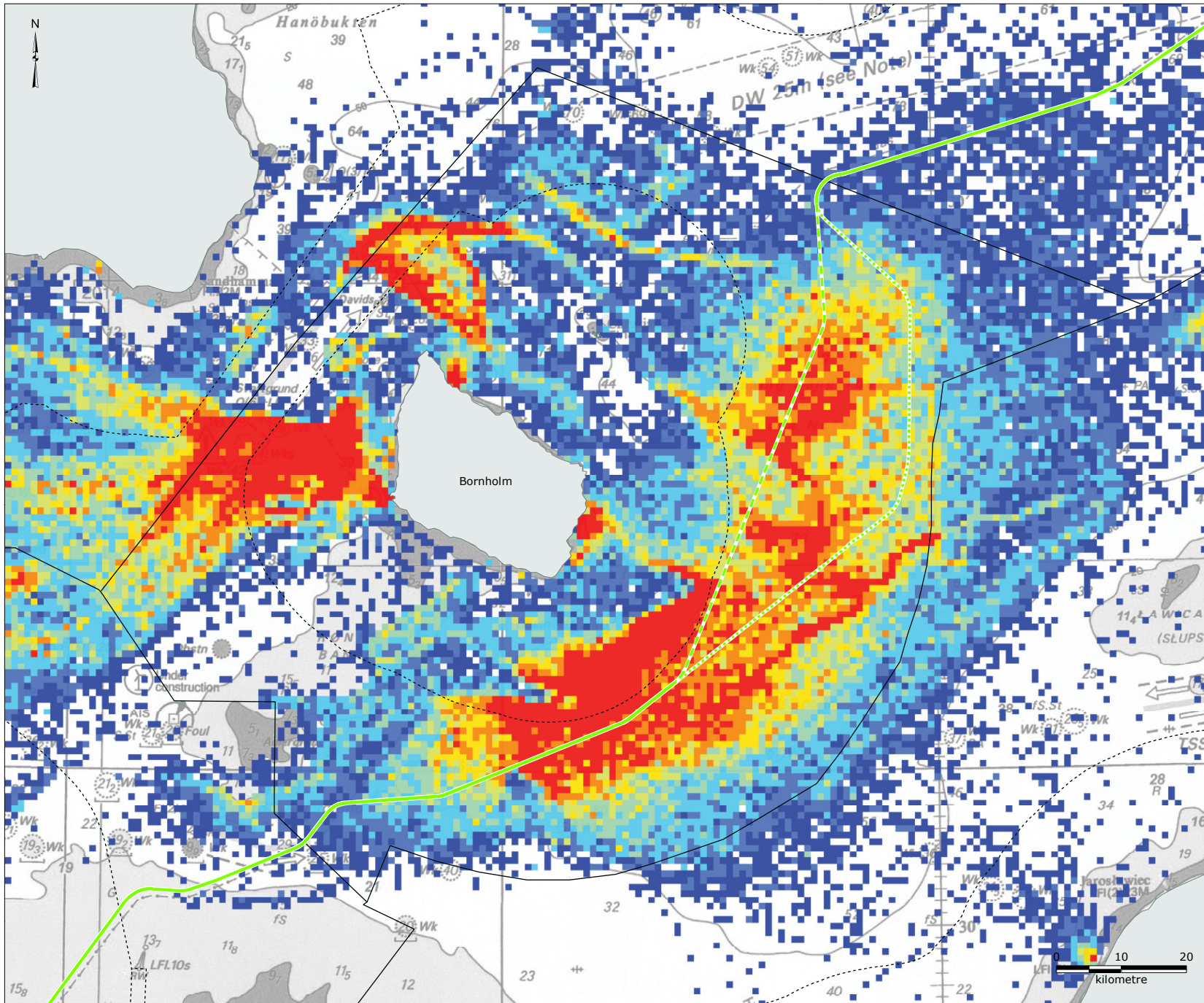
- References:
- Council Regulation (EC) No 1098/2007 of 18 September 2007 establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 779/97
 - Council Regulation (EC) No 2187/2005 of 21 December 2005 for the conservation of fishery resources through technical measures in the Baltic Sea, the Belts and the Sound, amending Regulation (EC) No 1434/98 and repealing Regulation (EC) No 88/98
 - Fiskeriministeriet, 2007, "Fiskeriårbogen 2007 (årgang 114)", Iver C. Weilbach & co, pp. 944
 - HELCOM, 2017, "Baltic Sea fisheries closure" <http://maps.helcom.fi/website/mapservice/index.html>, Data accessed: 2019-03-03
 - HELCOM, 2017, "Cod fisheries closures" <http://maps.helcom.fi/website/mapservice/index.html>, Data accessed: 2019-03-03
 - ICES, 2014, "Report of the Baltic Fishery Assessment Working Group (WGBFAS)", April 2014, ICES HQ, Copenhagen, Denmark. ICES CM 2014/ACOM:10
 - Kort og Matrikelstyrelsen, 2010, "Ny udgave af kort 188 - Østersøen omkring Bornholm, 5th edition
 - Ministry of Business and Growth, 2005, "Bekendtgørelse om forbud mod sejlsads, ankring og fiskeri mv. i visse områder i danske farvande", BEK nr. 135 af 04/03/2005

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FC-01-D

Areas where commercial fishery is prohibited





Legend:

- NSP2 route
- - - NSP2 route V1
- · · NSP2 route V2
- - - - Territorial water border
- EEZ border

Bottom trawling density 2010-2016, based on VMS-data:

- 1 - 2
- 2 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 35
- > 35

Note:
 - Density data were derived from VMS data points of Danish fishing vessels fishing in the Baltic in 2010-2016. Only vessels with speed between 0-5 knots are shown, as it is estimated that bottom trawling is undertaken at this speed interval. Background data obtained from The Danish Agrifish Agency

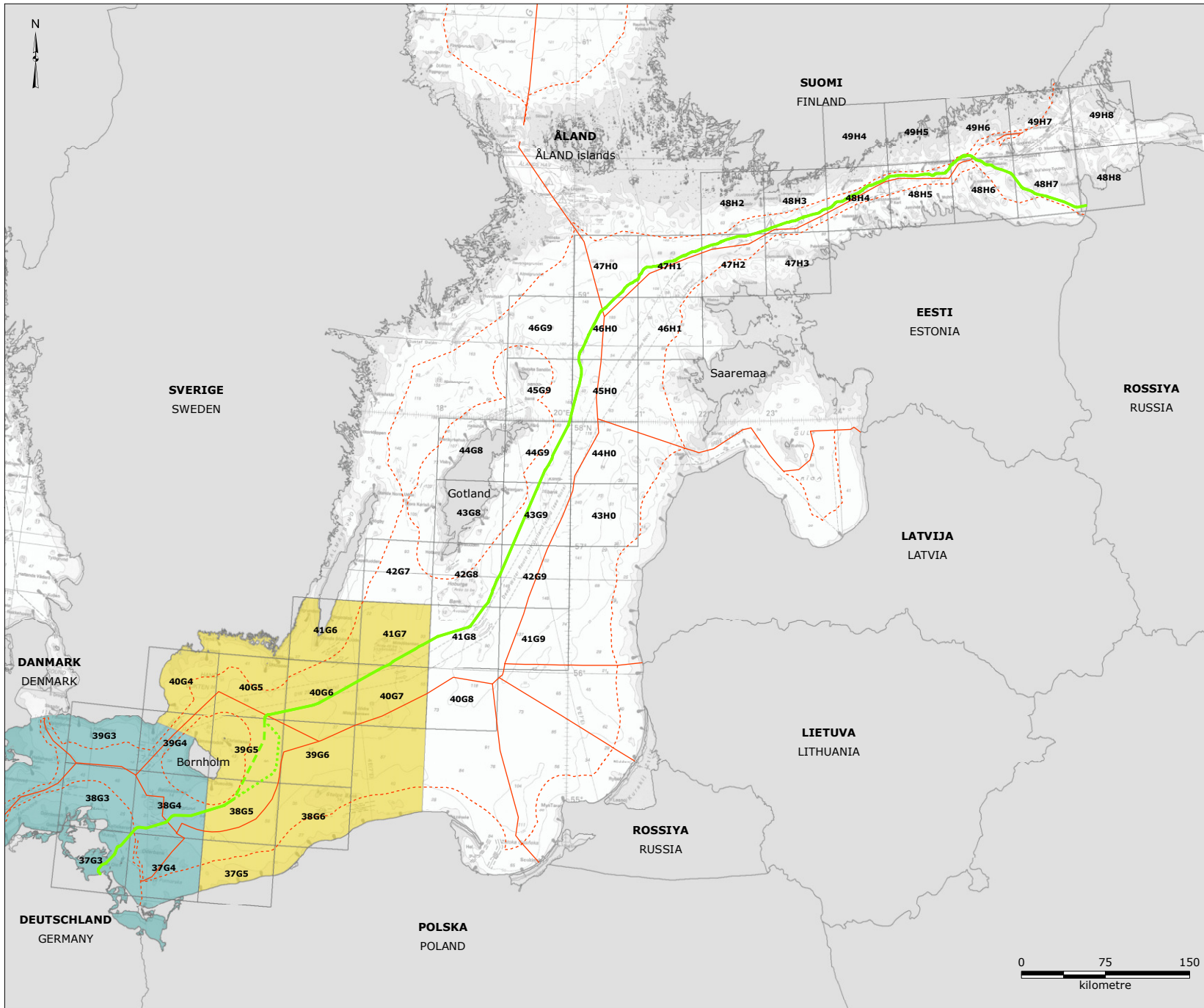
Reference:
 - Orbicon, 2018, "Nord Stream 2 - Baltic fisheries along the pipeline transect", Note, 2018-03-05

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FC-02-D

Bottom trawling density





Legend:

- NSP2 route
- - - NSP2 route V1
- . . . NSP2 route V2
- - - Territorial water border
- EEZ border
- ICES statistical rectangles

ICES subdivisions:

- 24
- 25

Note:
- ICES subdivisions are only shown for Denmark

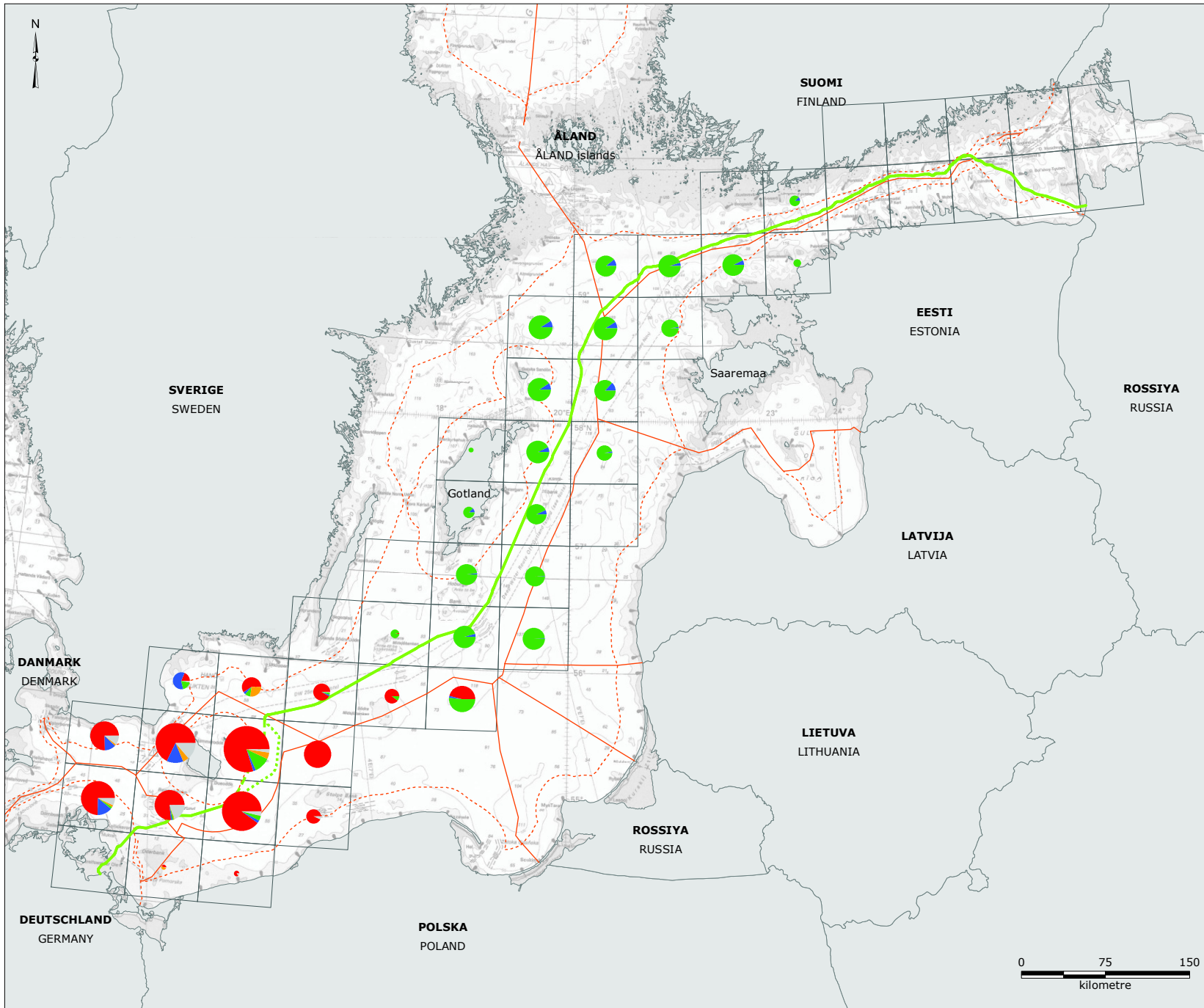
References:
-ICES, 2018,
<http://gis.ices.dk/sf/index.html>,
Date accessed: 2019-03-04
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

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FC-03

ICES statistical rectangles and subdivisions





Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border

Fishery mean value (euros):



- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:



Note:
- Based on data for 2010-2016

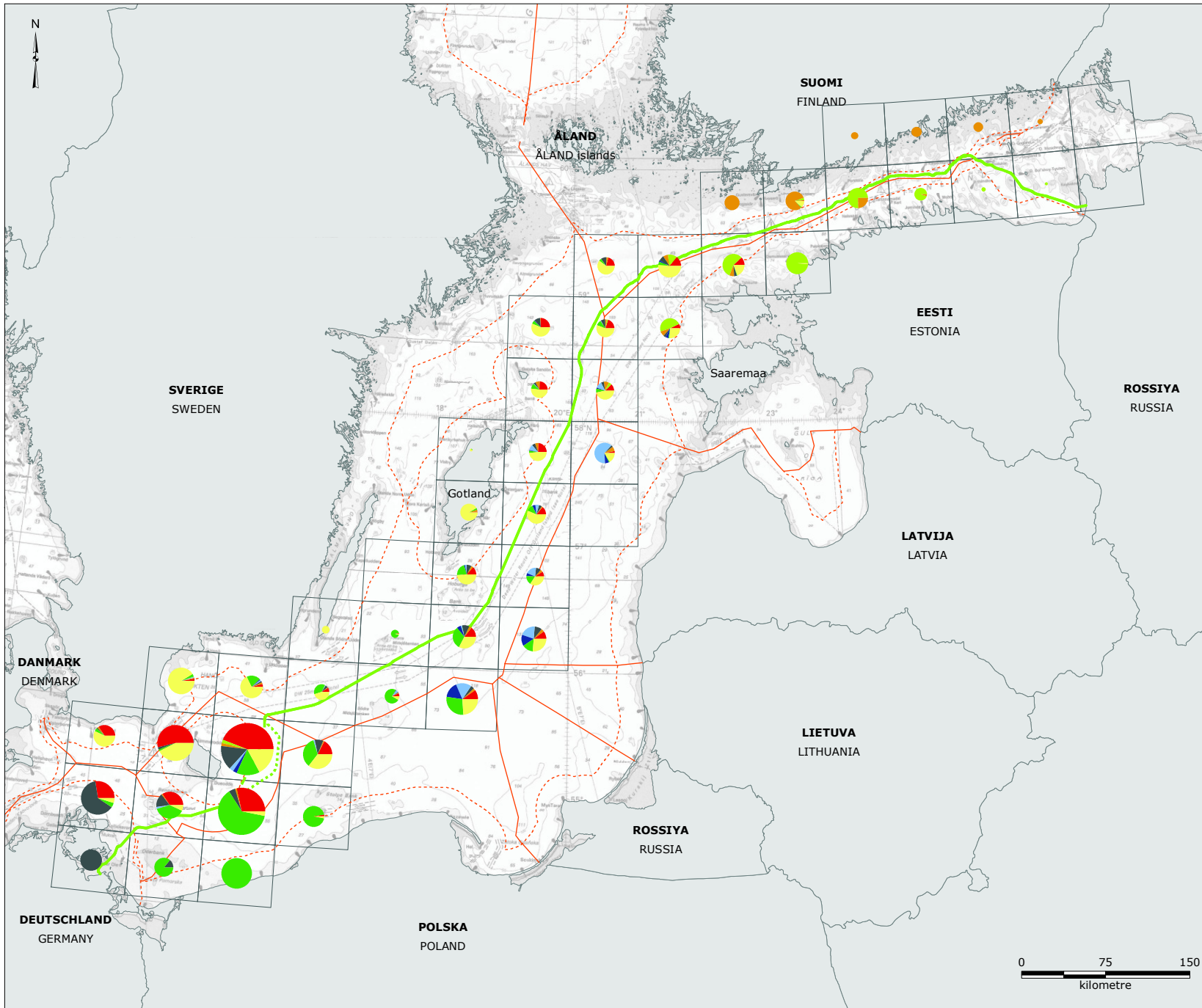
Reference:
- Orbicon, 2018, "Nord Stream 2 - Baltic fisheries along the pipeline transect", Note, 2018-03-05

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Controlled: MJK/CASO

FC-04

Mean value of catches according to species by Danish fishery





Legend:

- NSP2 route
- - - NSP2 route V1
- · · NSP2 route V2
- - - Territorial water border
- EEZ border

Fishery mean value (euro):

- Denmark
- Estonia
- Finland
- Germany
- Latvia
- Lithuania
- Poland
- Sweden

Pie areas scaled according to real values:

- 10,000,000 euro
- 5,000,000 euro
- 2,000,000 euro

Note:

- Based on data for 2010-2014.
- Data provided from Poland for 2009-2013
- Russia is not included (no data available)

References:

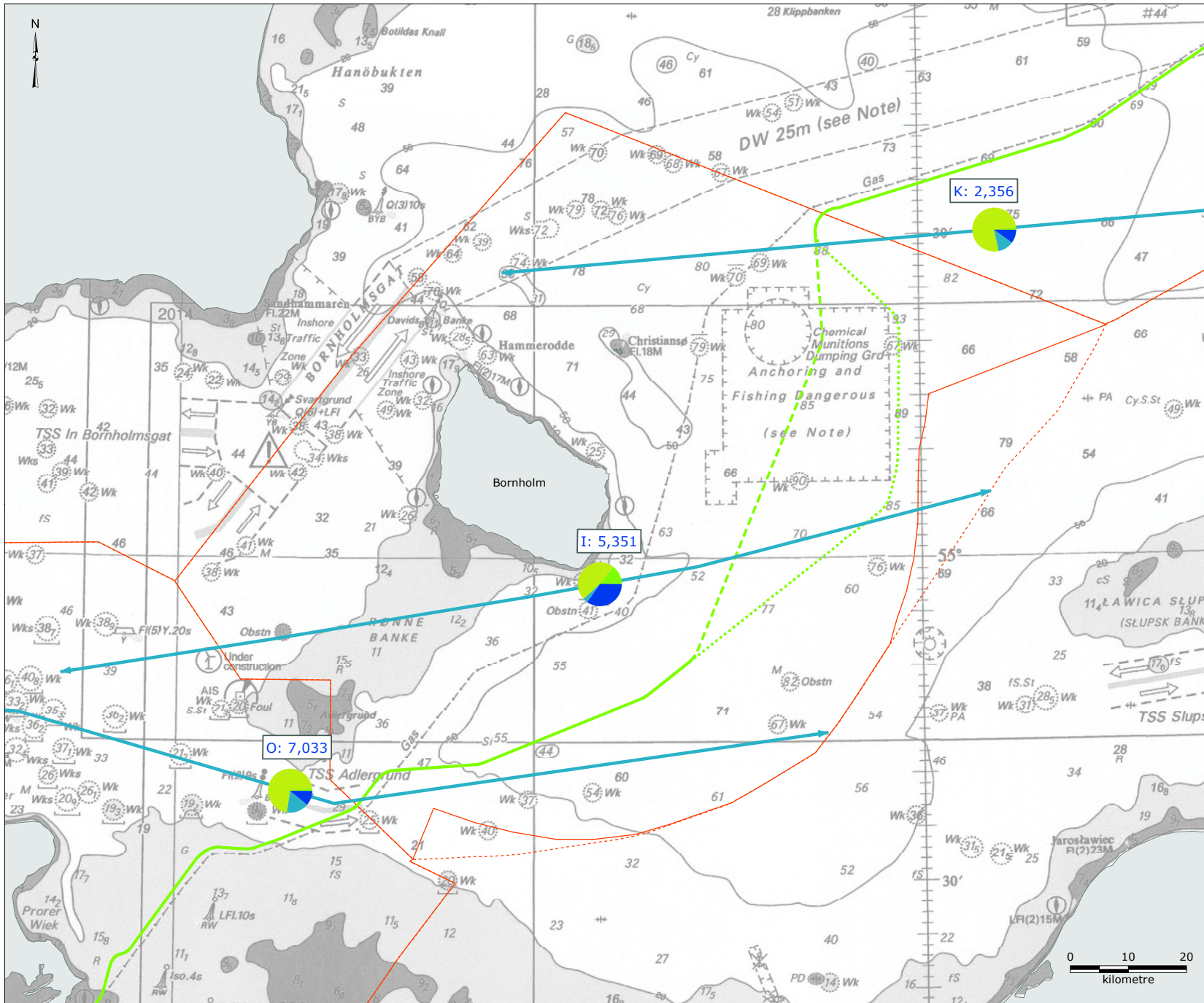
- Orbicon, 2016, "Nord Stream 2 - Baltic fisheries along the pipeline transect", Note, 2016-06-09

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FC-05

Mean value of catches by country

RAMBOLL



Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Primary ship traffic route

Ship types:

- Passenger
- Cargo
- Tanker
- Other

Note:

- The labels show number of ship movements on primary ship traffic routes in 2014
- Letters represent the name of the location where data was measured
- Ship statistics at certain points of interest are based on data concerning ships that cross a defined line on a shipping route. The lines are drawn approximately perpendicularly to the shipping route direction.
- The relevant major/minor ship traffic routes have been selected from the Baltic area in connection to the two Nordstream pipelines.

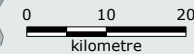
Reference:

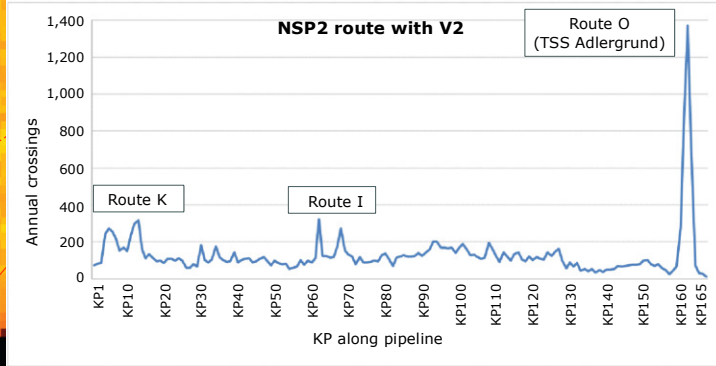
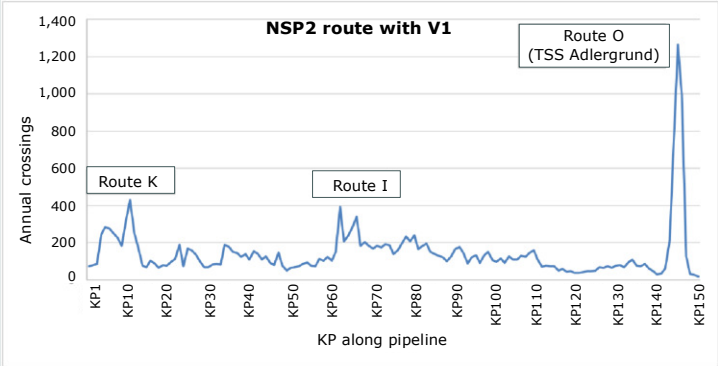
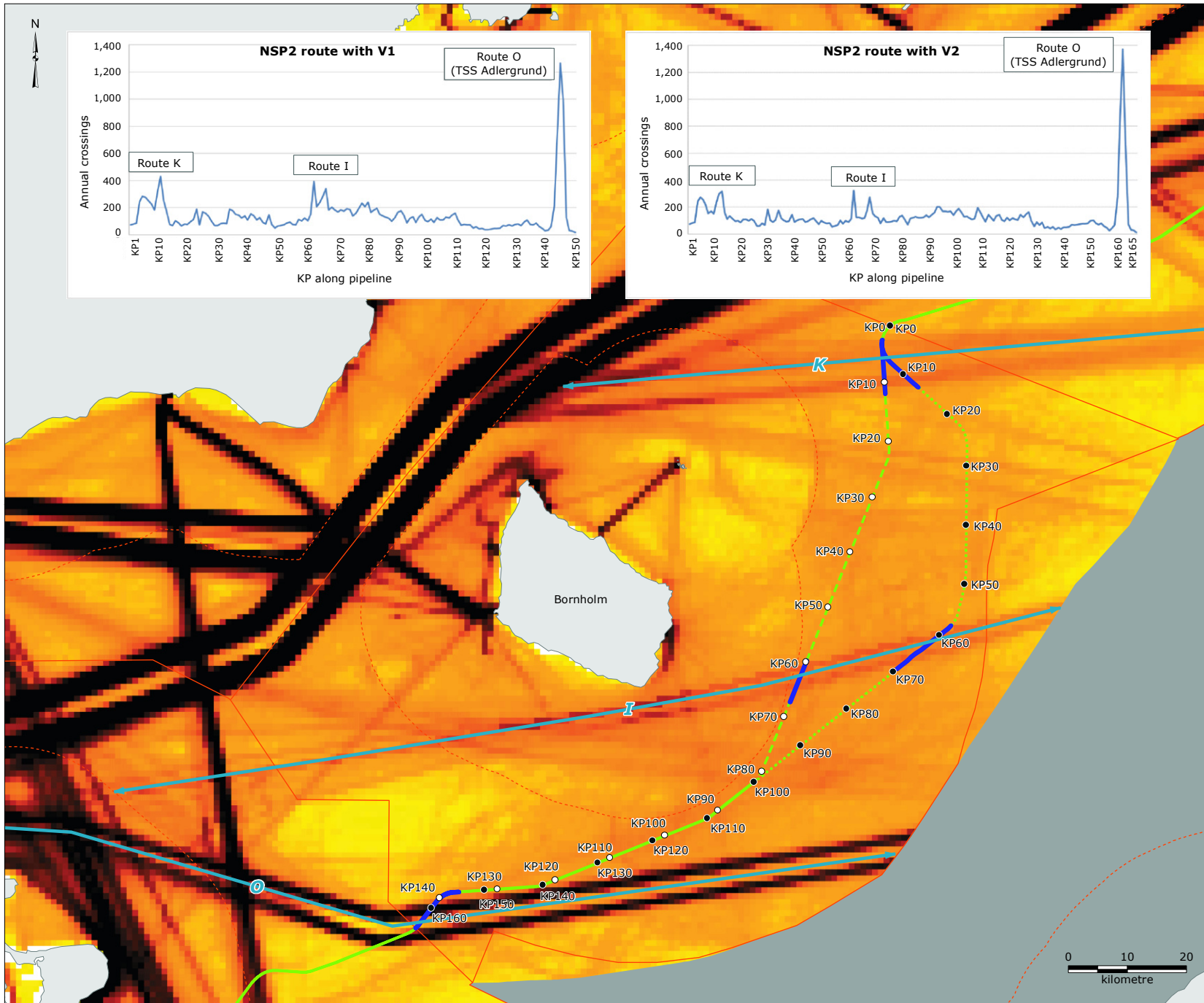
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014

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SH-01-D

Primary ship traffic routes





Legend:

- NSP2 route
- NSP2 route V1
- NSP2 route V2
- Territorial water border
- EEZ border
- Primary ship traffic route
- Locations where primary ship traffic routes cross NSP2 pipelines in Danish waters

Ship density (2014):

- 0 - 1
- > 1 - 100
- > 100 - 500
- > 500 - 600
- > 600 - 1,000
- > 1,000 - 1,500
- > 1,500
- No data available (Poland)
- KP (kilometre point) - NSP2 route V1
- KP (kilometre point) - NSP2 route V2

Note:

- There is no permission from Poland to show AIS data

References:

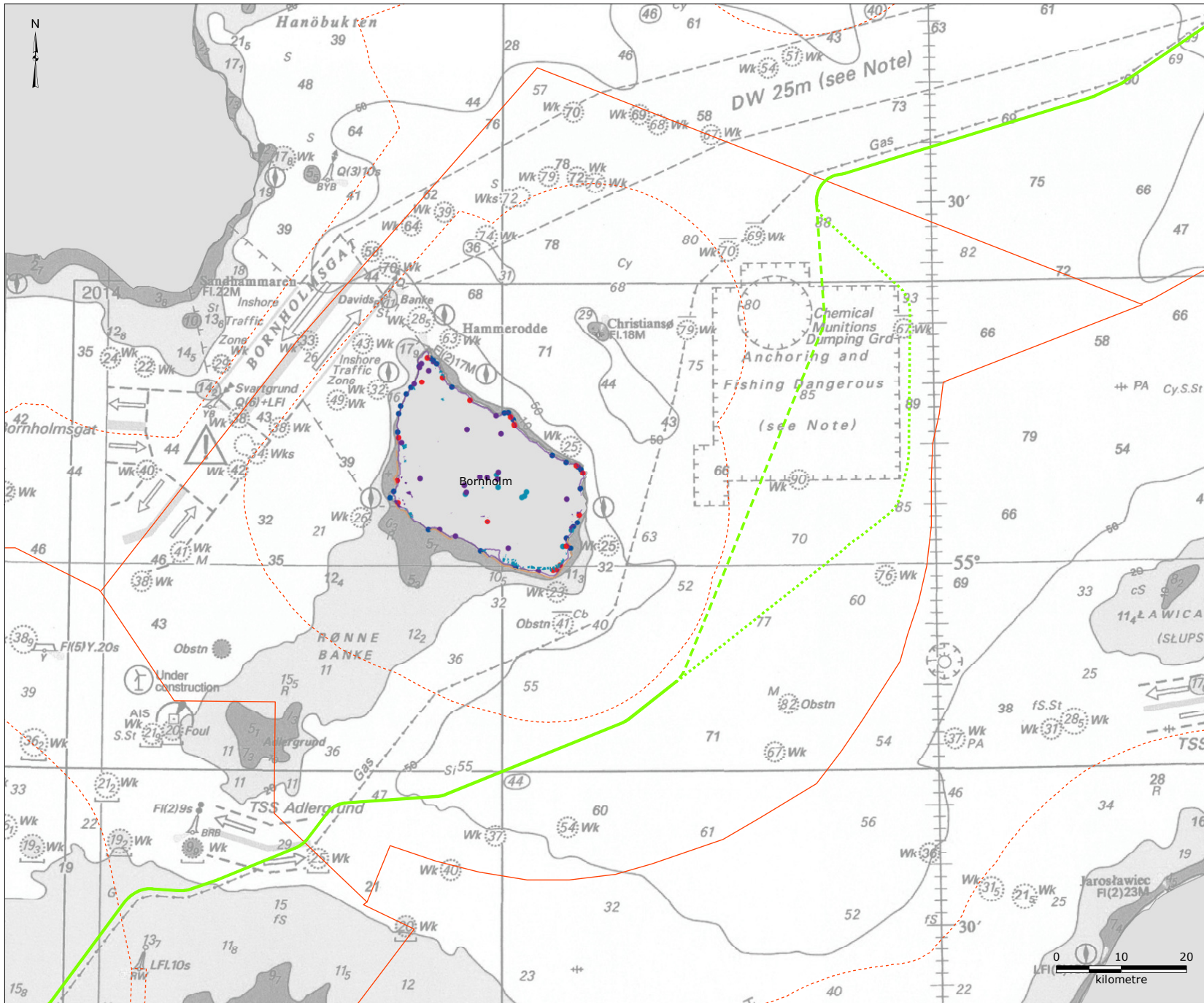
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.
- Rambøll, 2016, "Ship traffic background report", W-PE-EIA-POF-REP-805-060100EN, Rambøll, Denmark

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SH-02-D

NSP2 crossings of primary ship traffic routes

RAMBOLL



Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Coastal trails
- Particularly good beaches
- Recreation areas
- Summer cottage areas
- Primitive campsites and shelters
- Campsites
- Birdwatching towers
- Harbours

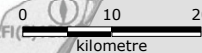
Note:
Tourist facilities are only shown for Bornholm

References:
- Rambøll, 2016, "E-mail from Bornholms Kommune, Denmark",
Received: 2016-04-20

Version: 05
Date: 2019-04-10
Prepared: MRIH
Controlled: MJK/CASO

TO-01-D

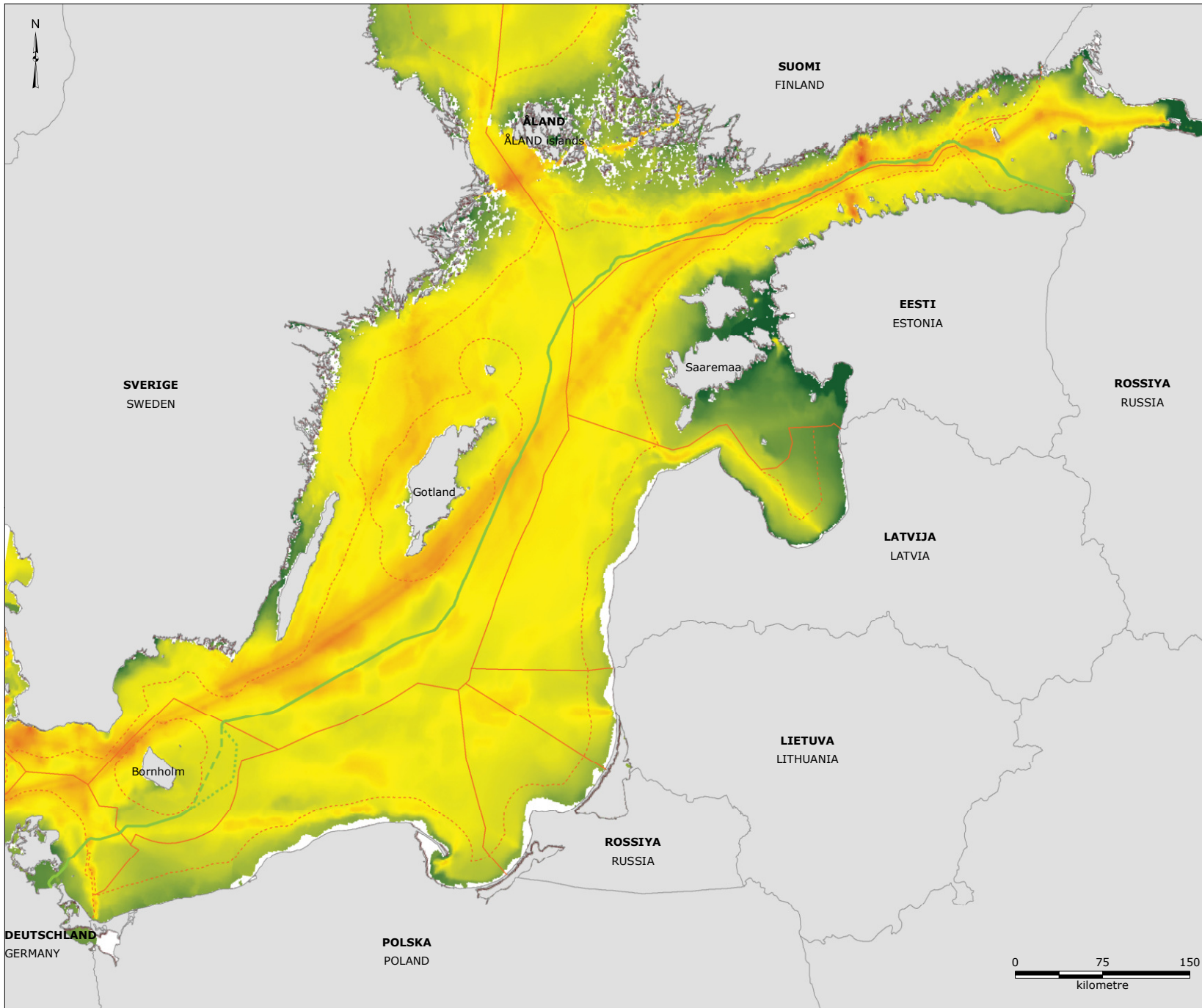
Tourist facilities



MATHEMATICAL MODELLING

NOISE MODELLING

SEDIMENT MODELLING



Legend:

- NSP2 route
- - - NSP2 route V1
- ... NSP2 route V2
- - - Territorial water border
- EEZ border

SPL (dB re 1µPa):

140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
No data

Note:

- Time period: 2014 March
- Centre Frequency: 125 Hz third octave band
- Depth interval: 0 - 15 m
- Exceeded Sound level: L10 (10% of time)
- SPL: Sound Pressure Level

- White portions along the coast are probably missing data and therefore should be treated as such.

Reference:

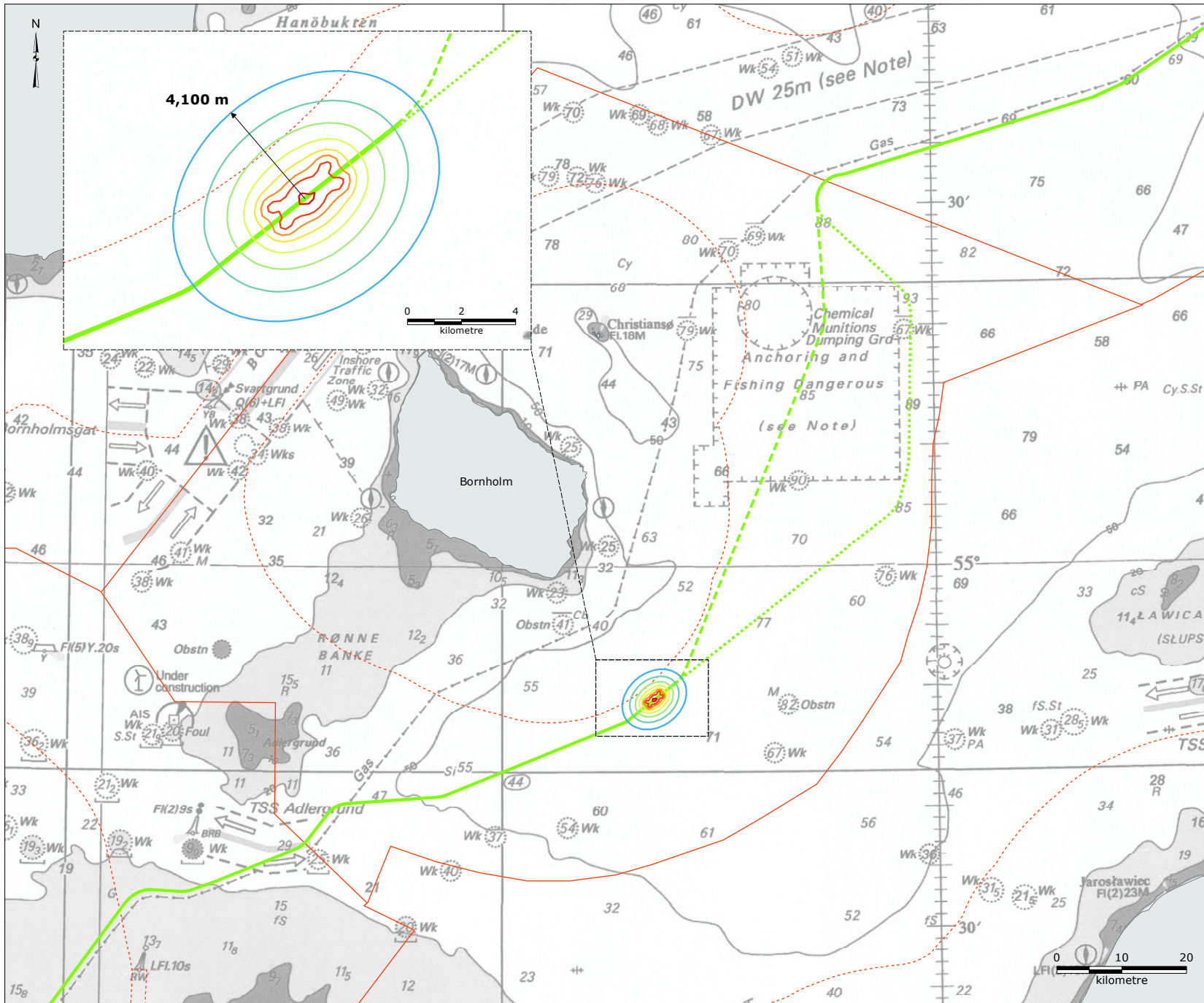
- These results have been extracted with help of the BIAS soundscape planning tool, which was prepared within the EU LIFE project Baltic Sea Information on the Acoustic Soundscape (BIAS LIFE11 ENV/SE 841); www.bias-project.eu.

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NM-01

Baltic Sea underwater soundscape

RAMBOLL



Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- · - · Territorial water border
- EEZ border

Noise distribution (db):

- 33
- 36
- 39
- 42
- 45
- 48
- 51
- 57

Note:
 - Atmospheric noise modelling assuming one anchored pipe-laying vessel, one supply vessel, and four tug vessels

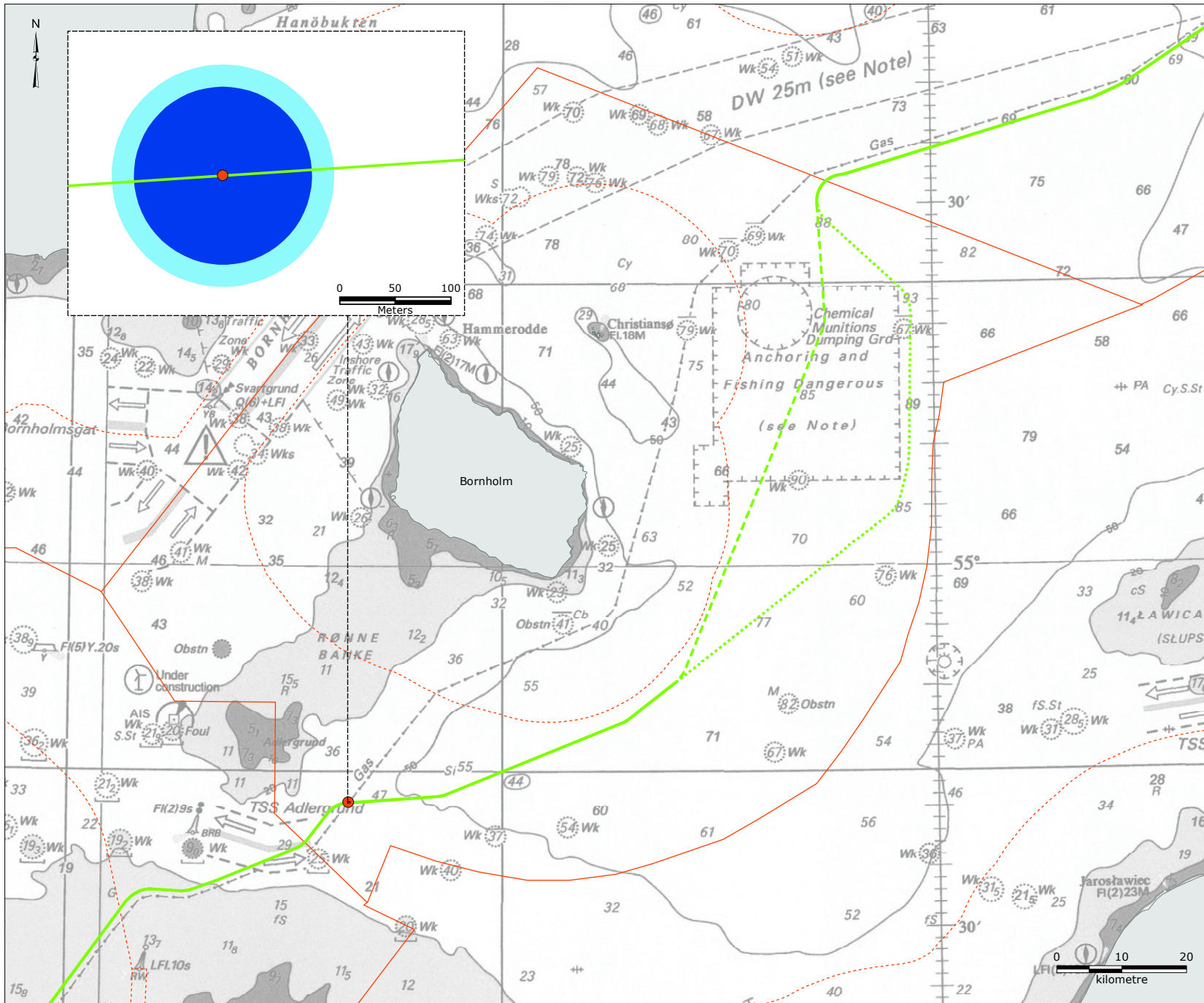
References:
 - Calculations according to Miljøstyrelsen, 1993, "Beregning af støj fra virksomheder. Fælles nordisk beregningsmetode", in Vejledning fra Miljøstyrelsen Nr. 5/1993
 - Nord Stream AG, 2008, Offshore pipeline through the Baltic Sea, Memo no. 4.3Q, Noise, June 2008.
 Doc. No. G-PE-PER-EIA-100-43Q0000-A

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 Controlled: MJK/CASO

NM-02-D

Airborne noise propagation modelling results





Legend:

- NSP2 route
- - - NSP2 route V1
- . . . NSP2 route V2
- - - Territorial water border
- EEZ border
- Noise modelling location

Rock placement, winter

Cumulative SEL (two-hour):

- Marine mammals (188 dB - TTS)
- Fish (186 dB - TTS)

Note:

- The cumulative SEL levels are related to threshold levels used in the assessment to evaluate impact on biological environment
- Underwater noise propagation from rock placement is shown for the winter conditions as the worst case scenario
- Exposure to sound may result in permanent hearing impairments (permanent threshold shift, PTS) or temporary hearing impairments (temporary threshold shift, TTS). The modelling results show that exceedance of TTS occurs only in the vicinity of the pipeline (less than 90 m). Underwater noise from rock placement does not exceed threshold levels causing PTS.

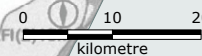
References:

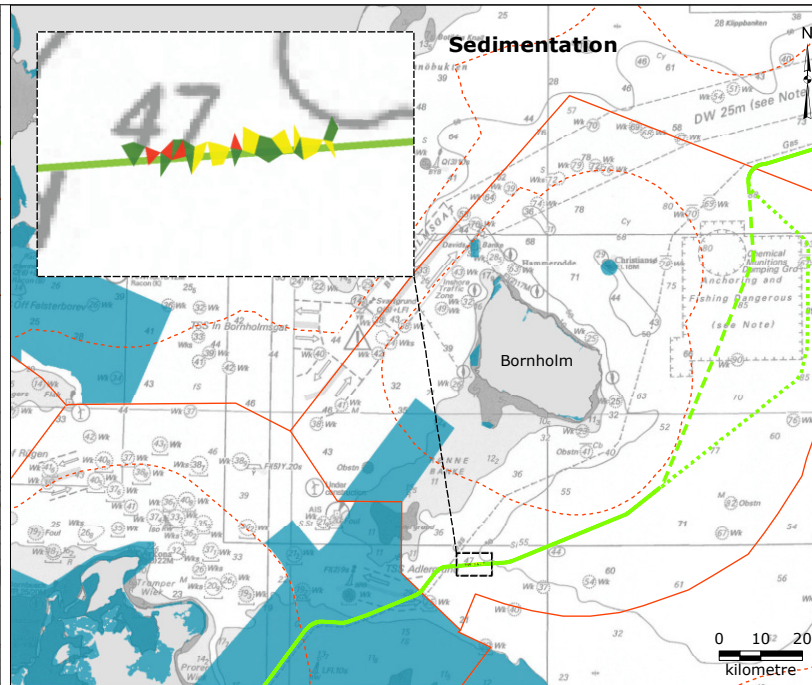
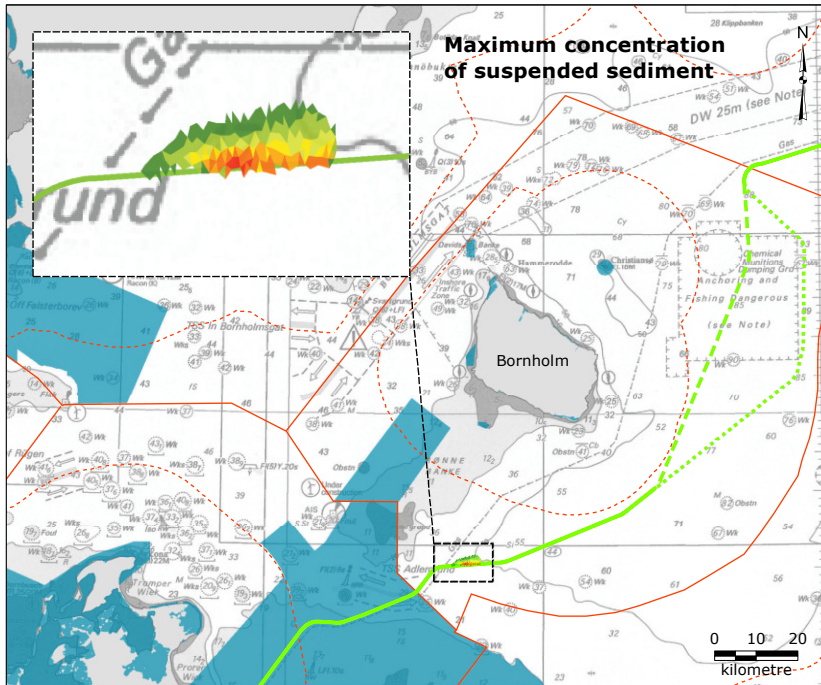
- Rambøll, 2018, "Nord Stream 2. Underwater noise modelling" Doc. No. W-PE-EIA-PDK-REP-805-DA0900EN-01

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 Controlled: MJK/CASO

NM-03-D

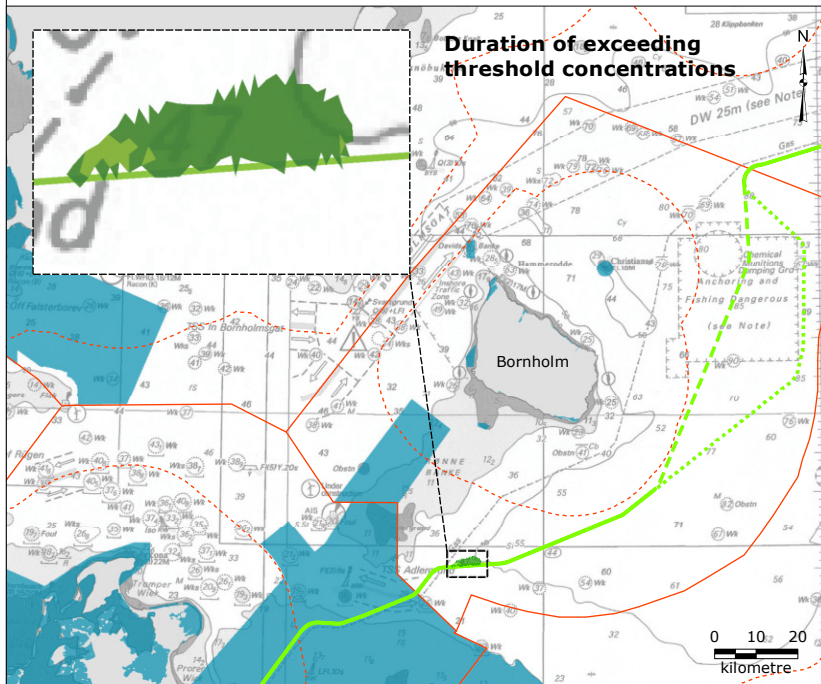
Sound exposure levels





Legend:

- NSP2 route
- - - NSP2 route V1
- · · NSP2 route V2
- - - Territorial water border
- EEZ border
- Natura 2000 site



Legend:

Maximum concentration of suspended sediment (mg/l):

- 0 - 2
- 2 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 50
- > 50

Sedimentation (g/m²):

- 0 - 50
- 50 - 100
- 100 - 200
- > 200

Duration of exceeding threshold concentrations (2 mg/l) in hours:

- 0 - 1
- 1 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- > 12

Note:
 - Duration of exceeding threshold concentration is shown for 2 mg/l since concentration of 10mg/l (avoidance reactions in fish) for rock placement would not be visible on the map
 - Winter scenario refers to a period with winter hydrographic conditions with respect to flow velocities and stratification
 - Redistribution of sediments for winter scenario is shown

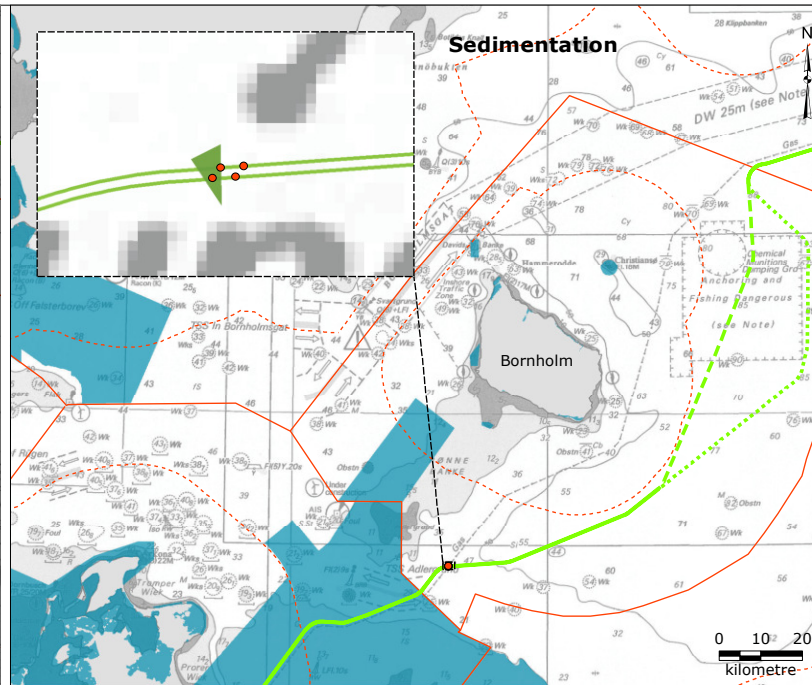
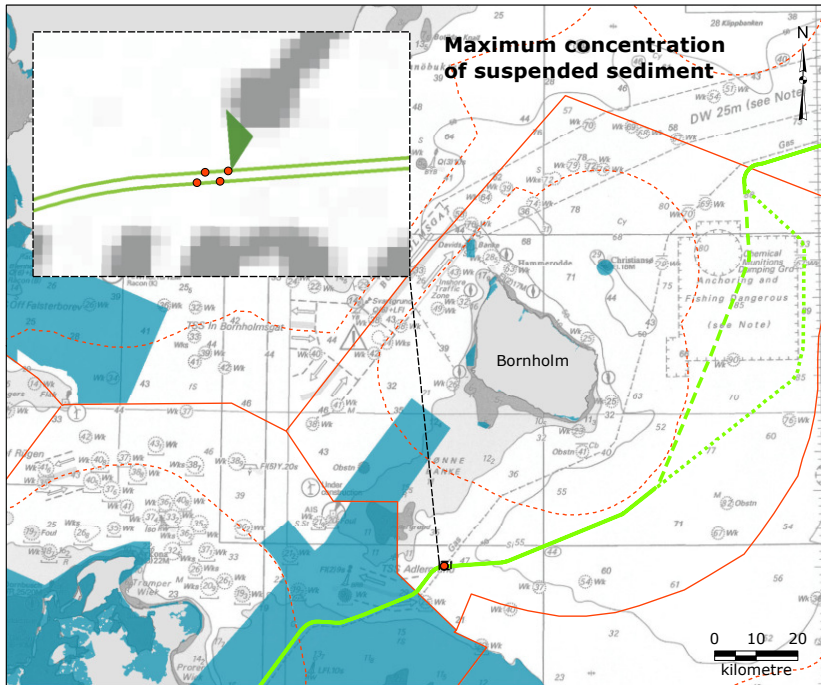
Reference:
 - European Environment Agency, 2017, "Natura 2000 data - the European network of protected sites", <https://www.eea.europa.eu/data-and-maps/data/natura-9>, Date accessed: 2019-03-05
 - The Danish Environmental Protection Agency, 2018, "Applicable Natura 2000 sites as of 2018-11-01", <http://miljoegis.mim.dk/spatialmap?profile=natura2000-afgransning-nov2018gaeldende>, Date accessed: 2019-03-05
 - Nord Stream 2 AG and Ramboll, 2018, "Modelling of sediment spill in Denmark - Southern", Doc. No. W-PE-EIA-PDK-REP-805-DA0800EN-01

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 Prepared: MALM/ MRIH
 Controlled: MJK/CASO

SM-01-D

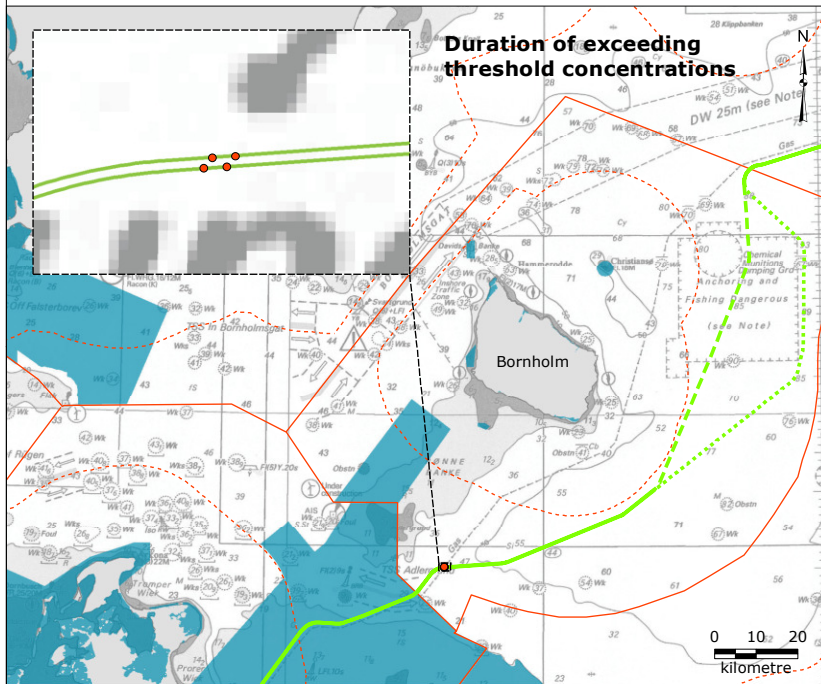
Suspended sediments and sedimentation – trenching





Legend:

- NSP2 route
- - - NSP2 route V1
- ⋯ NSP2 route V2
- - - Territorial water border
- EEZ border
- Natura 2000 site
- Spot rock placement, pipeline crossing



Legend:

Maximum concentration of suspended sediment (mg/l):

- 0 - 2
- 2 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25
- 25 - 50
- > 50

Duration of exceeding threshold concentrations (2 mg/l) in hours:

- 0 - 1
- 1 - 3
- 3 - 6
- 6 - 9
- 9 - 12
- > 12

Sedimentation (g/m²):

- 0 - 50
- 50 - 100
- 100 - 200
- > 200

Note:
 - Duration of exceeding threshold concentration is shown for 2 mg/l since concentration of 10 mg/l (avoidance reactions in fish) for rock placement would not be visible on the map
 - Winter scenario refers to a period with winter hydrographic conditions with respect to flow velocities and stratification
 - Redistribution of sediments for winter scenario is shown

Reference:
 - European Environment Agency, 2017, "Natura 2000 data - the European network of protected sites", <https://www.eea.europa.eu/data-and-maps/data/natura-9>, Date accessed: 2019-03-05
 - The Danish Environmental Protection Agency, 2018, "Applicable Natura 2000 sites as of 2018-11-01", <http://miljoegis.mim.dk/spatialmap?profile=natura2000-afgransning-nov2018gaeldende>, Date accessed: 2019-03-05
 - Nord Stream 2 AG and Ramboll, 2018, "Modelling of sediment spill in Denmark - Southern", Doc. No. W-PE-EIA-PDK-REP-805-DA0800EN-01

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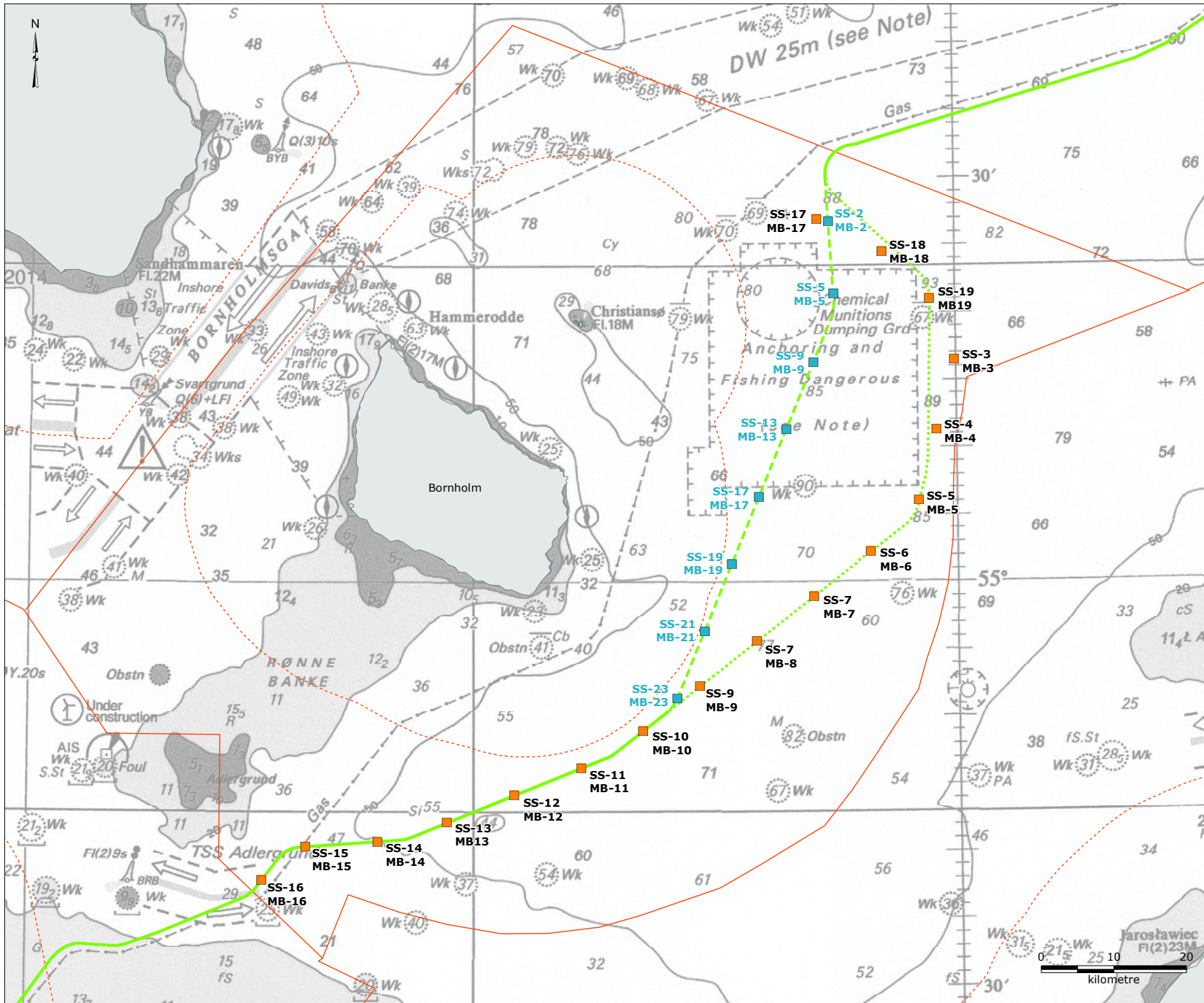
SM-02-D

Suspended sediments and sedimentation – rock placement



ENVIRONMENTAL SURVEY STATIONS

ENVIRONMENTAL SURVEY STATIONS



Legend:

- NSP2 route
- - - NSP2 route V1
- · · NSP2 route V2
- - - Territorial water border
- EEZ border
- Surface sediment (SS)/ macrozoobenthos (MB) station - 1st survey round
- Surface sediment (SS)/ macrozoobenthos (MB) station - 2nd survey round

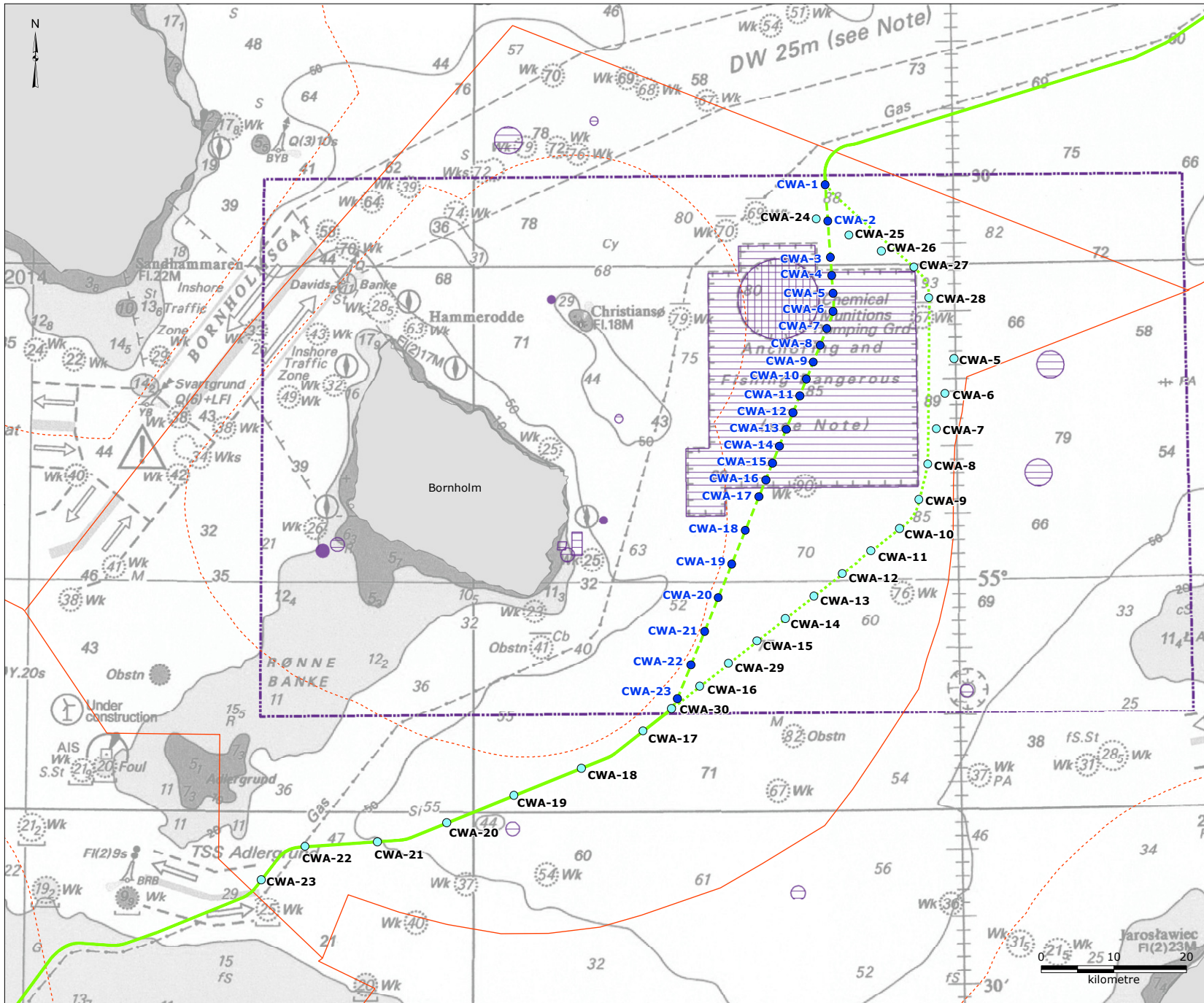
Reference:
 - Ramboll, 2018, Scope of Work for Environmental Baseline Survey in Danish Waters, Southern Route, Doc. no. W-PE-EIA-PDK-SOW-800-BLSUSREN-03
 - Additional Scope of Work for Environmental Baseline Survey in Danish Waters W-PE-EIA-PDK-SOW-800-ADLSUEN-02

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 Controlled: MJK/CASO

SS-01-D

Survey stations for surface sediment and macrozoobenthos





Legend:

- NSP2 route
- - - NSP2 route V1
- . . . NSP2 route V2
- - - Territorial water border
- EEZ border
- Emergency dumping area
- Chemical munitions dumping site
- Bottom trawling, anchoring and seabed intervention works discouraged
- Risk area in which fishing vessels are required to have first aid gas equipment on board
- CWA (chemical warfare agents) stations - 1st survey round
- CWA (chemical warfare agents) stations - 2nd survey round

Reference:
 - Ramboll, 2018, Scope of Work for Environmental Baseline Survey in Danish Waters, Southern Route, Doc. no. W-PE-EIA-PDK-SOW-800-BLSUSREN-03
 - Additional Scope of Work for Environmental Baseline Survey in Danish Waters W-PE-EIA-PDK-SOW-800-ADBSLUSREN-02

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SS-02-D

Survey stations for chemical warfare agents

