



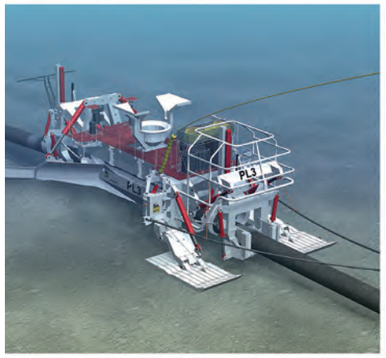


ESPOO ATLAS

Nord Stream 2
April 2017

W-PE-EIA-POF-DWG-805-040100EN

English Version

RAMBØLL

OFFSHORE PIPELINES THROUGH THE BALTIC SEA

ESPOO ATLAS

Nord Stream 2
April 2017

Prepared by: Rambøll A/S
Document ID: W-PE-EIA-POF-DWG-805-040100EN
Ref: 1100019533 / PO16-5068

The “Nord Stream 2 environmental impact assessment documentation for consultation under the Espoo Convention” will, hereinafter and throughout the entire documentation as submitted hereunder, be referred to as the “Nord Stream 2 Espoo Report” or the “Espoo Report”.
The English version of the Nord Stream 2 Espoo Report has been translated into nine relevant languages (hereinafter referred to as the "Translations"). In the event that any of the Translations and the English version conflict, the English version shall prevail.

Introduction

Nord Stream 2 is a pipeline system through the Baltic Sea planned to deliver natural gas from vast reserves in Russia directly to the EU gas market to fill the growing gas import demand.

The twin 1,200 kilometre subsea pipelines will have the capacity to supply 55 billion cubic metres of gas per year in an economic, environmentally safe and reliable way, compensating for the drop in the EU's domestic production.

The privately funded €8 billion infrastructure project will ensure long-term access to an important, low emissions energy source, thereby contributing to the EU's climate protection efforts. Additional supplies will boost competition in the market and support the EU's global industrial competitiveness.

Nord Stream 2 follows in the footsteps of the successful experience of construction and operation of the existing Nord Stream Pipeline, which has been recognised for its high environmental and safety standards, green logistics, open dialogue and public consultation.

Atlas maps

This ATLAS is part of the Espoo documentation for the planned Nord Stream 2 pipeline system.

The purpose of this ATLAS is to describe the general geographical distribution of physical, chemical and biological parameters in the Baltic Sea around the planned offshore pipeline.

When reading the text part of the EIA there will be references to the ATLAS. The individual Atlas maps are presented in a sequence that reflects the structure of the report.

The ATLAS maps are based on information from authorities, organisations and international databases, data gained from existing Nord Stream pipeline project, and on data from Nord Stream 2 field surveys carried out in 2015 – 2016 along the planned pipeline corridor.

The references used are shown in the ATLAS map legends.

Please be aware that the marked route of the pipeline on the maps is not representative of the actual pipeline width. It serves merely as an indication of the route.

An overview of the topics covered by the ATLAS and of the individual ATLAS maps is shown overleaf.

Note:

General references on all Atlas maps:
- Limits of Exclusive Economic Zones and Territorial Waters: IBRU May 2010
- Background sea charts are "Not to be used for navigation"
- Background sea chart; © Crown Copyright and/or database rights.
Reproduced by permission of the Controller of Her Majesty's
Stationery Office and the UK Hydrographic Office (www.ukho.gov.uk)

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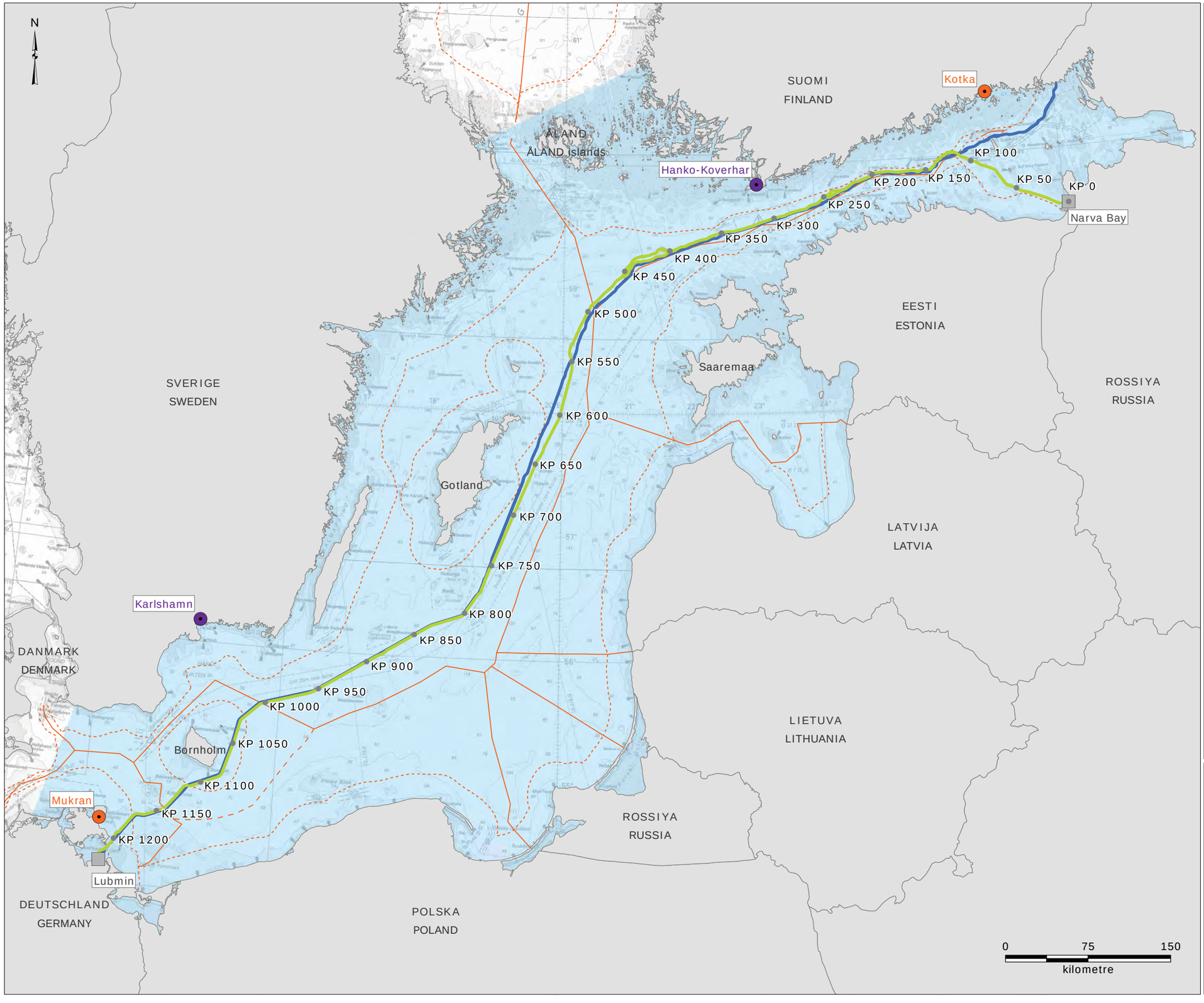
DESCRIPTION OF THE PROJECT

DESCRIPTION OF THE PROJECT

DESCRIPTION OF ALTERNATIVES



Legend:

- NSP2 Route
- NSP Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Kilometre point (distance from landfall Narva Bay (km))

Storage yards:

- Pipe coating plant/ Pipe storage site
- Pipe storage site
- Landfall

Project area:

- Offshore section

Version:	08
Date:	2017-03-13
Prepared:	MSTB
Controlled:	JLA

PR-01-Espoo

Preferred pipeline route and onshore facilities

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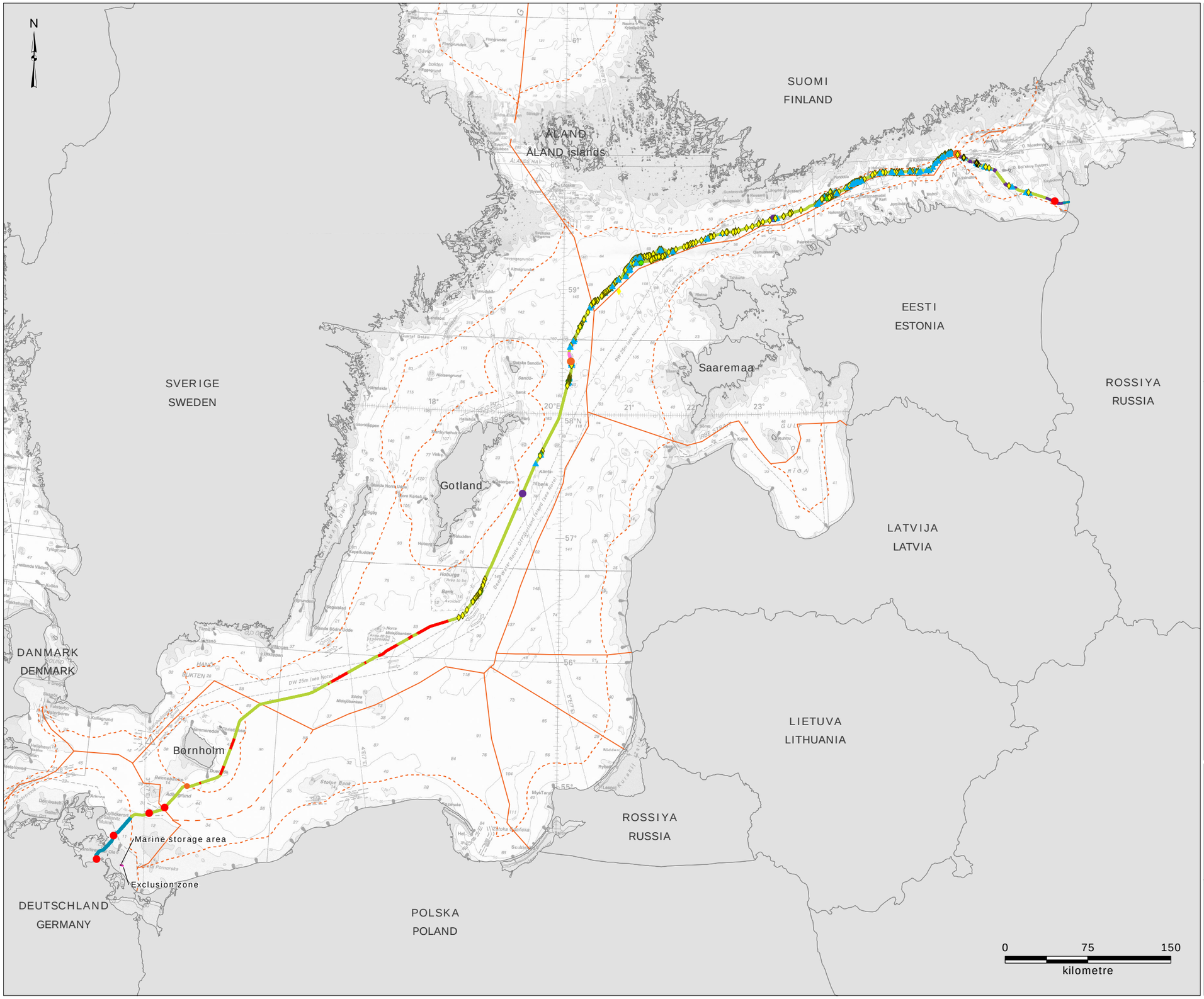

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Potential hyperbaric tie-in
- Potential above water tie-in
- In-service buckling
- Spot rock placement
- Post-lay trenching (by plough)
- Dredging
- Proposed storage area for NSP2 storage
- Exclusion zone

Rock placement locations:

- Pre-lay
- Post-lay, 2nd phase
- Post-lay, 3rd phase
- Pipeline crossing

Version: 08
Date: 2017-02-14
Prepared: MSTB
Controlled: JLA

PR-02-Espoo

Preferred pipeline route and anticipated seabed intervention works

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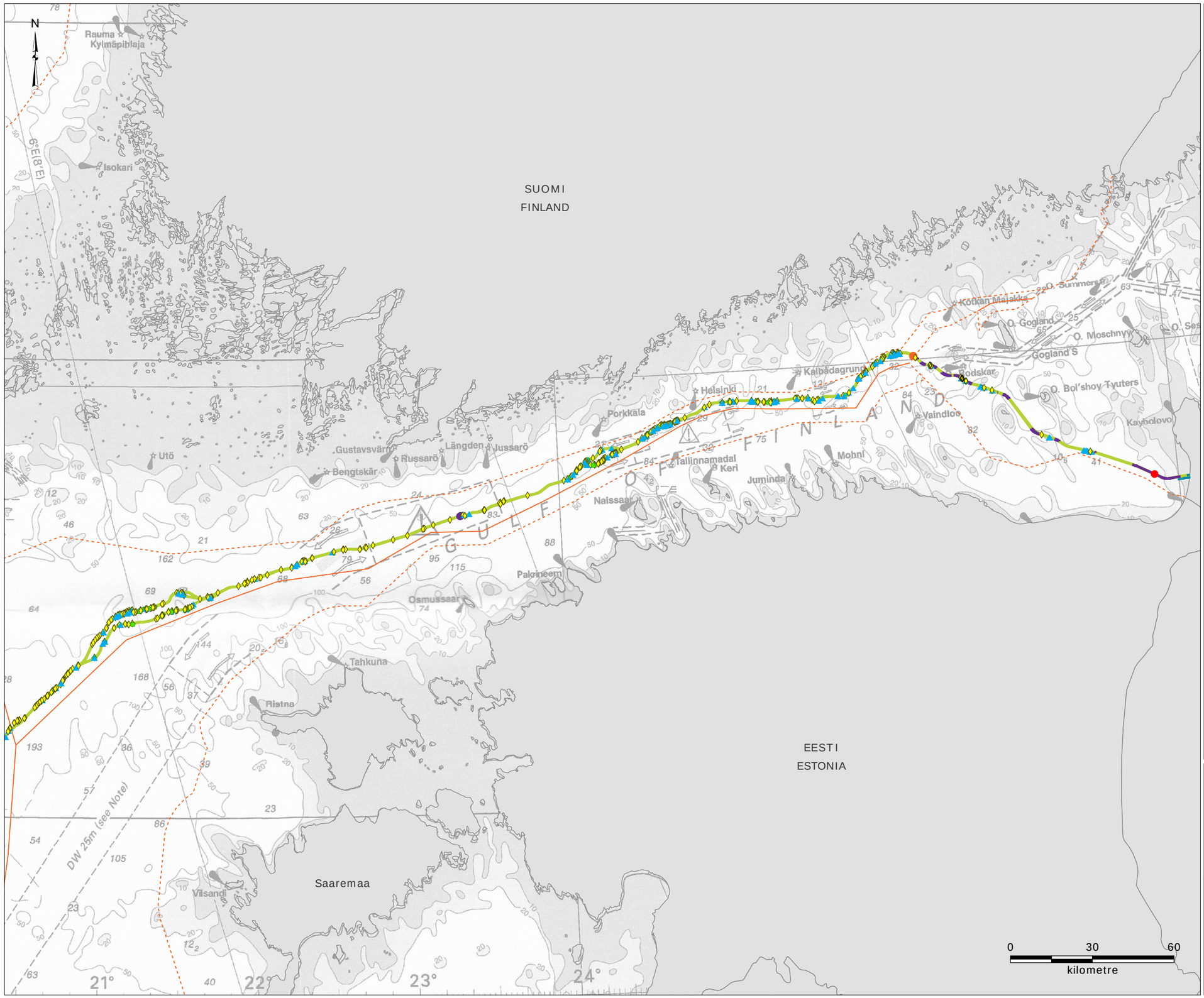
Part of Espoo Documentation: W-PE-EIA-POF-DWG-805-040100EN-06



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Potential hyperbaric tie-in
- Potential above water tie-in
- In-service buckling
- Dredging

Rock placement locations:

- Pre-lay
- Post-lay, 2nd phase
- Post-lay, 3rd phase
- Pipeline crossing

Version:	05
Date:	2017-02-07
Prepared:	MSTB
Controlled:	JLA

PR-03-Espoo

Preferred pipeline route and anticipated seabed intervention works in Gulf of Finland

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N

SVERIGE
SWEDEN

LATVIJA
LATVIA

LIETUVA
LITHUANIA

Gotland

Huvudskär
Landsort
Gustaf Dalén
Landsortsdjupet
Gotska Sandön
Sandö-
bank
Nielsengrund
Häradskär
Hallshuk
Fårö
Storklappen
Stenkyrkehuk
Visby
Ölands Norra Udde
Stora Karlsö
Östergarn
Klints-
bank
Högby
När
Faludden
Hoburg
Kapelludden
Hoburgs
Area to be
Avoided
Bank
Jgrunden
Segerstad
Ölands Södra Udde
Norra
Midsjöbanken
Area to be
Avoided
Södra
Midsjöbanken
Tärnö
Hanö
Utlängan
Utklippan
HANÖ-
BUKTEN
Hammerodde
Christiansø
Visingsö
Irbes
Deep Water Route Off Gotland (see Note)
DW 25m (see Note)
5°E (7°E)
17°
18°
19°
20°E
21°
22°
59°
58°N
57°
56°

0 25 50
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Potential hyperbaric tie-in
- Spot gravel dumping
- Post-lay trenching (by plough)

Rock placement locations:

- Pre-lay
- Post-lay, 2nd phase
- Post-lay, 3rd phase
- Pipeline crossing

Version: 06
Date: 2017-02-10
Prepared: MSTB
Controlled: JLA

PR-04-Espoo

Preferred pipeline route and anticipated seabed intervention works in Baltic Proper

RAMBØLL

Legend:

- NSP2 Route
- EEZ border
- Midline between Denmark and Poland
- Territorial water border
- Potential above water tie-in
- Post-lay trenching (by plough)
- Dredging
- Proposed storage area for NSP2 storage
- Exclusion zone

Rock placement locations:

- Pipeline crossing

Marine storage area

Exclusion zone

0 25 50
kilometre

Version: 08
Date: 2017-02-14
Prepared: MSTB
Controlled: JLA

PR-05-Espoo

Preferred pipeline route and anticipated seabed intervention works in southern Baltic Sea

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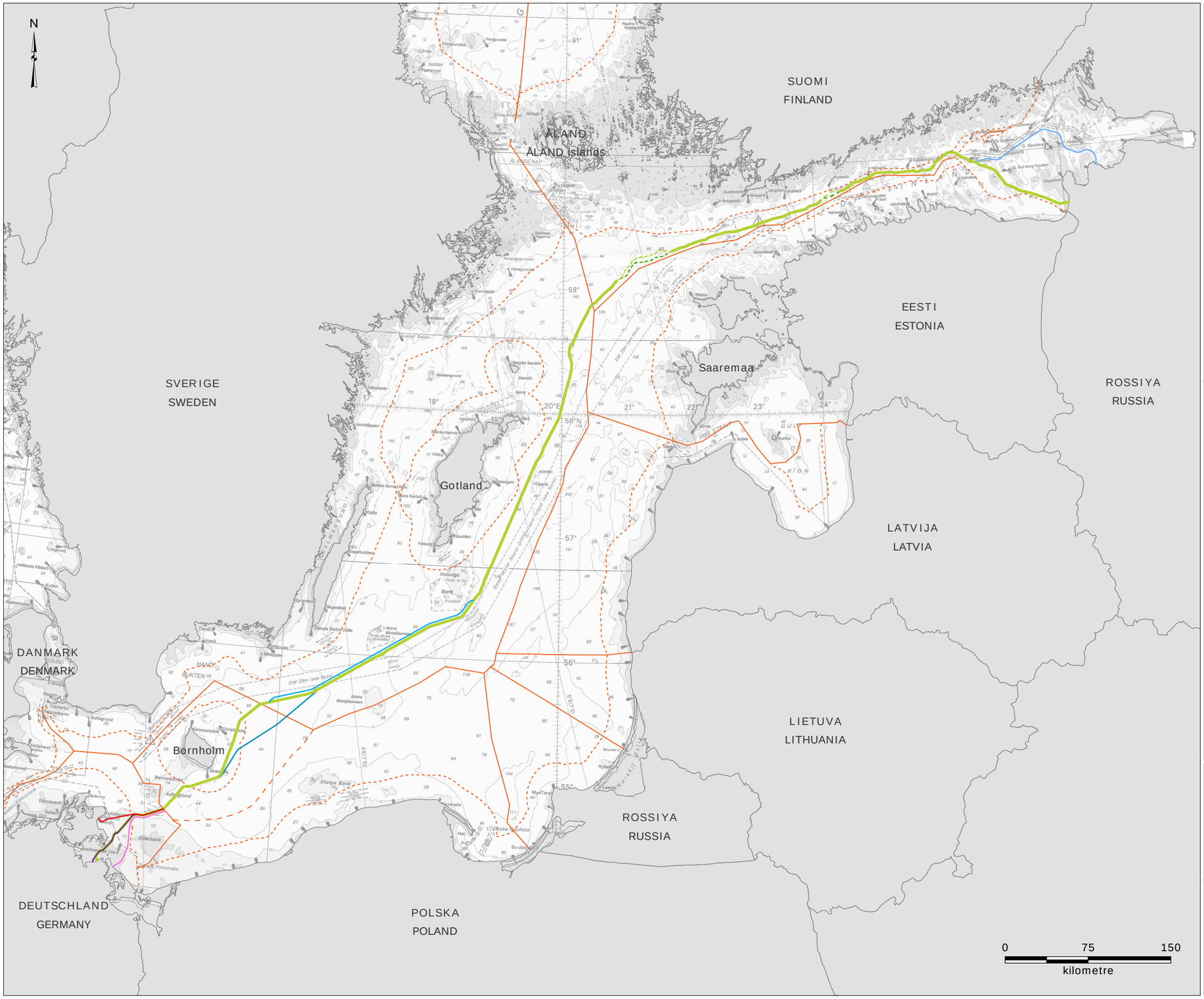

Legend:

- ES Route (proposed NSP2 Route)
- Kolganpya Route
- ALT E1
- ALT E2
- ALT W1
- ALT W2
- FS_new Route
- RA Route
- Mukran Route
- Vierow Route
- Usedom Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Version: 06
Date: 2017-02-10
Prepared: MIRS
Controlled: OM

AL-01-Espoo

Alternative NSP2 pipeline routes

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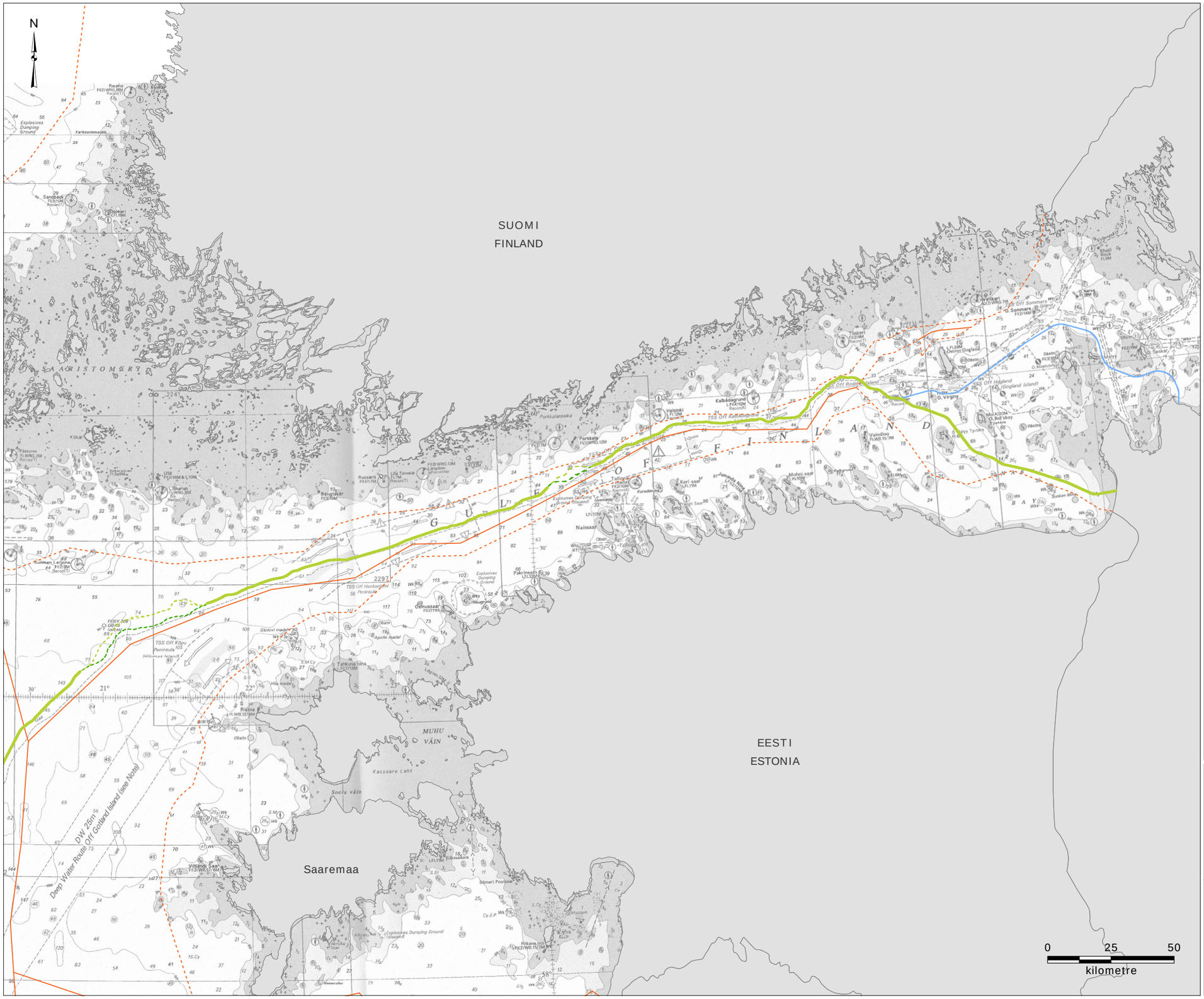


Legend:

- ES Route (proposed NSP2 Route)
- Kolganpya Route
- ALT E1
- ALT E2
- ALT W1
- ALT W2
- Territorial water border
- EEZ border

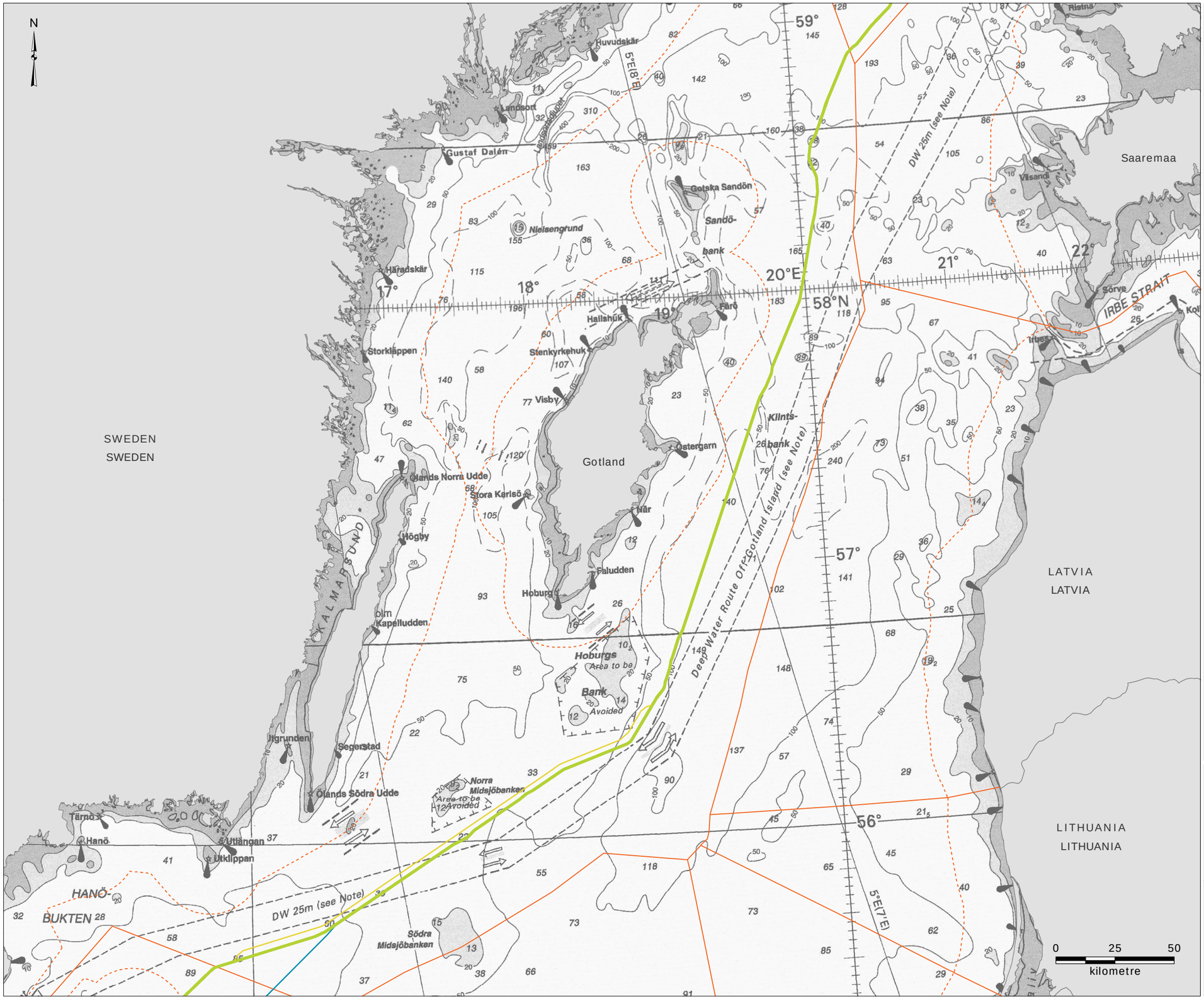
Version: 03
Date: 2017-01-25
Prepared: MIRS
Controlled: OM

AL-02-Espoo

Alternative pipeline routes in Gulf of Finland

RAMBØLL

Part of Espoo Documentation: W-PE-EIA-POF-DWG-805-040100EN-06



Legend:

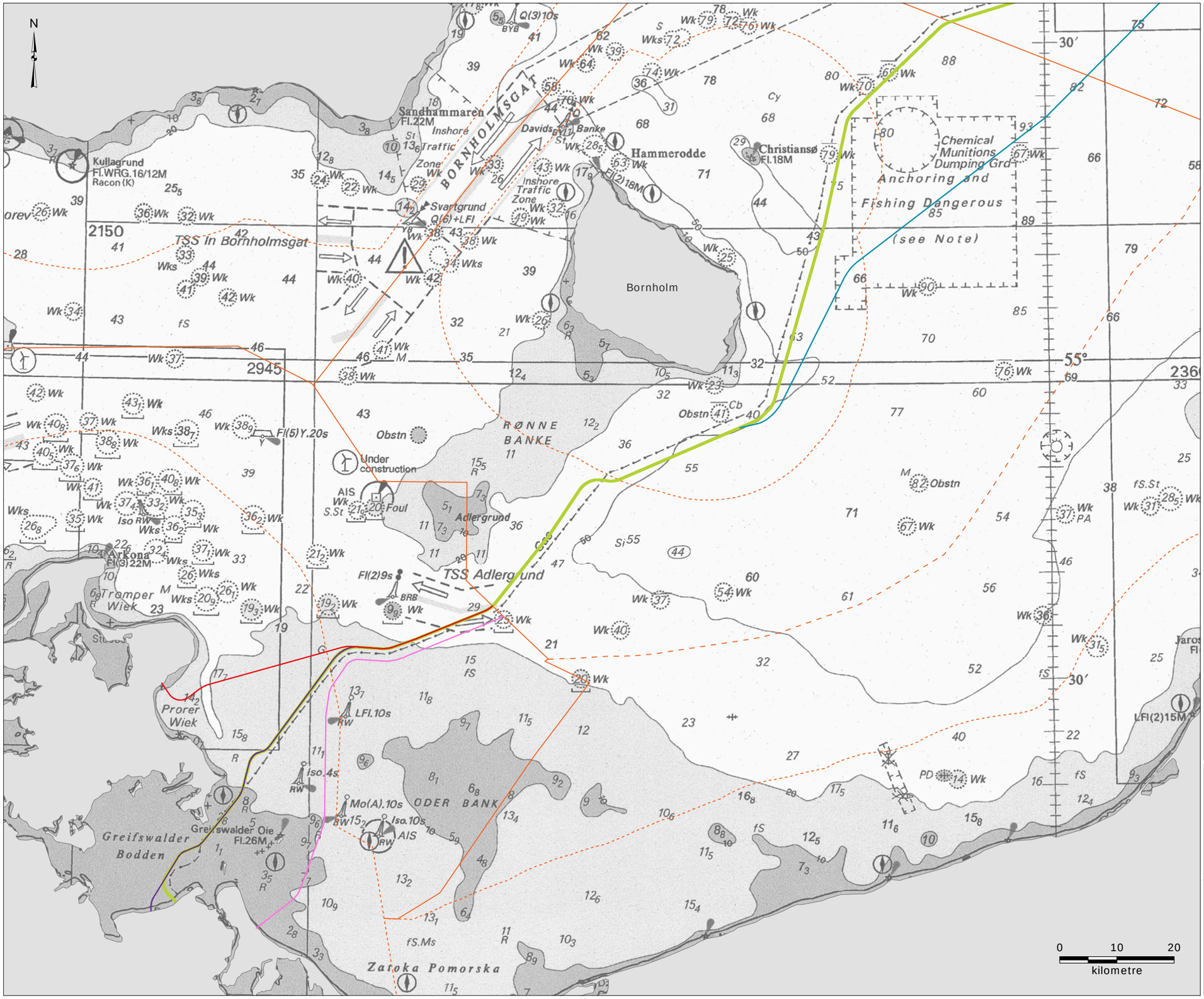
- ES Route (proposed NSP2 Route)
- FS_new Route
- RA Route
- Territorial water border
- EEZ border

Version: 06
Date: 2017-02-10
Prepared: MIRS
Controlled: OM

AL-03-Espoo

Alternative pipeline routes in Baltic Proper

RAMBØLL



Legend:

- ES Route (proposed NSP2 Route)
- RA Route
- Mukran Route
- Vierow Route
- Usedom Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Version:	04
Date:	2017-01-26
Prepared:	MIRS
Controlled:	OM

AL-04-Espoo

Alternative pipeline routes in southern Baltic Sea

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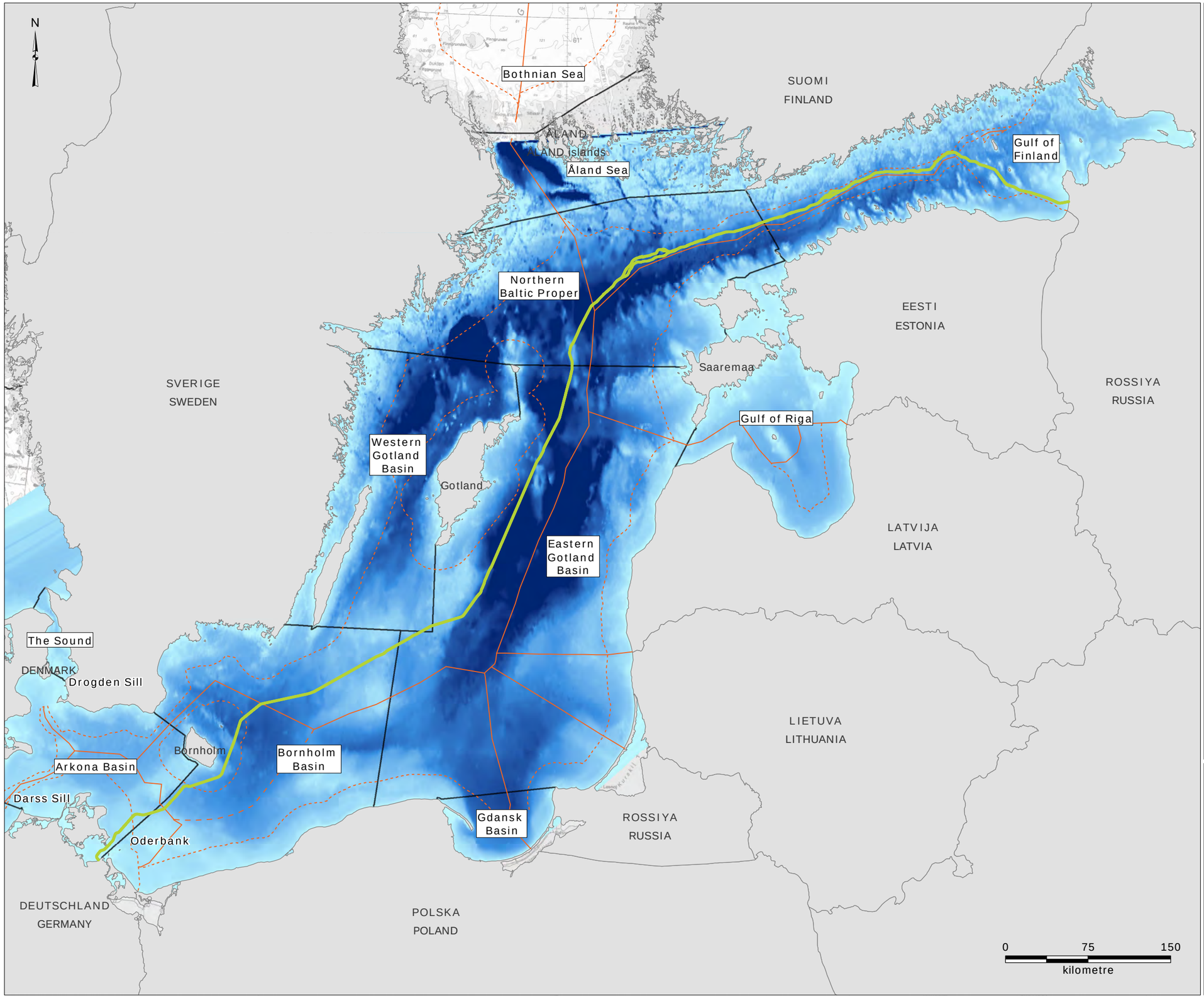
PHYSICAL-CHEMICAL ENVIRONMENT

BATHYMETRY AND HYDROGRAPHY

GEOLOGY AND SEABED

WATER QUALITY

CLIMATE



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Sub-basins

Bathymetry (depth (m)):

- 0
- -430

References:

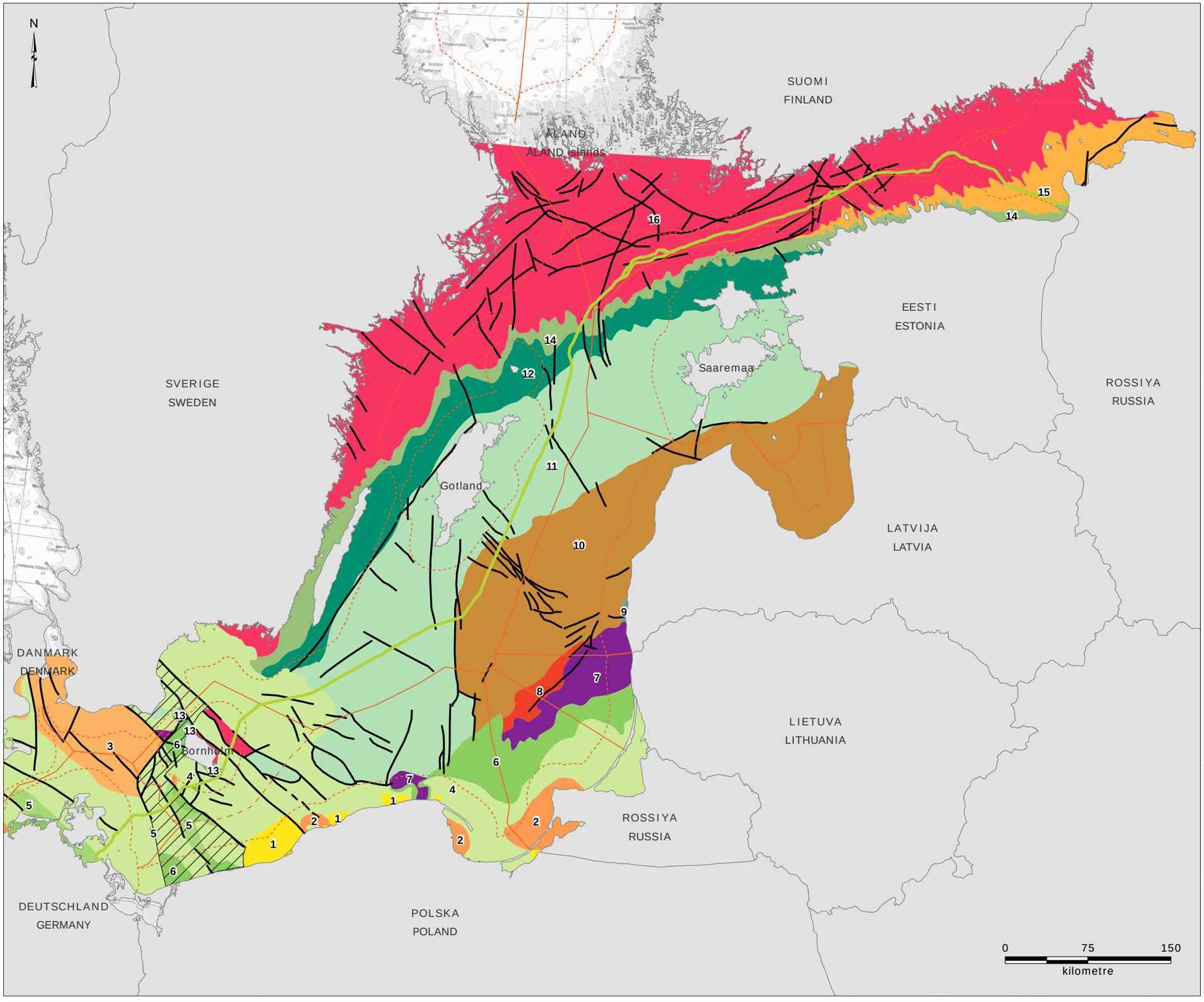
- HELCOM, 2013, "HELCOM subbasins", http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-3-30
- MIKE C-map database, February 2012

Version:	07
Date:	2017-01-24
Prepared:	MSTB
Controlled:	JRV

BA-01-Espoo

Bathymetry and sub-basins in the Baltic Sea

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Faults
- Tornquist zone

Geology:

- (1) Neogene
- (2) Paleogene
- (3) Danian limestones
- (4) Cretaceous chalk and limestones
- (5) Cretaceous mudstones and sandstones
- (6) Cretaceous; mainly sandstones and mudstones
- (7) Triassic; mainly mudstones and sandstones
- (8) Permian
- (9) Carboniferous
- (10) Devonian; sandstones, mudstones and limestones
- (11) Silurian; mainly limestones, marls, mudstones and shales
- (12) Ordovician limestones and shales
- (13) Cambrian-Ordovician
- (14) Cambrian sandstones, shales and conglomerates
- (15) Vendian (Neoproterozoic) sedimentary rocks
- (16) Precambrian crystalline basement

References:
Digitized from the following references:
- Per Ahlberg, 1986: "Den svenske kontinentalsockelns berggrund". Geological Survey of Sweden, Rapporter och meddelanden nr. 47.
- Curt Fredén (editor), 1994. "Berg och jord". Sveriges Nationalatlas, SNA Förlag, Stockholm, 208 pp.
- Tapio Koistinen (editor), 1994. "Precambrian basement of the Gulf of Finland and surrounding area". 1:1 mill. Geological Survey of Finland, Espoo

Version: 06
Date: 2017-01-24
Prepared: MSTB
Controlled: JRV

GE-01-Espoo

Geology of the Baltic Sea

RAMBØLL

N

SUOMI
FINLAND

ÅLAND
ÅLAND (Åland)

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

LATVIJA
LATVIA

DANMARK
DENMARK

Bornholm

LIETUVA
LITHUANIA

ROSSIYA
RUSSIA

DEUTSCHLAND
GERMANY

POLSKA
POLAND

0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Seabed sediment types:

- Bedrock
- Hard bottom complex
- Hard clay
- Mud
- Sand

Reference:
- "Balance" project within the Baltic Sea Region (BSR) INTERREG III B Neighbourhood Program.

Version: 05
Date: 2017-01-24
Prepared: MSTB
Controlled: JRV

GE-02-Espoo

Seabed sediments of the Baltic Sea

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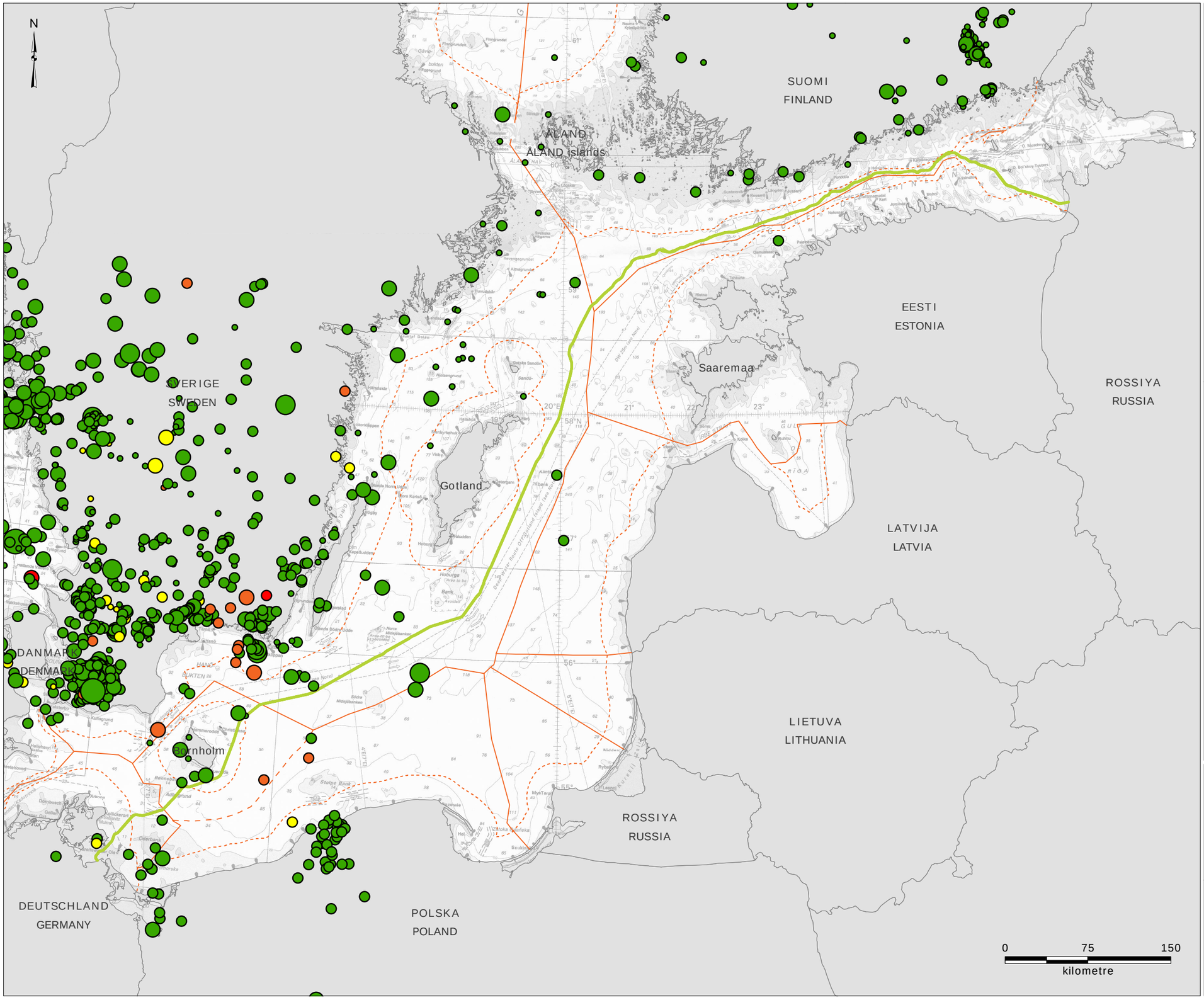

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Magnitude of earthquakes (Richter scale):

- 0 - 1
- > 1 - 2
- > 2 - 3
- > 3 - 4
- > 4 - 5

Depth of earthquakes (km):

- 0 - 35
- > 35 - 70
- > 70 - 150
- > 150 - 300

References:
- GEUS, 2016, "Registrerede jordskælv", Date accessed: 2016-03-21
- Institute of Seismology, 2016, "Seismic bulletins", University of Helsinki, Data accessed: 2016-04-25
- Ramboll, 2016, "Reynir Bödvarsson, The Swedish National Seismic Network, Sweden", Received: 2016-05-19

Version: 07
Date: 2017-01-24
Prepared: MSTB
Controlled: JRV

GE-03-Espoo

Seismic activity measured 2002-2015 by Finland, Sweden and Denmark

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N

SUOMI
FINLAND

ÅLAND
ÅLAND islands

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

LATVIJA
LATVIA

DANMARK
DENMARK

Bornholm

LIETUVA
LITHUANIA

ROSSIYA
RUSSIA

DEUTSCHLAND
GERMANY

POLSKA
POLAND

0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Inflow of oxygen-rich water

Bathymetry [depth (m)]:

0
-430

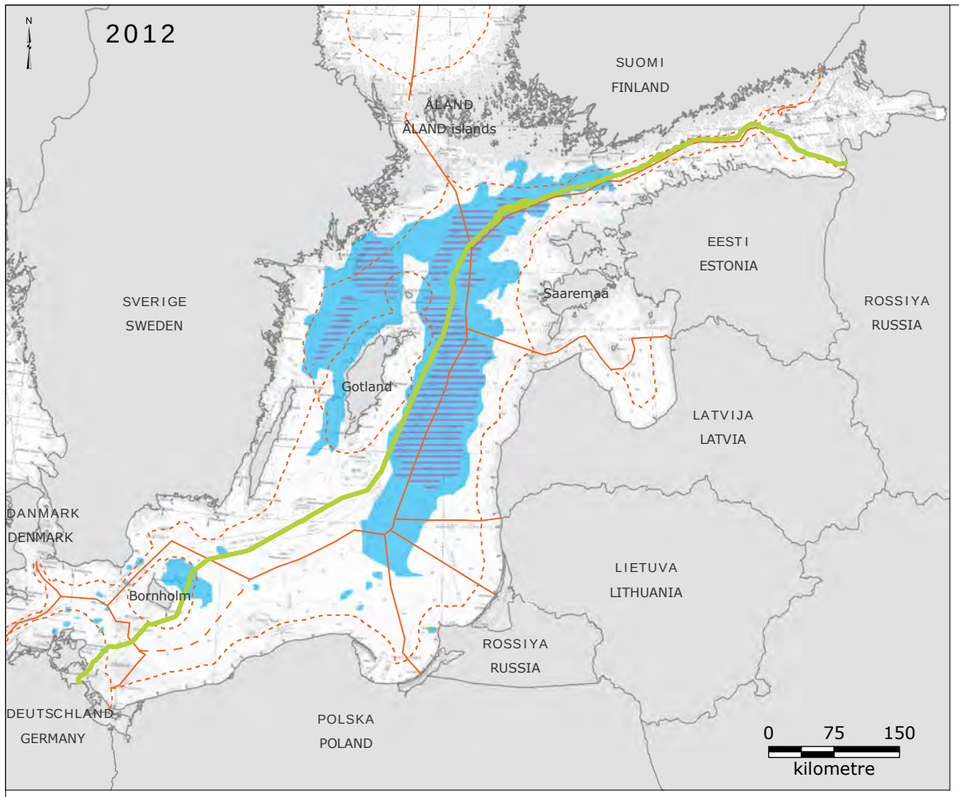
References:
- Bernes, C., 2005, "Förändringar under ytan, Monitor 19, Sveriges havsmiljö granskad på djupet", Naturvårdsverket, pp. 192
- MIKE C-map database, February 2012

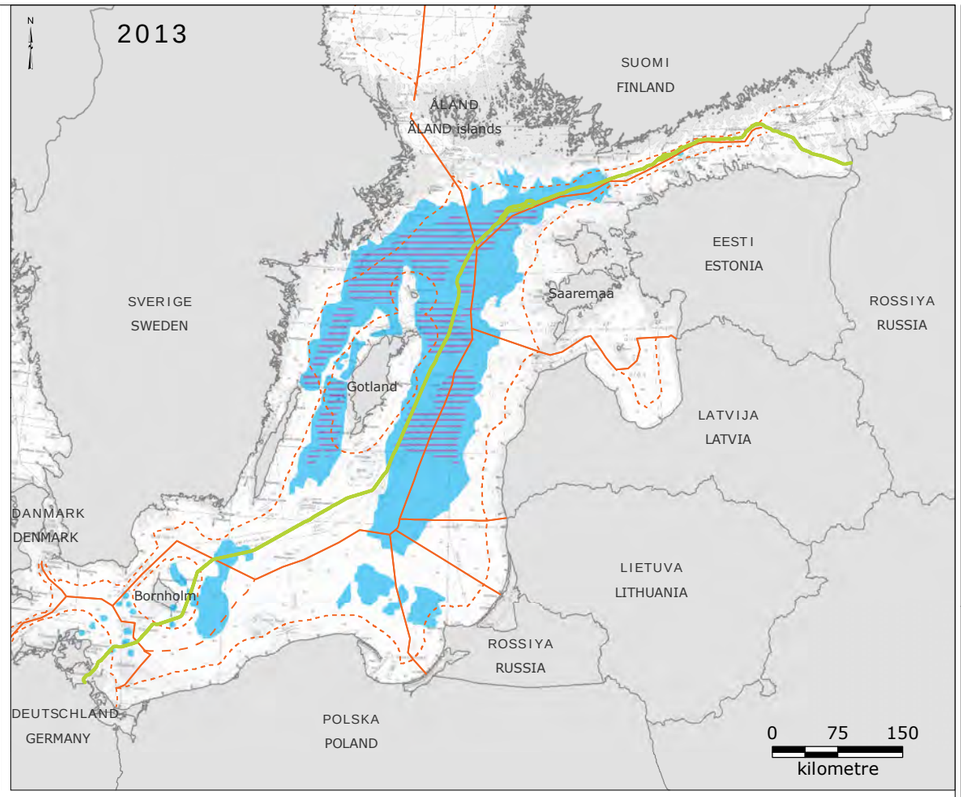
Version: 06
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

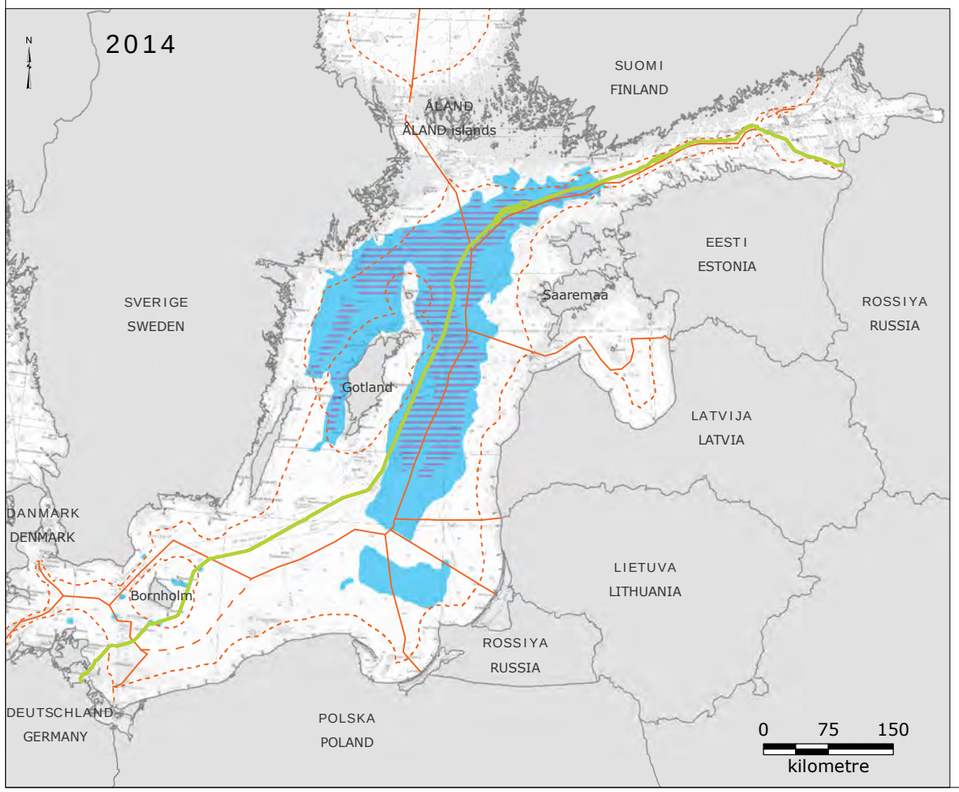
WA-01-Espoo

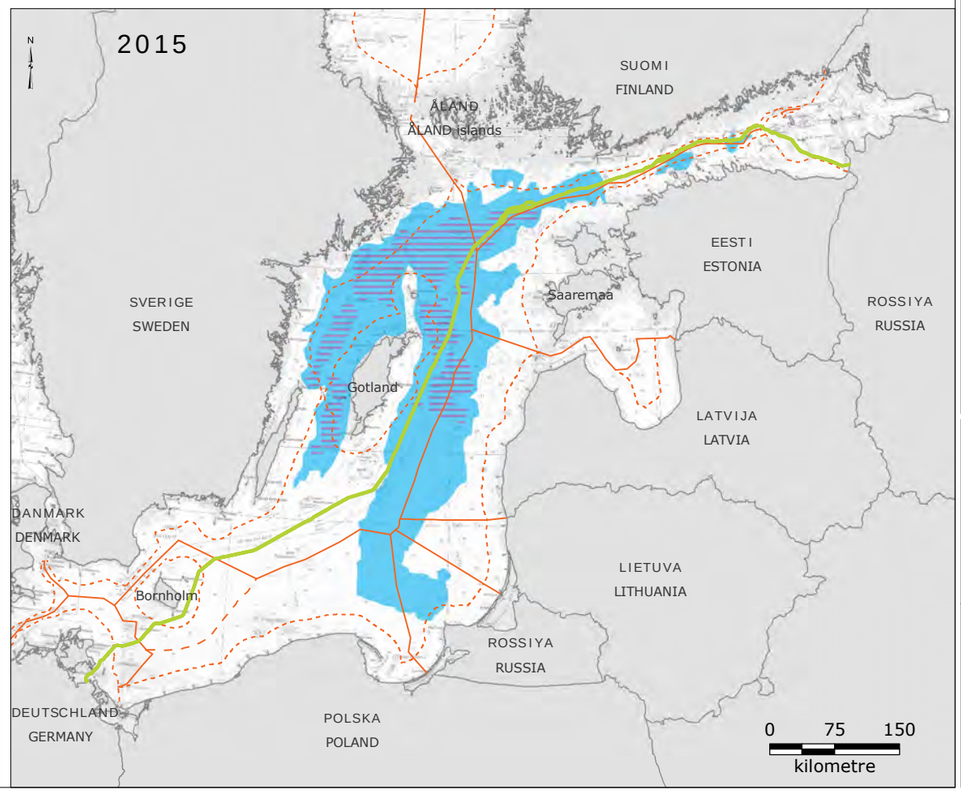
Inflow of oxygen-rich water to the Baltic Sea in 2003

RAMBØLL









Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Hypoxic (oxygen content ≤ 2 mg/l)
- Anoxic (oxygen content = 0 mg/l)

Note:
- Anoxic and hypoxic areas in the Baltic Sea, Autumn 2012, 2013, 2014 and 2015

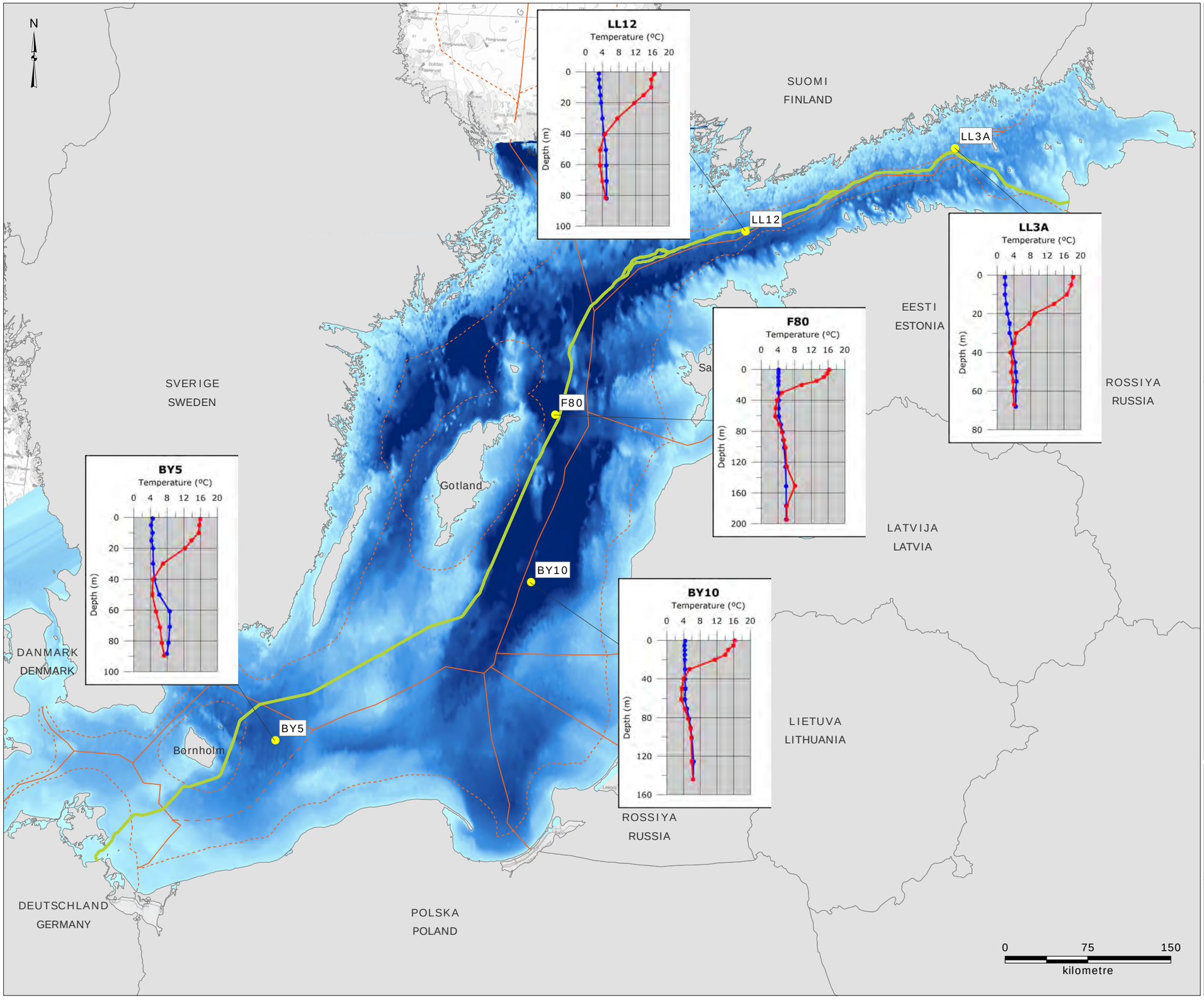
References:
- SMHI, 2013, "Oxygen Survey in the Baltic Sea, 2013 - Extent of Anoxia and Hypoxia, 1960-2013". SMHI Report Oceanography No. 49
- SMHI, 2015, "Oxygen Survey in the Baltic Sea, 2015 - Extent of Anoxia and Hypoxia, 1960-2015". SMHI Report Oceanography No. 53

Version: 07
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

WA-02-Espoo

Anoxic and hypoxic areas

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- HELCOM monitoring station

Bathymetry (depth (m)):

- -0
- -430

- Winter profile (December-February)
- Summer profile (June-August)

Note:
- Average measured values for the period 2000-2015

References:

- ICES, 2016, "Baltic Sea (HELCOM) monitoring data", http://ocean.ices.dk/Helcom/Helcom.aspx?Mode=1, Date accessed: LL3A: 2016-06-08, LL12: 2016-07-11, F80: 2016-09-04, BY5 and BY10: 2016-09-11
- MIKE C-map database, February 2012

Version: 02
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

WA-03-Espoo

Average water temperature summer/winter in the Baltic Sea

RAMBØLL

N

SUOMI
FINLAND

SVERIGE
SWEDEN

EESTI
ESTONIA

ROSSIYA
RUSSIA

LATVIJA
LATVIA

LIETUVA
LITHUANIA

DANMARK
DENMARK

DEUTSCHLAND
GERMANY

POLSKA
POLAND

Gotland

Bornholm

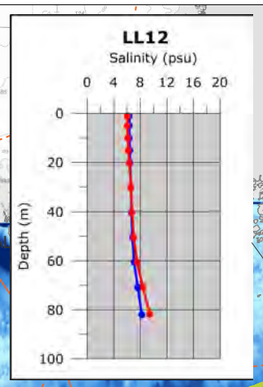
LL12

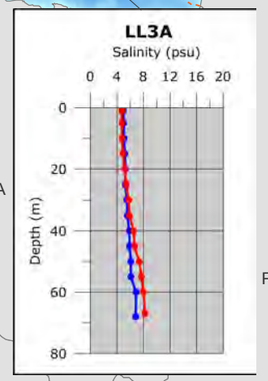
LL3A

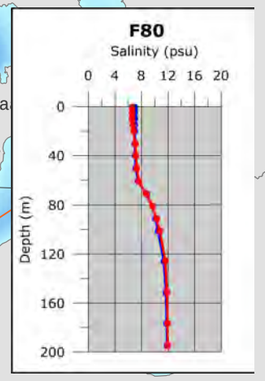
F80

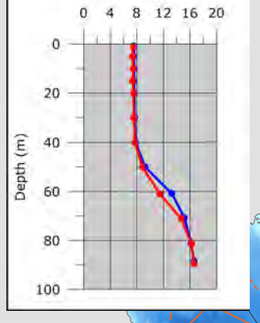
BY10

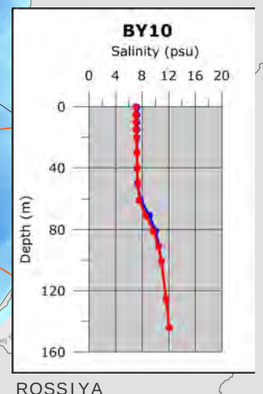
BY5











0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- HELCOM monitoring station

Bathymetry (depth (m)):

0
-430

- Winter profile (December-February)
- Summer profile (June-August)

Note:
- Average measured values for the period 2000-2015

References:
- ICES, 2016, "Baltic Sea (HELCOM) monitoring data", http://ocean.ices.dk/Helcom/Helcom.aspx?Mode=1, Date accessed: LL3A: 2016-06-08, LL12: 2016-07-11, F80: 2016-09-04, BY5 and BY10: 2016-09-11
-MIKE C-map database, February 2012

Version: 02
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

WA-04-Espoo

Average salinity summer/winter in the Baltic Sea

RAMBØLL

N

SUOMI
FINLAND

SVERIGE
SWEDEN

EESTI
ESTONIA

ROSSIYA
RUSSIA

LATVIJA
LATVIA

LIETUVA
LITHUANIA

DANMARK
DENMARK

DEUTSCHLAND
GERMANY

POLSKA
POLAND

Gotland

Bornholm

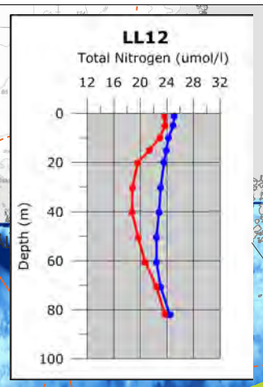
LL12

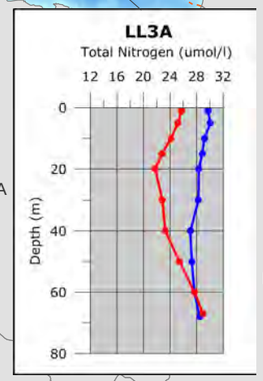
LL3A

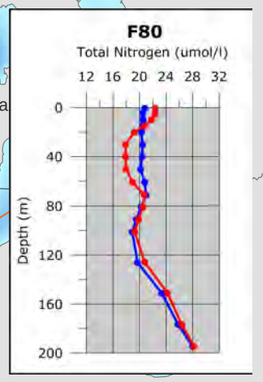
F80

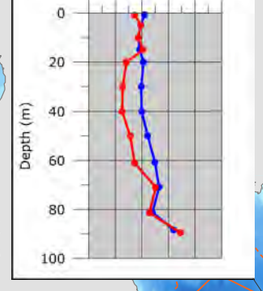
BY10

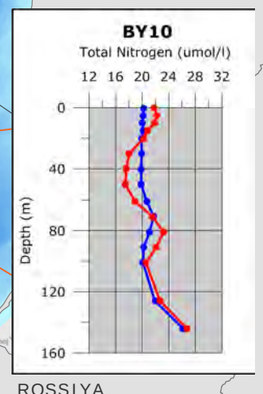
BY5











0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- HELCOM monitoring station

Bathymetry (depth (m)):

- 0
- -430

- Winter profile (December-February)
- Summer profile (June-August)

Note:
- Average measured values for the period 2000-2015

References:
- ICES, 2016, "Baltic Sea (HELCOM) monitoring data", http://ocean.ices.dk/Helcom/Helcom.aspx?Mode=1, Date accessed: LL3A: 2016-06-08, LL12: 2016-07-11, F80: 2016-09-04, BY5 and BY10: 2016-09-11
-MIKE C-map database, February 2012

Version: 02
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

WA-05-Espoo

Average total nitrogen concentration summer / winter in the Baltic Sea

RAMBØLL

N

SUOMI
FINLAND

SVERIGE
SWEDEN

EESTI
ESTONIA

ROSSIYA
RUSSIA

LATVIJA
LATVIA

LIETUVA
LITHUANIA

DANMARK
DENMARK

DEUTSCHLAND
GERMANY

POLSKA
POLAND

Gotland

Bornholm

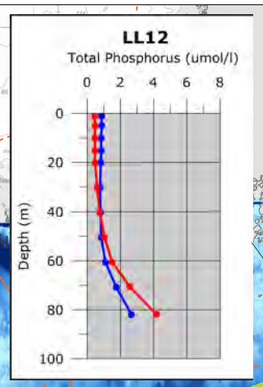
LL3A

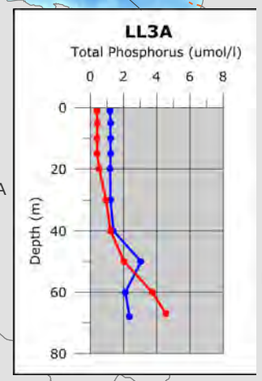
LL12

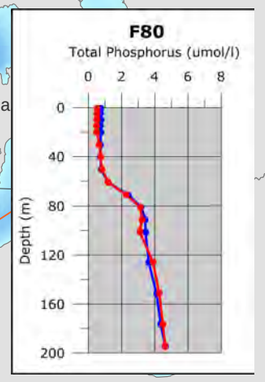
F80

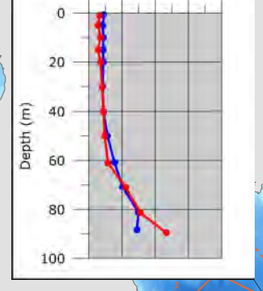
BY10

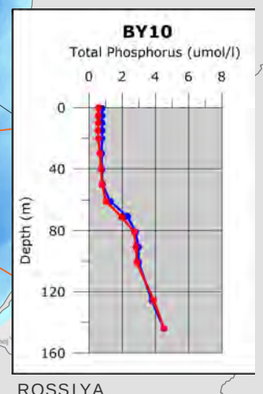
BY5











0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- HELCOM monitoring station

Bathymetry (depth (m)):

0
-430

- Winter profile (December-February)
- Summer profile (June-August)

Note:
- Average measured values for the period 2000-2015

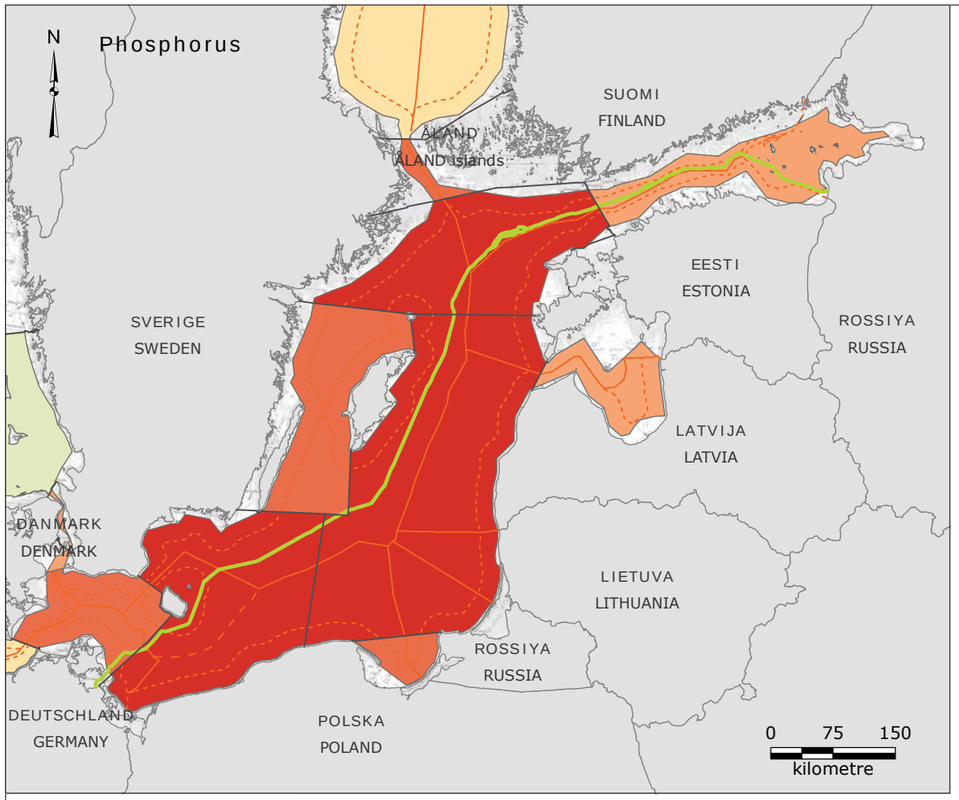
References:
- ICES, 2016, "Baltic Sea (HELCOM) monitoring data", http://ocean.ices.dk/Helcom/Helcom.aspx?Mode=1, Date accessed: LL3A: 2016-06-08, LL12: 2016-07-11, F80: 2016-09-04, BY5 and BY10: 2016-09-11
- MIKE C-map database, February 2012

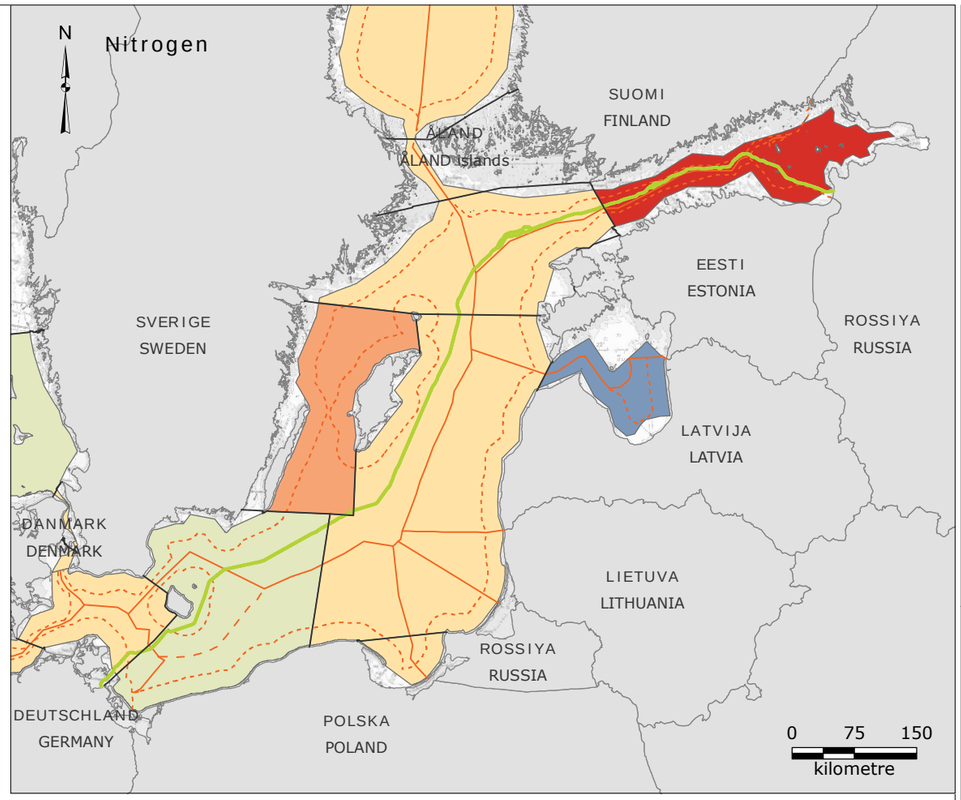
Version: 02
Date: 2017-01-27
Prepared: MSTB
Controlled: JRV

WA-06-Espoo

Average total phosphorus concentration summer / winter in the Baltic Sea

RAMBØLL





Legend:

NSP2 Route

Territorial water border

EEZ border

Midline between Denmark and Poland

Sub-basins

Legend:

Phosphorus status 2007-2011:

(Eutrophication Ratio)

- ≤ 0.79
- 0.80 - 0.99
- 1
- 1.01 - 1.19
- 1.20 - 1.39
- 1.40 - 1.59
- 1.60 - 1.79
- ≥ 1.80

Legend

Nitrogen status 2007-2011:

(Eutrophication Ratio)

- ≤ 0.79
- 0.80 - 0.99
- 1
- 1.01 - 1.19
- 1.20 - 1.39
- 1.40 - 1.59
- 1.60 - 1.79
- ≥ 1.80

Note:
- The eutrophication status of seventeen open sea sub-basins (at least one nautical mile from the baseline) defined according to the HELCOM division of the Baltic Sea has been assessed
- Target values for Good Environmantal Status (GES) have been set by HELCOM for the various parts of the Baltic Sea, based on relation to scientifically based and commonly agreed knowledge.
- Left: Eutrophication Ratio: Concentration of Dissolved Inorganic Phosphorus (DIP) in surface water (0-10 m) as winter average 2007-2011, relative to target concentration of GES.
The GES-boundary is set at ER ≤ 1.00.
- Right: Eutrophication Ratio: Concentration of Dissolved Inorganic Nitrogen (DIN) in surface water (0-10 m) as winter average 2007-2011, relative to target concentration of GES.
The GES-boundary is set at ER ≤ 1.00.

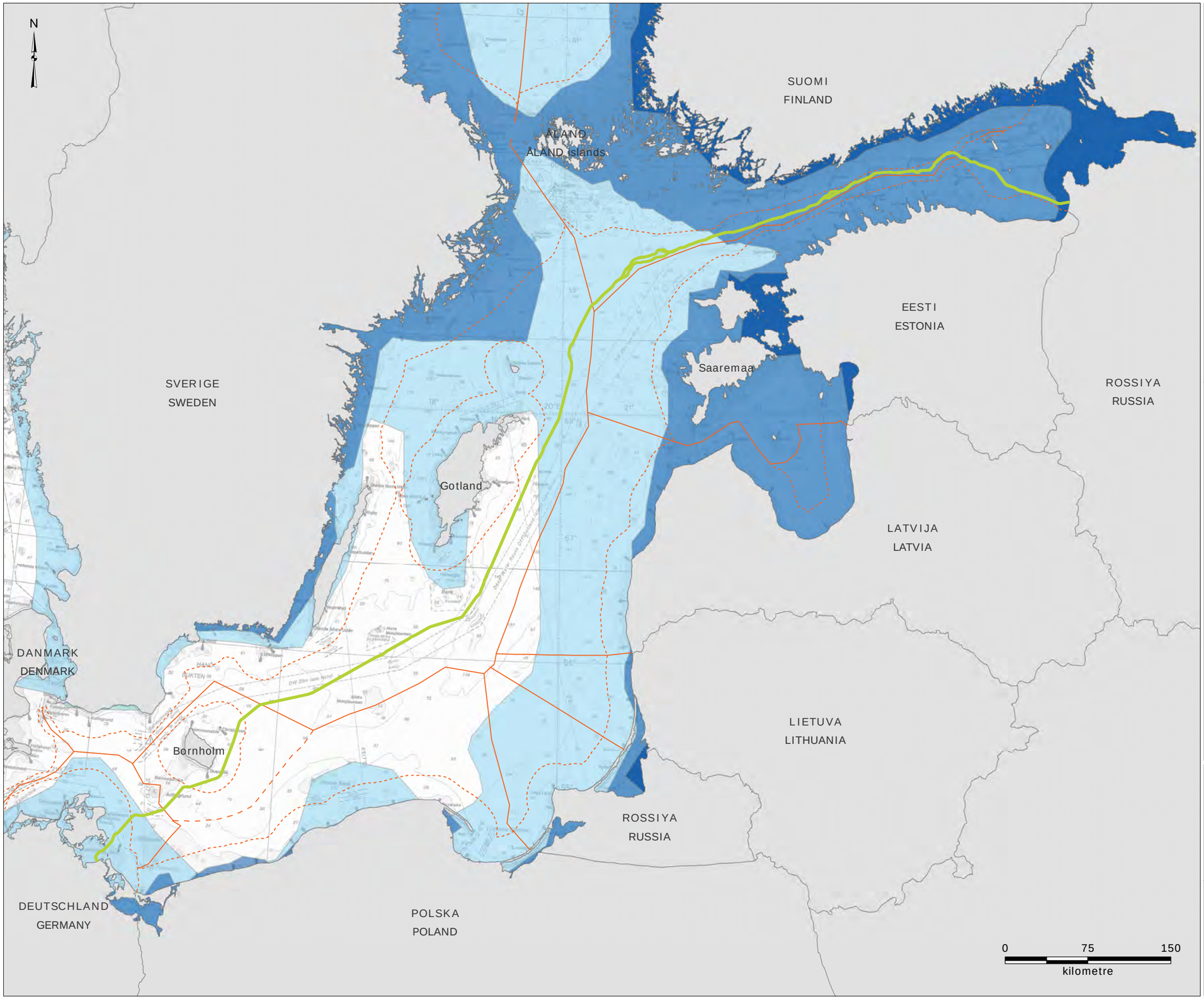
References:
- HELCOM, 2013, "HELCOM subbasins", http://maps.helcom.fi/website/mapservice/index.html, Date accessed: 2016-3-30
- HELCOM, 2013. "Phosphorus status distance to target 2007-2011", http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-05-30
- HELCOM, 2013. "Nitrogen status distance to target 2007-2011", http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-05-30

Version: 03
Date: 2017-01-27
Prepared: MSTB
Controlled: JVR

WA-07-Espoo

Eutrophication status

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Ice cover in 2014-2015 (mild winter)
- Ice cover in 2012-2013 (average winter)
- Ice cover in 2010-2011 (severe winter)

Reference:
- Finnish Meteorological Institute (FMI), http://ilmatieteenlaitos.fi/jaatalvet, Date accessed: 2016-04-14.

Version: 06
Date: 2017-01-30
Prepared: MIRS
Controlled: JRV

CL-01-Espoo

Maximum ice cover during mild, average and severe winters

RAMBØLL

N

SUOMI
FINLAND

ÅLAND
ÅLAND islands

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

LATVIJA
LATVIA

DANMARK
DENMARK

Bornholm

LIETUVA
LITHUANIA

ROSSIYA
RUSSIA

DEUTSCHLAND
GERMANY

POLSKA
POLAND

0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Possible warming of the Baltic Sea surface water between year 2000 - 2100:

- 2.4 - 2.6 °C
- > 2.6 - 2.8 °C
- > 2.8 - 3.0 °C
- > 3.0 - 3.2 °C
- > 3.2 - 3.4 °C
- > 3.4 - 3.6 °C
- > 3.6 - 3.8 °C
- > 3.8 °C

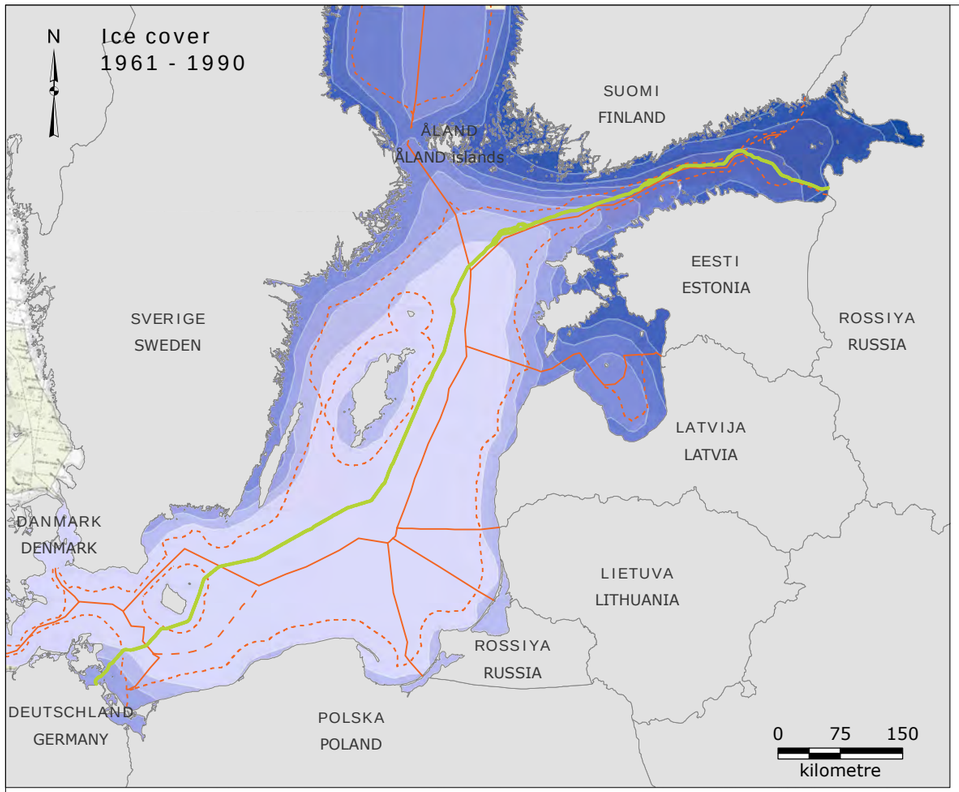
Reference:
- Berner, C., 2005, "Change Beneath the Surface, Monitor 19: An In-Depth Look at Sweden's Marine Environment". Naturvårdsverket,192 pages, ISBN: 91-620-1246-0

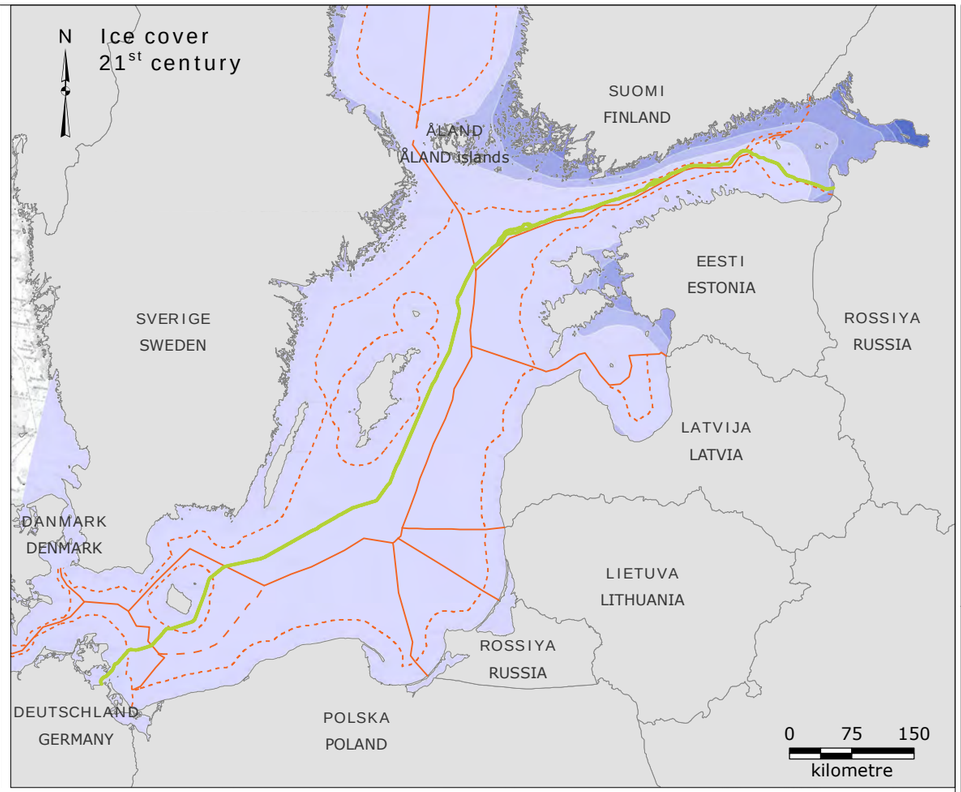
Version: 03
Date: 2017-01-24
Prepared: MSTB
Controlled: JRV

CL-02-Espoo

Possible warming of the Baltic Sea surface water during the 21st century

RAMBØLL





Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Duration of ice cover in the Baltic Sea:

- <= 10 days
- > 10 - 20 days
- > 20 - 40 days
- > 40 - 60 days
- > 60 - 80 days
- > 80 - 100 days
- > 100 - 120 days
- > 120 - 140 days
- > 140 - 160 days
- > 160 - 180 days

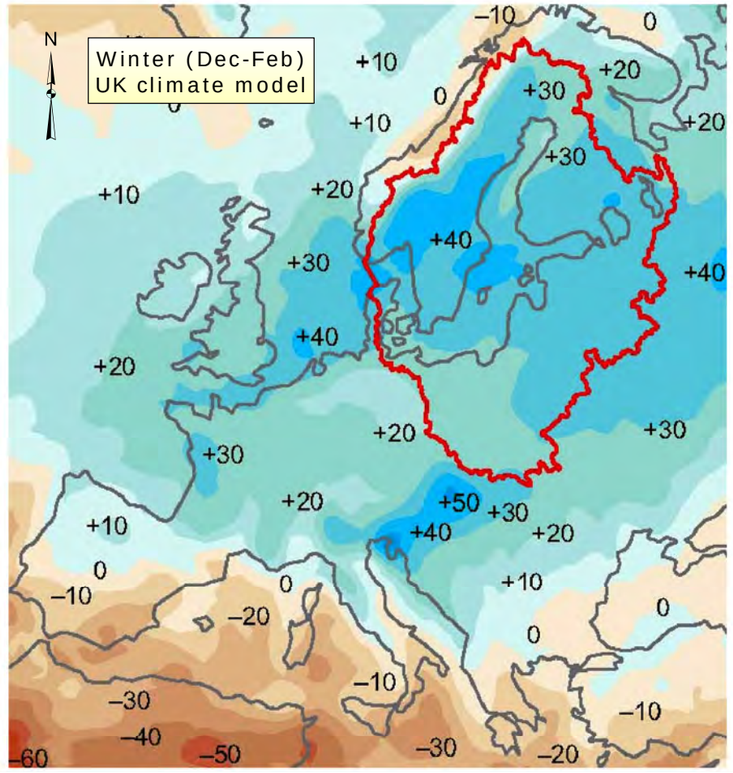
Reference:
- Berner, C., 2005, "Change Beneath the Surface, Monitor 19: An In-Depth Look at Sweden's Marine Environment". Naturvårdsverket,192 pages, ISBN: 91-620-1246-0

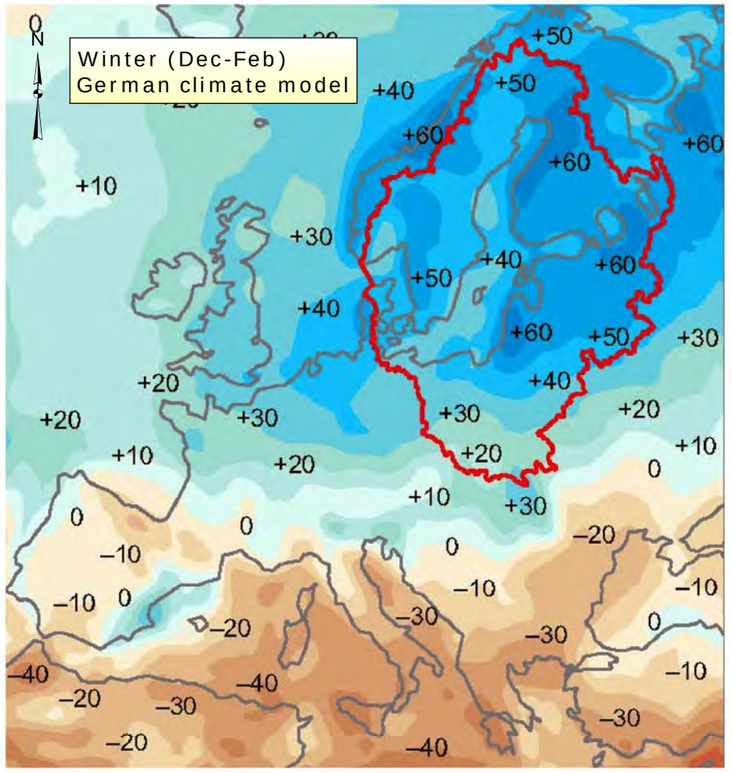
Version: 07
Date: 2017-01-30
Prepared: MSTB
Controlled: JRV

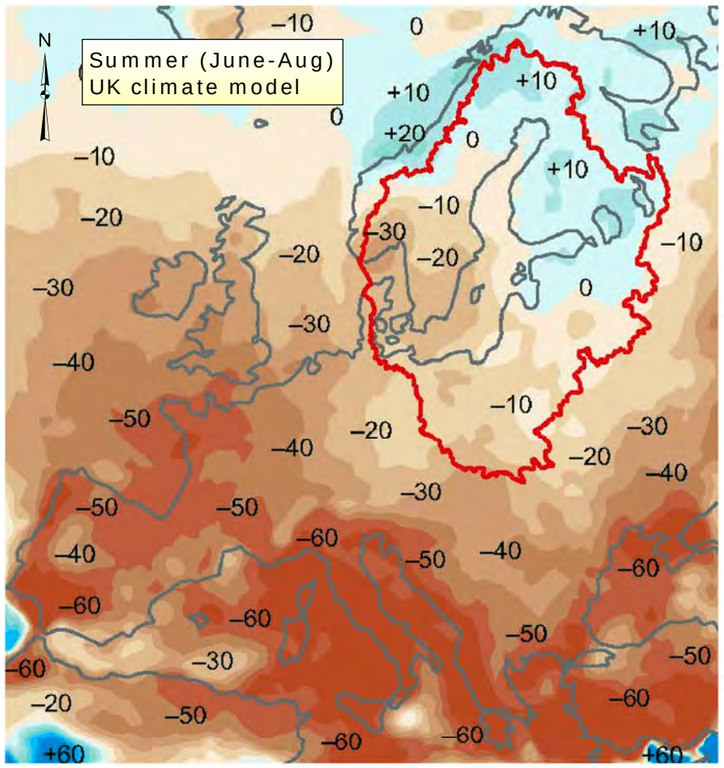
CL-03-Espoo

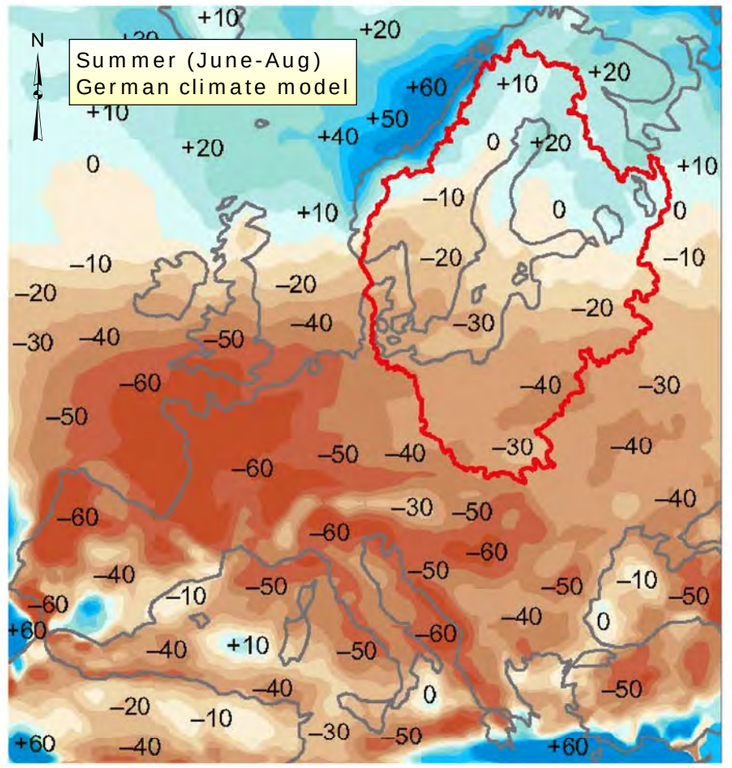
Annual average duration of ice cover between 1961-1990 and possible duration of predicted ice cover at the end of the 21st century

RAMBØLL









Legend:

Changes in winter and summer precipitation (%):

- Catchment area
- < (-60)
- > (-60) - (-50)
- > (-50) - (-40)
- > (-40) - (-30)
- > (-30) - (-20)
- > (-20) - (-10)
- > (-10) - 0
- > 0 - 10
- > 10 - 20
- > 20 - 30
- > 30 - 40
- > 40 - 50
- > 50 - 60
- > 60

Note:
- Winter and summer precipitation is shown in order to illustrate the fact that in particular the winter precipitation increases as a consequence of the climate change caused by global warming
- The results of both the UK and the German climate model are shown, to illustrate the fact that the results from different models show the same overall tendencies
- For choice of models used, reference is given to Berner, 2005, in which more details are available

Reference:
- Berner, C., 2005, "Change Beneath the Surface, Monitor 19: An In-Depth Look at Sweden's Marine Environment". Naturvårdsverket,192 pages, ISBN: 91-620-1246-0

Version: 03
Date: 2017-01-30
Prepared: MSTB
Controlled: JRV

CL-04-Espoo

Possible changes in winter and summer precipitation during the 21st century

RAMBØLL

N

SUOMI
FINLAND

ÅLAND
ÅLAND islands

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

LATVIJA
LATVIA

DANMARK
DENMARK

Bornholm

LIETUVA
LITHUANIA

ROSSIYA
RUSSIA

DEUTSCHLAND
GERMANY

POLSKA
POLAND

0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Possible changes in local sea level (cm):

- > 50
- > 40 - 50
- > 30 - 40
- > 20 - 30
- > 10 - 20
- > 0 - 10
- > (- 10) - 0
- > (-20) - (-10)
- > (-30) - (-20)
- (-40) - (-30)

Reference:
- Berner, C., 2005, "Change Beneath the Surface, Monitor 19: An In-Depth Look at Sweden's Marine Environment". Naturvårdsverket,192 pages, ISBN: 91-620-1246-0

Version: 04
Date: 2017-01-24
Prepared: MSTB
Controlled: JRV

CL-05-Espoo

Possible changes in the local sea level during the 21st century

RAMBØLL

BIOLOGICAL ENVIRONMENT

PELAGIC ENVIRONMENT

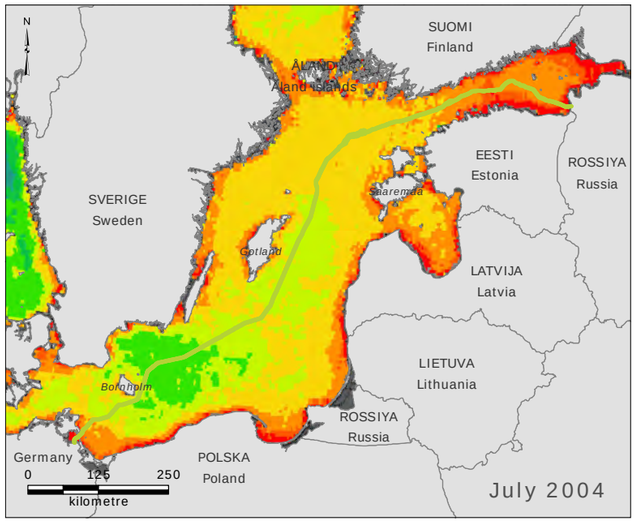
BENTHIC ENVIRONMENT

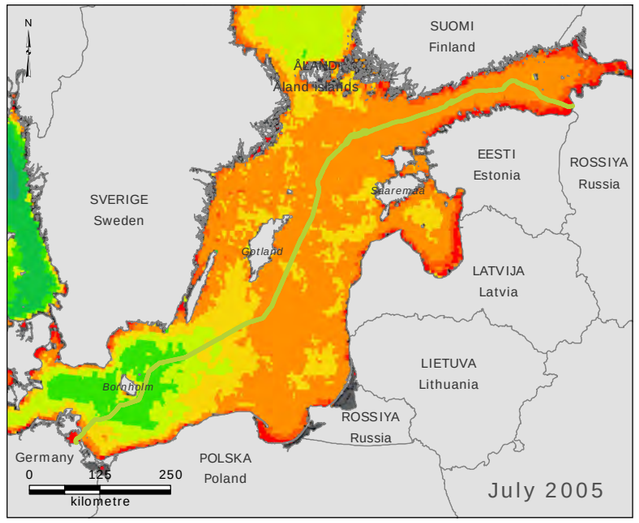
FISH

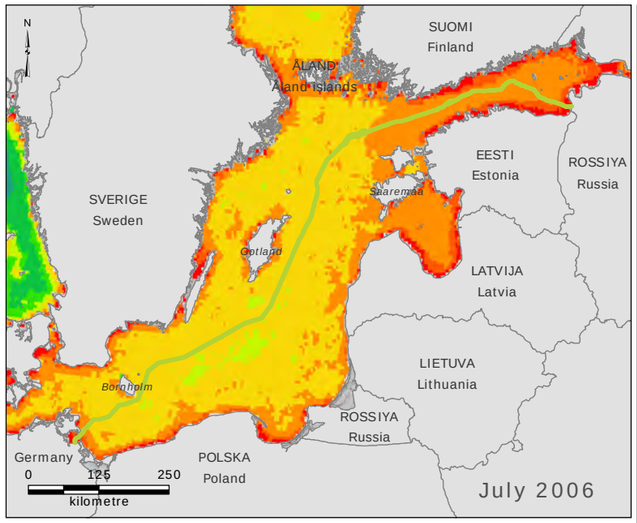
MARINE MAMMALS

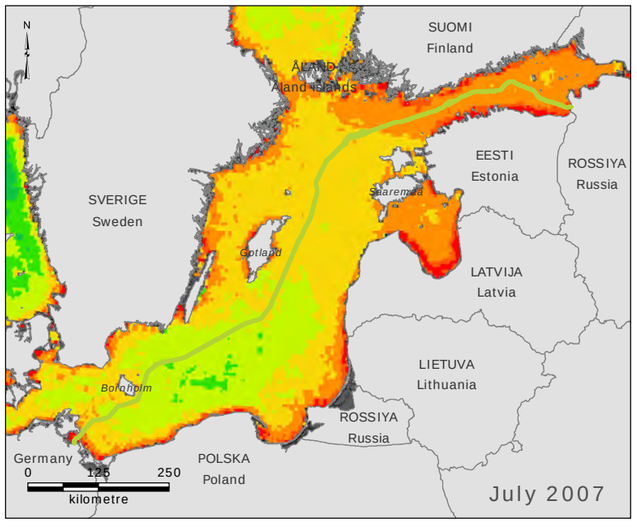
BIRDS

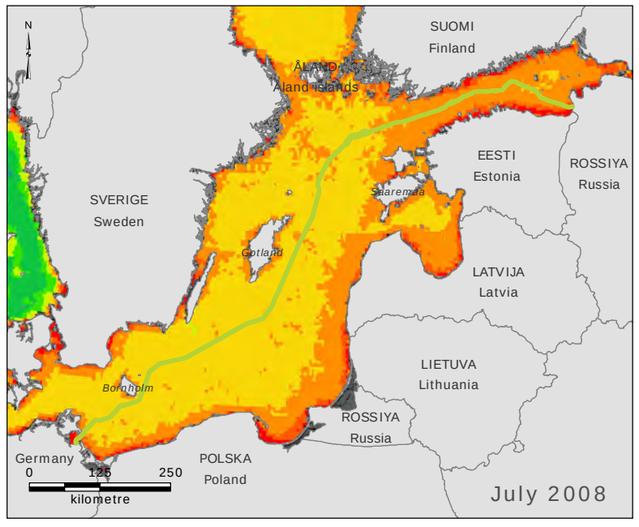
PROTECTED AREAS

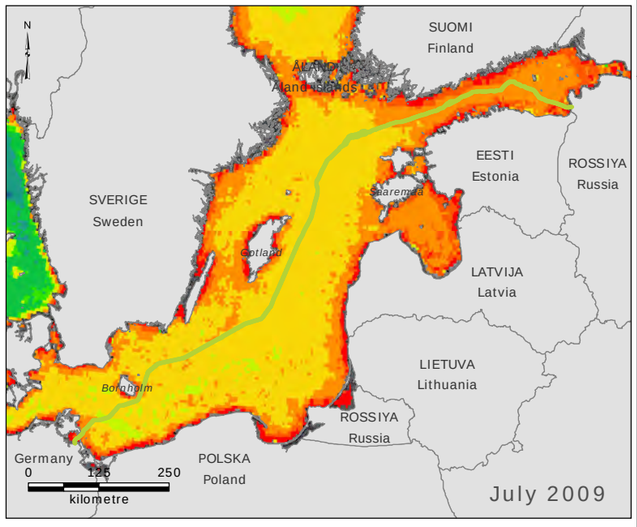


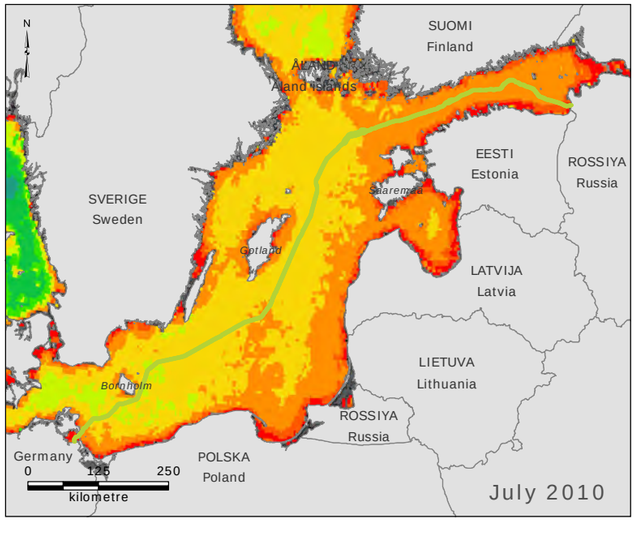


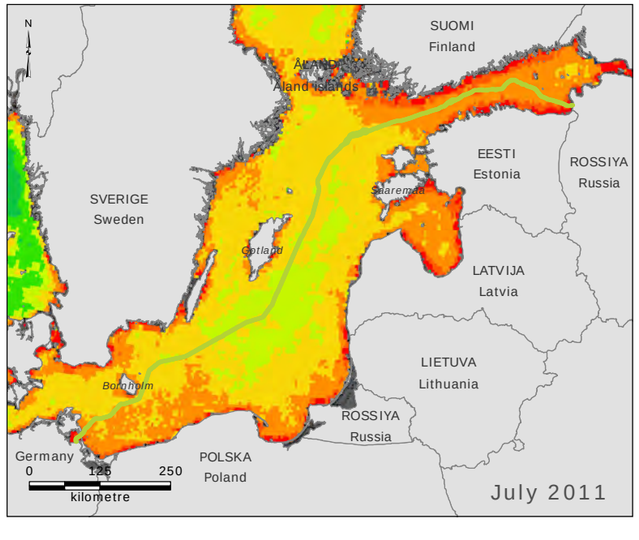


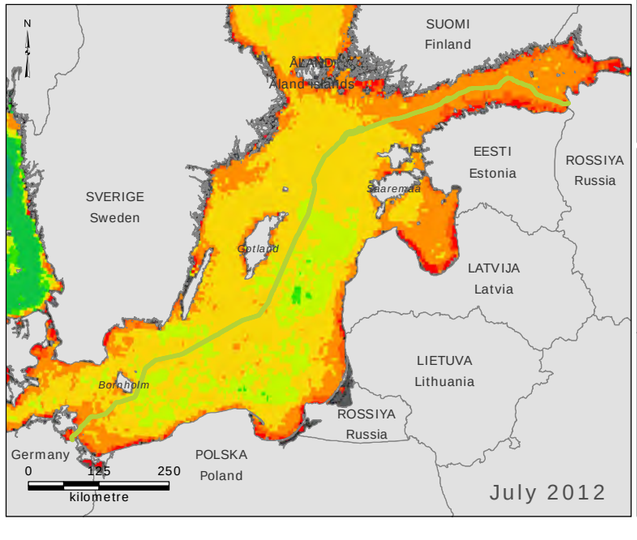












Legend:

NSP2 Route

Surface Chlorophyll a (mg/m^3)

- 0
- > 0 - 0.2
- > 0.2 - 0.5
- > 0.5 - 1
- > 1 - 2
- > 2 - 3
- > 3 - 5
- > 5 - 10
- > 10 - 20
- > 20 - 30
- >30

Note:
- The value 0 in a cell represents areas where the satellite could not collect data due to absence of Chlorophyll a, sea ice, extensive cloud cover etc.
- Data for July has been chosen to be shown due to the high chlorophyll *a* content compared to other months of the year.

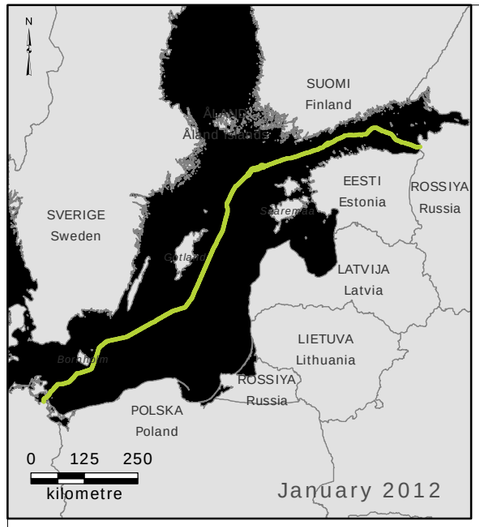
Reference:
- European Commision, "Chlorophyll Concentration (MODIS A)", http://mcc.jrc.ec.europa.eu/emis/dev.py?N=50&O=306&titre_chap=Data%20discovery&titre_page=4km%20Marine%20Data, Date accessed: 2015-11-20.

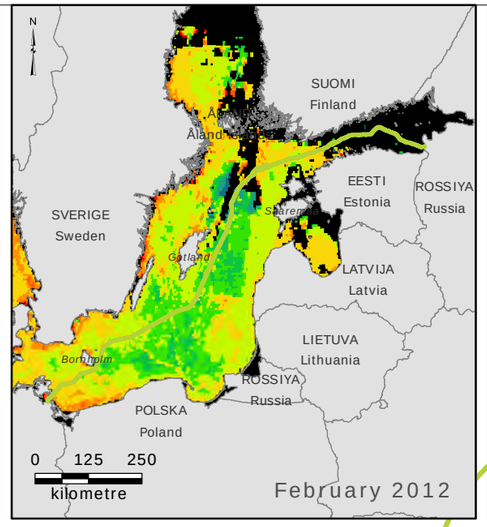
Version: 07
Date: 2017-02-10
Prepared: MIRS
Controlled: MAJH

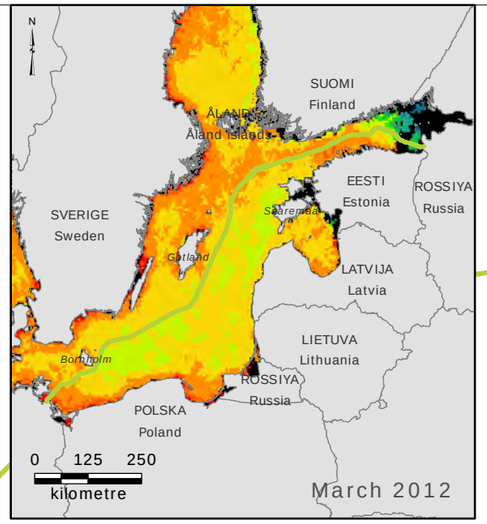
PE-01-Espoo

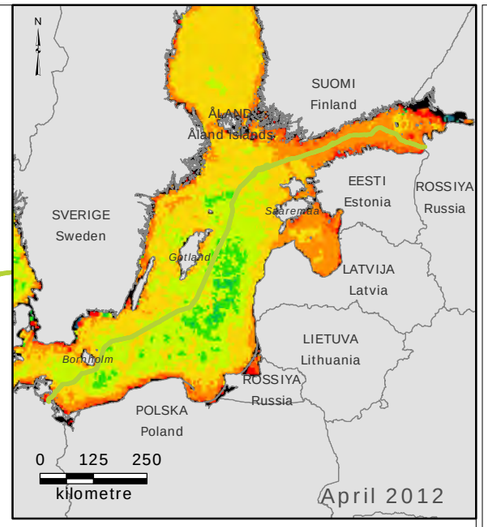
Surface Chlorophyll a - July 2004-2012

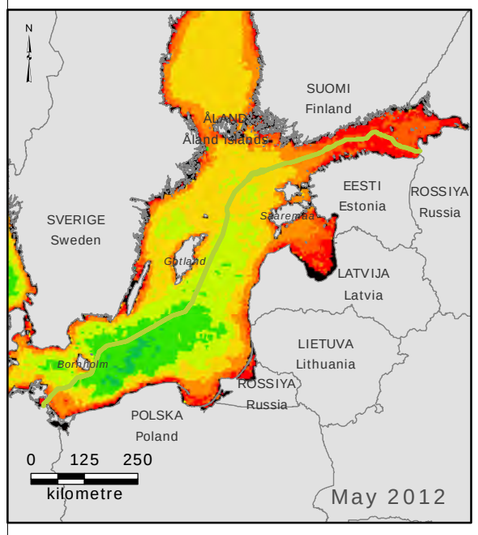
RAMBØLL

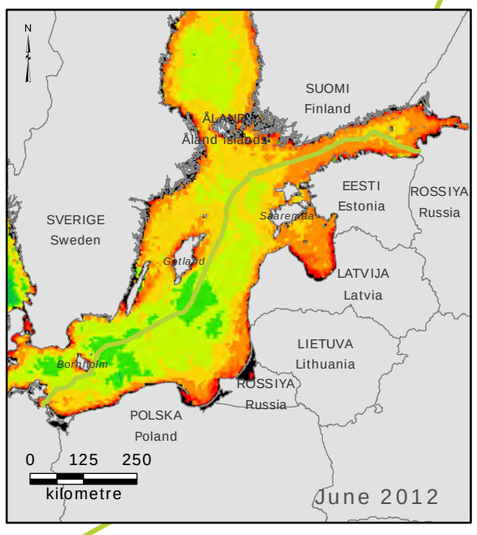


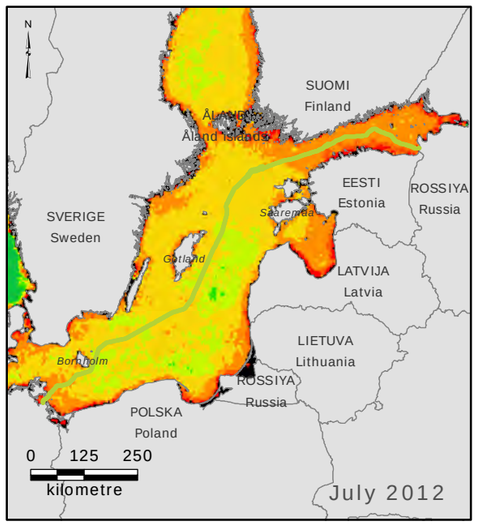


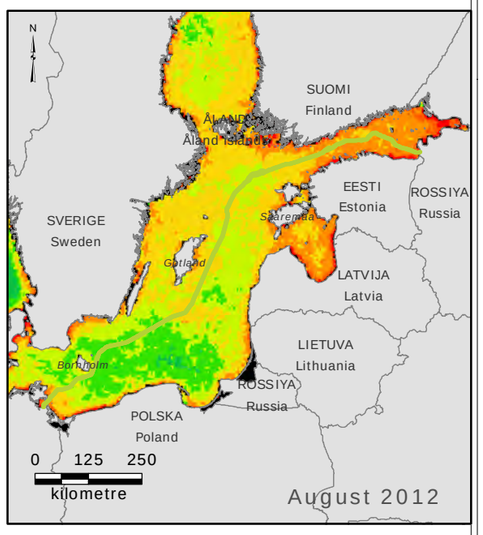


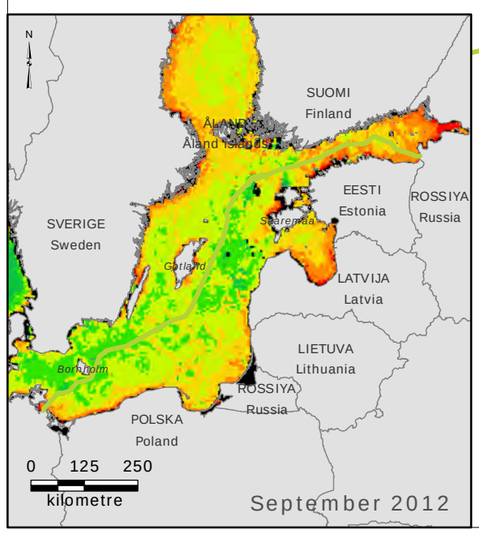


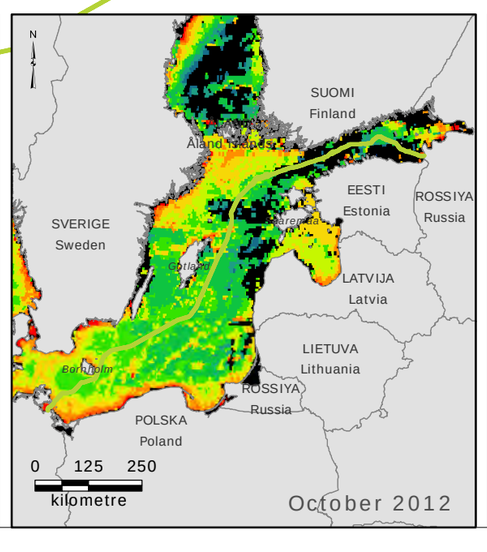


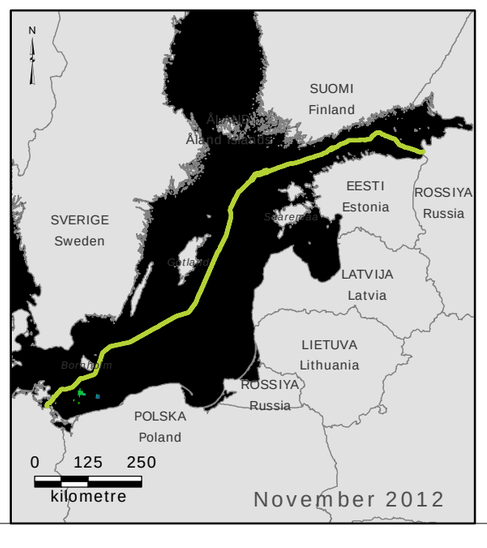


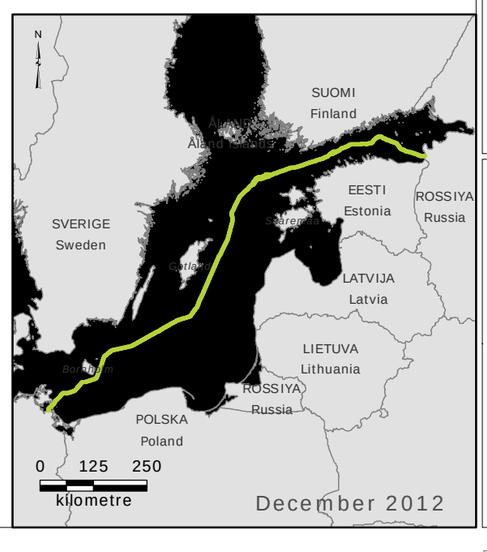












Legend:

NSP2 Route

Surface Chlorophyll a (mg/m^3)

- 0
- > 0 - 0.2
- > 0.2 - 0.5
- > 0.5 - 1
- > 1 - 2
- > 2 - 3
- > 3 - 5
- > 5 - 10
- > 10 - 20
- > 20 - 30
- >30

Note:
- The value 0 in a cell represents areas where the satellite could not collect data due to absence of Chlorophyll a, sea ice, extensive cloud cover etc.
- January, November, and December are most affected by the lack of sunlight and spread of ice cover and therefore show large areas whithout Chlorophyll *a* content.

Reference:
- European Commision, "Chlorophyll Concentration MODIS A)", http://mcc.jrc.ec.europa.eu/emis/dev.py?N=50&O=306&titre_chap=Data%20discovery&titre_page=4km%20Marine%20Data, Date accessed: 2015-11-20.

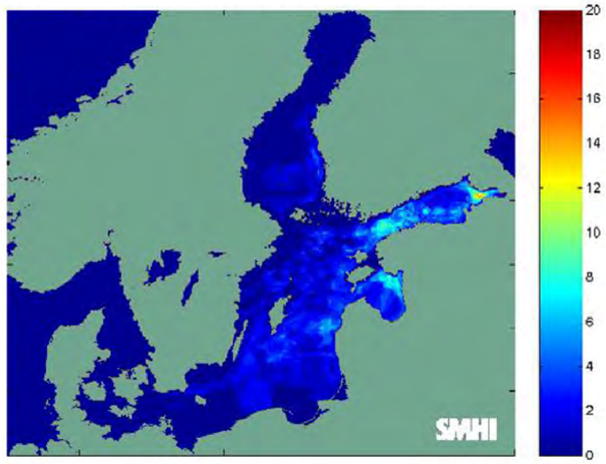
Version: 08
Date: 2017-01-27
Prepared: MIRS
Controlled: MAJH

PE-02-Espoo

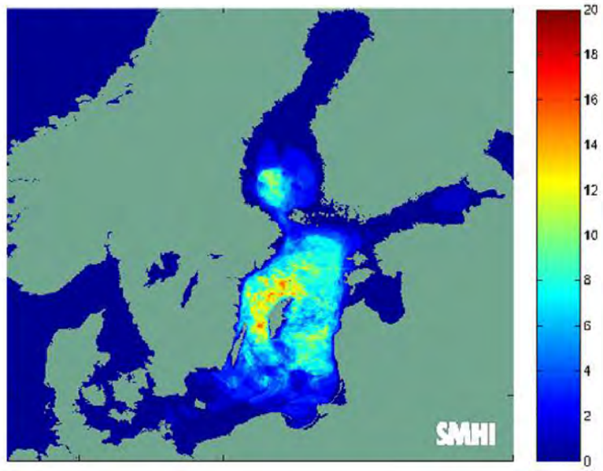
Surface Chlorophyll a - 2012

RAMBØLL

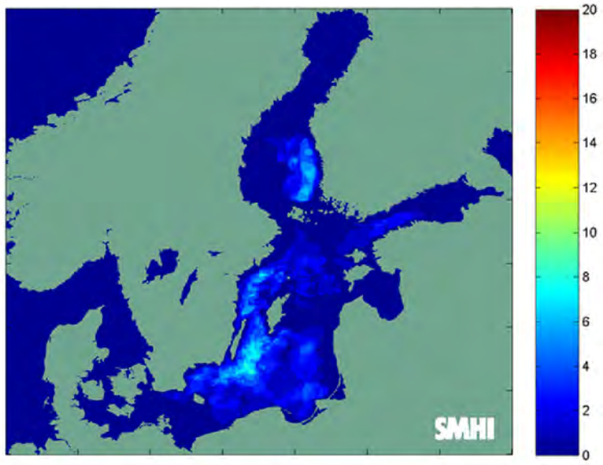
Number of days with cyanobacteria observations during 2007



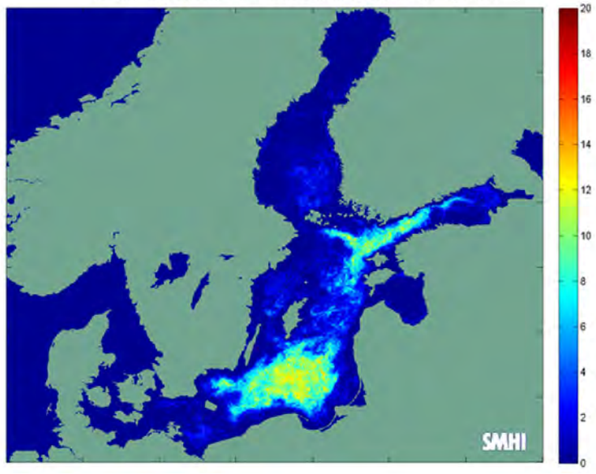
Number of days with cyanobacteria observations during 2008



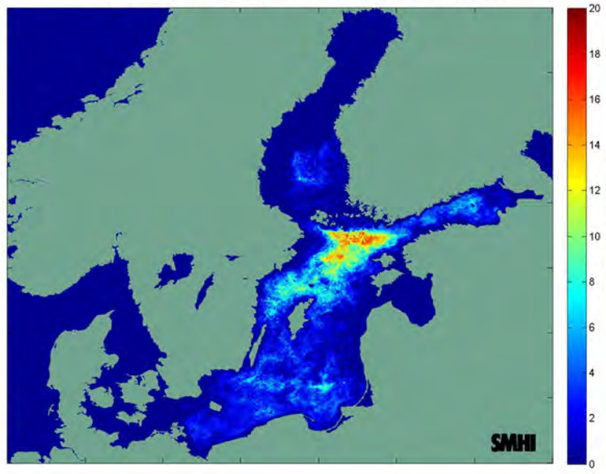
Number of days with cyanobacteria observations during 2009



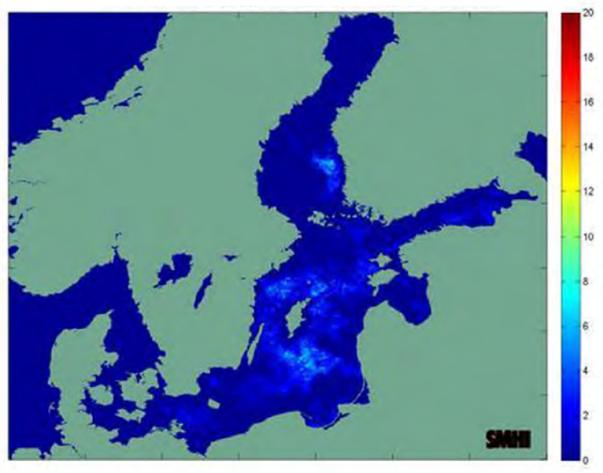
Number of days with cyanobacteria observations during 2010



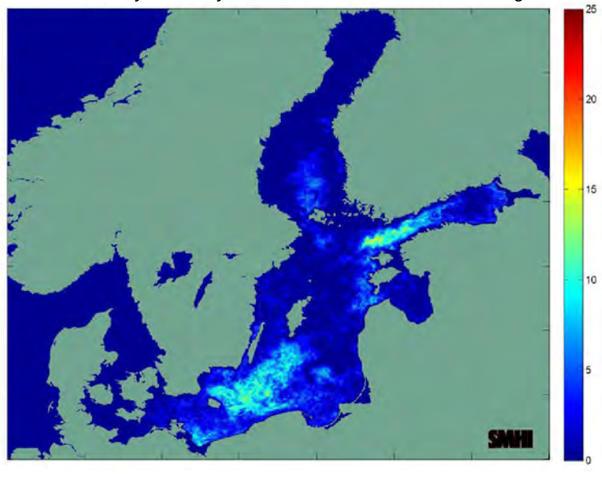
Number of days with cyanobacteria observations during 2011



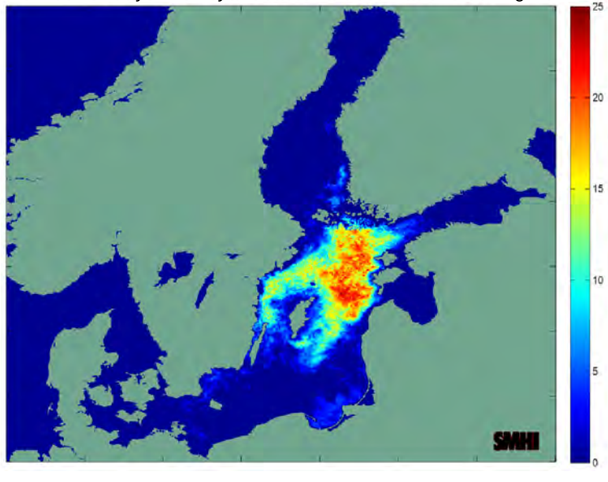
Number of days with cyanobacteria observations during 2012



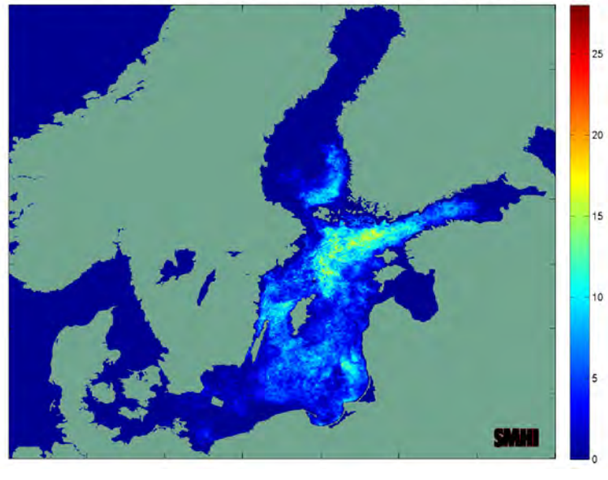
Number of days with cyanobacteria observations during 2013



Number of days with cyanobacteria observations during 2014



Number of days with cyanobacteria observations during 2015



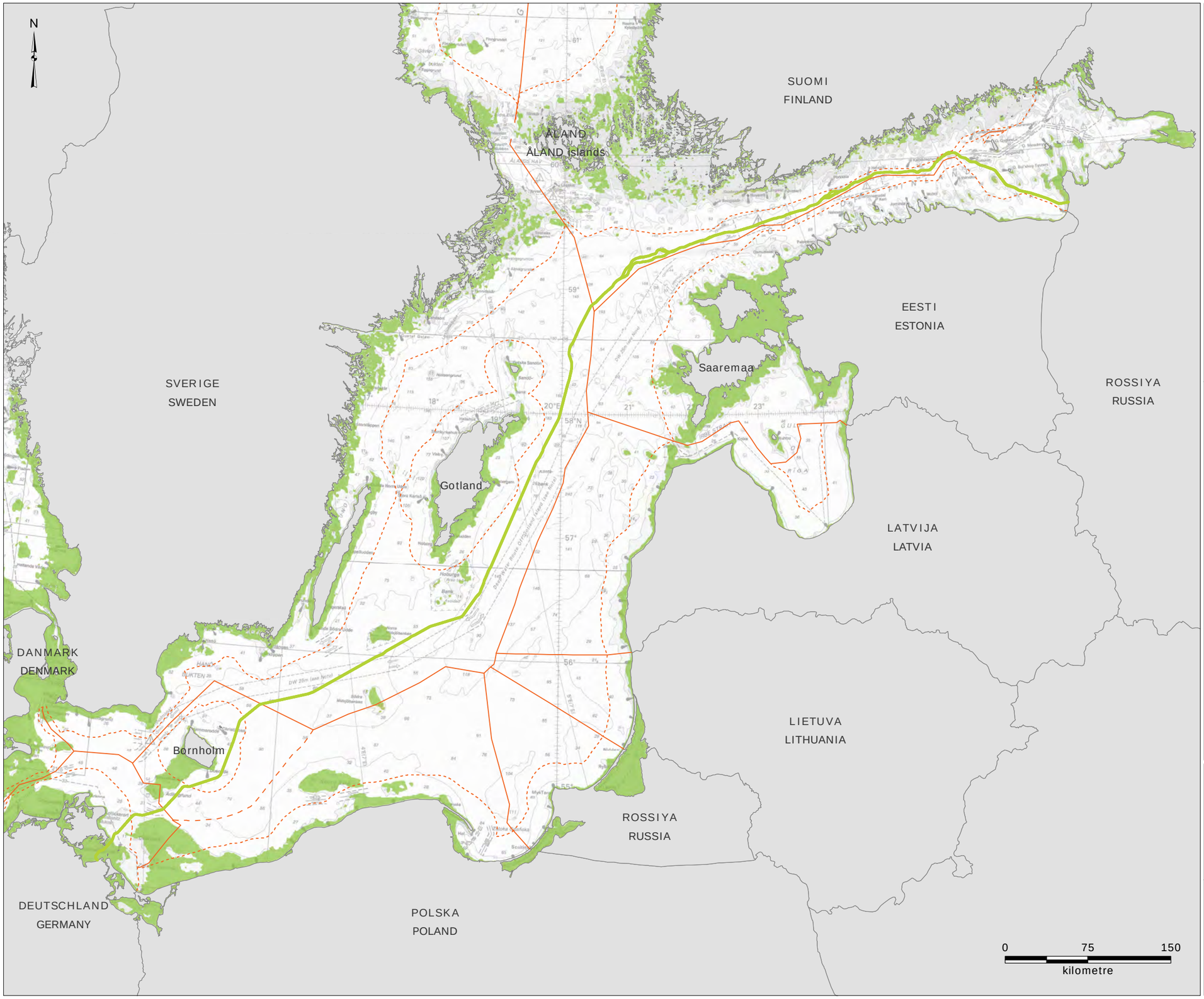
References:
- Öberg, J., 2016, "Cyanobacterial blooms in the Baltic Sea in 2016", HELCOM Baltic Sea Environment Fact Sheet 2016

Version: 01
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

PE-03-Espoo

Cyanobacteria

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- DHI-model for euphotic zone

Note:
- *Benthic flora - modelling results of areas with possible benthic flora occurences (comprising the areas where the euphotic zone reaches seabed)

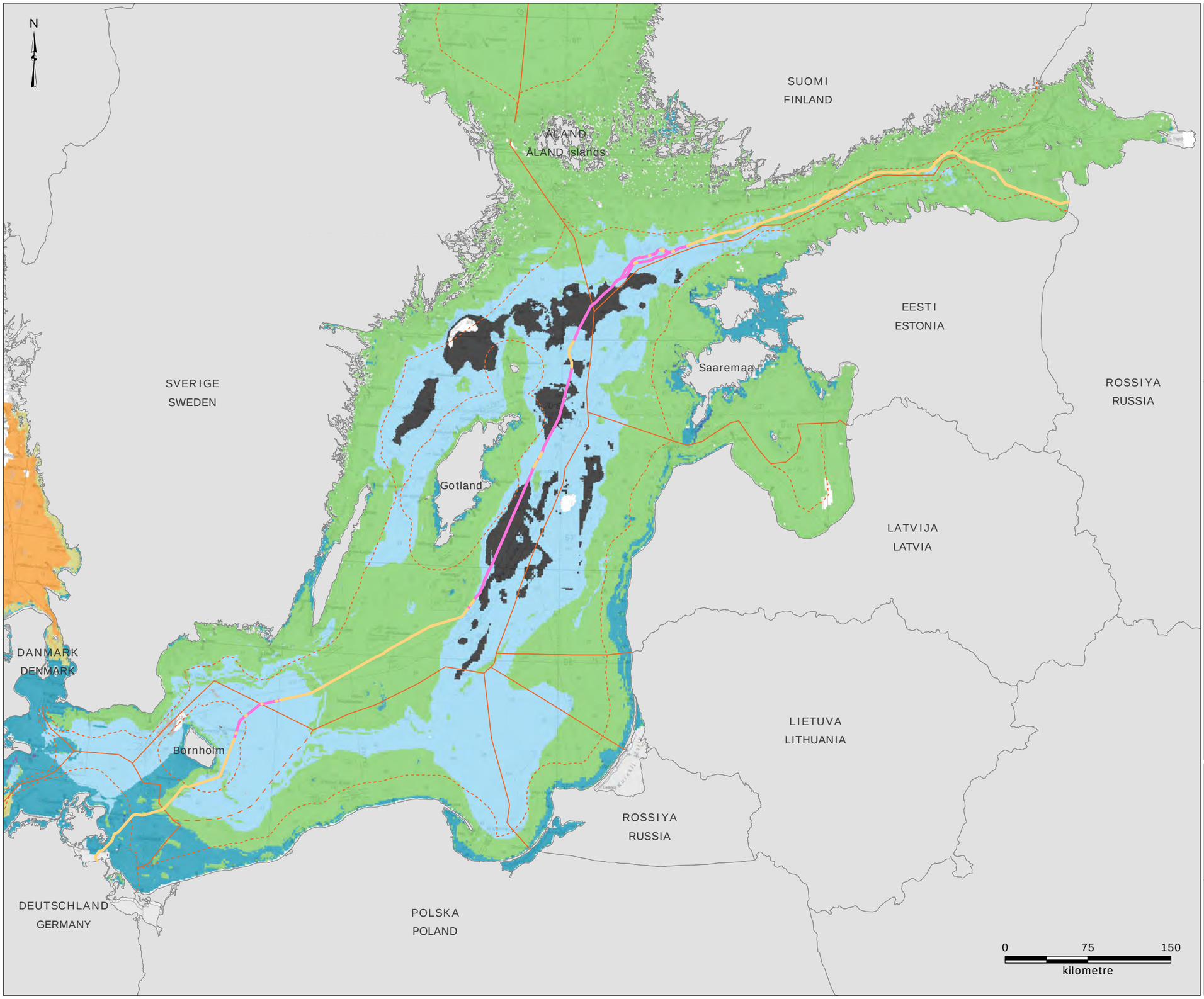
Reference:
- DHI and HELCOM, 2013, "Modelled photic zone polygon (EUSeaMap)", http://maps.helcom.fi/website/mapservice/index.html, Date accessed: 2016-06-08

Version: 06
Date: 2017-01-24
Prepared: MSTB
Controlled: MAJH

BE-01-Espoo

DHI-model of potential benthic flora distribution*

RAMBØLL



Legend:

NSP2 Route (depth in meters):

- < 80
- > 80
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Benthic Fauna:

- *Monoporeia affinis, Marenzelleria, Macoma balthica*
- Hydrobiidae, *Pygospio elegans, Cerastoderma glaucum*
- *Diastylis, Corbula gibba, Dipolydora quadrilobata, Arctica islandica, Aricidea suecica, Abra alba*
- *Bylgides sarsi, Pontoporeia femorata*
- *Amphiura* sp., *Abra nitida, Galathowenia oculata, Ennucula tenuis, Thyasira flexuosa, Nucula nitidosa, Diplocirrus glaucus*
- *Mytilus edulis, Amphibalanus improvisus*
- *Phoronis* sp., *Tellina fabula, Thracia phaseolina, Ophelia borealis, Spiophanes bombyx, Branchiostoma lanceolatum, Spio arndti*
- *Tellina tenuis, Ensis directus, Haustorius arenarius, Lamprops fasciatus*
- *Lagis koreni, Cerastoderma edule, Polydora* sp., *Halicryptus spinulosus*
- *Echinocyamus pusillus, Harmothoe* sp., *Bittium reticulatum*, Oligochaeta, *Alitta virens, Turritella communis, Asterias rubens*
- Other
- No benthic fauna

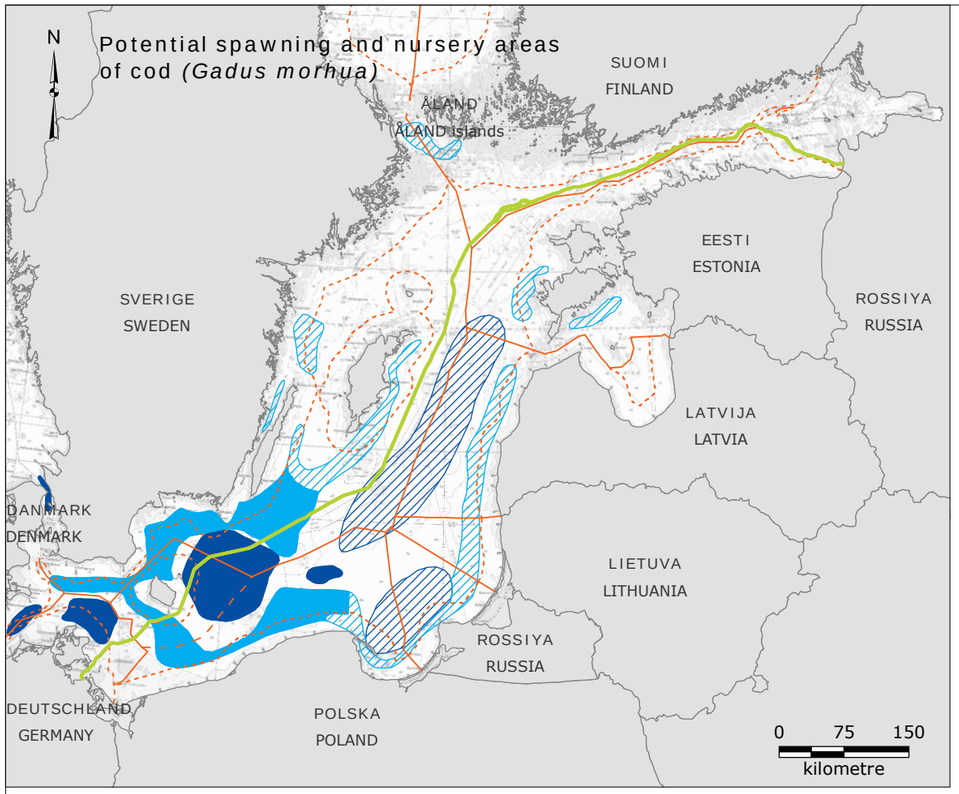
Reference:
- Gogina, M., Nygård, H., Blomqvist, M., Daunys, D., Josefson, A.B., Kotta, J., Maximov, A., Warzocha, J., Yermakov, V., Gräwe, U. and Zettler, M.L. The Baltic Sea scale inventory of benthic faunal communities. ICES J. Mar. Sci. first published online January 26, 2016. doi:10.1093/icesjms/fsv265. 18 pages.

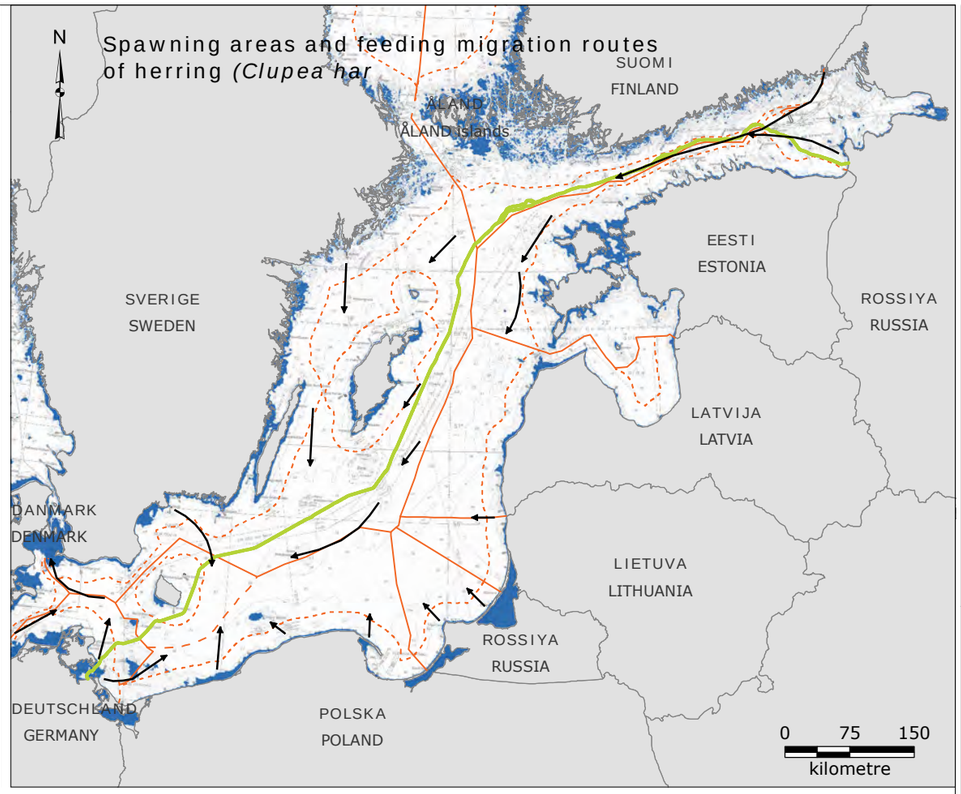
Version: 07
Date: 2017-01-02
Prepared: MSTB
Controlled: MAJH

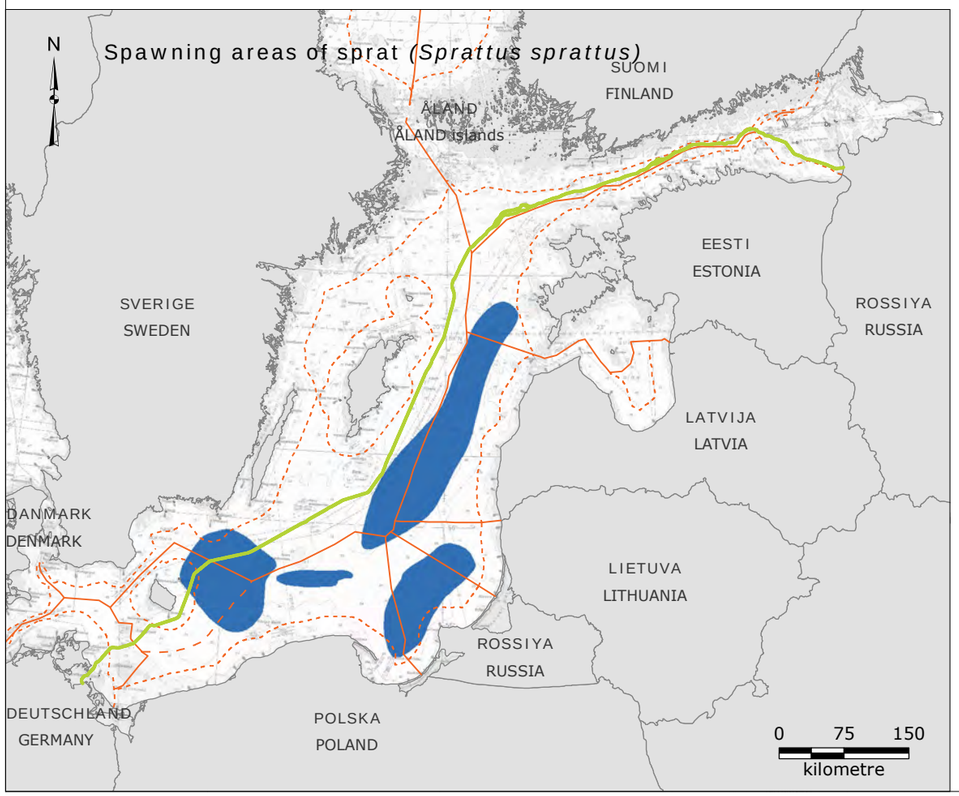
BE-02-Espoo

Benthic fauna communities based on abundance

RAMBØLL







Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Nursery area
- Spawning area
- Previous nursery area
- Previous spawning area
- Migration routes to feeding areas

Note:
- Areas referred to as 'previous', represent data prior to the year 2000 /ICES 2012/

References:

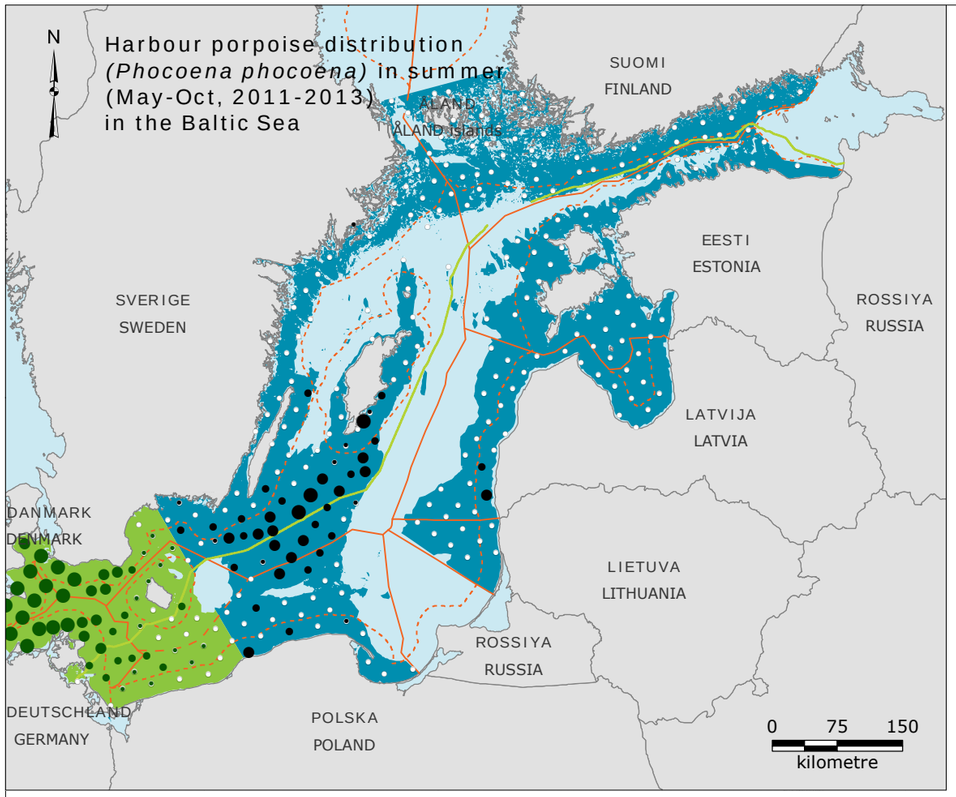
- Bagge, O., Thurow, F., Steffensen, E., Bay, J. 1994. "The Baltic Cod". Dana, 10, pp. 1-28
- Cardinale, M., Svedäng, H., 2011. "The beauty of simplicty in science: Baltic cod stock improves rapidly in "cod hostile" ecosystem state". Marine Ecology Progress Series, 425, pp. 297-301
- ICES, 2012, "Report of the ICES Advisory Committee". ICES advice 2012, Book 8. ICES, Copenhagen.
- ICES, 2006. "ICES advice. Book 9. Widely distributed and Migratory stocks".
- Plikks and Aleksjevs, 1998. "Latvijas baba". Riga

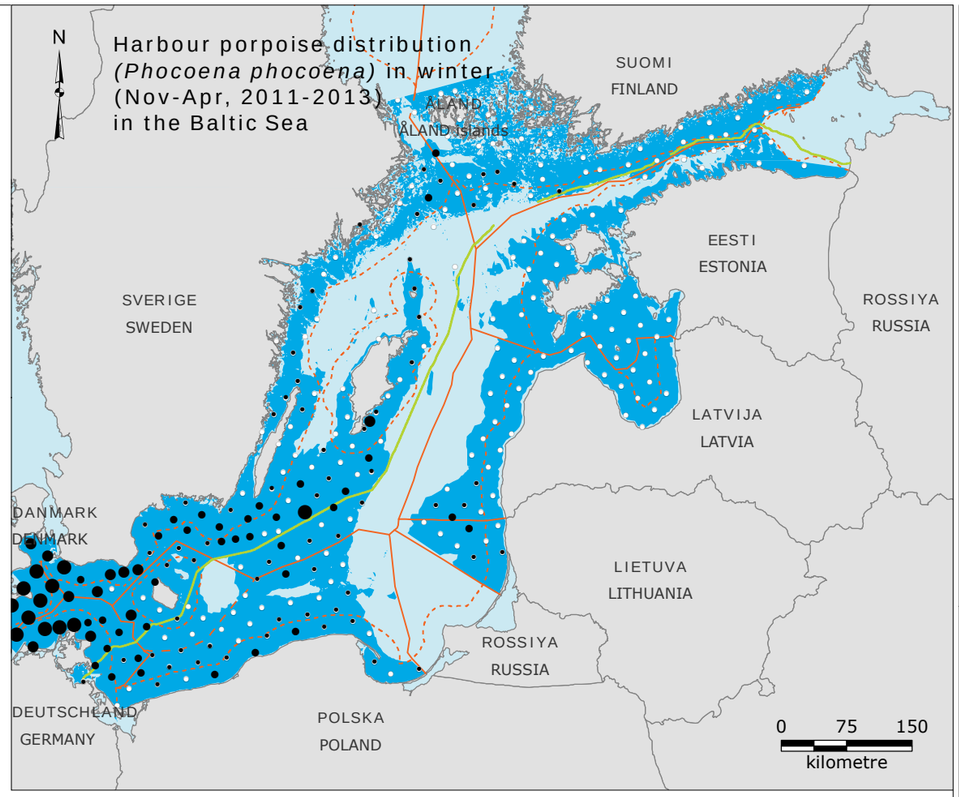
Version: 04
Date: 2017-02-10
Prepared: MSTB
Controlled: MCO

FI-01-Espoo

Spawning areas of cod, herring and sprat

RAMBØLL





Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Legend:

Population areas:

- Baltic
- Belt Sea
- No data available

Belt Sea, Summer (May - Oct)

Porpoise Positive Seconds per day (Belt Sea):

- 0.023 - 1
- > 1 - 10
- > 10 - 100
- > 100 - 3015
- zero detections

Baltic, Summer (May - Oct)

Porpoise Positive Seconds per day (Baltic):

- 0.002 - 0.1
- > 0.1 - 1
- > 1 - 10
- > 10 - 248
- zero detections

Each acoustic station is indicated by a circle. If porpoises were detected, the circle is black and scaled in size to the density (number of 'porpoise positive seconds per day'). If no porpoises were detected, an open circle is used. Green indicates that the area is inhabited by part of the Belt Sea population extending to the east. Blue is used to indicate the area of the assumed breeding distribution of the remaining Baltic Sea porpoise population

Legend:

Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise areas:

- Data available
- No data available

Porpoise Positive Seconds per day:

- 0.003 - 1
- > 1 - 10
- > 10 - 100
- > 100 - 1856
- Zero detections

Each acoustic station is indicated by a circle. If porpoises were detected, the circle is black and scaled in size to the density (number of 'porpoise positive seconds per day'). If no porpoises were detected, an open circle is used. Blue is used to indicate the area used by a mixture of the Baltic Sea porpoise population and the Belt Sea porpoise population

Notes:
- It is only possible to separate the Baltic Sea and Belt Sea harbour porpoise populations in summer
- Porpoise Positive Secounds is the encounter rate, measured as proportion of click positive seconds per second
- Data collected by CPODs under the Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise project

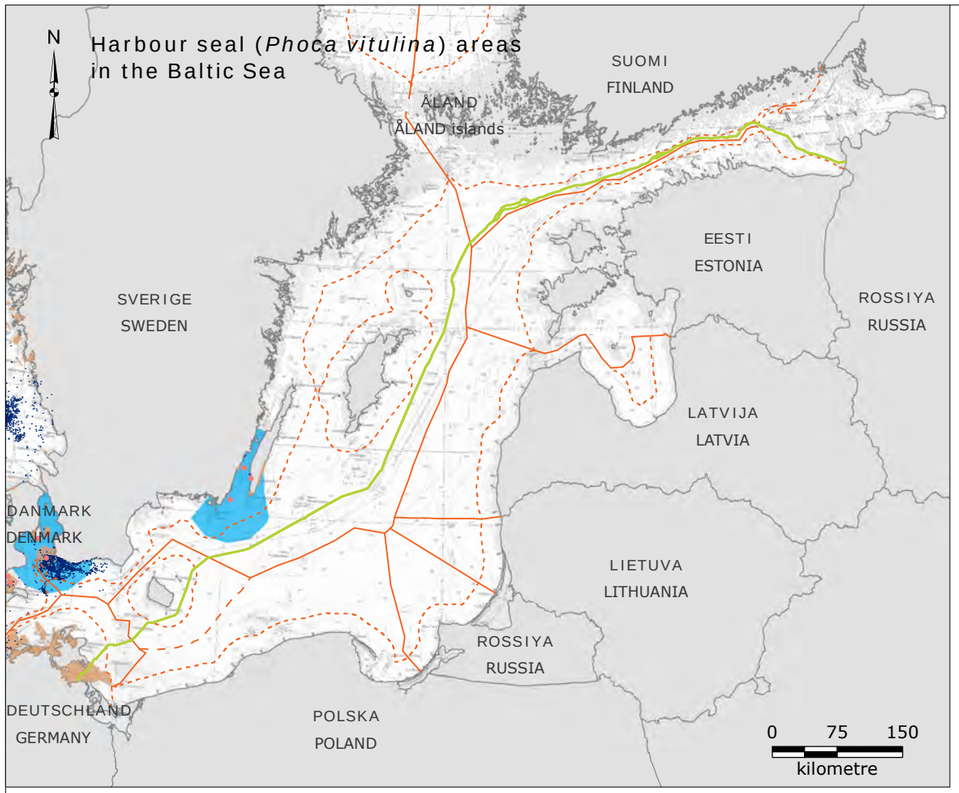
References:
- SAMBAH, 2016, "Static Acoustic Monitoring of the Baltic Sea Harbour Porpoise (SAMBAH). Final report under the LIFE+ project LIFE08 NAT/S/000261", Kolmårdens Djurpark AB, SE-618 92 Kolmården, Sweden. 81pp.
- Teilmann, J., Sveegaard, S., 2016. "Marine mammals in the Baltic Sea in relation to the Nord Stream 2 project – Baseline report", DCE/Institute for Bioscience, Aarhus University

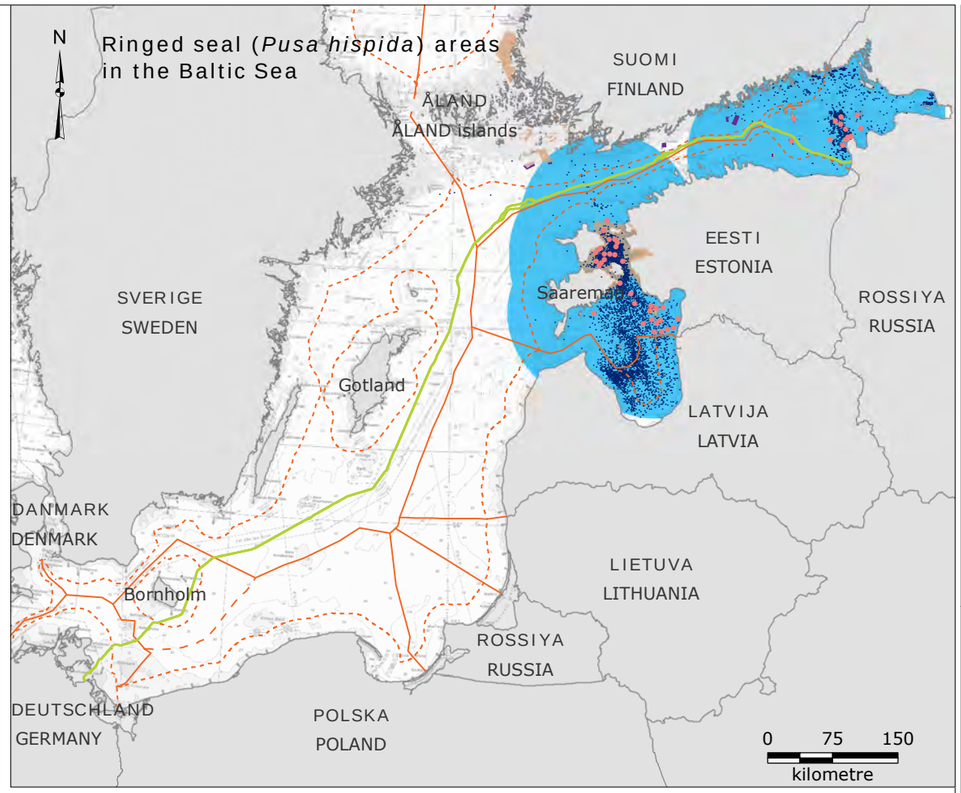
Version: 05
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

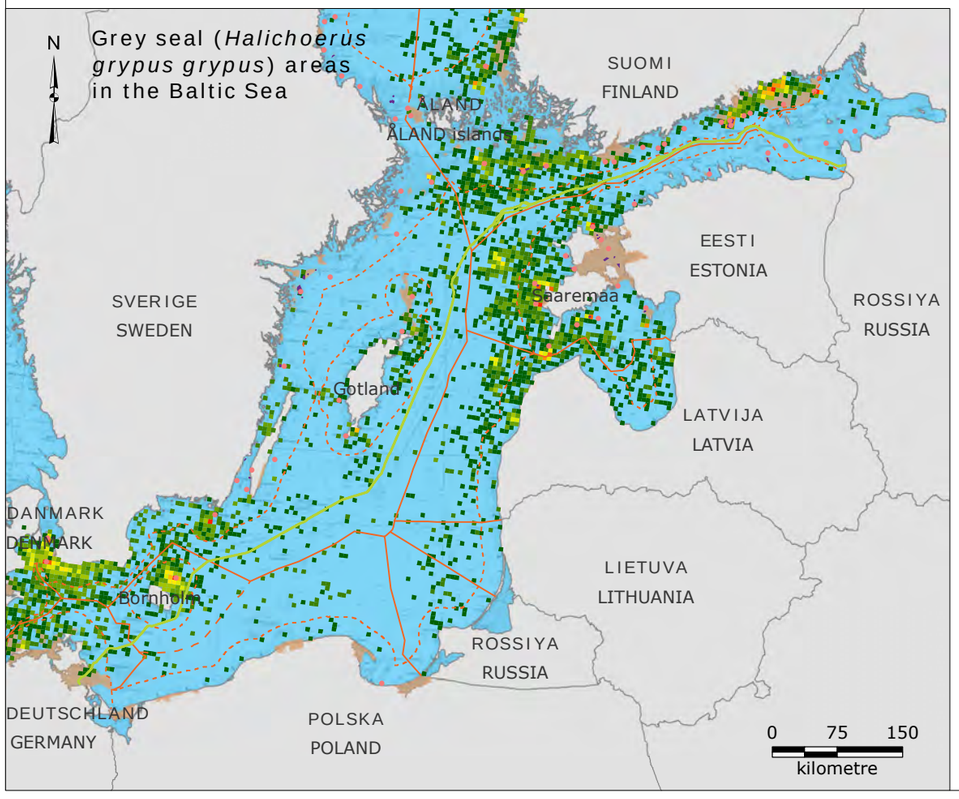
MA-01-Espoo

Harbour porpoise distribution in the Baltic Sea

RAMBØLL







Legend:

Harbour seals:

- Colony
- Satellite tracking location (HELCOM data, n=30)
- Sanctuary
- Natura 2000 site designated for harbour seal
- Regular occurrence (27 km zone)

Ringed seals:

- Colony
- Ringed seal satellite tracking location (n=37)
- Sanctuary
- Natura 2000 site designated for ringed seal
- Regular occurrence (100 km zone)

Grey seals:

- Colony
- Sanctuary
- Natura 2000 site designated for grey seal
- Regular occurrence (380 km zone)

Grey seal distribution in 2015:

(Number of grey seal observations)

- 1
- 2
- 3 - 6
- 7 - 11
- 12 - 17
- 18 - 25
- 26 - 45
- 46 - 77
- 78 - 113
- 114 - 432

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Note:
- Satellite tracking based on number of tagged seals
- Regular occurrence represents maximum tagging distance from colony

Reference:

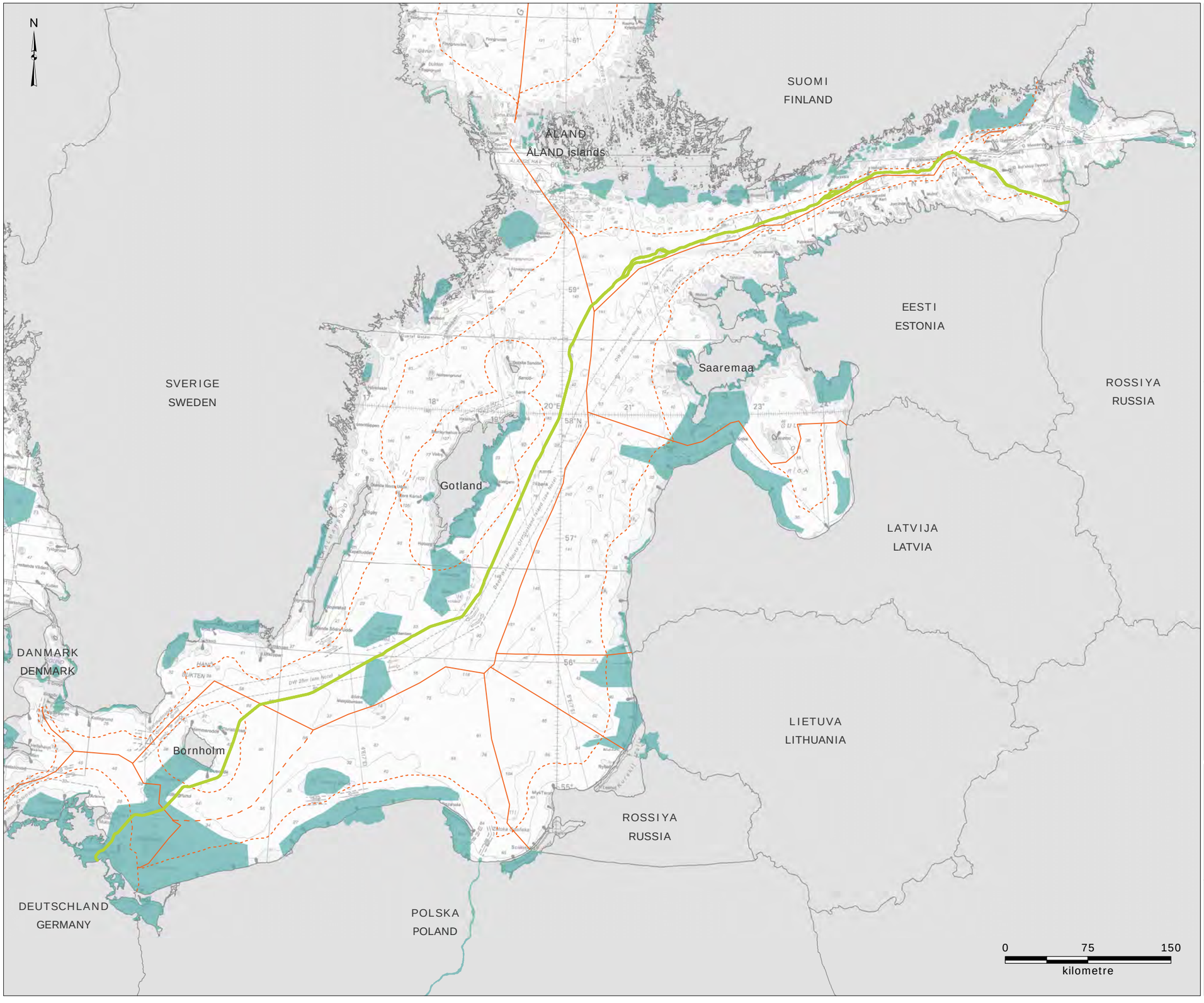
- Estonian Fund for Nature, ringed seal satellite tracking location
- Estonian Nature Information System (EELIS), Date accessed: 2016-04-04
- Eco Express, 2016, "Baseline - Book 4"
- HELCOM, 2015, "BALSAM - Grey seals", http://maps.helcom.fi/website/mapservice/index.html, Date accessed: 2016-01-25
- Teilmann, J., Sveegaard, S., 2016. "Marine mammals in the Baltic Sea in relation to the Nord Stream 2 project – Baseline report", DCE/Institute for Bioscience, Aarhus University

Version: 06
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

MA-02-Espoo

Harbour, ringed and grey seal areas

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Important Bird and Biodiversity Areas (IBA)

References:

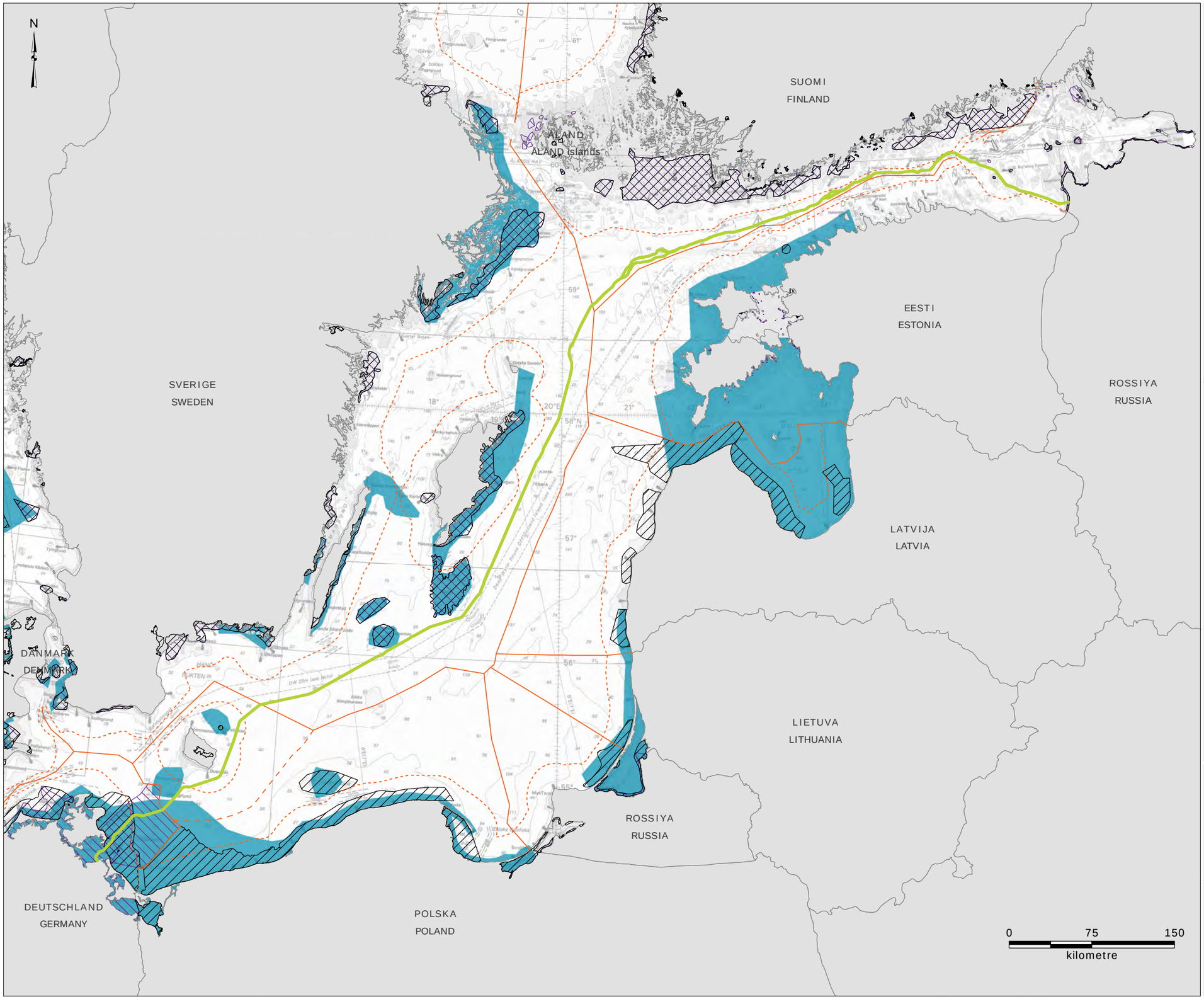
- BirdLife, 2016, "Marine IBA e-atlas", http://maps.birdlife.org/marineIBAs/default.html, Date accessed: 2016-3-1
- BirdLife Finland, 2016, http://www.birdlife.fi/suojelu/paikat/iba/iba-suomen-tarkeat-lintualueet.shtml, Date accessed: 2016-09-15
- HELCOM, 2003, "Important Bird Areas - digital map", http://maps.helcom.fi/website/Biodiversity/index.html, Date accessed: 2015-6-11

Version: 07
Date: 2017-01-24
Prepared: MIRS
Controlled: MAJH

BI-01-Espoo

Important Bird and Biodiversity Areas (IBA's)

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Waterbirds during migration (spring and autumn)
- Waterbirds during breeding season (spring and summer)
- Waterbirds during winter

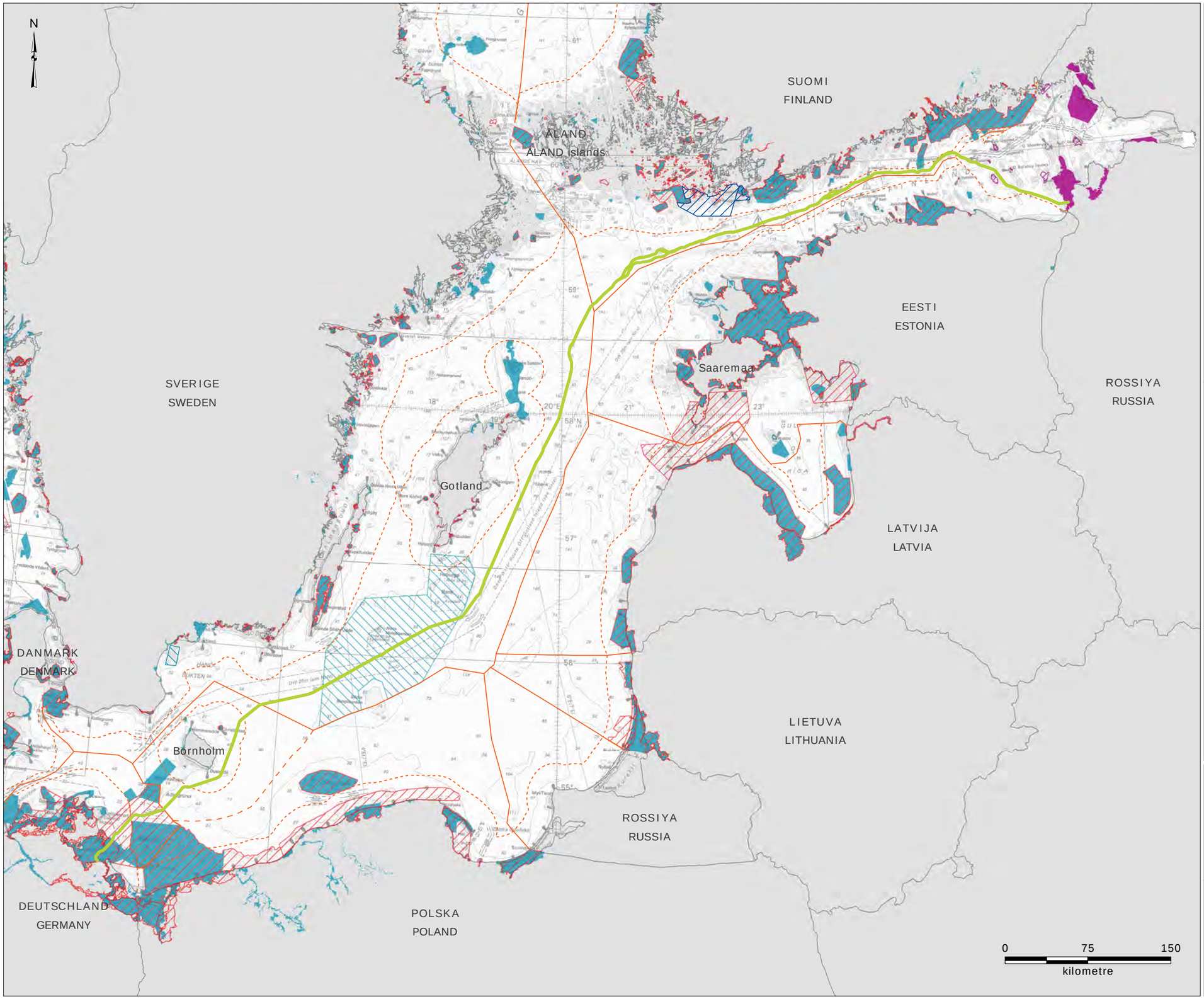
References:
- COWI, 2010, "Sub-Regional risk of spill of oil and hazardous substances in the Baltic Sea (BRISK)", Data Collection Report, Denmark.
- Sonntag, N., Mendel, B., Garthe, S., 2006, "Distribution of seabirds and waterbirds in the German Baltic Sea throughout the year". Vogelwarte 44, pp. 81-112
- Skov, H., Vaitkus, G., Flensted, K.N., Grishanov, G., Kalamees, A., Kondratyev, A., Leivo, M., Luigujõe, L., Mayr, C., Rasmussen, J.F., Raudonikis, L., Scheller, W., Sidlo, P.O., Stipniece, A., Struwe-Juhl, B., Welander, B., 2000, "Inventory of Coastal and marine Important Bird Areas in the Baltic Sea". BirdLife International, Cambridge, 287 pp.
- Heath, M.F., Evans, M.I. (eds.), 2000, "Important Bird Areas in Europe: priority sites for conservation". Vol. 1: Northern Europe. BirdLife Conservation Series No. 9, BirdLife International
- Skov, H., Durinck, J., Leopold, M.F., Tasker, M.L., 2007. "A quantitative method for evaluating the importance of marine areas for conservation of birds". Biological Conservation, 136, pp. 362-371",
http://maps.helcom.fi/website/Biodiversity/index.html,
Date accessed: 2015-06-11

Version: 03
Date: 2017-01-24
Prepared: MSTB
Controlled: MAJH

BI-02-Espoo

Bird wintering and staging areas during migration

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Natura 2000 sites:

- Special Protection Area (SPA)
- Special Area of Conservation/ Special Conservation Interests (SAC/SCI)
- Proposed new and extended Natura 2000 site in Sweden
- Proposed extended Natura 2000 site in Finland: Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

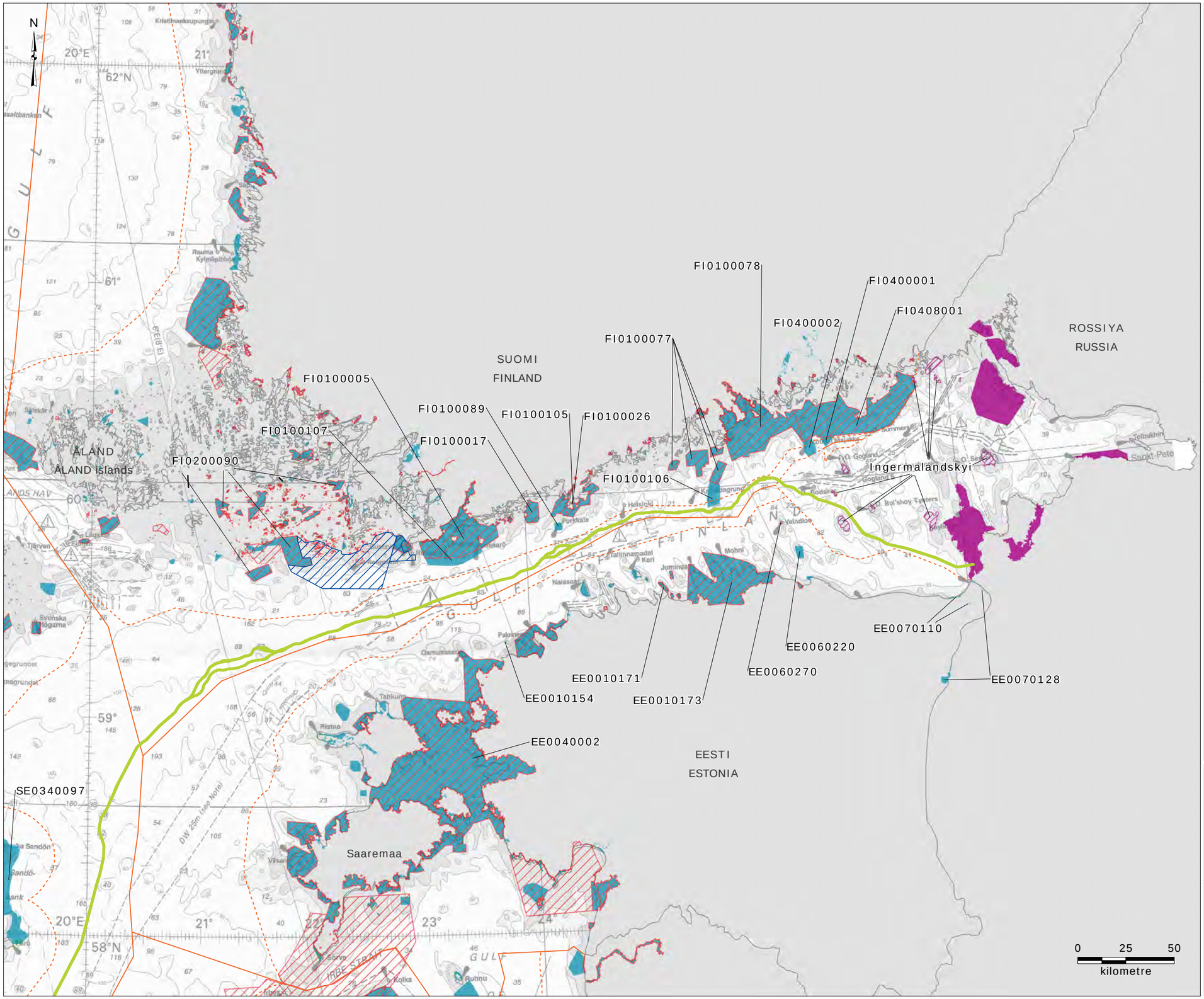
References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Länsstyrelsen Skåne, 2015, "Utpekande av nya Natura 2000-områden i Skåne 2015, dnr 511-11380-14, 2015-05-05"
- Länsstyrelsen Gotlands Län and Kalmar Län, 2016, "M2015/02273/N m (delvis) - Förslag till nya områden för bevarande av livsmiljöer samt vilda djur och växter - SE0330308 Hoburgs bank och Midsjöbankarna", Miljö- och Energidepartementet, Regeringen
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14

Edition: 10
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

PA-01-Espoo

Natura 2000 sites and Russian protected areas in the Baltic region

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border

Natura 2000 sites:

- Special Protection Area (SPA)
- Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Proposed extended Natura 2000 site in Finland:

- Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Note:
- Only sites assessed in the Espoo report are labelled

References:

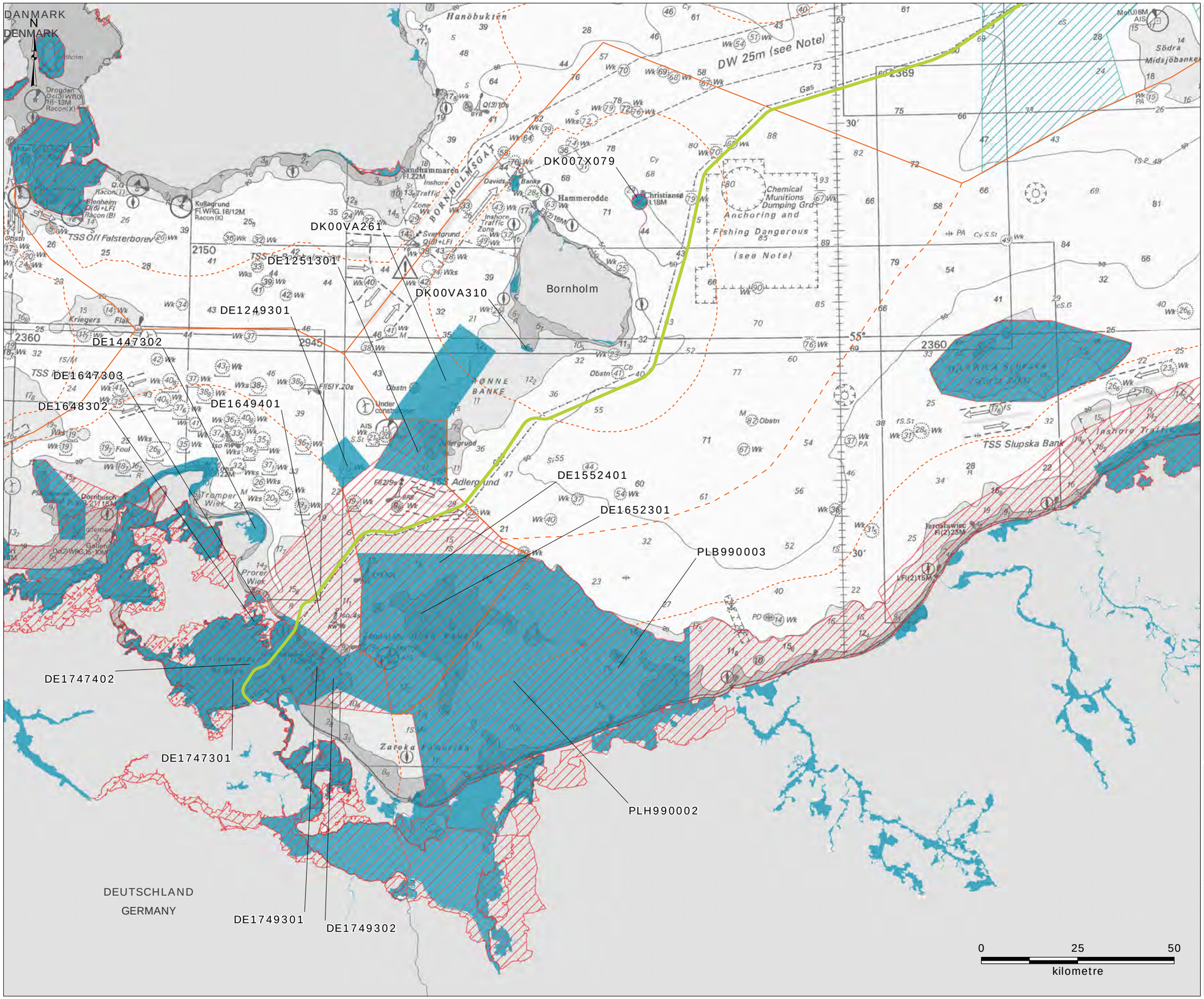
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-1-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14

Version: 09
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

PA-02-Espoo

Natura 2000 sites and Russian protected areas in the Gulf of Finland

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Natura 2000 sites:

- Special Protection Area (SPA)
- Special Area of Conservation/ Special Conservation Interests (SAC/SCI)
- Proposed extended Natura 2000 site in Sweden

Note:
- Only sites assessed in the Espoo report are labelled

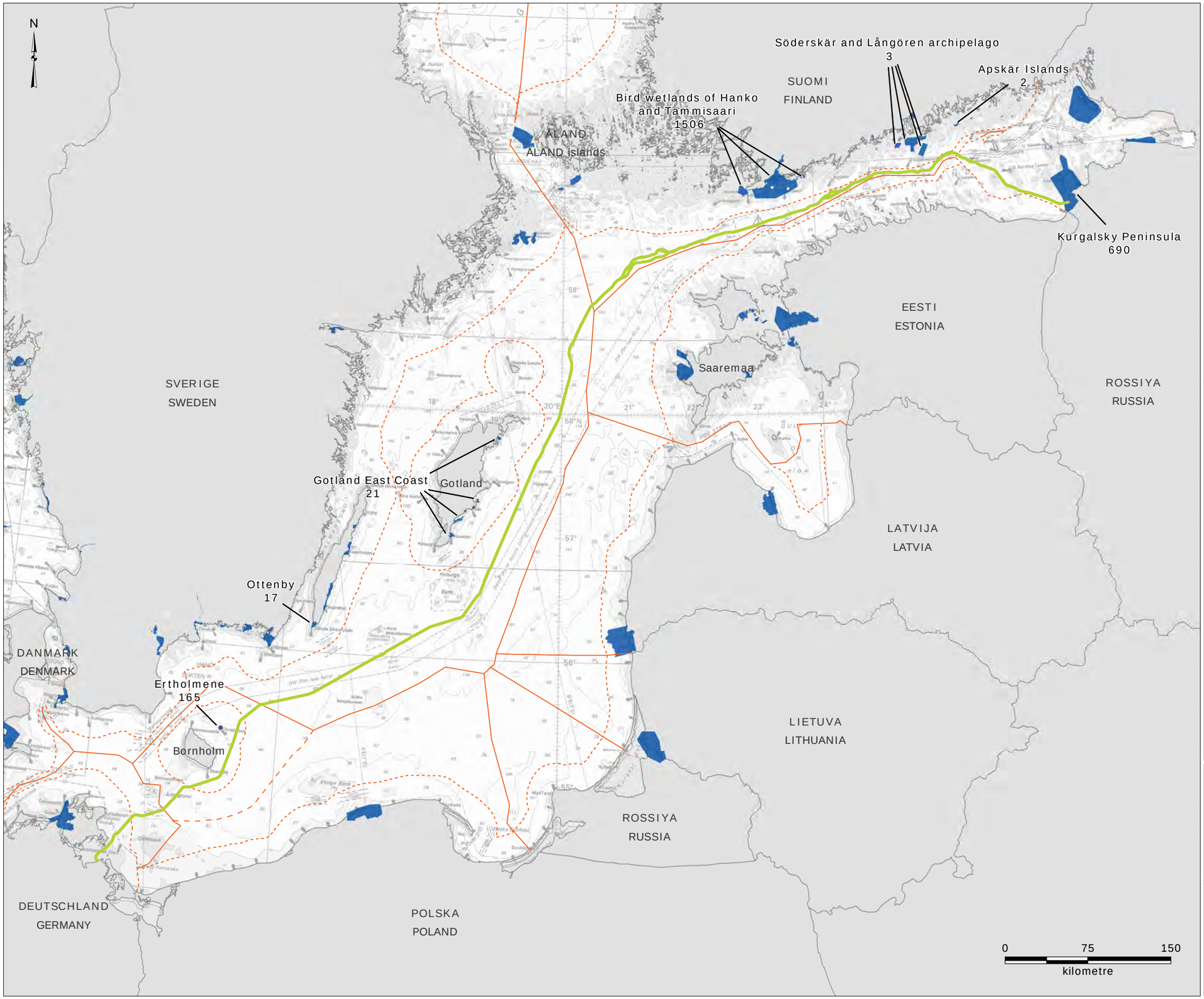
Reference:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-1-19
- Länsstyrelsen Gotlands Län and Kalmar Län, 2016, "M2015/02273/N m (delvis) - Förslag till nya områden för bevarande av livsmiljöer samt vilda djur och växter - SE0330308 Hoburgs bank och Midsjöbankarna", Miljö- och Energidepartementet, Regeringen

Version: 08
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

PA-03-Espoo

Natura 2000 sites in Germany and Denmark

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Ramsar site

Note:
- Only sites assessed in the Espoo report are labelled

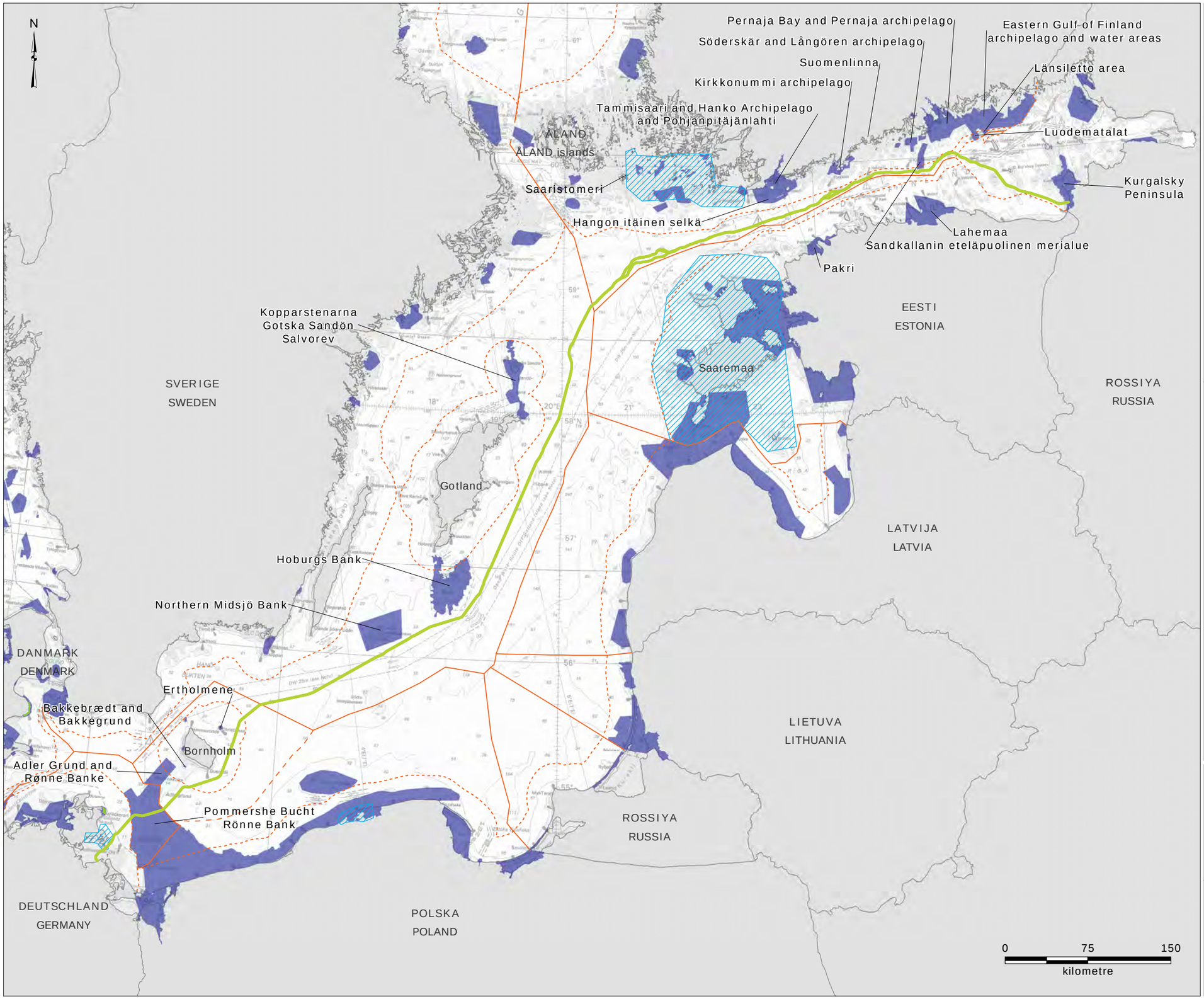
Reference:
- European Environment Agency and HELCOM, 2012, "Ramsar sites", http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-1-21

Version: 07
Date: 2017-02-10
Prepared: MSTB
Controlled: MAJH

PA-04-Espoo

Ramsar sites in the Baltic region

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- UNESCO - Biosphere Reserves
- UNESCO - World Heritage Site (natural)
- HELCOM MPA

Note:
- Only sites assessed in the Espoo report are labelled

References:
- HELCOM, European Commission and UNESCO, 1998, "UNESCO sites", http://maps.helcom.fi/website/mapservice/index.html, Date accessed: 2015-11-12
- HELCOM, 2015, "HELCOM MPAs", http://maps.helcom.fi/website/mapservice/index.html, Date accessed: 2016-01-11

Version: 07
Date: 2017-02-14
Prepared: MSTB
Controlled: MAJH

PA-05-Espoo

Marine Protected Areas (MPA's) and UNESCO Biosphere Reserves in the Baltic region

RAMBØLL

SOCIO-ECONOMIC ENVIRONMENT

CULTURAL HERITAGE

MARITIME TRAFFIC AND NAVIGATION

COMMERCIAL FISHERIES

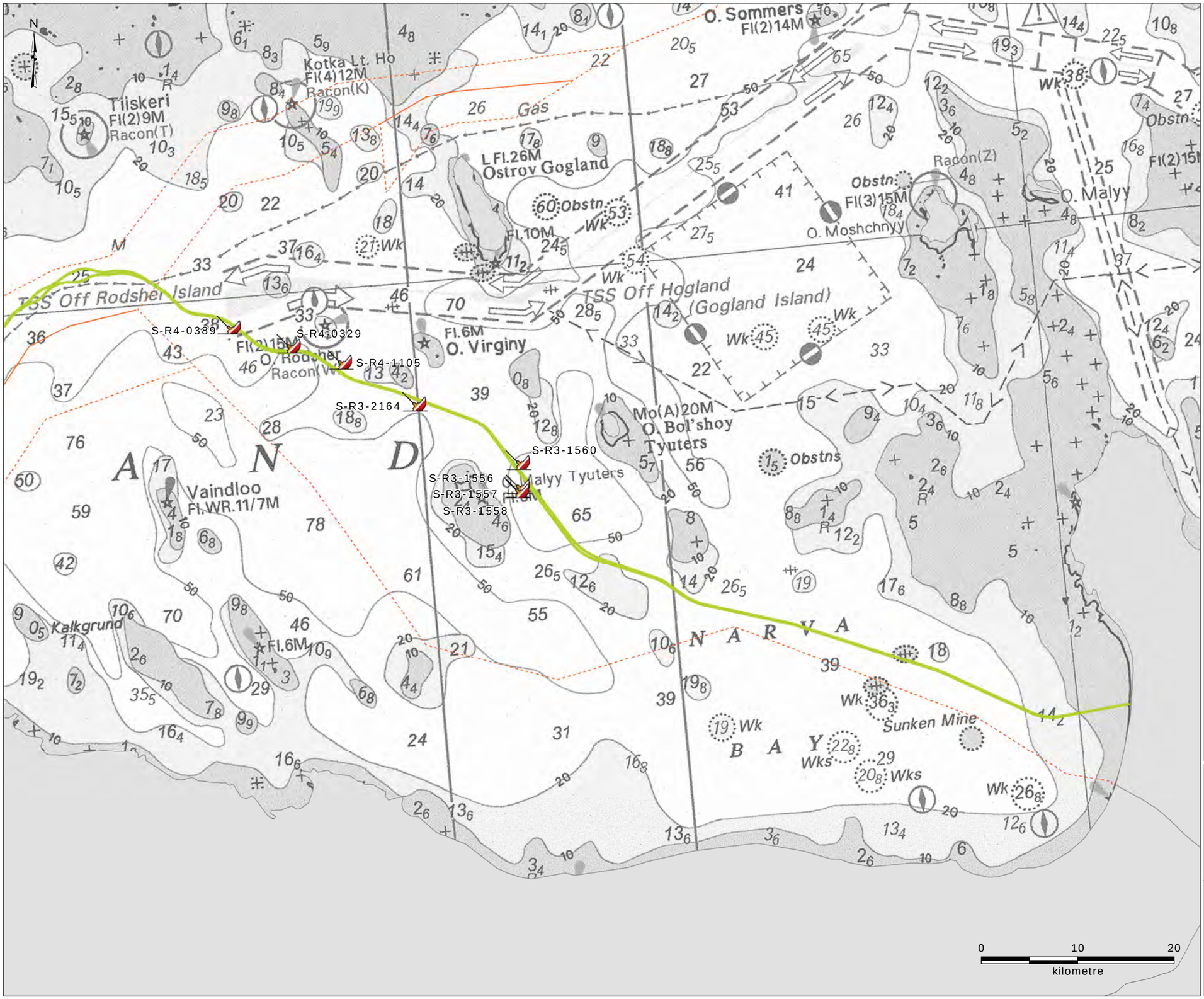
RAW MATERIAL EXTRACTION SITES

MILITARY PRACTISE AREAS

EXISTING AND PLANNED INFRASTRUCTURE

INTERNATIONAL/NATIONAL MONITORING STATIONS

CONVENTIONAL MUNITIONS AND CHEMICAL WARFARE AGENTS



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Wrecks

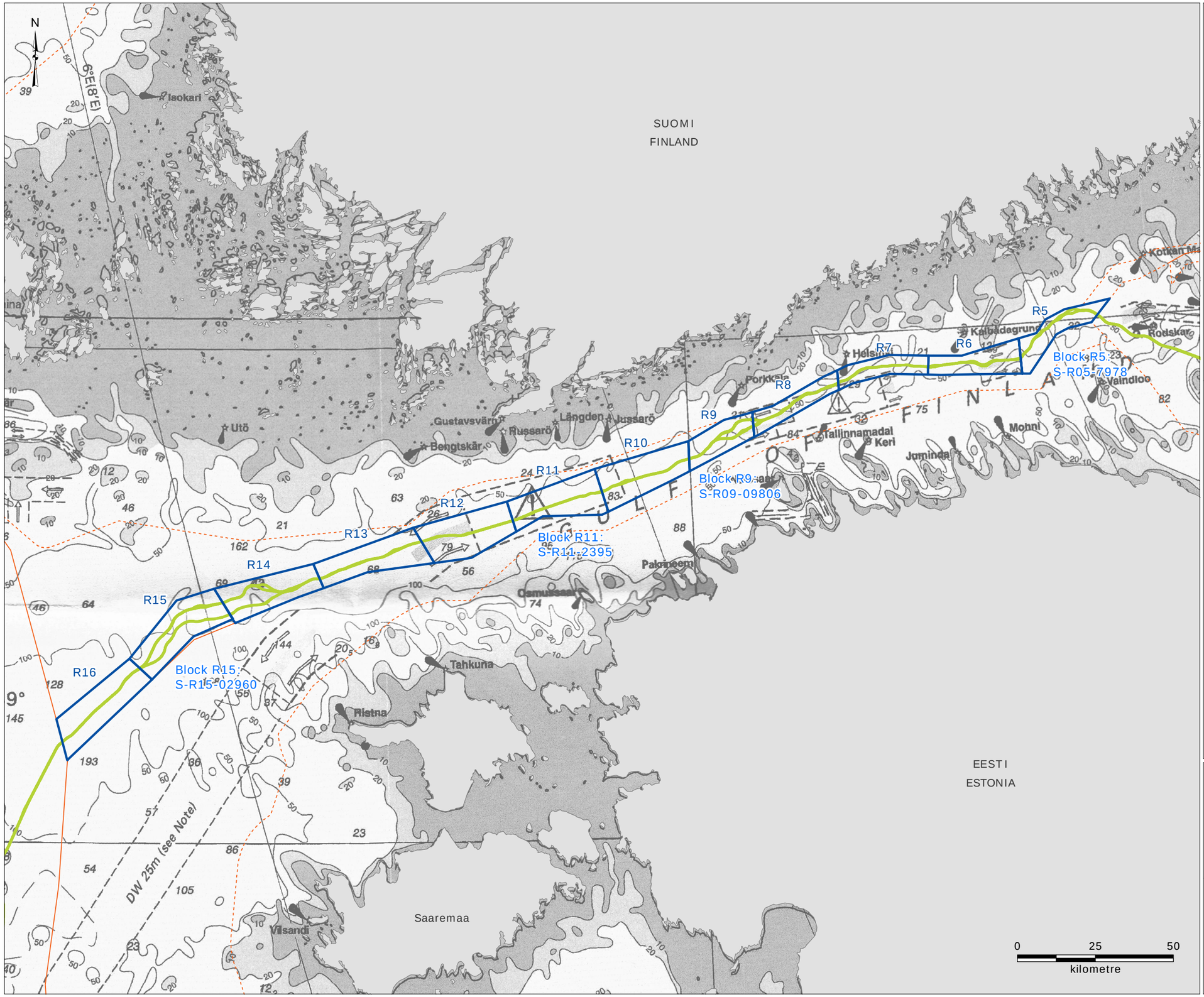
Reference:
- Svarog, 2016, W-SU-REC-OFR-REP-807-ARCH02EN-01, "Technical report on expert analysis and historical and cultural attribution of discovered underwater objects in survey corridor of the Nord Stream 2 pipeline in Russian territorial sea", Nord Stream 2 AG

Version: 03
Date: 2017-02-07
Prepared: MSTB
Controlled: DPEREIRA

CU-01-Espoo

Cultural heritage in Russia

RAMBOLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Block border

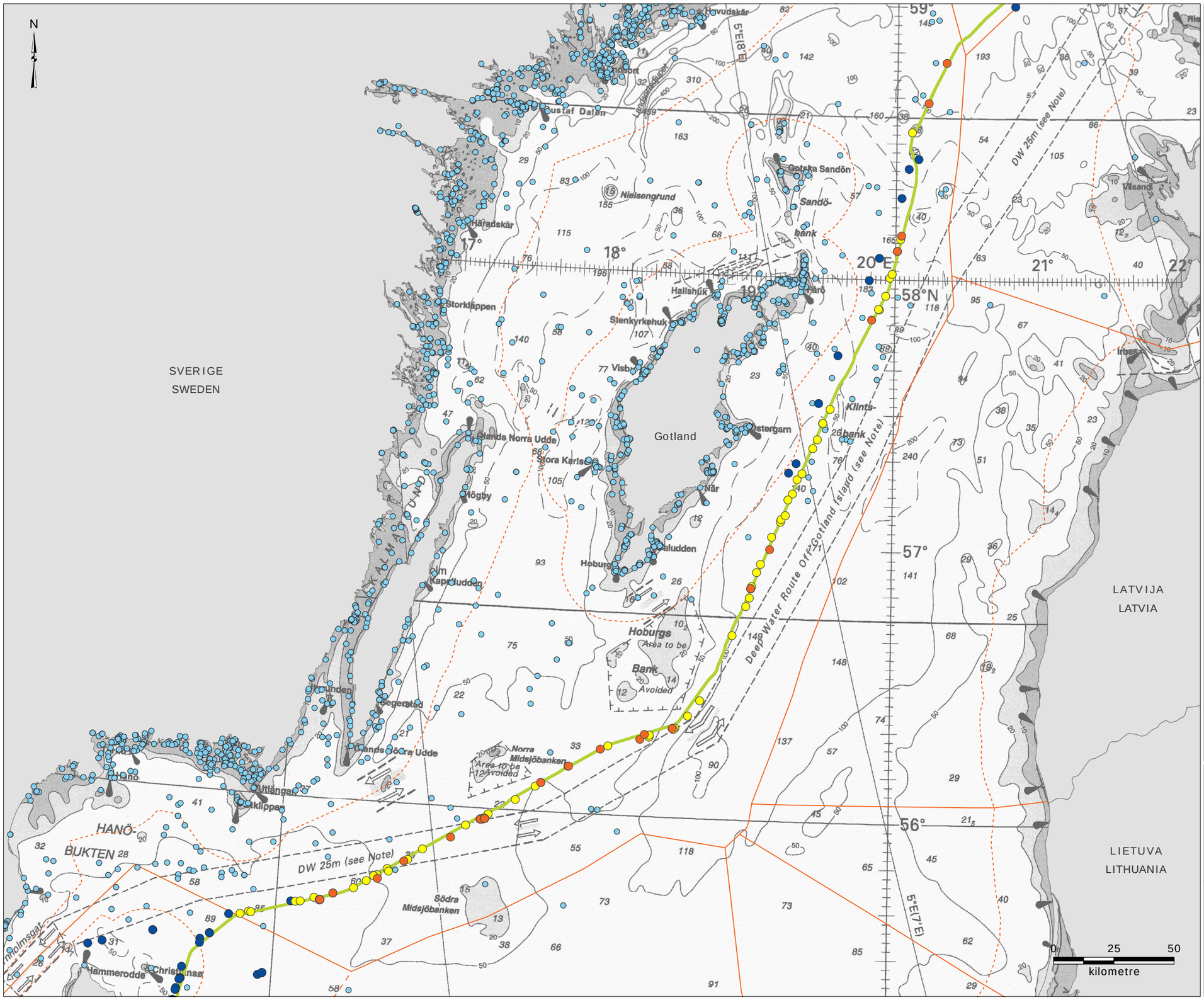
References:
- Fugro Survey Limited, 2016, W-SU-REC-POF-REP-803-FIN000EN-01, "Geophysical Reconnaissance Surveys Reference Route, Baltic Sea", Nord Stream 2 AG

Version: 01
Date: 2017-01-25
Prepared: MIRS
Controlled: DPEREIRA

CU-02-Espoo

Cultural heritage in Finland

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Distinct wrecks from NSP2 investigations
- Possible wrecks from NSP2 investigations
- Identified ship wrecks from NSP investigations
- Marine archeological objects from database of the Swedish National Heritage Board

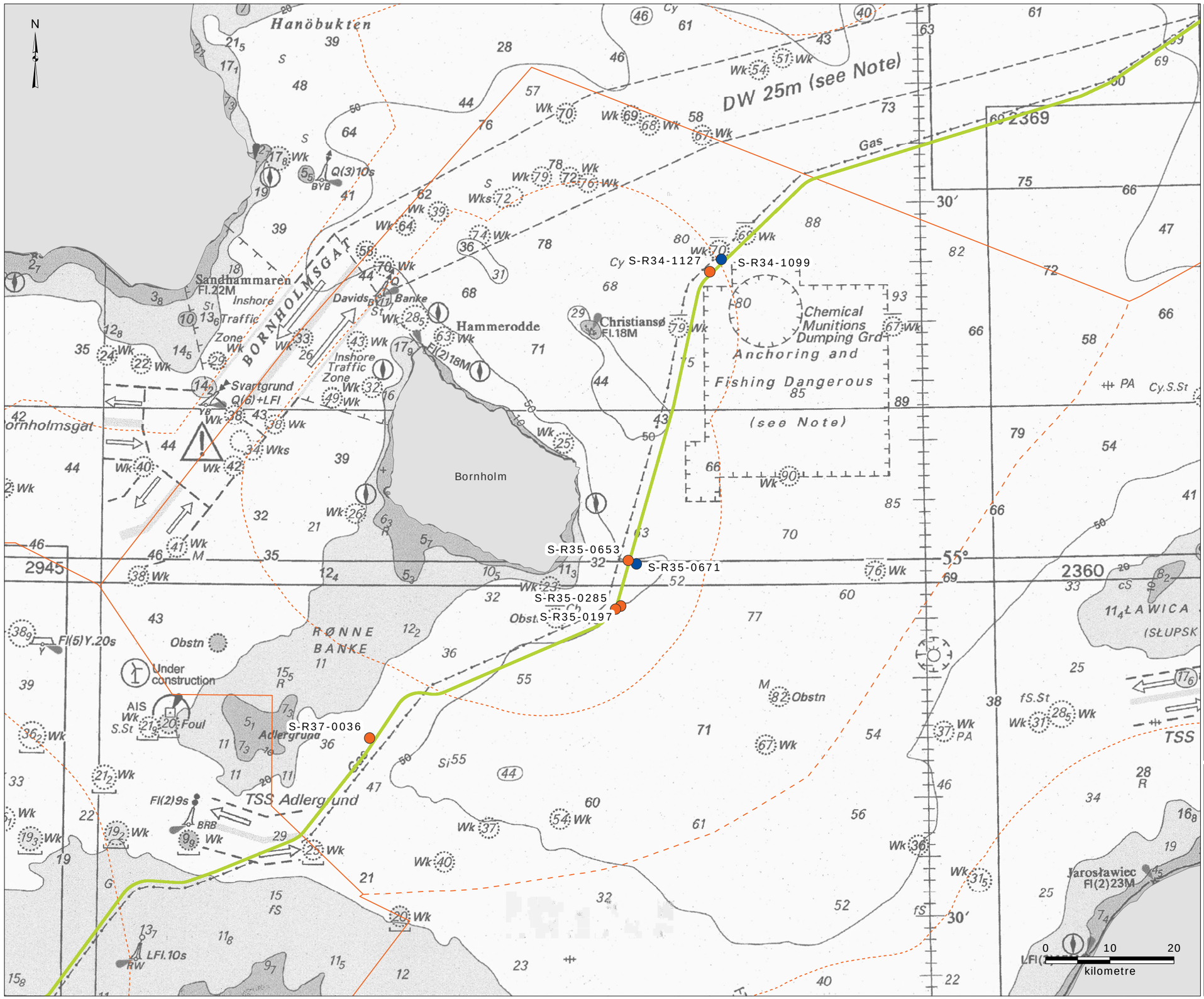
References:
- Marine archeological objects: The Swedish National Heritage Board, http://www.fmis.raa.se. Data accessed: 2016-3-10
- Maritime Museum, 2016, archaeological report

Version: 03
Date: 2017-01-24
Prepared: MSTB
Controlled: DPEREIRA

CU-03-Espoo

Cultural heritage in Sweden

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Identified possible ship wrecks from NSP2 investigations
- Identified ship wrecks from NSP investigations

Note:
- Potential ship wreck findings are from NSP2 investigations. Findings are to be verified further by the Viking Ship Museum and The Heritage Agency of Denmark.

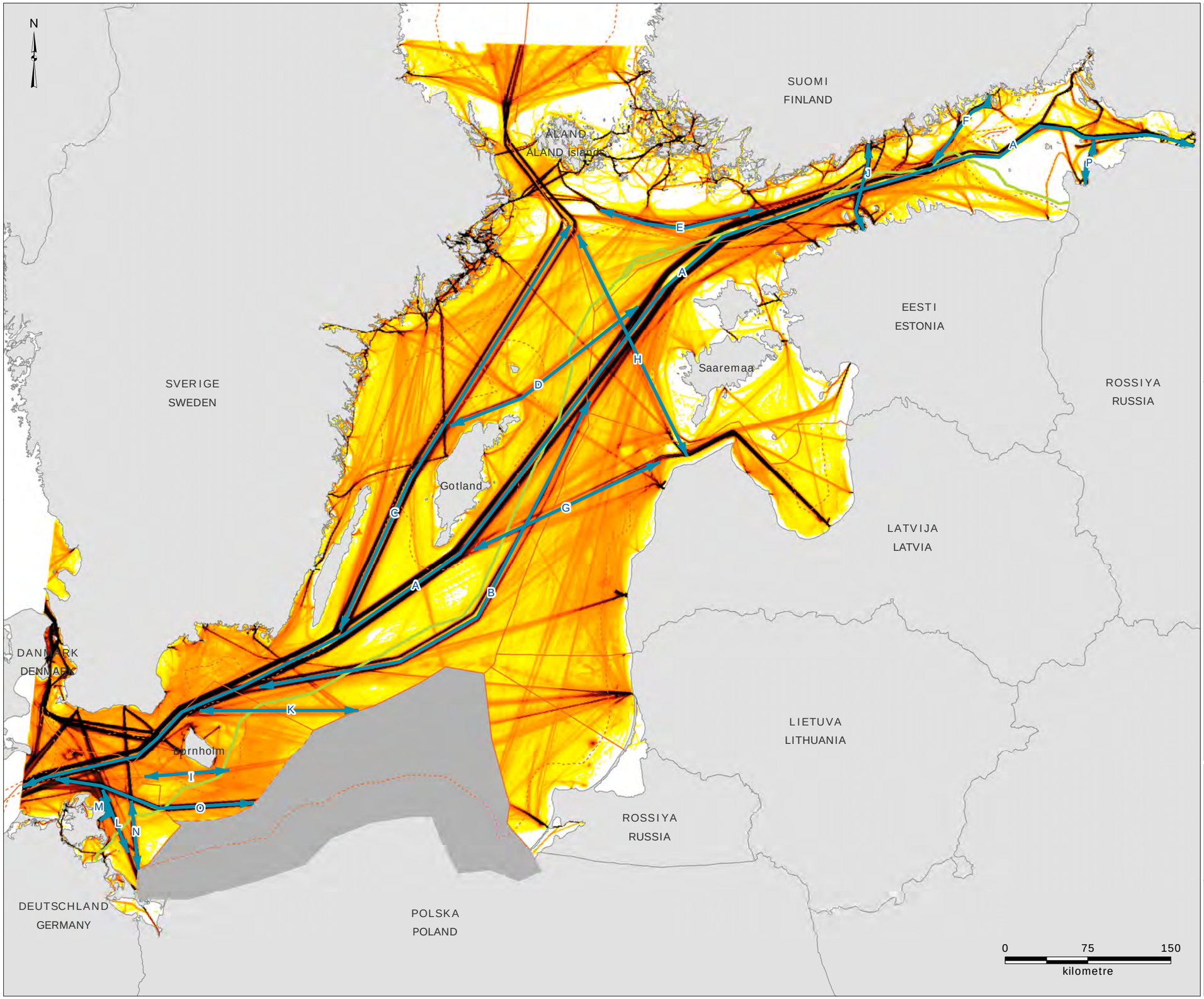
Reference:
- W-SU-REC-POF-REP-803-DEN000EN-01 Geophysical Reconnaissance surveys reference route, Country report Denmark

Version: 05
Date: 2017-01-25
Prepared: MIRS
Controlled: DPEREIRA

CU-04-Espoo

Cultural heritage in Denmark

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes

Ship density (2014):

- 0 - 1
- > 1 - 100
- > 100 - 500
- > 500 - 600
- > 600 - 1,000
- > 1,000 - 1,500
- > 1,500
- No data available (Poland)

Note:
- There is no permission from Poland to show AIS data
- Primary ship traffic routes in 2014
- Letters represent the name of the location where data was measured

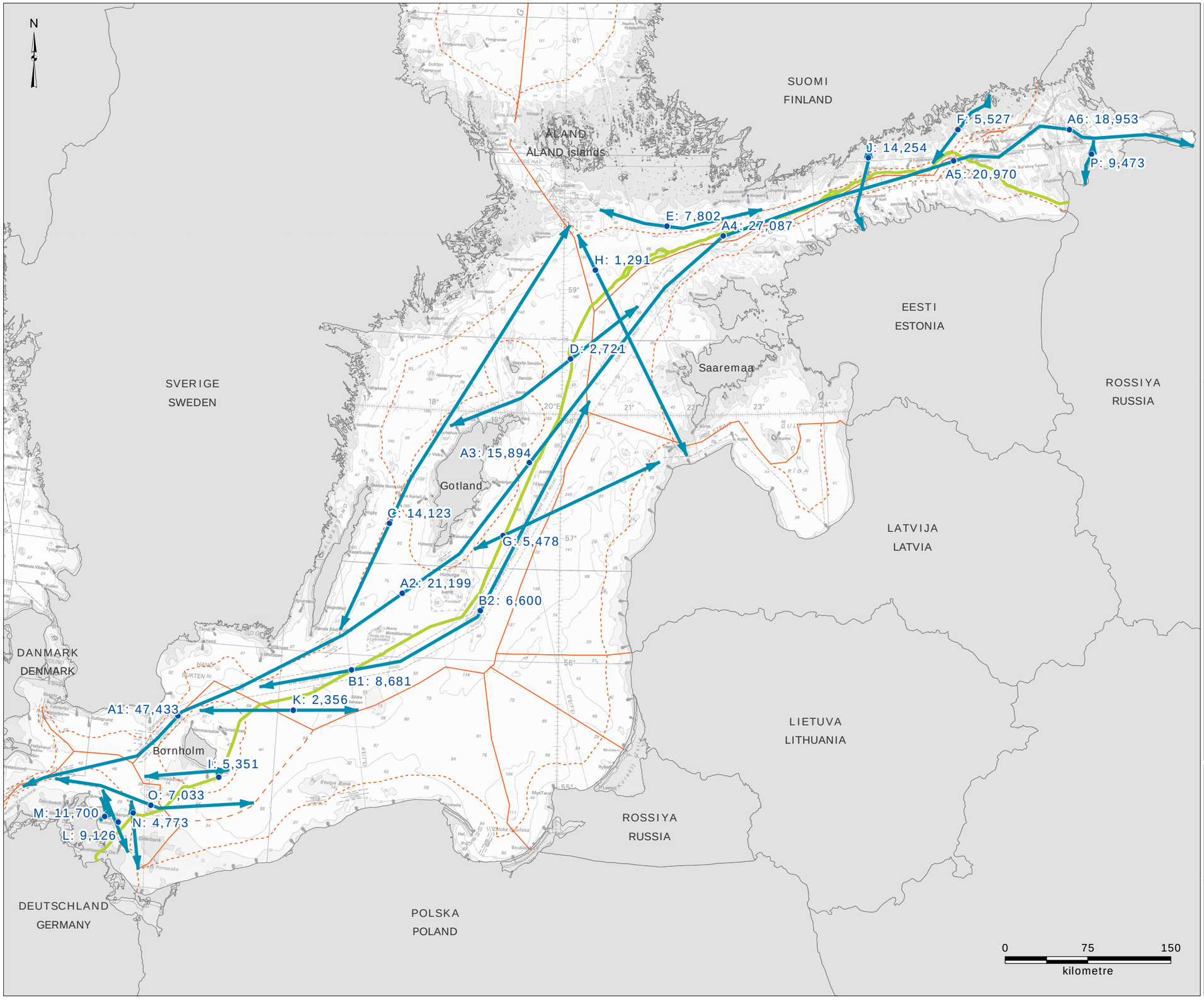
Reference:
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.

Version: 05
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-01-Espoo

Primary ship traffic routes

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes
- Ship movements in 2014

Note:
- The labels show number of ship movements on primary ship traffic routes in 2014
- The letters and numbers represent the route, and location along the route, where the 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.

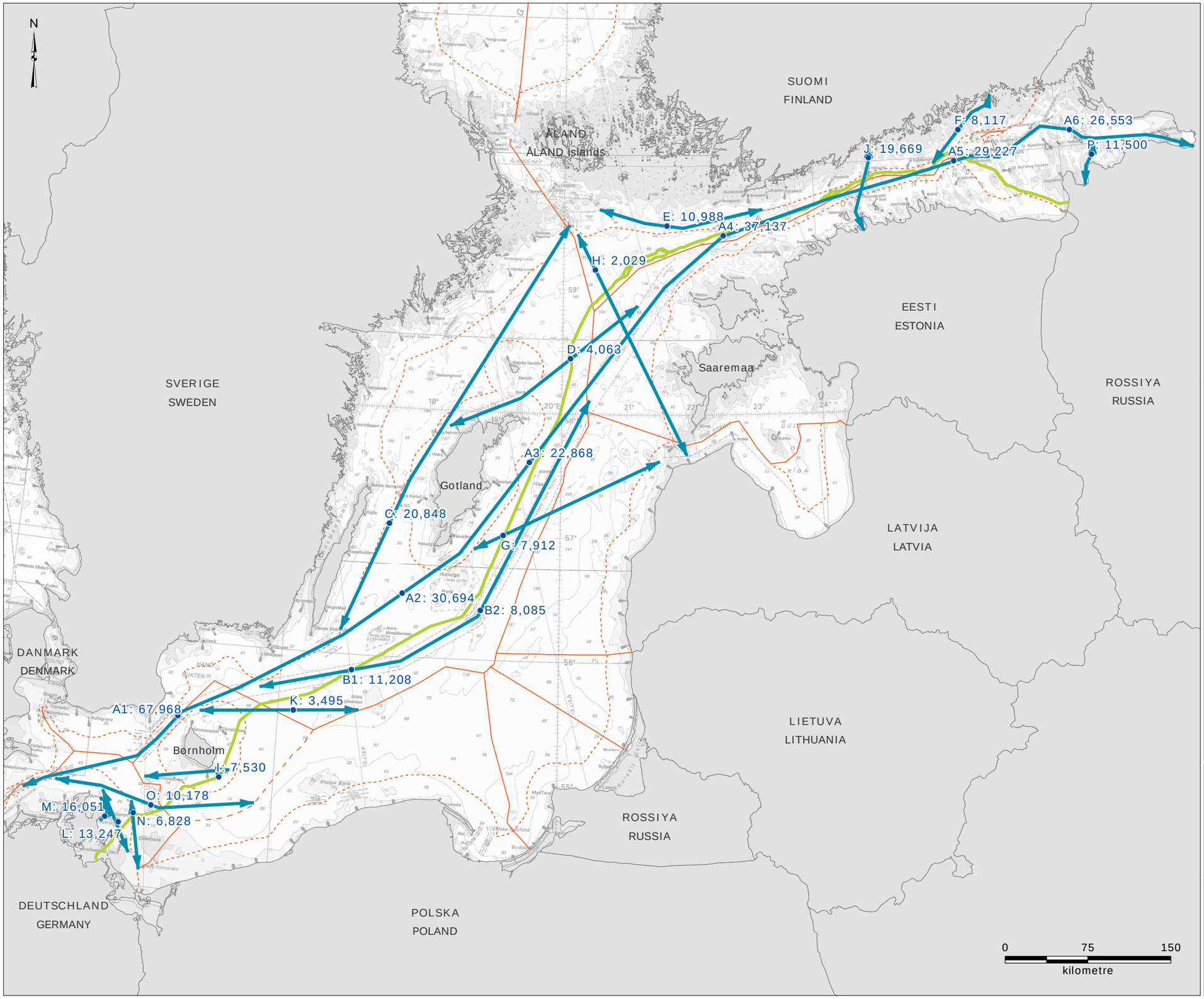
Reference:
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.

Version: 05
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-02-Espoo

Annual number of ship movements on primary ship traffic routes

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes
- Ship movements in 2025

Note:
- The labels show estimated number of ship movements on primary ship traffic routes in 2025
- 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.

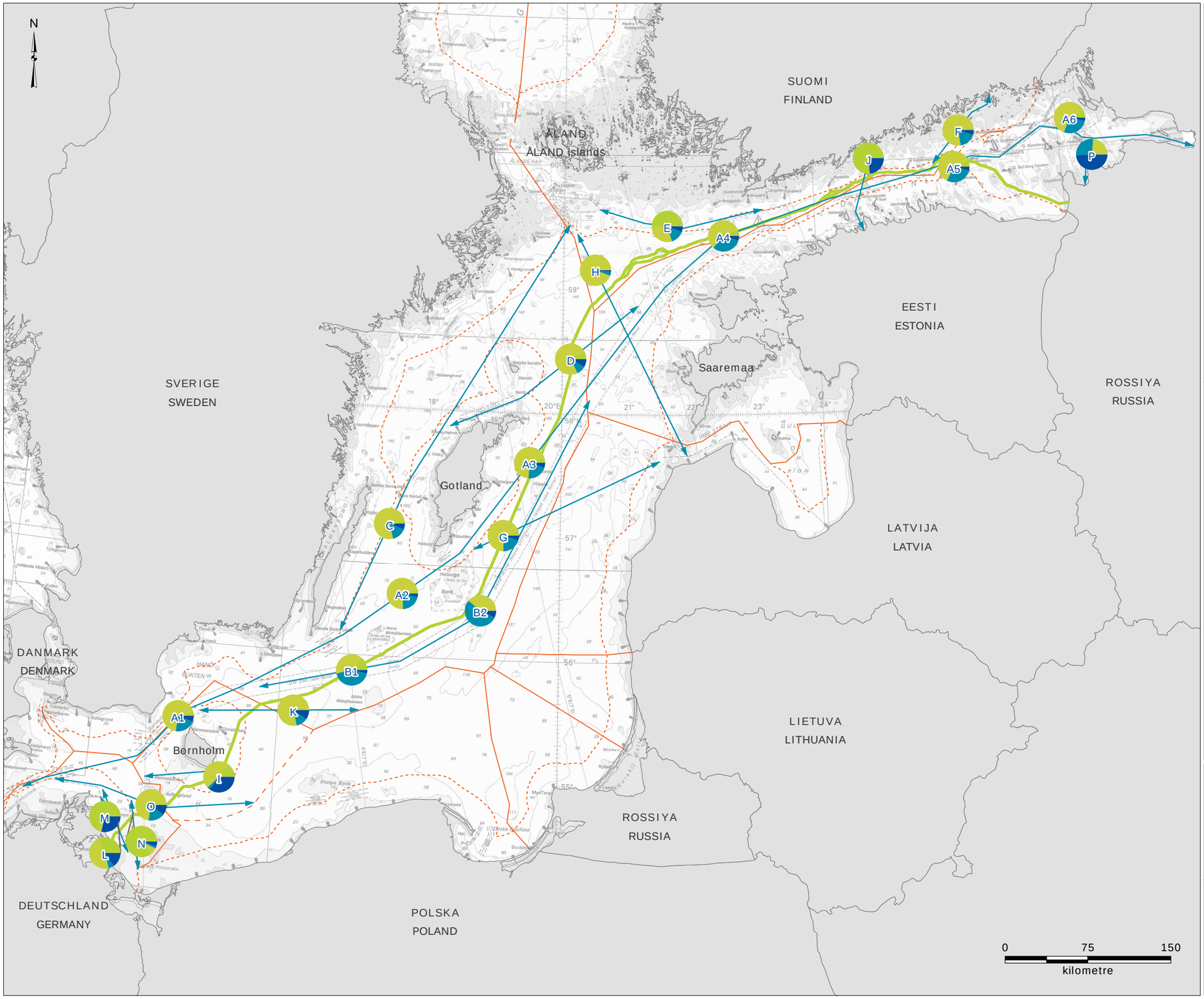
Reference:
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.

Version: 06
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-03-Espoo

Predicted annual number of ship movements on primary ship traffic routes

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes

Ship types:

- Passenger
- Cargo
- Tanker
- Other

Note:
- Distribution of ship types on primary ship traffic routes in 2014
- The letters and numbers represent the route, and location along the route, where the 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.

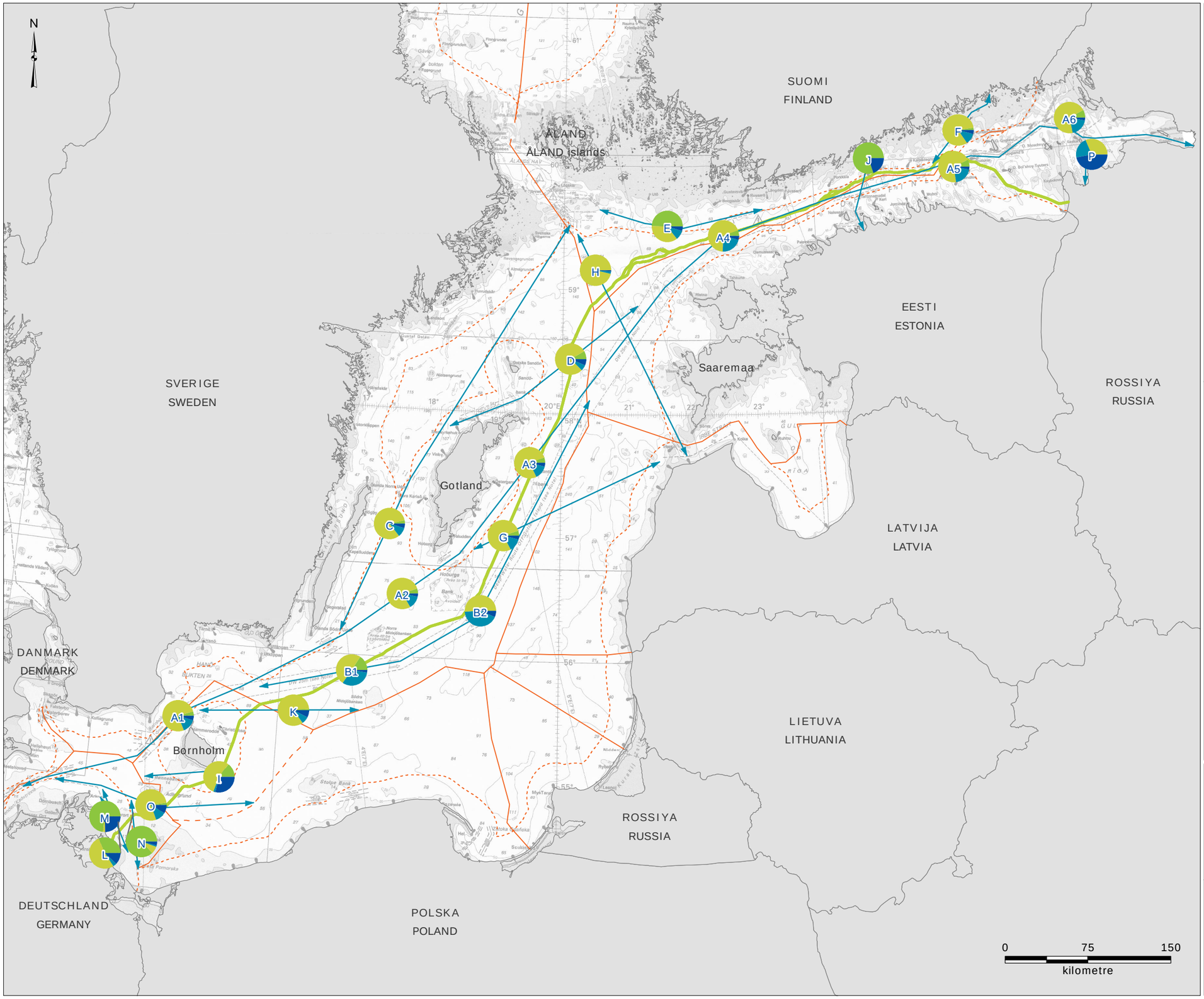
Reference:
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.

Version:	05
Date:	2017-01-27
Prepared:	MIRS
Controlled:	DPEREIRA

SH-04-Espoo

Distribution of ship types on primary ship traffic routes

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes

Ship types:

- Passenger
- Cargo
- Tanker
- Other

Note:
- Predicted distribution of ship types on primary ship traffic routes in 2025
- The letters and numbers represent the route, and location along the route, where the 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.

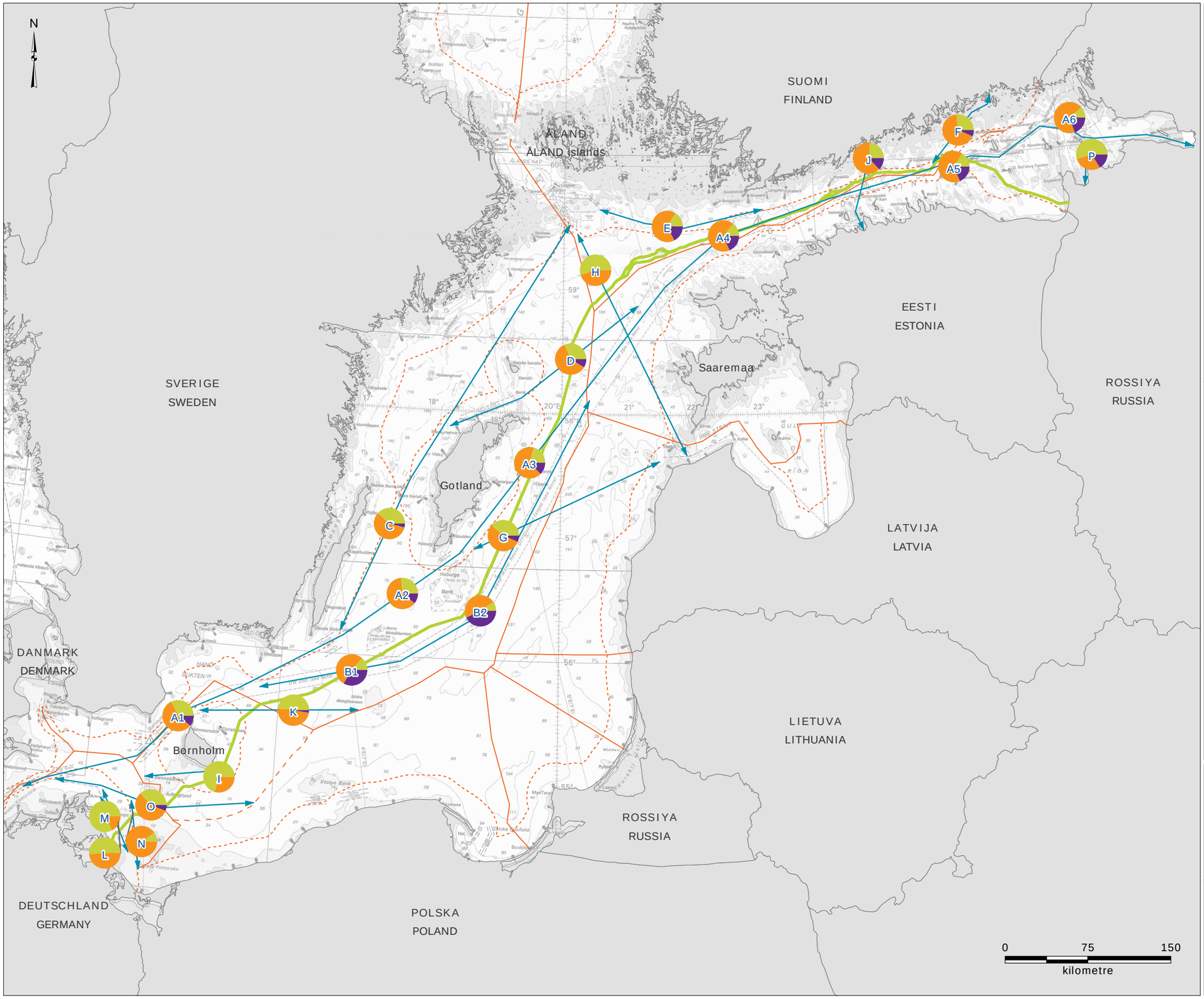
Reference:
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.

Version: 05
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-05-Espoo

Predicted distribution of ship types on primary ship traffic routes

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Primary ship traffic routes

Ship lengths (m):

- 0 - 100
- > 100 - 200
- > 200 - 300
- > 300

Note:
- Distribution of ship length on primary ship traffic routes in 2014
- The letters and numbers represent the route, and location along the route, where the 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.

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

Version: 05
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-06-Espoo

Distribution of ship length on primary ship traffic routes

RAMBØLL

N

SUOMI
FINLAND

ÅLAND
ÅLAND Islands

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

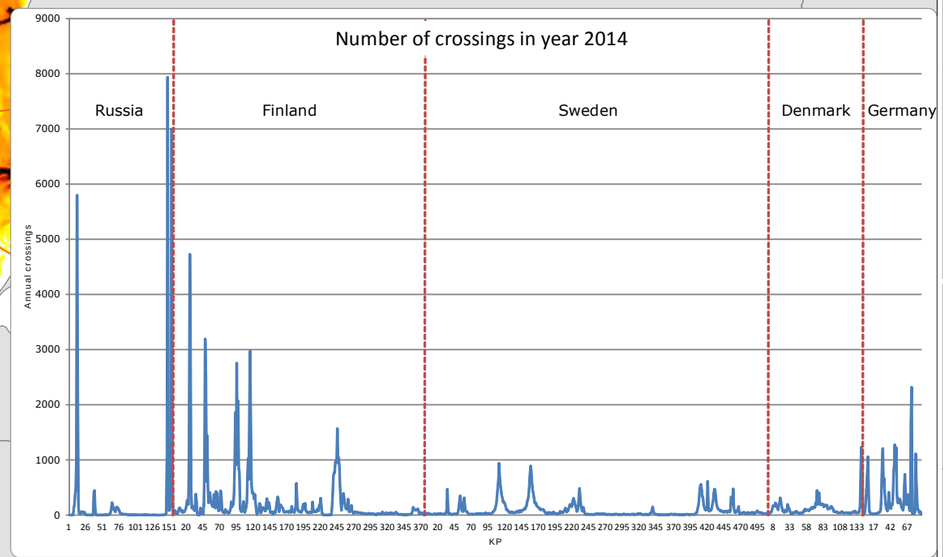
LATVIJA
LATVIA

DANMARK
DENMARK

Bornholm

DEUTSCHLAND
GERMANY

POLSKA
POLAND



0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Locations where primary sailing routes cross NSP2 pipelines

Ship density (2014):

- 0 - 1
- > 1 - 100
- > 100 - 500
- > 500 - 600
- > 600 - 1,000
- > 1,000 - 1,500
- > 1,500
- No data available (Poland)

Note:
- There is no permission from Poland to show AIS data

References:

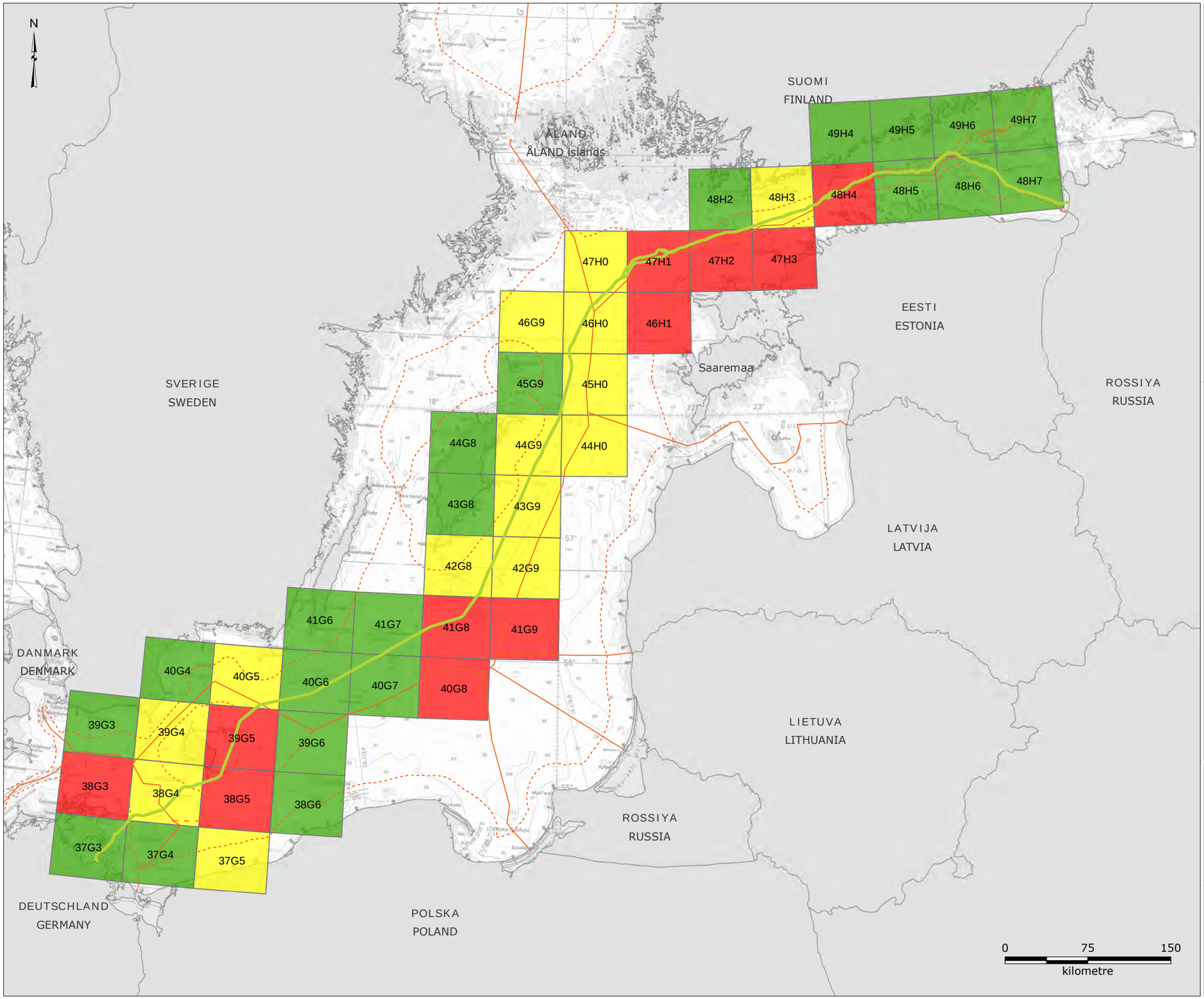
- The Danish Maritime Authority (DMA), 2014, Automatic Identification System (AIS) data 2014.
- Ramboll, 2016, "Ship traffic background report", W-PE-EIA-POF-REP-805-060100EN, Ramboll, Denmark

Version: 07
Date: 2017-01-27
Prepared: MIRS
Controlled: DPEREIRA

SH-07-Espoo

Locations where primary ship traffic routes cross the pipelines

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Trawl mean catch in weight (tonnes) 2010-2014*:

- Less important trawl areas: < 5,000 tonnes
- Important trawl areas: 5,000 - 8,000 tonnes
- Very important trawl areas: > 8,000 tonnes

Note:
- "Trawl" includes all types of trawling activities
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares

* Data provided from Poland for 2009-2013

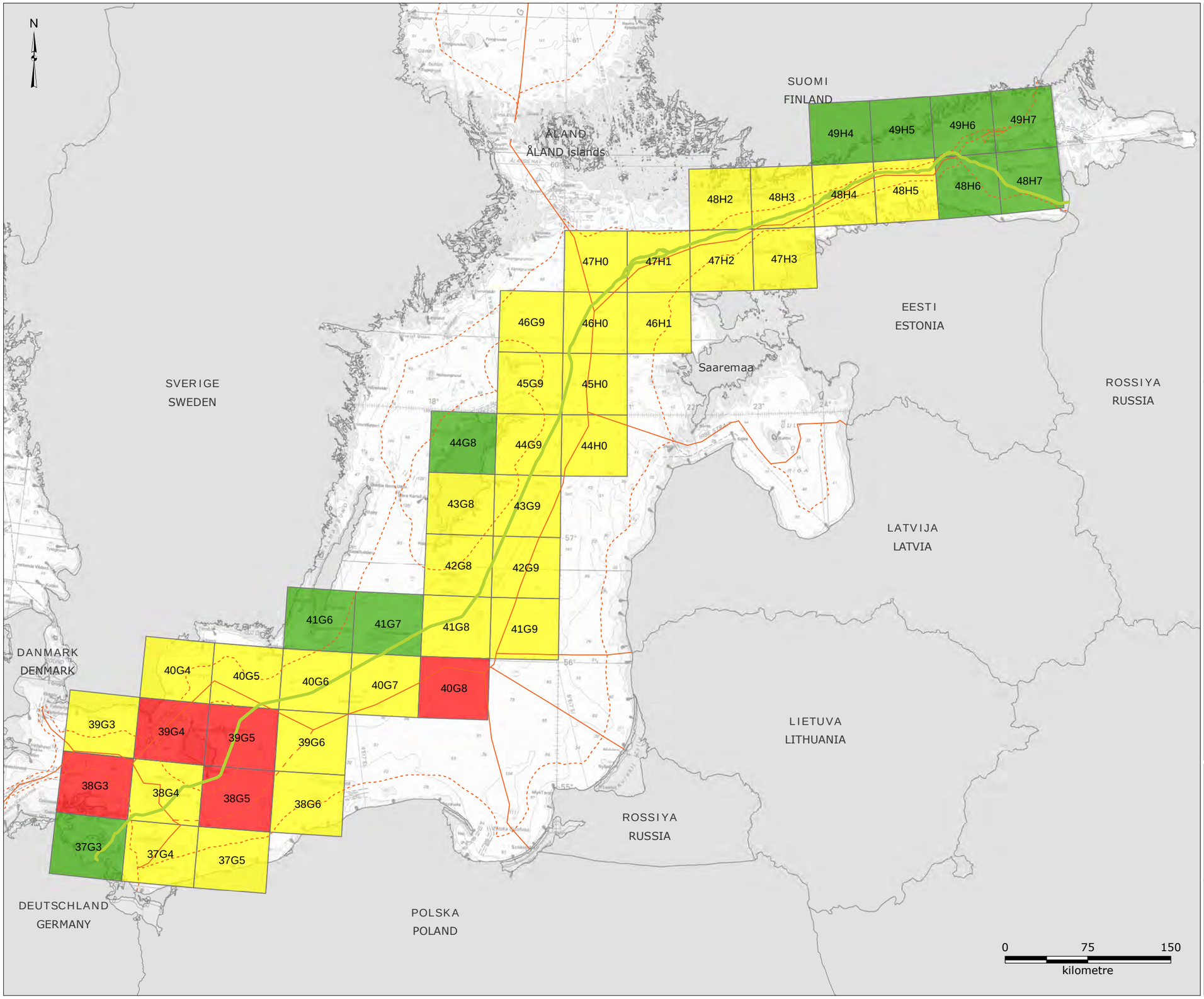
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 05
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-01-Espoo

Trawl importance based on mean weight of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Trawl mean value of catches (euro) 2010-2014*:

- Less important areas: < 500,000 euro
- Important areas: 500,000 - 3,100,000 euro
- Very important areas: > 3,100,000 euro

Note:
- "Trawl" includes all types of trawling activities
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

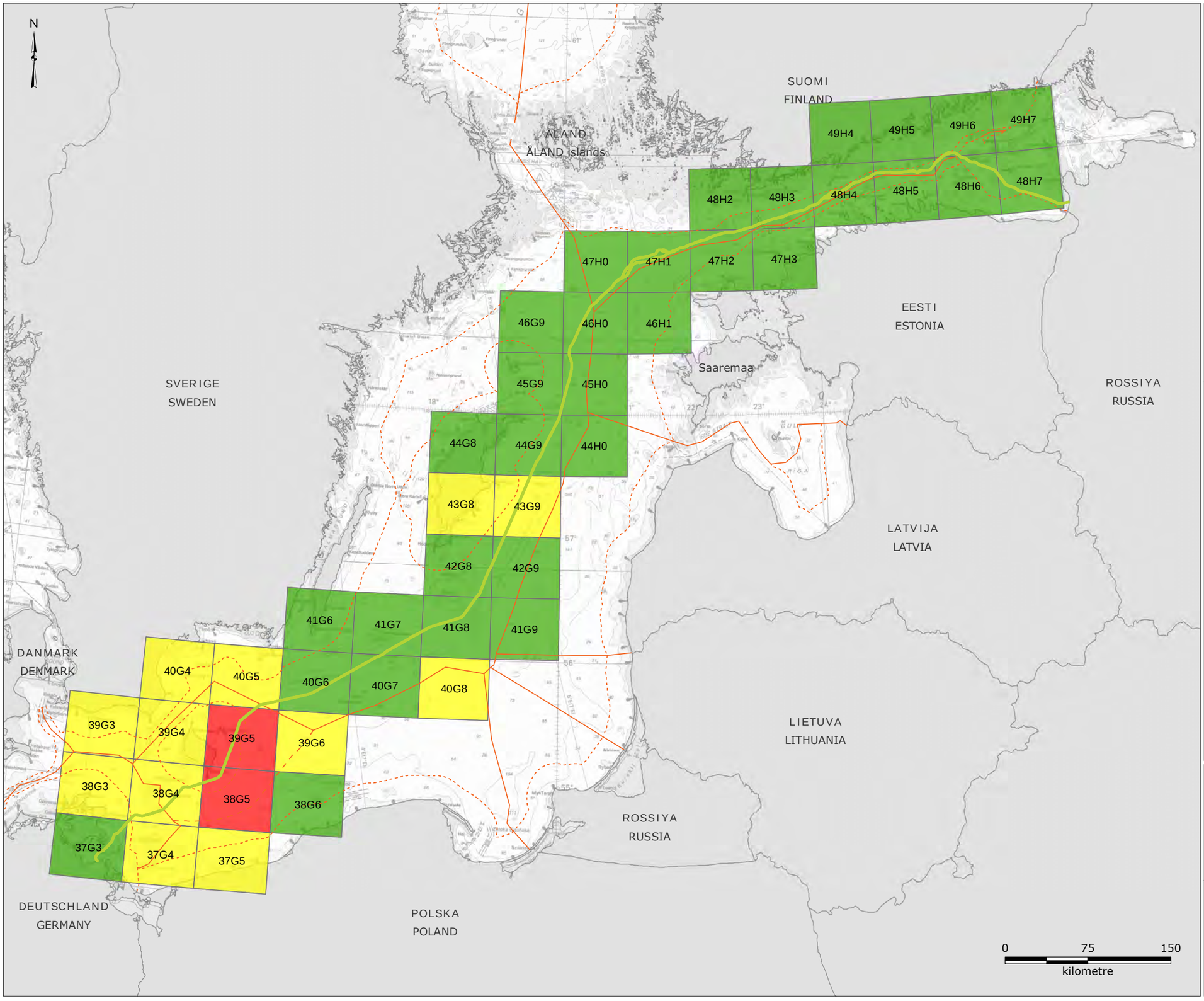
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 06
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-02-Espoo

Trawl importance based on mean value of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Bottom trawl mean catch in weight (tonnes) 2010-2014*:

- Less important trawl areas: < 650 tonnes
- Important trawl areas: 650 - 3,500 tonnes
- Very important trawl areas: > 3,500 tonnes

Note:
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

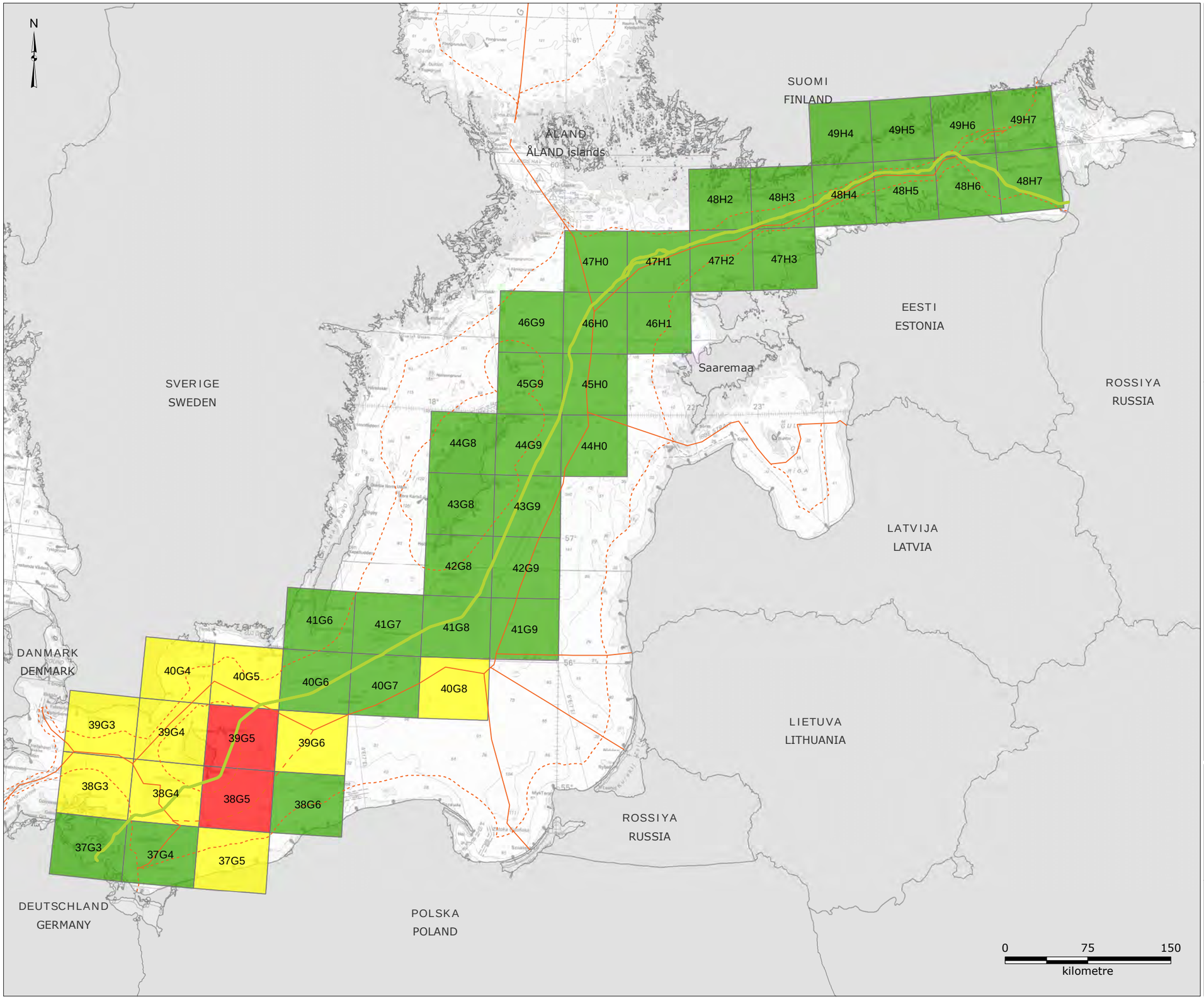
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 05
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-03-Espoo

Bottom trawl importance based on mean weight of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Bottom trawl mean catch in value (euro) 2010-2014*:

- Less important areas: < 800,000 euro
- Important areas: 800,000 - 3,650,000 euro
- Very important areas: > 3,650,000 euro

Note:
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

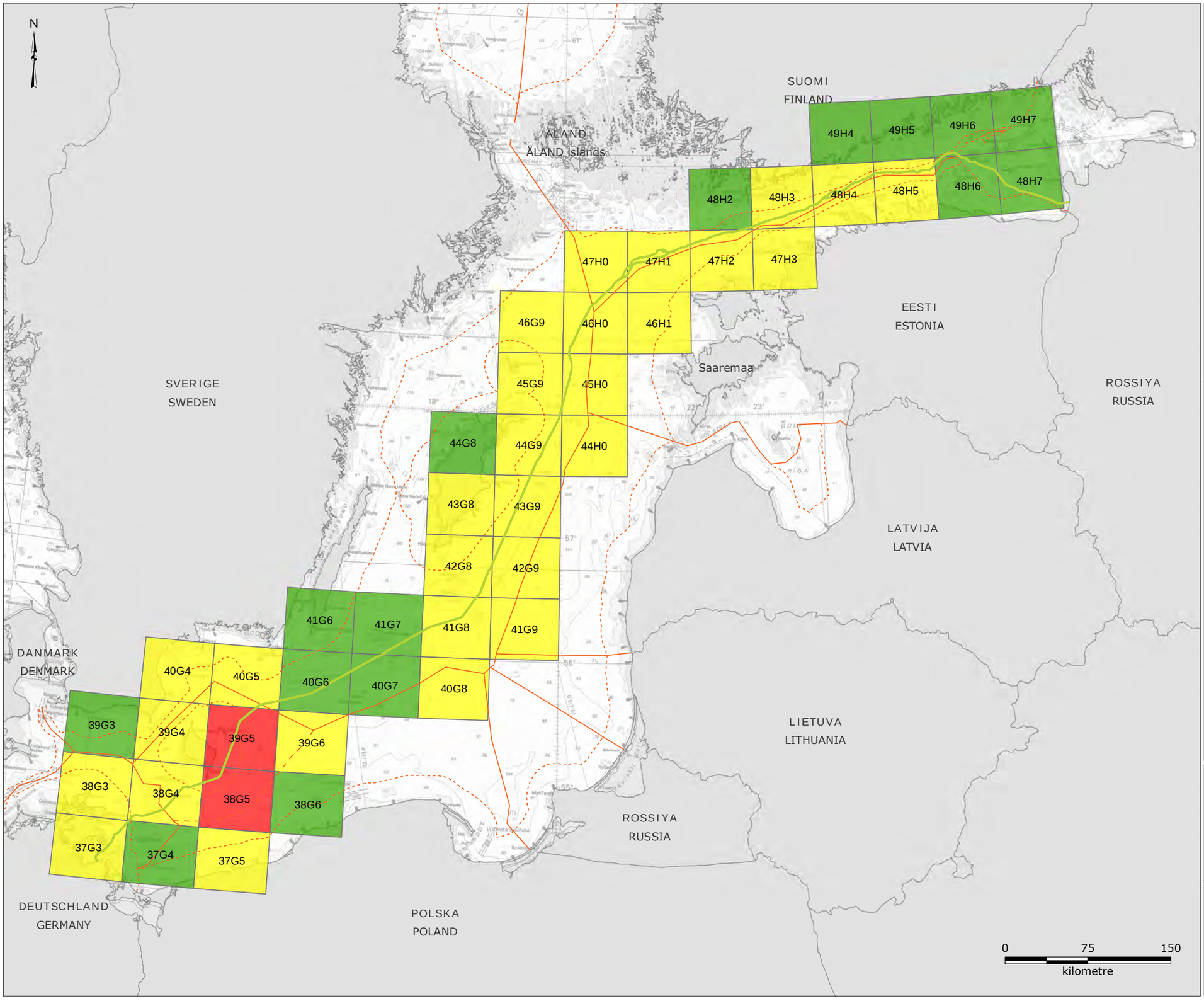
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 05
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-04-Espoo

Bottom trawl importance based on mean value of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Total mean catch in weight (tonnes) 2010-2014*:

- Less important areas: < 4,000 tonnes
- Important areas: 4,000 - 15,000 tonnes
- Very important areas: > 15,000 tonnes

Note:
- Importance based on mean weight of all types of catch methods
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

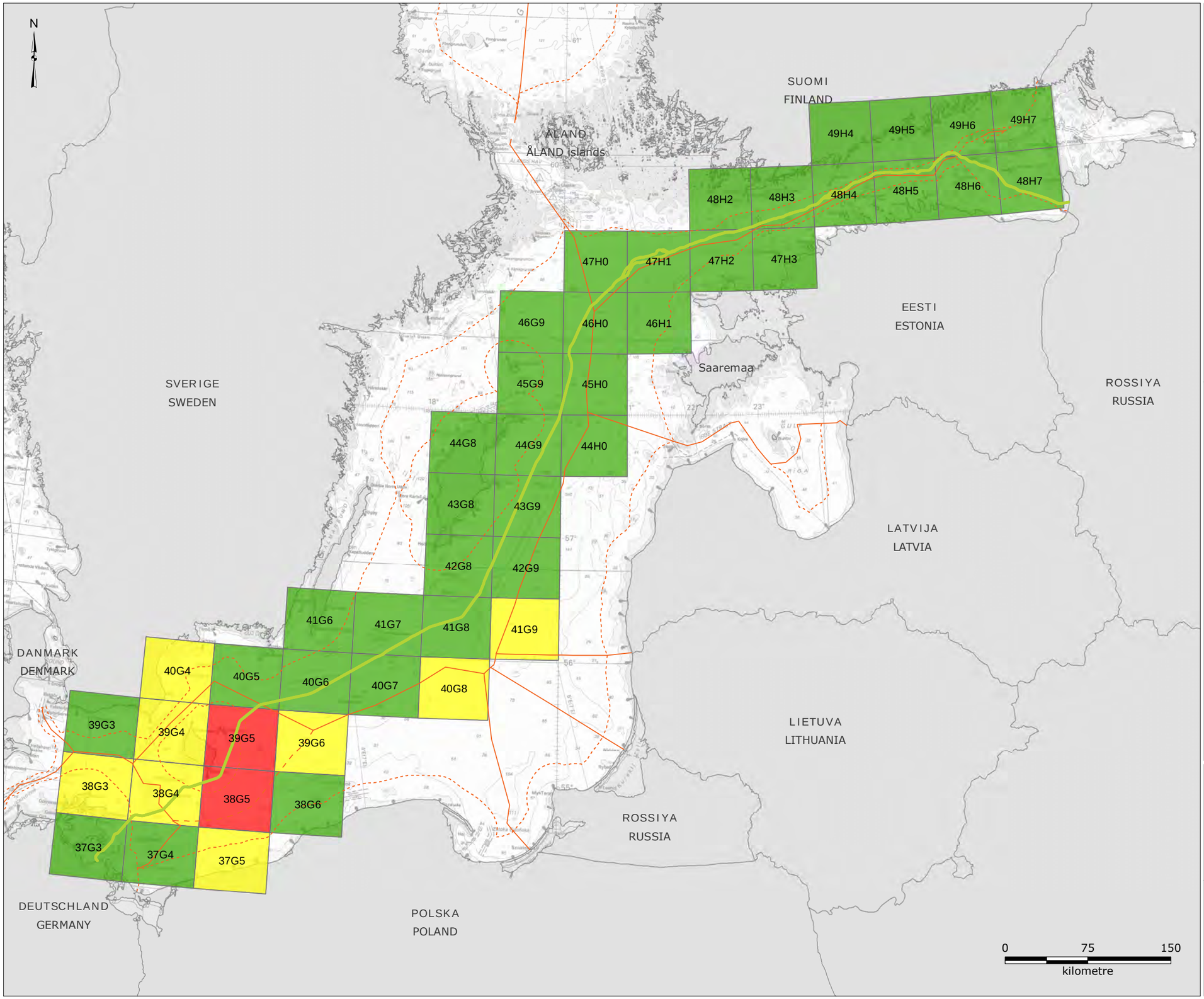
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 05
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-05-Espoo

Importance based on mean weight of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Total mean catch in value (euro) 2010-2014*:

- Less important areas: < 2,800,000 euro
- Important areas: 2,800,000 - 6,500,000 euro
- Very important areas: > 6,500,000 euro

Note:
- Importance based on mean value of all types of catch methods
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

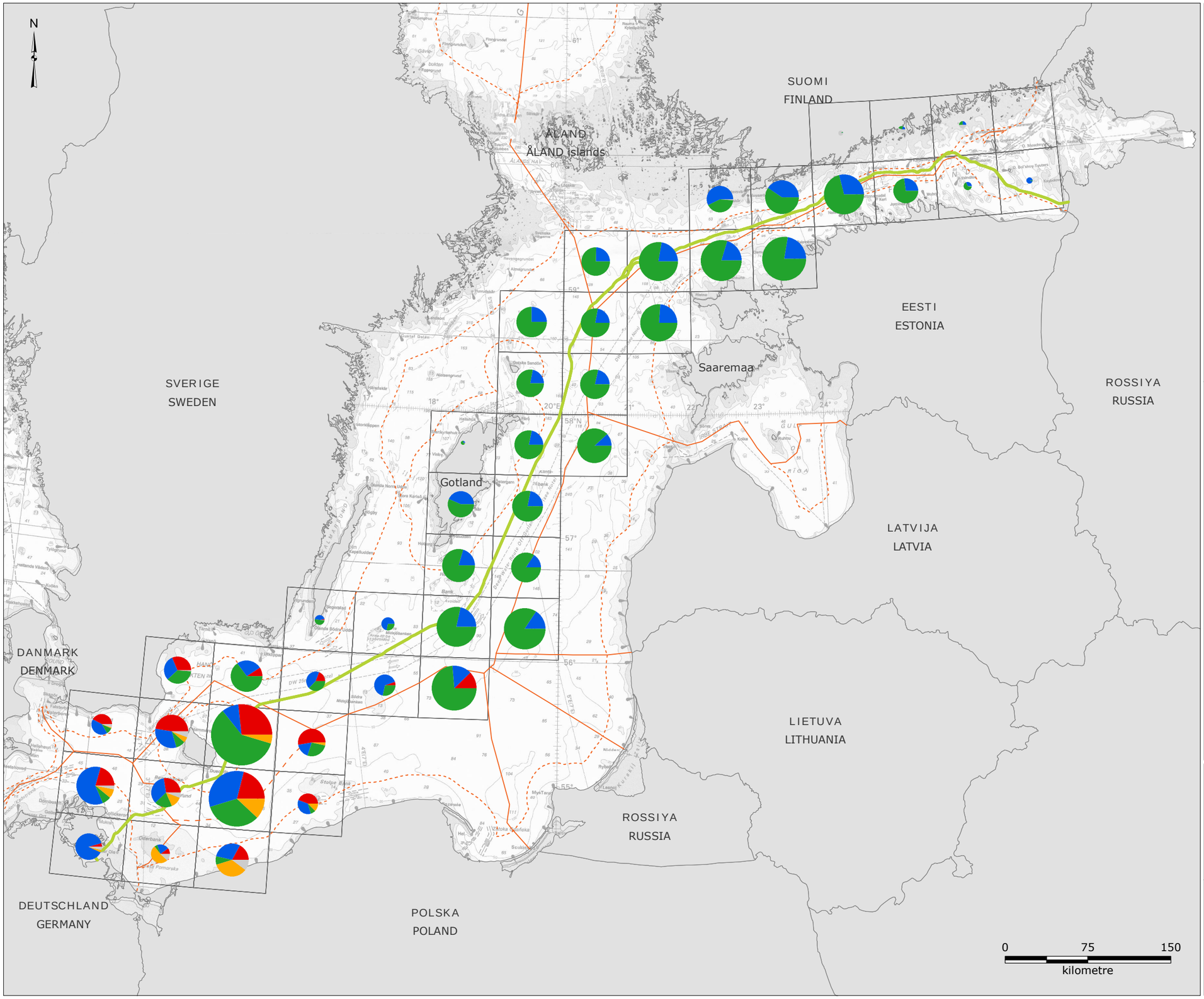
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 06
Date: 2017-01-30
Prepared: MSTB
Controlled: JLA

FC-06-Espoo

Importance based on mean value of catches

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Mean catch by species in tonnes (2010-2014)*:

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to real values:

- 15,000 tonnes
- 5,000 tonnes
- 2,500 tonnes

Note:
- Mean weight of all types of catch methods of fish species
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

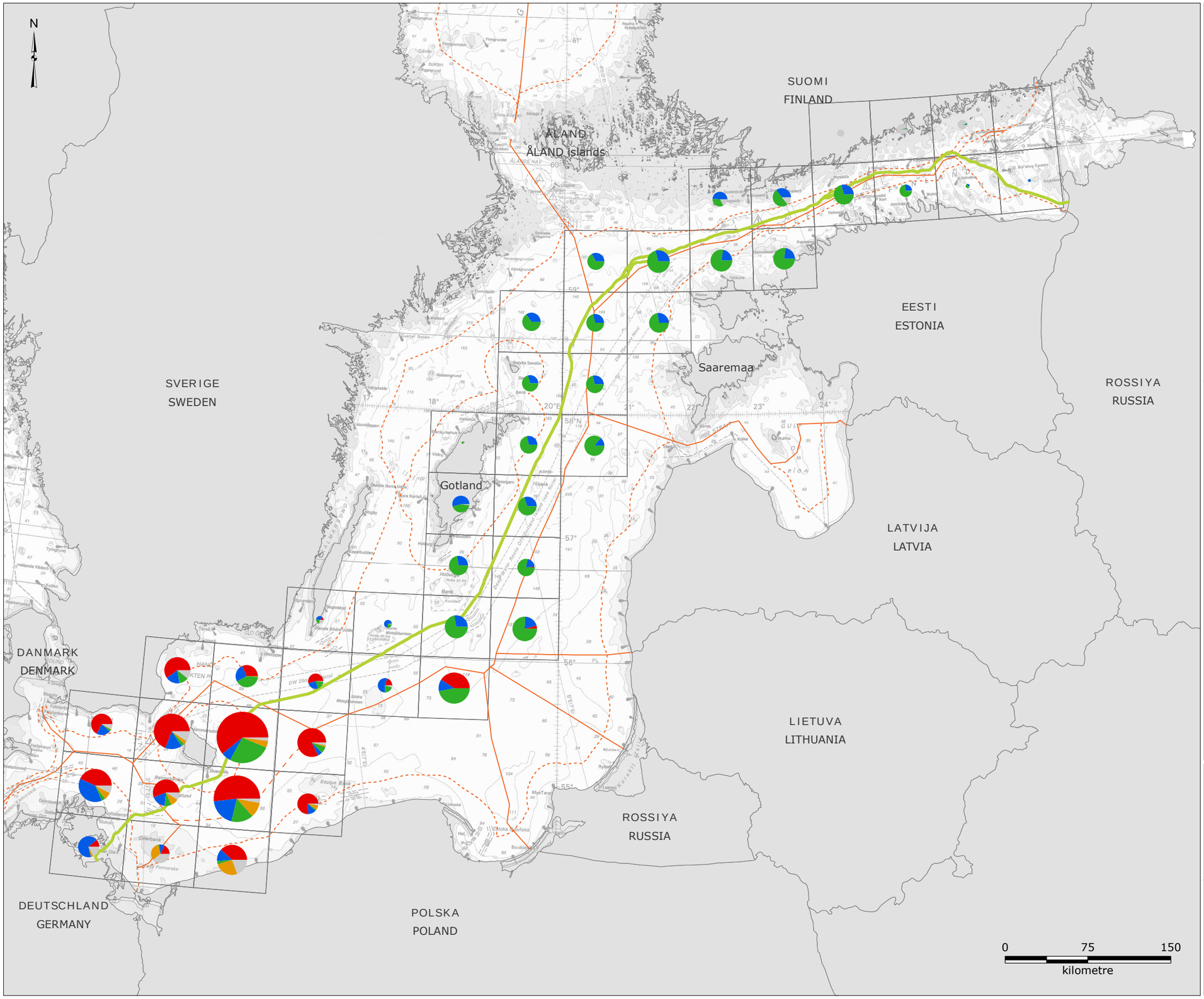
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-07-Espoo

Mean weight of catches of fish species

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Total mean catch by species in value (euro) 2010-2014*:

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to real values:

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

Note:
- Mean value of all types of catch methods of fish species
- Based on data for 2010-2014.
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares

* Data provided from Poland for 2009-2013

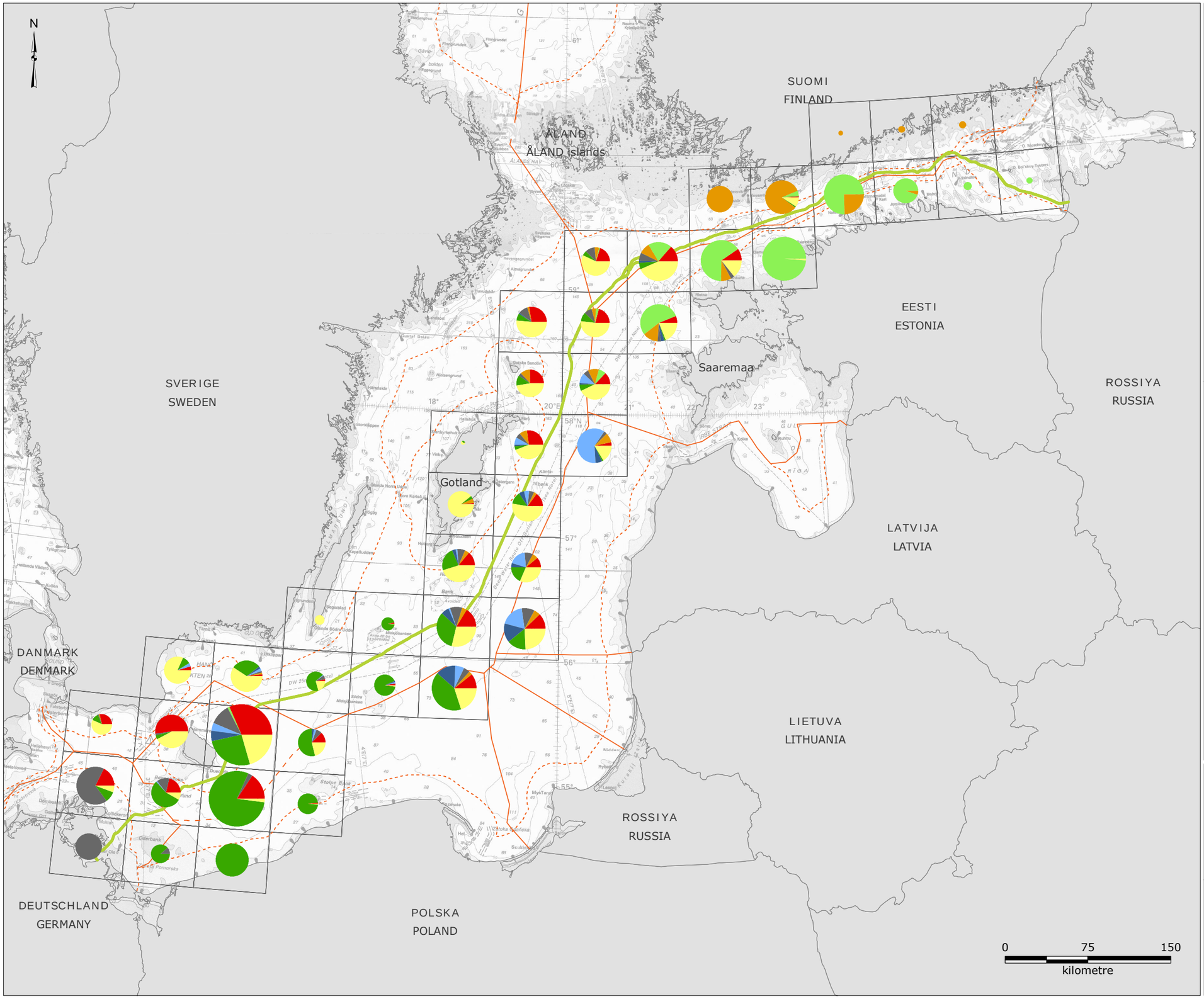
References:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-08-Espoo

Mean value of catches of fish species

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

Fishery mean catch (tonnes) 2010-2014*:

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

Pie areas scaled according to real values:

- 15,000 tonnes
- 5,000 tonnes
- 2,500 tonnes

Note:
- Based on data for 2010-2014
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares
* Data provided from Poland for 2009-2013

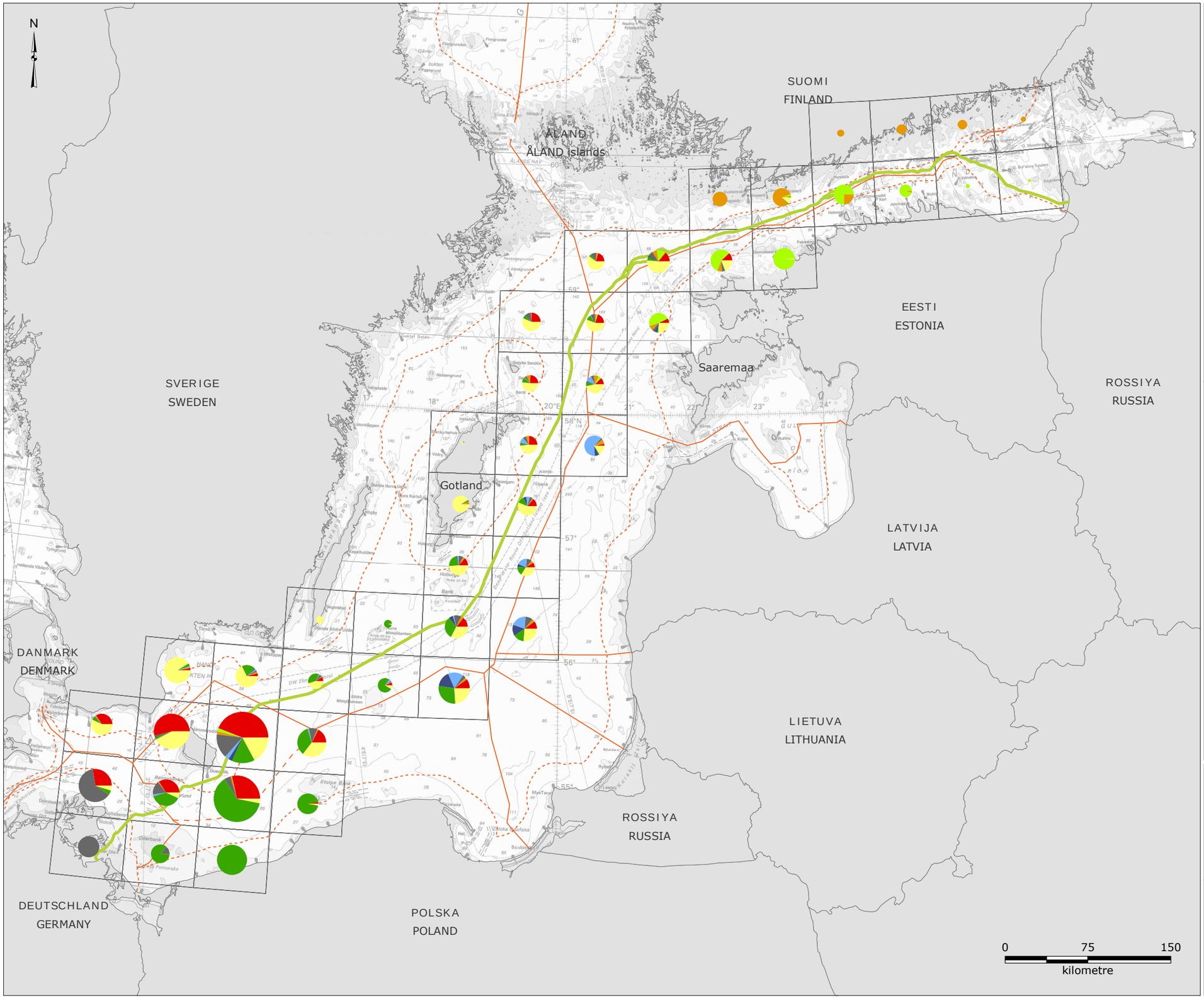
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 05
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-09-Espoo

Mean weight of catches by country

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- ICES statistical rectangles

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
- No results for Russia as Russia does not make inventory of fish catches in ICES sub-squares

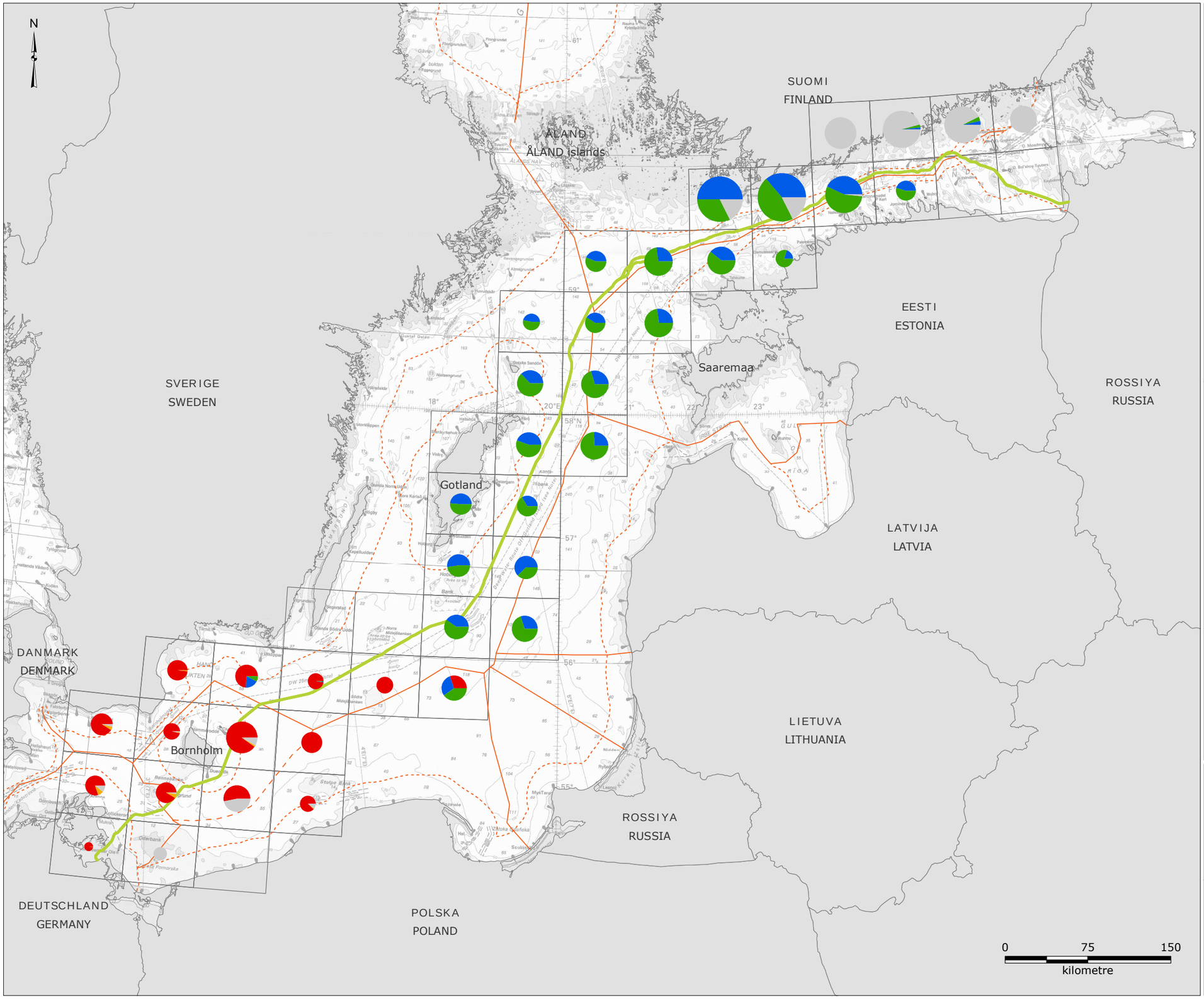
Reference:
- Orbicon, 2016, "Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-10-Espoo

Mean value of catches by country

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

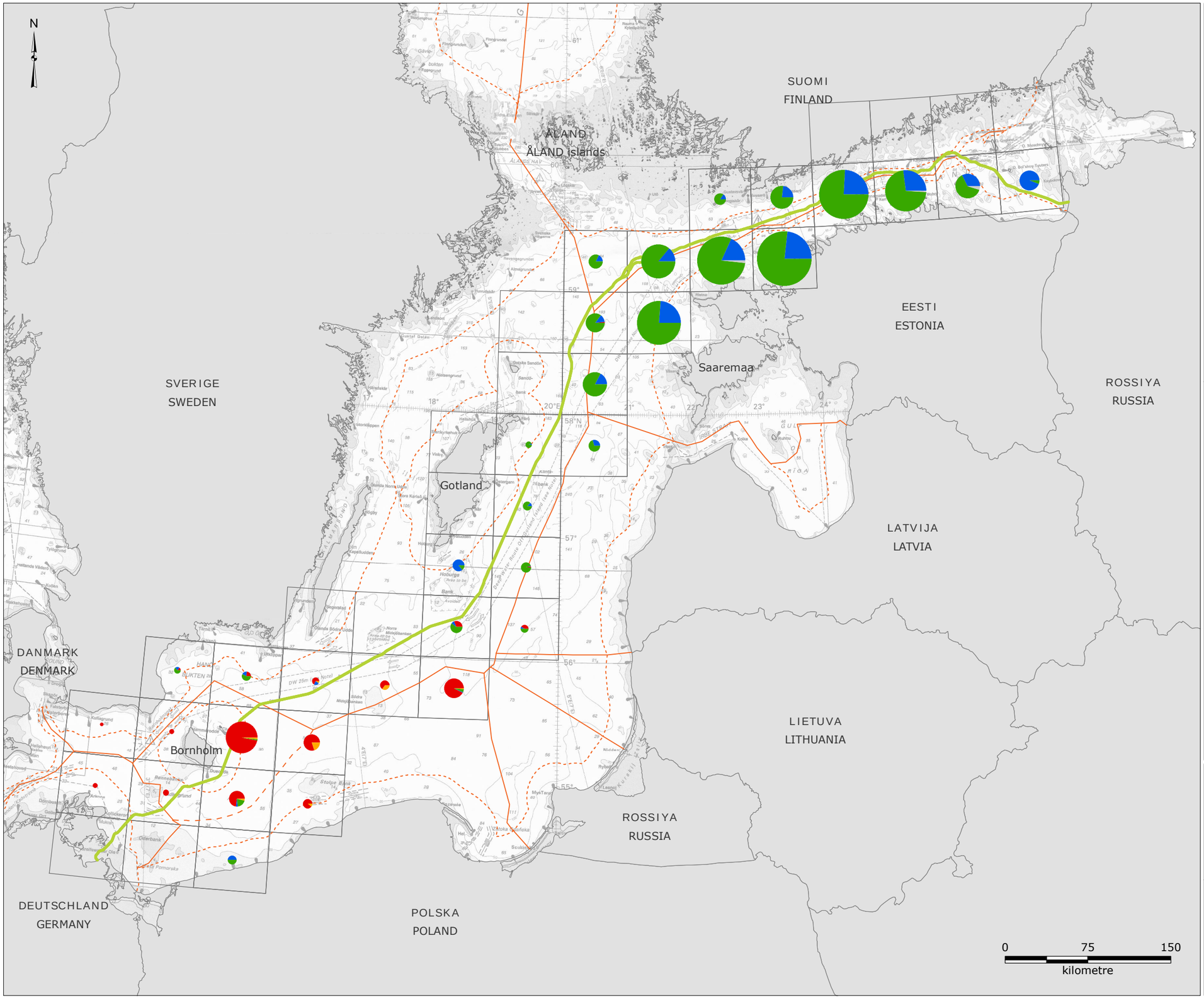
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-11-Espoo

Mean value of catches according to species by Finland

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

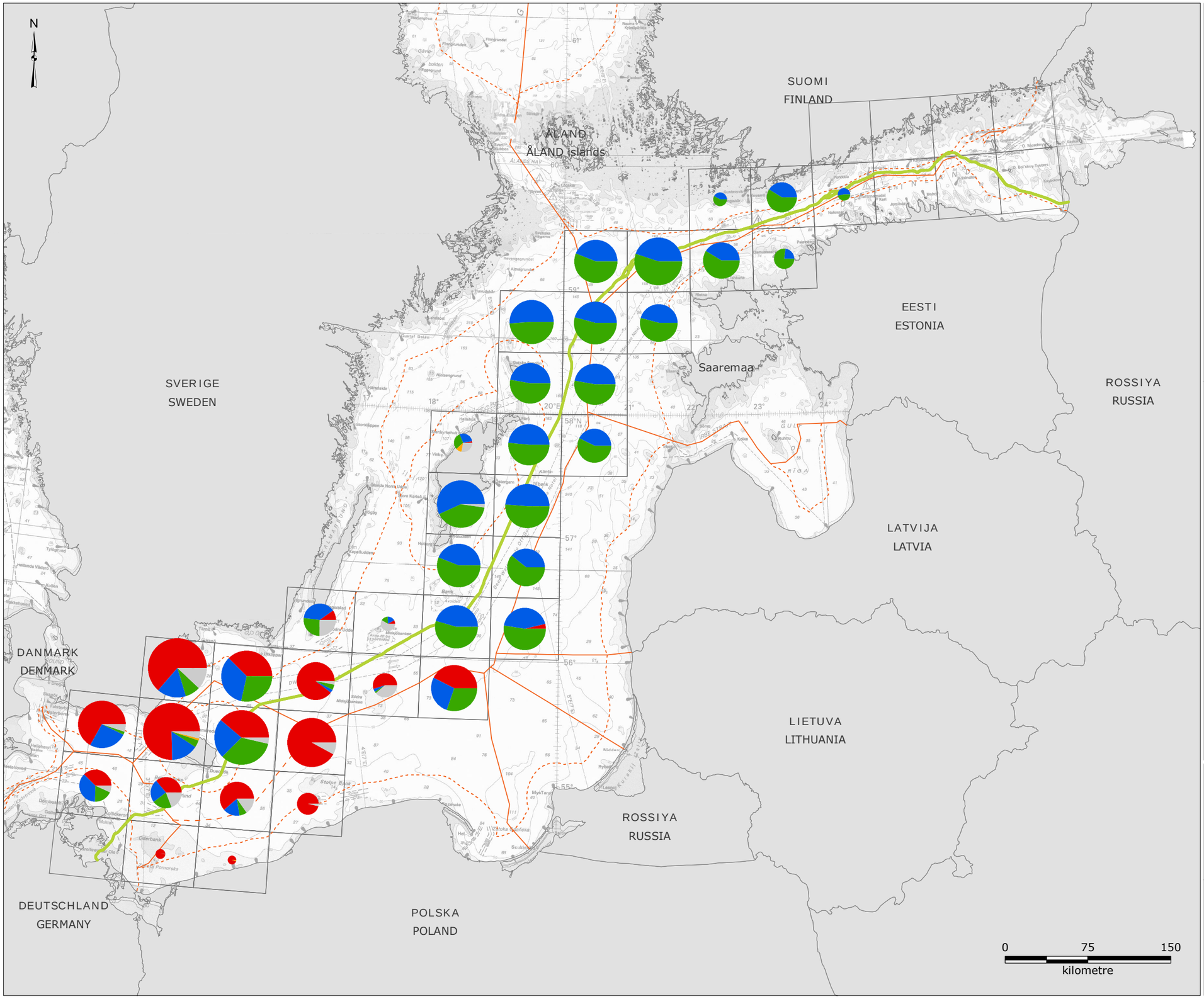
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 03
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-12-Espoo

Mean value of catches according to species by Estonia

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

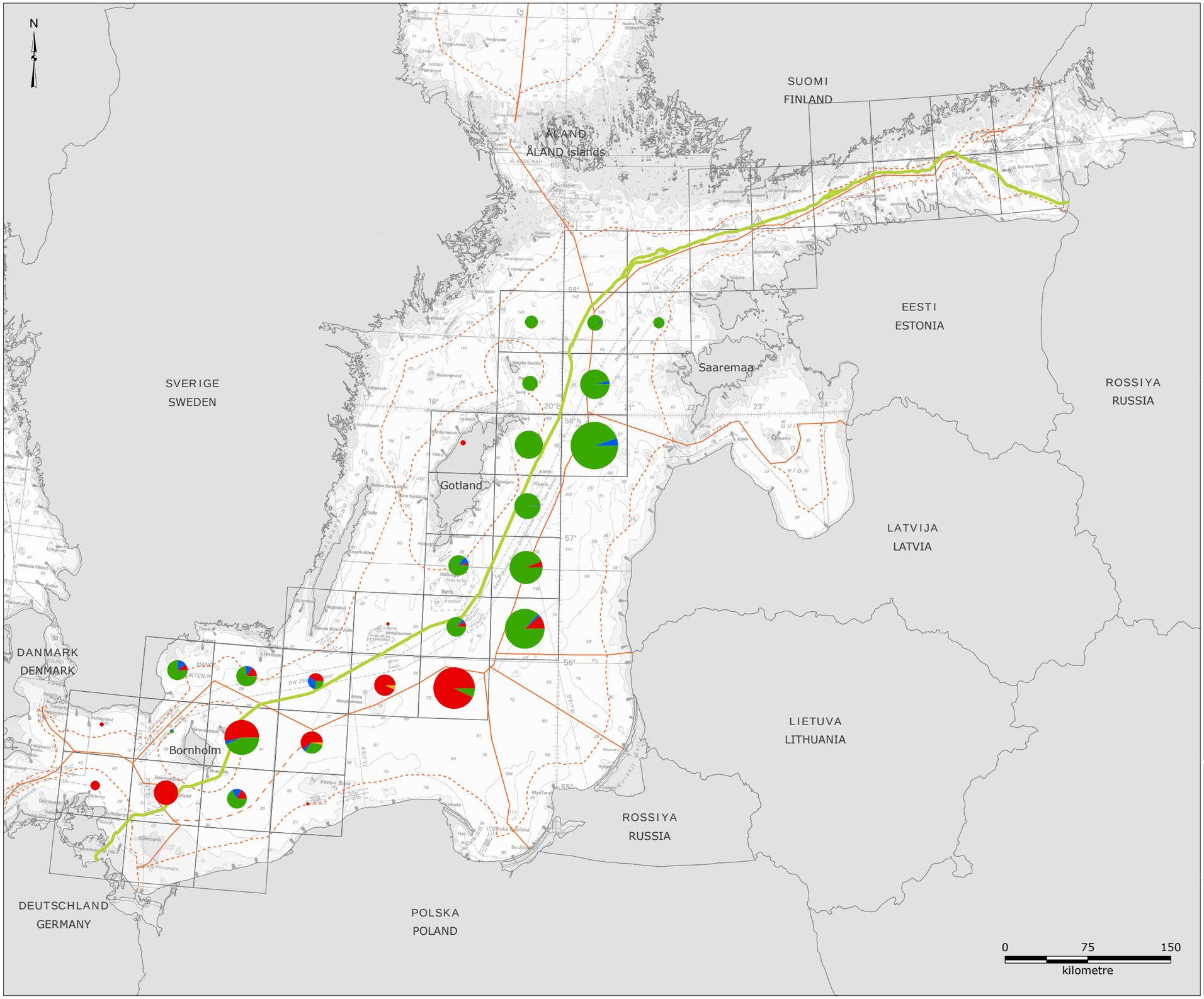
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 03
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-13-Espoo

Mean value of catches according to species by Sweden

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014.

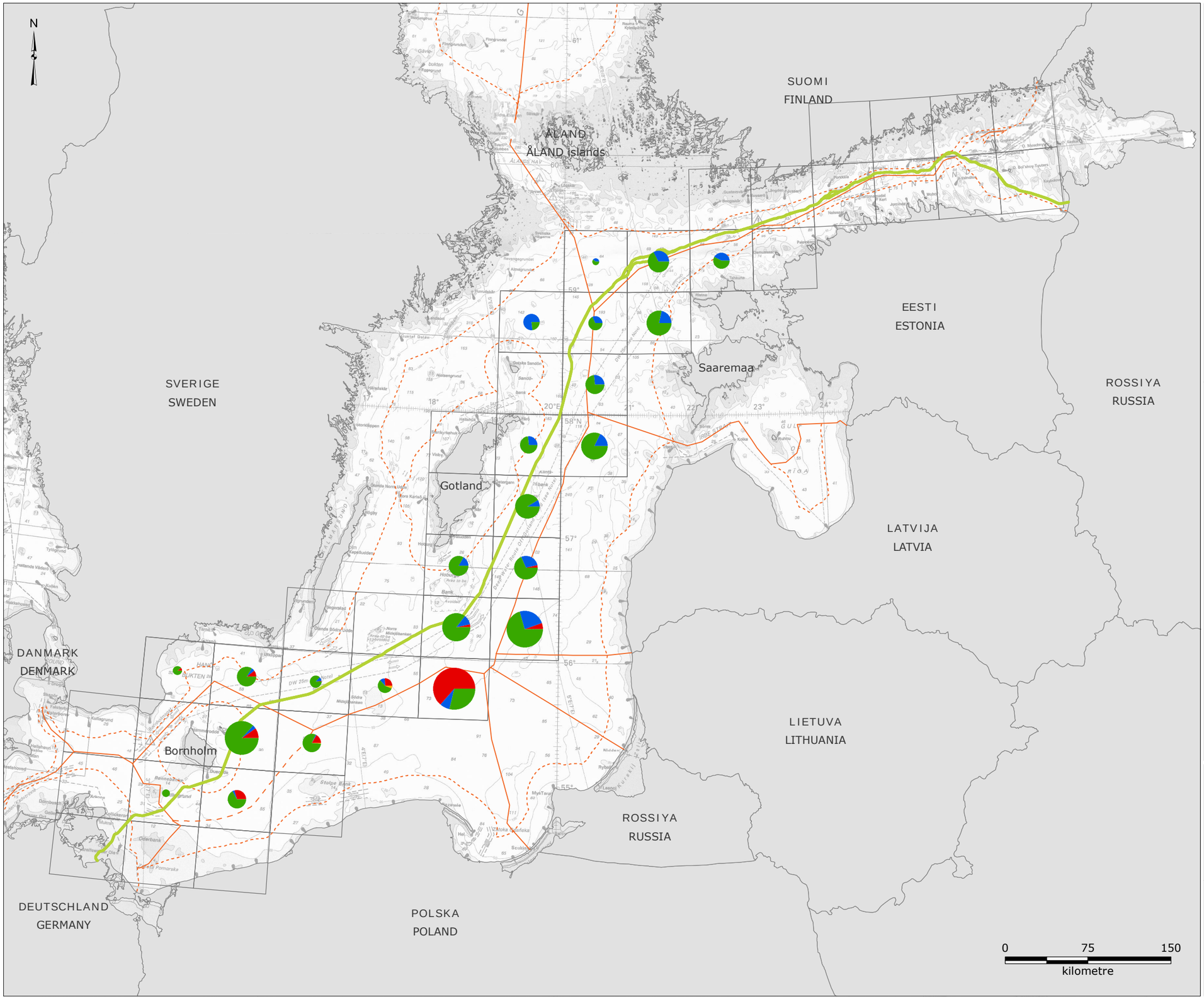
References:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 03
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-14-Espoo

Mean value of catches according to species by Latvia

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

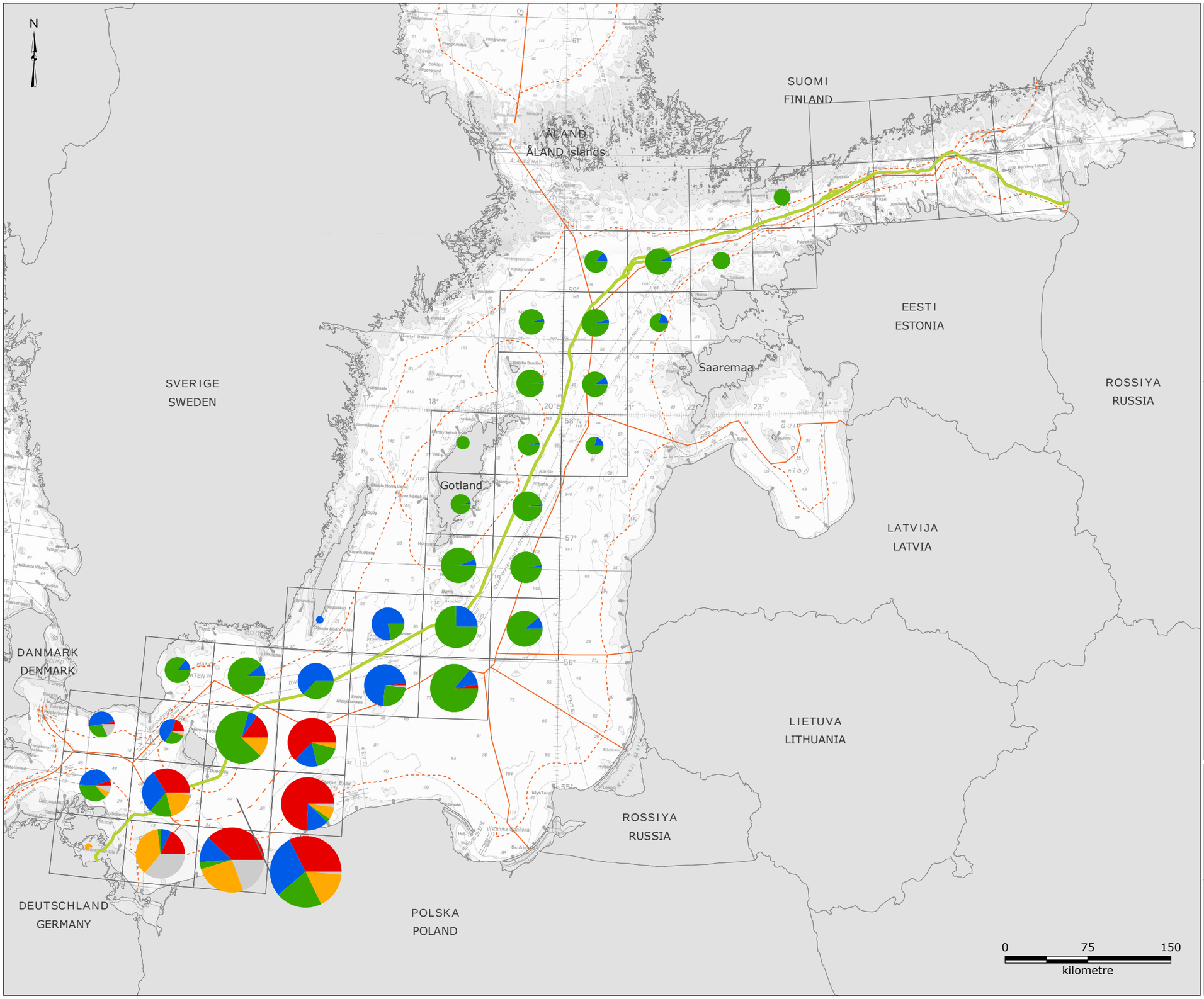
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 03
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-15-Espoo

Mean value of catches according to species by Lithuania

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2009-2013

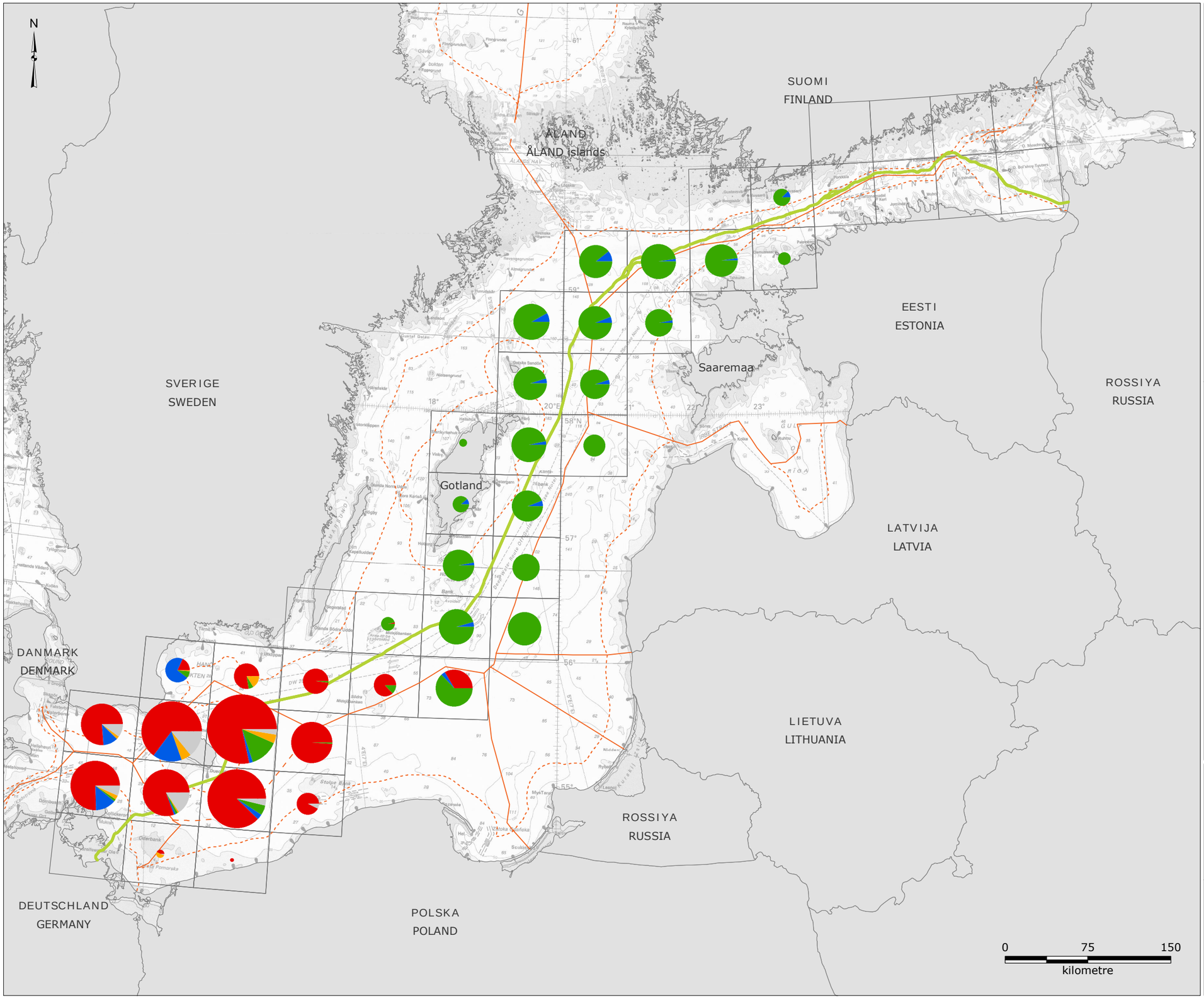
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-16-Espoo

Mean value of catches according to species by Poland

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

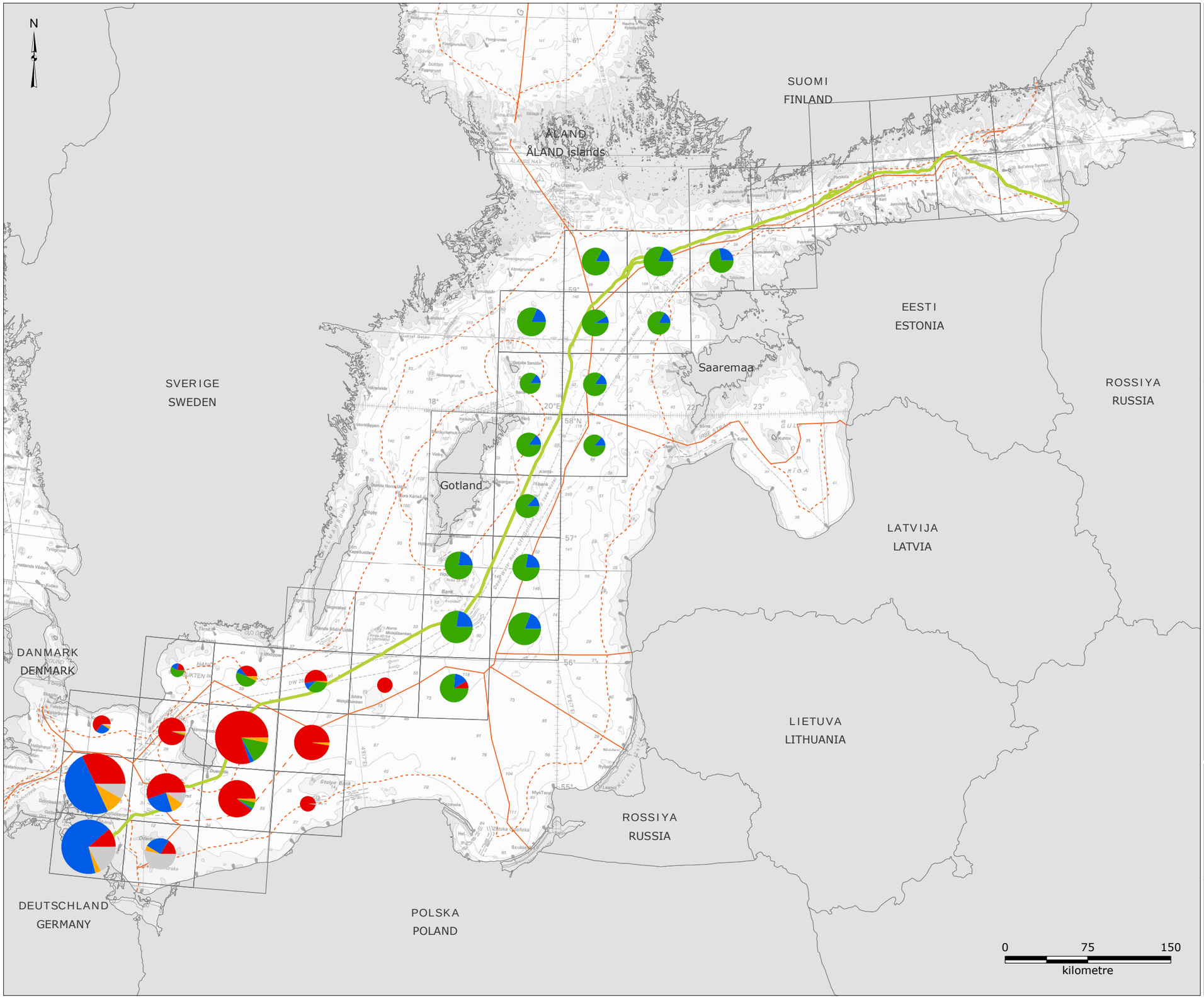
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-17-Espoo

Mean value of catches according to species by Denmark

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishery mean value (euro):

- Cod
- Herring
- Sprat
- Flounder
- Other

Pie areas scaled according to square root of values:

- 900,000 euro
- 245,000 euro
- 55,000 euro

Note:
- Based on data for 2010-2014

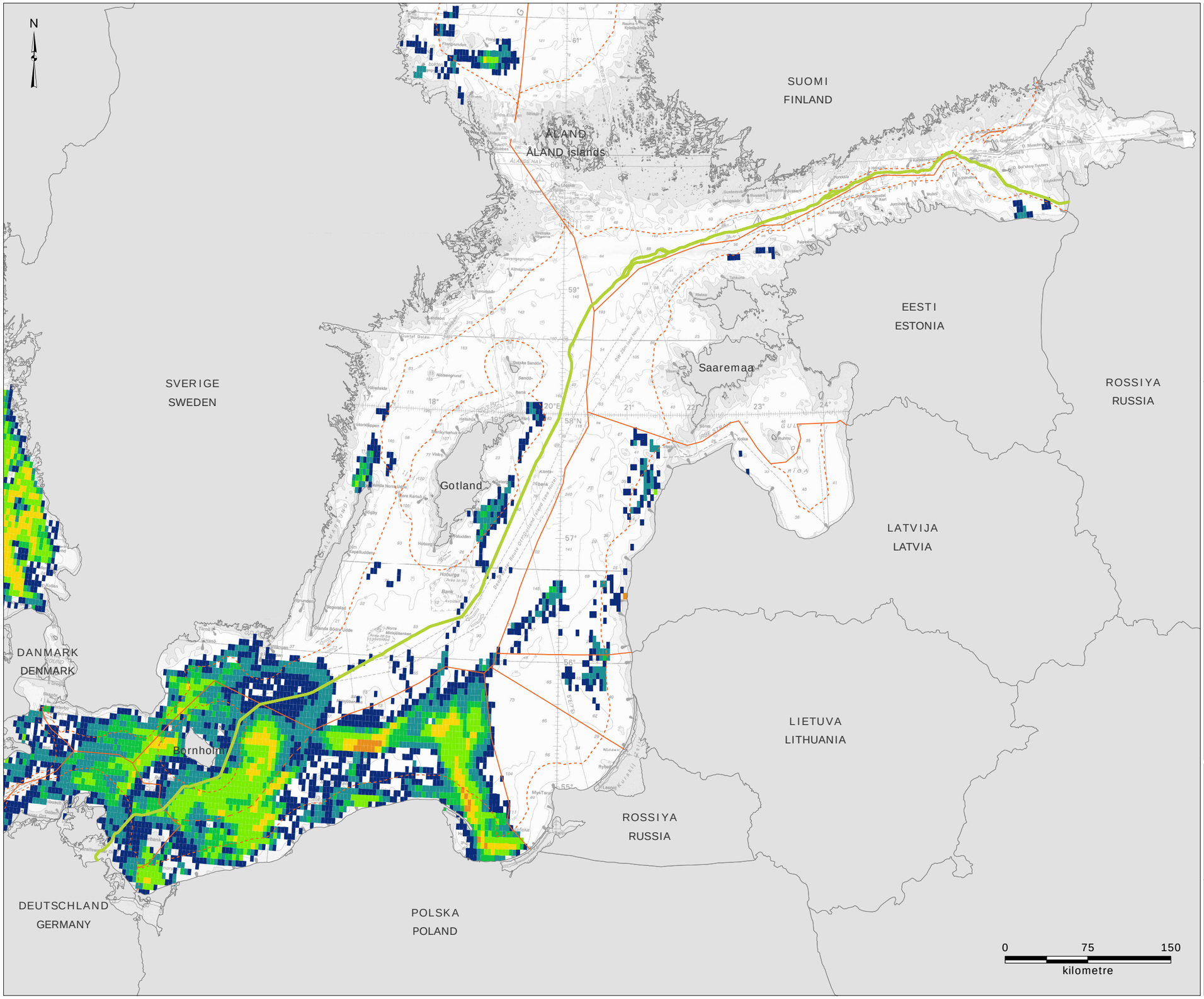
Reference:
- Orbicon, 2016, " Nord Stream 2 – Baltic fisheries along the pipeline transect", Note, 2016-06-09

Version: 04
Date: 2016-12-21
Prepared: MSTB
Controlled: JLA

FC-18-Espoo

Mean value of catches according to species by Germany

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishing intensity:

(Bottom trawl hours - 2013)

- 0 - 10
- 11 - 50
- 51 - 100
- 101 - 250
- 251 - 500
- 501 - 1000
- > 1000

Note:
- Data represent the sum of hours spent on fishing in 2013

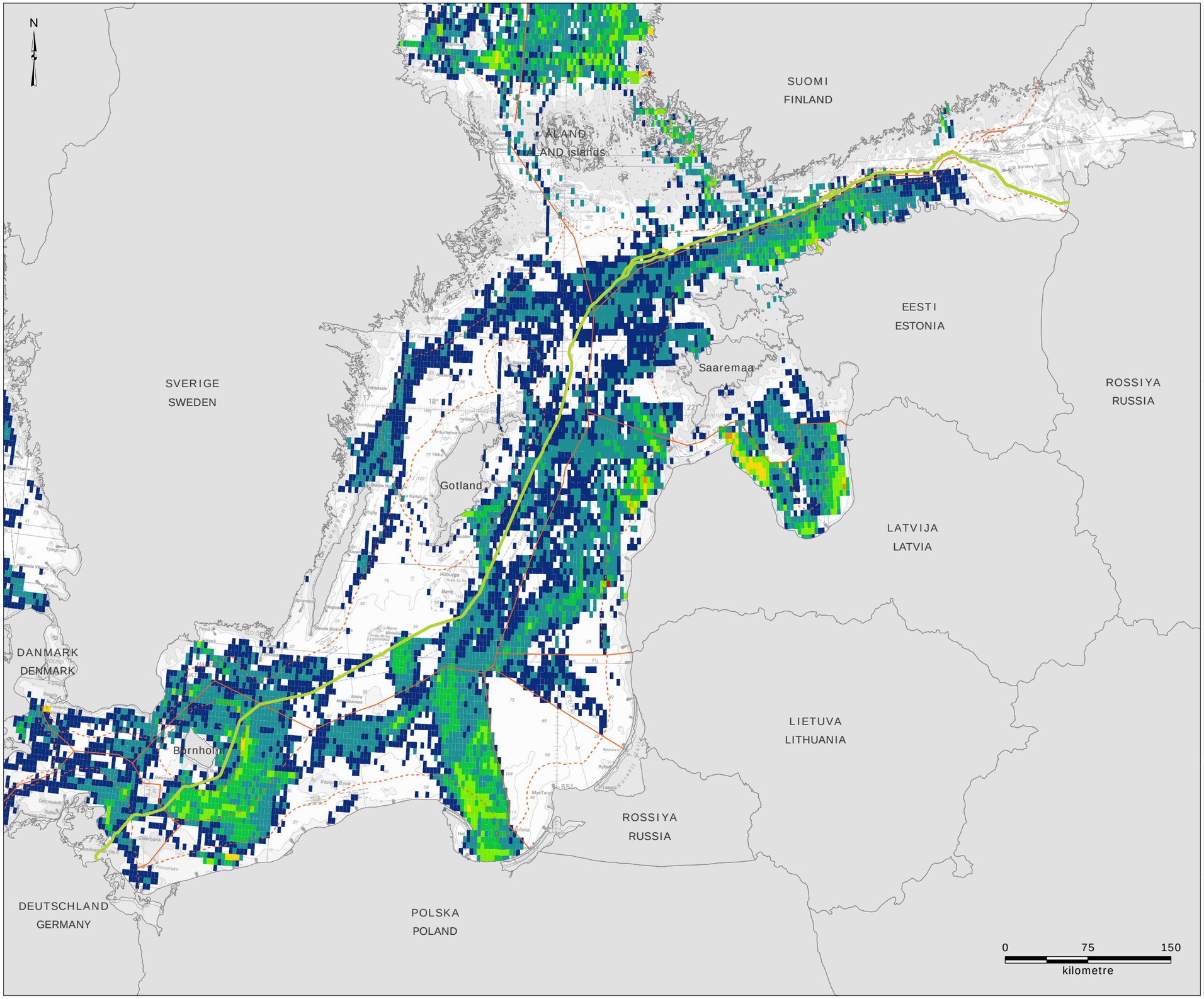
Reference:
- ICES, 2015, #Fishing abrasion pressure maps for mobile bottom-contacting gears in HELCOM area", http://ices.dk/sites/pub/Publication%20Reports/Data%20outputs/HELCOM_mapping_fishing_intensity_and_effort_data_outputs_2015.zip

Version: 05
Date: 2016-12-21
Prepared: MIRS
Controlled: JLA

FC-19-Espoo

Fishing hours - bottom trawling in the Baltic Sea based on VMS data - 2013 (HELCOM data)

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Fishing intensity:

(Midwater trawl hours - 2013)

- 0 - 10
- 11 - 50
- 51 - 100
- 101 - 250
- 251 - 500
- 501 - 1000
- > 1000

Note:
- Data represent the sum of hours spent on fishing in 2013

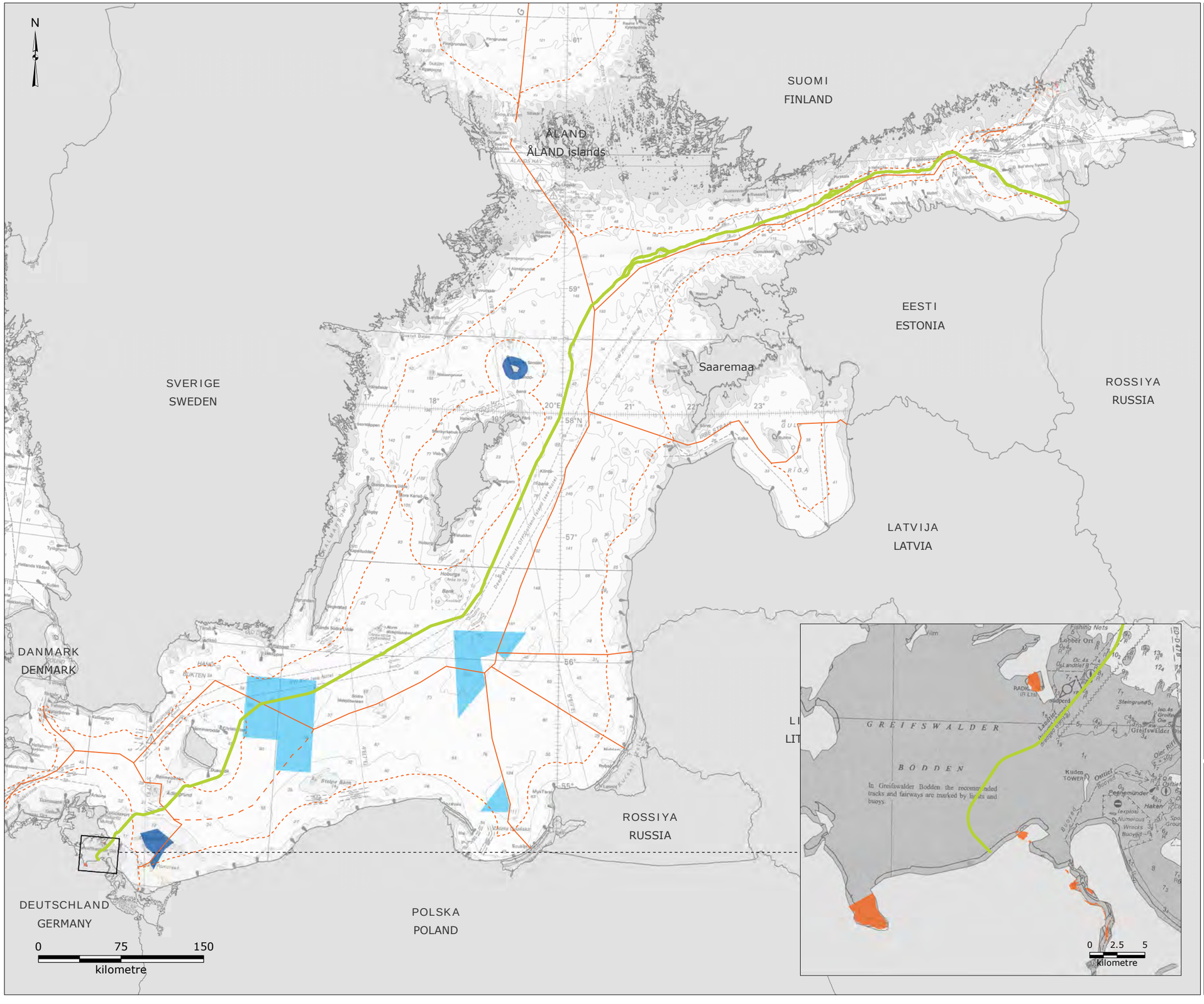
Reference:
- ICES. 2015. Fishing abrasion pressure maps for mobile bottom-contacting gears in HELCOM area. http://ices.dk/sites/pub/Publication%20Reports/Data%20outputs/HELCOM_mapping_fishing_intensity_and_effort_data_outputs_2015.zip

Version: 05
Date: 2016-12-21
Prepared: MIRS
Controlled: JLA

FC-20-Espoo

Fishing hours - midwater trawling in the Baltic Sea based on VMS data - 2013 (HELCOM data)

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Area permanently closed to fisheries with active gear year around
- Area closed to cod (*Gadus morhua*) fishery from May 1 to October 31
- Area closed to fishery during spawning period (Herring (*Clupea harengus*) spawning area) from March – May (Western Baltic population)

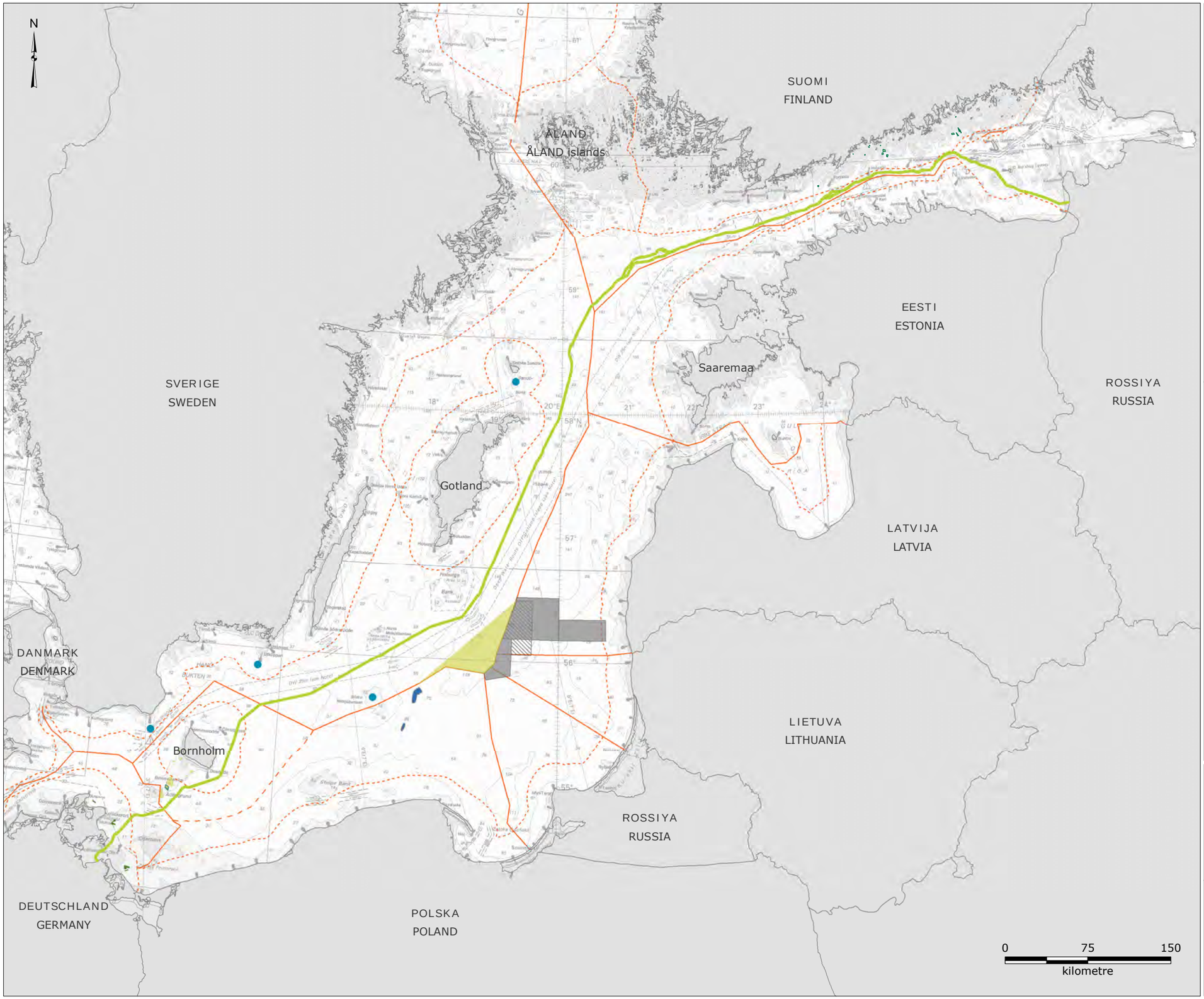
References:
- Council Regulation (EC) No 1098/2007 of 18 September 2007 establishing a multiannual plan for the cod stocks in the Baltic Sea and the fisheries exploiting those stocks, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 779/97
- Council Regulation (EC) No 2187/2005 of 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
- Havs- och vattenmyndighetens författningssamling Fiskeriverkets föreskrifter (FIFS 2004:36) om fiske i Skagerrak, Kattegatt och Östersjön. Konsoliderad elektronisk utgåva. Senast uppdaterad 2016-01-26
- HELCOM, 2013, "Baltic Sea fisheries closure" http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-2-24
- HELCOM, 2013, "Cod fisheries closures" http://maps.helcom.fi/website/mapservice/index.html, Data accessed: 2016-2-24
- Umweltverträglichkeitsstudie (UVS) zur Nord Stream-Gaspipeline von der Grenze der deutchen Grenze Ausschliesslichen Wirtschaftzone (AWS) bis zum Anlandungspunkt. Nord Stream.

Version: 03
Date: 2016-11-30
Prepared: MSTB
Controlled: JLA

FC-21-Espoo

Areas where fishery is prohibited

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Area of interest for sand and gravel extraction
- Natural gas reservoir
- Oil and gas production license area
- Oil and gas exploration license area
- Sediment dumping site
- Raw materials extraction area
- Reserved, potential future resource extraction
- Extraction and spoil dump sites
- Existing and planned extraction sites

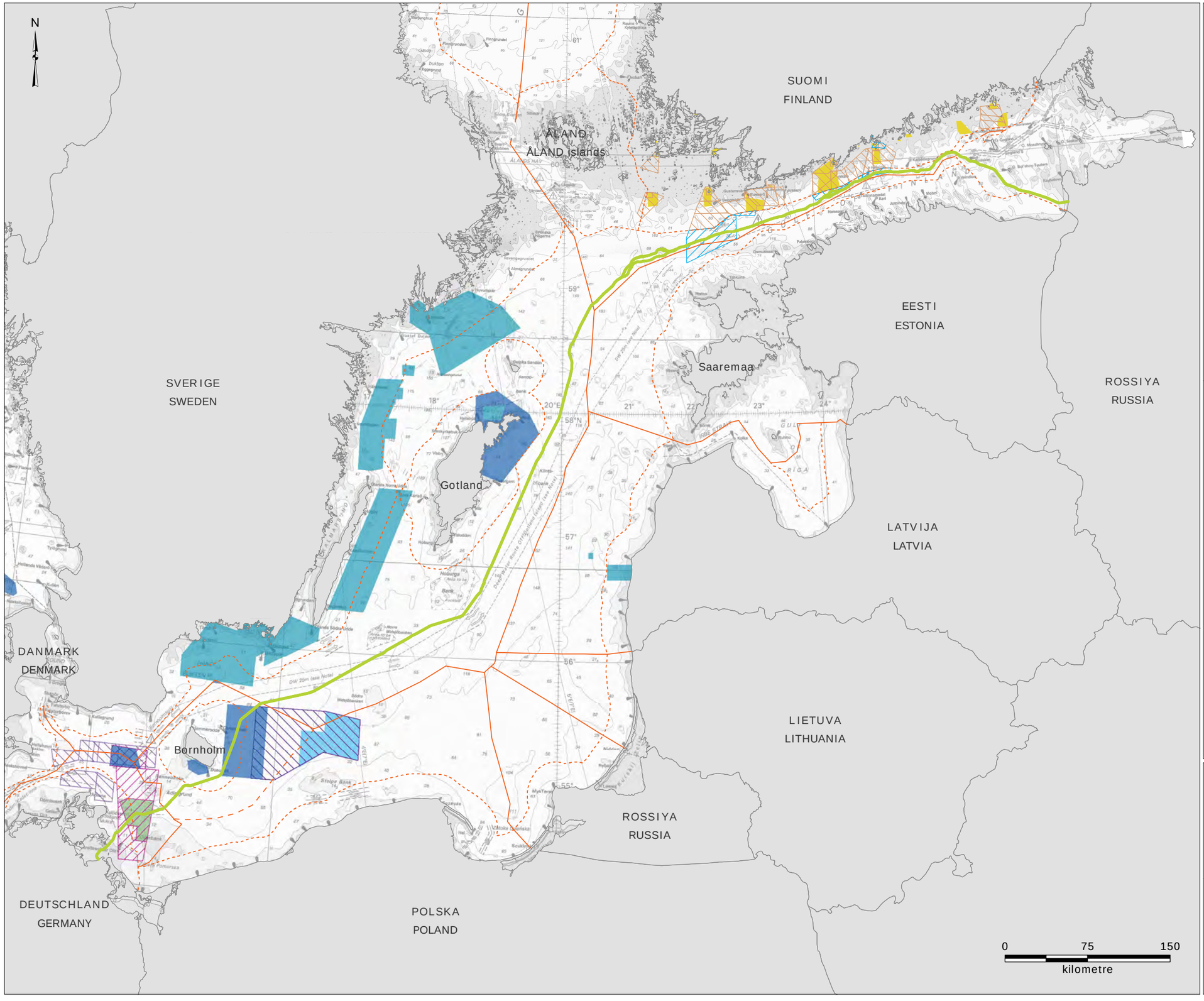
References:
- Geological Survey of Sweden, 2013, "Begäran om sektorsunderlag till kommande havsplanering", Havs- och Vattenmyndigheten, Göteborg, Sweden
- Ministry of Economics of the Republic of Latvia, 2011, "oil-map_licences_2011.jpg", Riga, Latvia
- Regional Director for Environmental Protection in Gdańsk, 2014, "RDOŚ-Gd-WOO.4211.12.2014.ER.8", Gdańsk, Poland
- Naturstyrelsen, 2016, "Råstofindvinding på havet - Reservationsområder", http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet, Miljøministeriet, Date accessed: 2016-01-06
- Naturstyrelsen, 2016, "Restriktive områder - Klappladser", http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet, Miljøministeriet, Date accessed: 2016-01-06
- Naturstyrelsen, 2016, "Råstofindvinding på havet - Fællesområder", http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet, Miljøministeriet, Date accessed: 2016-01-06
- Ramboll, 2017, "E-mail from IfAÖ GmbH, Germany", Received: 2017-03-01

Version: 04
Date: 2017-03-07
Prepared: MIRS
Controlled: DPEREIRA

RM-01-Espoo

Raw material extraction sites

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- D area, Danger area where activities dangerous to aircraft may occur
- R area, Restricted area within the Finnish airspace
- Restricted area by the Finnish Navy
- Other military exercise area
- Firing danger area
- Submarine exercise area
- Safe bottoming areas
- Other live firing exercise area
- Artillery firing exercise area

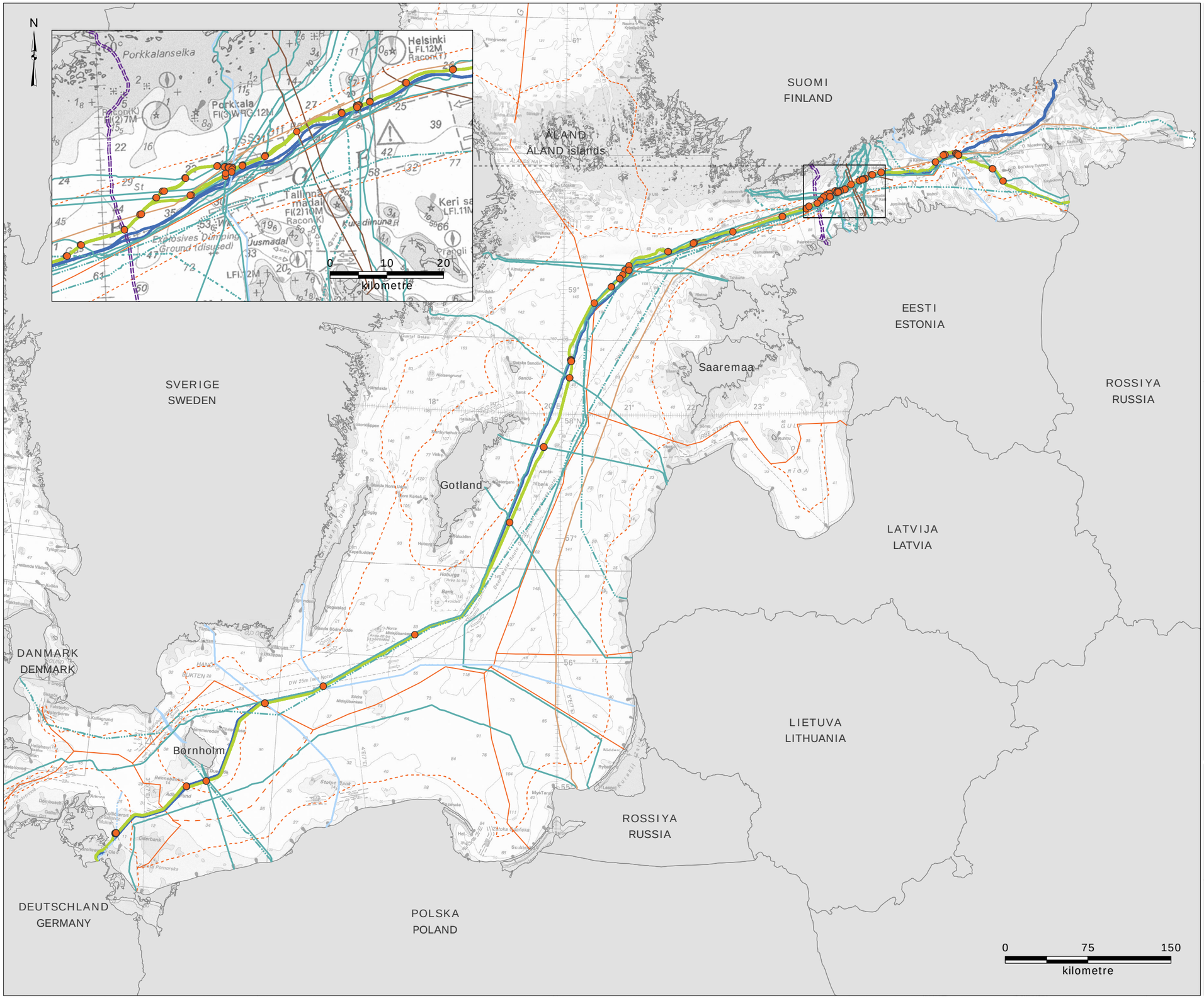
References:
- FINLEX, http://www.finlex.fi, Date accessed: 2012-05-28
- Försvarsmakten, 2015, "Redovisning av riksintressen och områden av betydelse för totalförsvarets militära del enligt 3 kap §9 Miljöbalken i Kalmar Län", Sweden
- Letter from Federal Office for Infrastructure, Environmental Protection and Services of The German Armed Forces, 23 March 2016
- Ramboll, 2013, "E-mail from Forsvarets Bygnings- & Etablissementstjeneste, Denmark", Received: 2013-06-27
- Ramboll, 2017, "E-mail from IfAÖ GmbH, Germany", Received: 2017-03-01
- Trafi, http://www.finlex.fi/fi, Data accessed: 2012-05-28
- UKHO, 2007, "British Admiralty Nautical Chart 2223: Gotland to Saaremaa", United Kingdom Hydrographic Office
- UKHO, 2007, "British Admiralty Nautical Chart 2816: Baltic Sea, Southern Sheet", United Kingdom Hydrographic Office

Version: 04
Date: 2017-03-08
Prepared: MSTB
Controlled: DPEREIRA

MI-01-Espoo

Military practice areas

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Pipeline / cable crossing for active existing and planned infrastructure

Cables:

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

Pipelines:

- NSP Route
- Balticconnector - planned

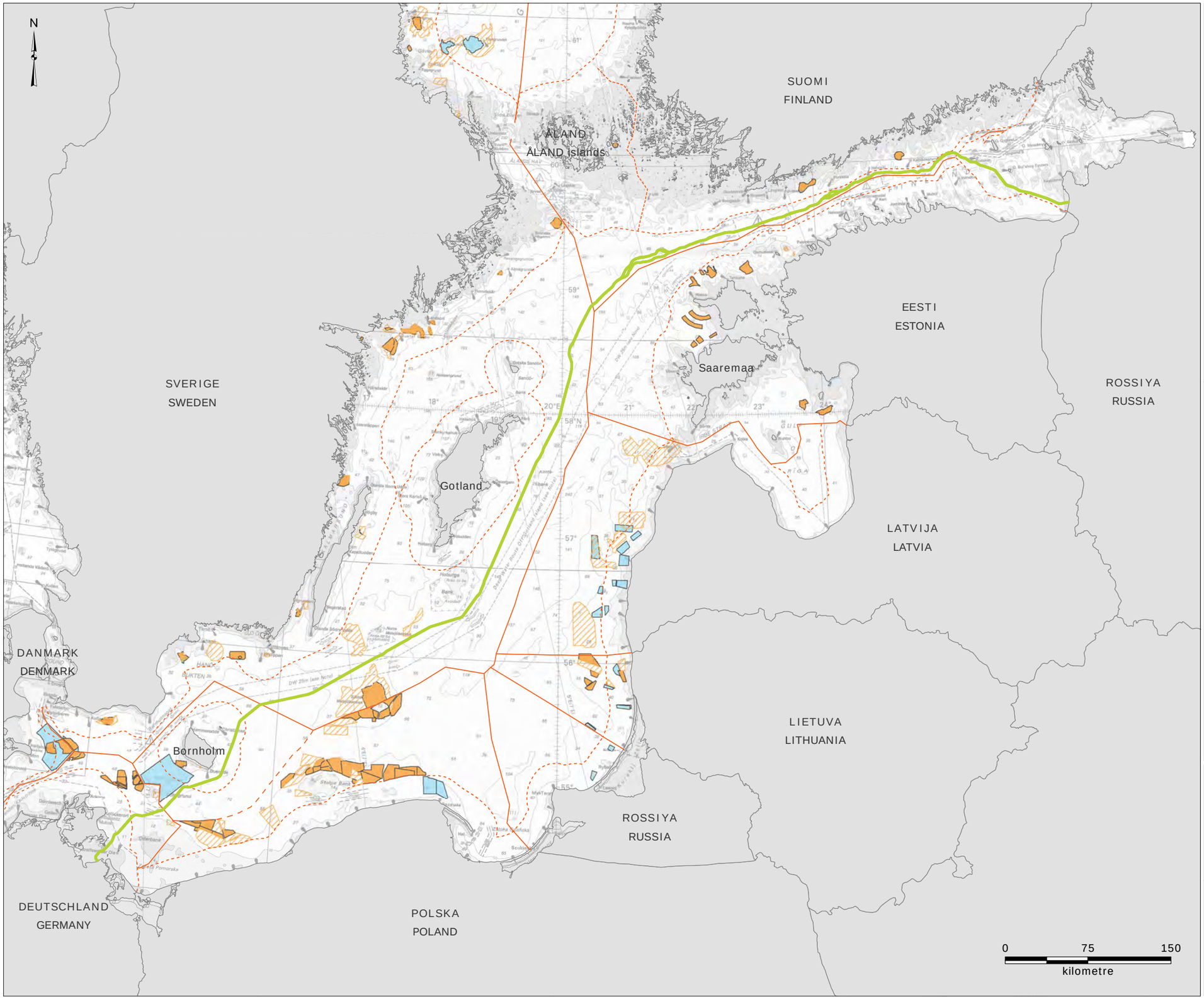
Reference:
- Cable data received from Nord Stream 2 AG 20 January 2017

Version: 09
Date: 2017-03-10
Prepared: MSTB
Controlled: DPEREIRA

IN-01-Espoo

Registered cables and pipelines in the Baltic Sea crossed by NSP2

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Wind farms:

- Planned Area
- Reserved Area
- Potential Area

Note:
- Planned refers to areas where there currently are planned projects in various stages
- Reserved area refers to areas that are reserved for wind farms by authorities
- Potential areas refers to areas where there at some point in time has been planned projects that have been cancelled, however the areas could potentially house future projects involving windfarms

References:
- 4C Offshore, http://www.4coffshore.com/offshorewind/, Date accessed: 2016-08-04 and 2017-02-21
- Wind power: Uusimaa Regional plan - 4th phase proposall

Version: 05
Date: 2017-02-21
Prepared: MIRS
Controlled: DPEREIRA

IN-02-Espoo

Existing and planned wind farms

RAMBOLL

N

SUOMI
FINLAND

ÅLAND
ÅLAND islands

SVERIGE
SWEDEN

EESTI
ESTONIA

Saaremaa

ROSSIYA
RUSSIA

Gotland

DANMARK
DENMARK

Bornholm

DEUTSCHLAND
GERMANY

POLSKA
POLAND

LIETUVA
LITHUANIA

ROSSIYA
RUSSIA

1 2 3 4 5 6 7 8 9 10 11

0 5 10
kilometre

0 50 100
kilometre

0 2.5 5
kilometre

0 75 150
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- HELCOM monitoring station (water) from ICES
- HELCOM monitoring station (sediment) from ICES
- Finnish national monitoring station from SYKE
- Swedish national monitoring station from SMHI
- Swedish national monitoring station from SGU
- Old Swedish national monitoring station from SGU (not in use)
- National monitoring station (water temperature, salinity, and oxygen saturation) from LUNG M-V
- Estonian survey station
- Estonian survey station

Note:
- Labels refer to numbering in Espoo report - not the station name
- Label number 7 represents a HELCOM station (LL11) monitoring both water quality and benthos

References:

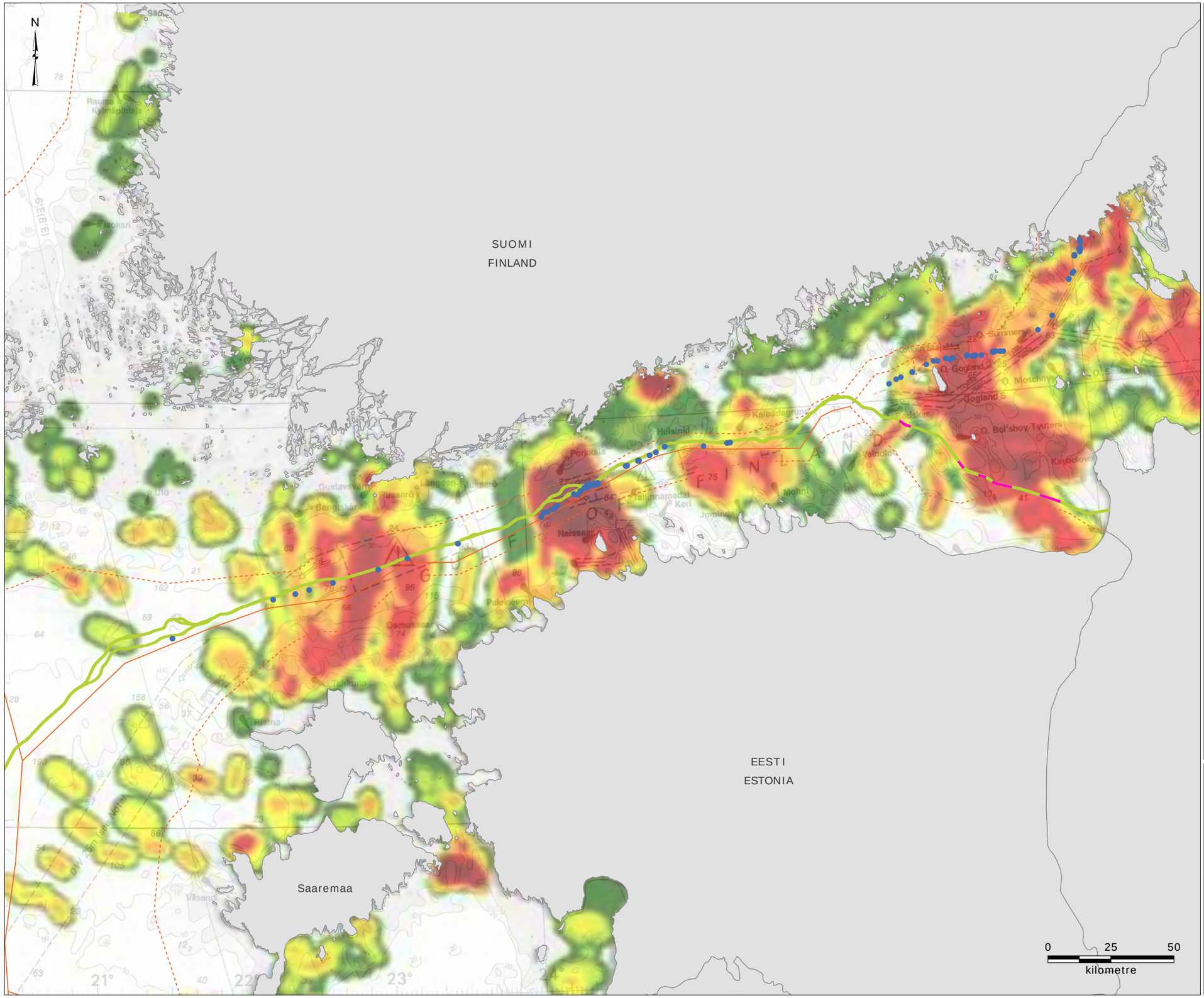
- Rambøll, 2016, "E-mail from ICES, Denmark", Received: 2016-04-01
- Rambøll, 2014, "E-mail from SYKE, Finland", Received: 2014-11
- Rambøll, 2016, "E-mail from Swedish Meteorological and Hydrological Institute(SMHI)", Received: 2016-03-31
- Geological Survey of Sweden (SGU), http://apps.sgu.se, Date accessed: 2016-03-23
- Rambøll, 2017, "E-mail from IfAÖ GmbH, Germany", Received: 2017-02-15
- Estonian Nature Information System (EELIS), Date accessed: 2016-04

Version: 09
Date: 2017-03-08
Prepared: MSTB
Controlled: DPEREIRA

MS-01-Espoo

Monitoring stations

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Mine area
- Munitions cleared during NSP

Munitions density:

Highest

Lowest

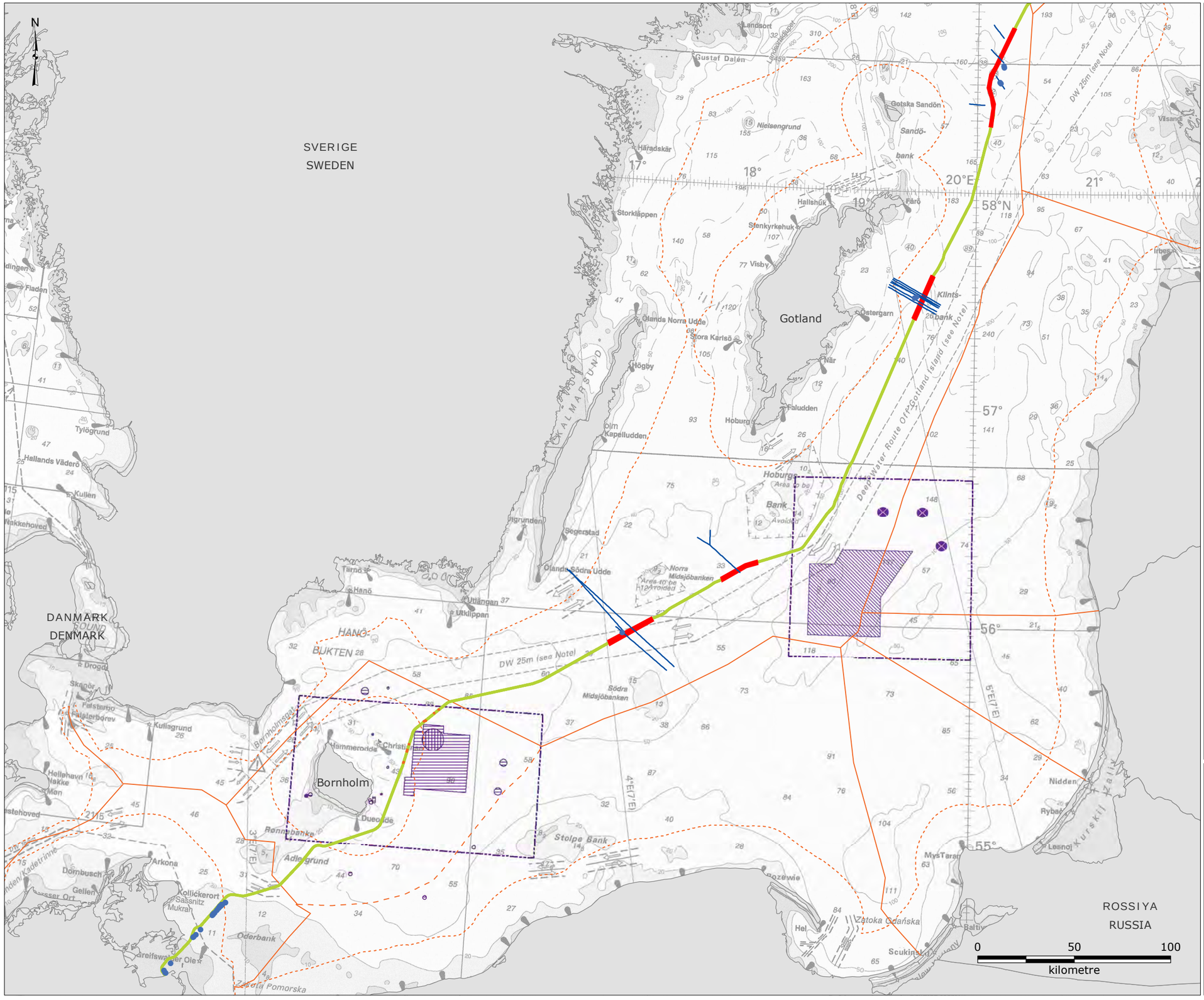
References:
- Baltic Ordnance Safety Boad, 2014, "The Explosive legacy from the Wars", HELCOM Submerged, Szczegin
- Munitions data received from Nord Stream AG 16 February 2012
- Nord Stream 2 AG, 2016, "Mine lines and munitions density - Russia"

Version: 02
Date: 2017-03-21
Prepared: MSTB
Controlled: OM

MU-01-Espoo

Areas with conventional munitions and chemical warfare agents (CWA) in Gulf of Finland

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Single dumping
- Emergency dumping area
- Chemical and conventional munitions 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
- Mine lines
- High priority areas
- Chemical munitions identified during NSP2 munition screening survey
- Munitions cleared during NSP

References:
- Fiskeriministeriet, 2007, "Fiskeriårbogen 2007 (årgang 114)", Iver C. Weilbach & co., pp. 944
- Försvarsmakten, 2016. "Försvarsmaktens information till Nord Stream 2 AG". FM2016:14851:2. Received: 2016-06-17
- Kort og Matrikelstyrelsen, 2010, "Ny udgave af kort 188 - Østersøen omkring Bornholm, 5th edition
- Ministry of Business and Growth, 2005, "Bekendtgørelse om forbud mod sejlads, ankring og fiskeri mv. i visse områder i danske farvande", BEK nr. 135 af 04/03/2005
- Munitions data received from Nord Stream AG 16 February 2012
- UKHO, 2007, "British Admiralty Nautical Chart 2816: Baltic Sea, Southern Sheet", United Kingdom Hydrographic Office
- W-SU-SUR-GEN-SOW-800-MUN002EN-01

Version: 01
Date: 2017-03-21
Prepared: MSTB
Controlled: OM

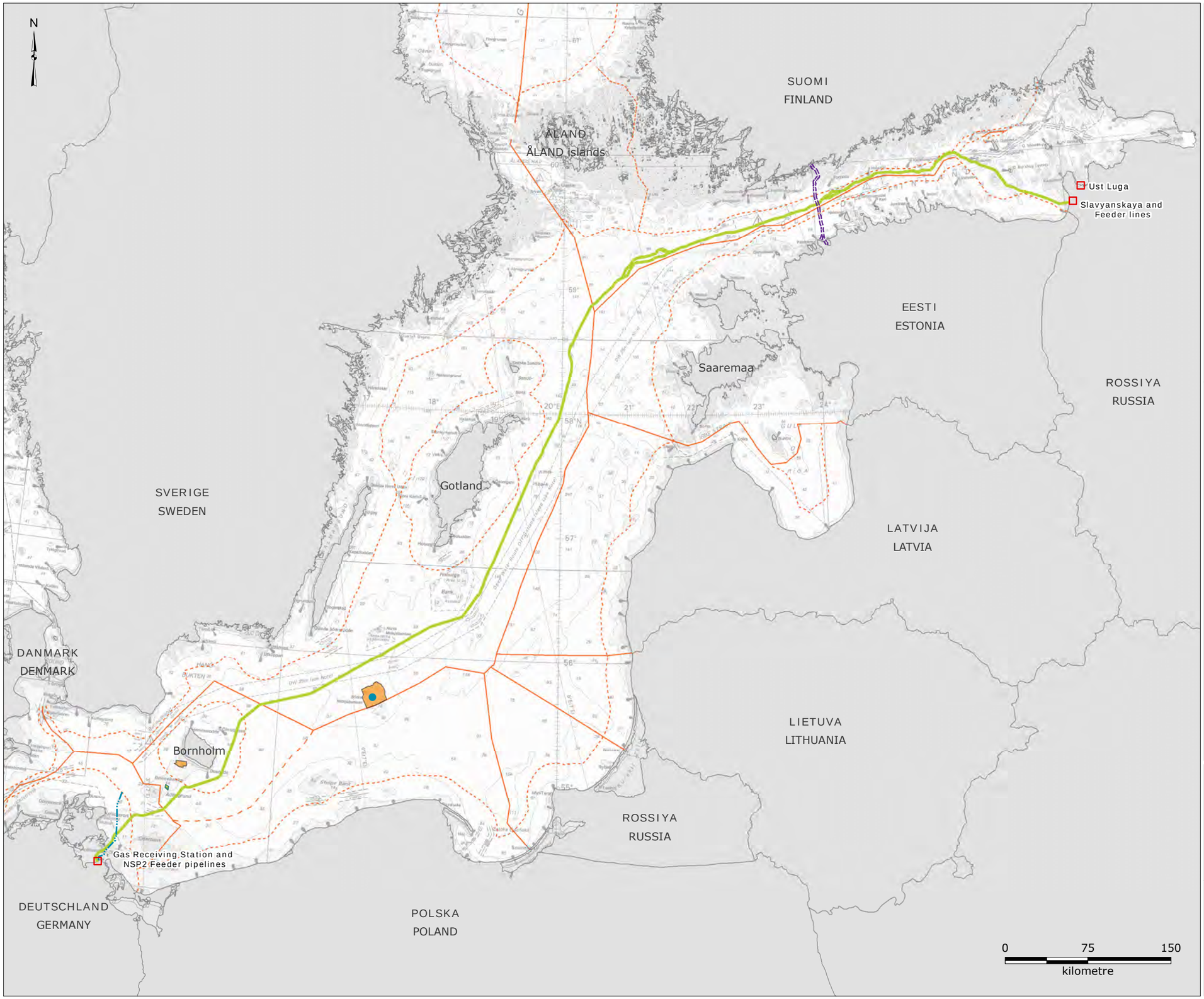
MU-02-Espoo

Areas with conventional munitions and chemical warfare agents (CWA) in Baltic Proper and southern Baltic Sea

RAMBØLL

CUMULATIVE IMPACT

PLANNED AND EXISTING PROJECTS



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Cumulative impacts:

- Planned project site
- Balticconnector
- Area of interest for sand and gravel extraction
- Wind farm - planned
- Reserved, potential future resource extraction
- 50Hertz power - planned

Note:
- Slavyanskaya compressor station and developments in and around Ust Luga Port

References:

- 4C Offshore, http://www.4coffshore.com/offshorewind/, Date accessed: 2016-08-04 and 2017-02-21
- Geological Survey of Sweden, 2013, "Begäran om sektorsunderlag till kommande havsplanering", Havs- och Vattenmyndigheten, Göteborg, Sweden
- Naturstyrelsen, 2016, "Råstofindvinding på havet - Reservationsområder", http://miljoegis.mim.dk/cbkort?profile=miljoegis-raastofferhavet, Miljøministeriet, Date accessed: 2016-01-06

Version: 03
Date: 2017-03-10
Prepared: MIRS
Controlled: JLA

PP-01-Espoo

Cumulative impacts of planned and existing projects

RAMBØLL

MATHEMATICAL MODELLING

DISPERSION OF SEDIMENT AND CONTAMINANTS

UNDERWATER NOISE

NOISE IN AIR

N

0 5 10
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Natura 2000 site
- Proposed new and extended Natura 2000 site

Rock placement - normal hydrography
Duration of exceeding threshold concentrations (10 mg/l) in hours:

- 0 - 1
- > 1 - 3
- > 3 - 6
- > 6 - 9
- > 9 - 12
- > 12 - 24

Trenching - normal hydrography
Duration of exceeding threshold concentrations (10 mg/l) in hours:

- 0 - 1
- > 1 - 3
- > 3 - 6
- > 6 - 9
- > 9 - 12
- > 12 - 24

Note:
- Redistribution of sediments for normal scenario is shown
- Normal scenario refers to a period with normal hydrographic conditions with respect to flow velocities and stratification
- See map PR-04-Espoo showing all locations with planned rock placement/trenching

References:

- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Länsstyrelsen Skåne, 2015, "Utpekande av nya Natura 2000-områden i Skåne 2015, dnr 511-11380-14, 2015-05-05"
- Länstyrelsen, 2016, "Samråd kring förslag till utvidgning av Natura 2000-områdena Hoburgs bank och Norra Midsjöbanken med viktiga områden för tumlare"
- Rambøll, "Modelling of sediment spill in Sweden", Doc. no. W-PE-EIA-PSE-REP-805-020200EN-06
- Rambøll, "Modelling of sediment spill in Denmark", Doc. no. W-PE-EIA-PDK-REP-805-010200EN-05

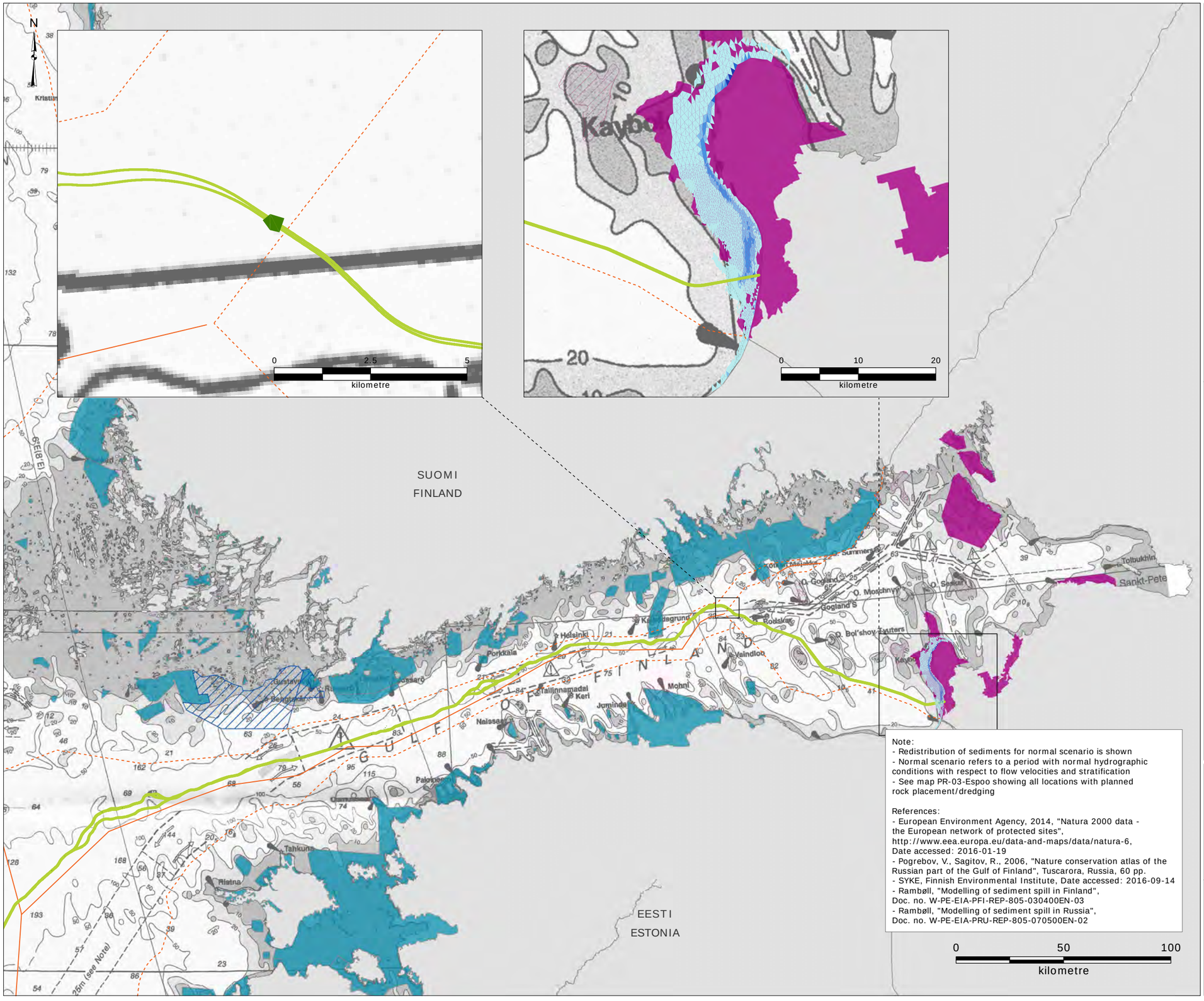
Version: 03
Date: 2017-03-03
Prepared: MIRS
Controlled: JLA

MO-01-Espoo

Duration of exceeding 10 mg/l from rock placement and trenching in Swedish and Danish waters

0 50 100
kilometre

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Proposed extended Natura 2000 site in Finland:

- Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Dredging (Micro-tunnelling) - normal hydrography
Duration of exceeding threshold concentrations (10 mg/l) in hours:

- 0 - 50
- > 50 - 100
- > 100 - 200
- > 200 - 300
- > 300 - 400
- > 400 - 550

Rock placement - normal hydrography
Duration of exceeding threshold concentrations (10 mg/l) in hours:

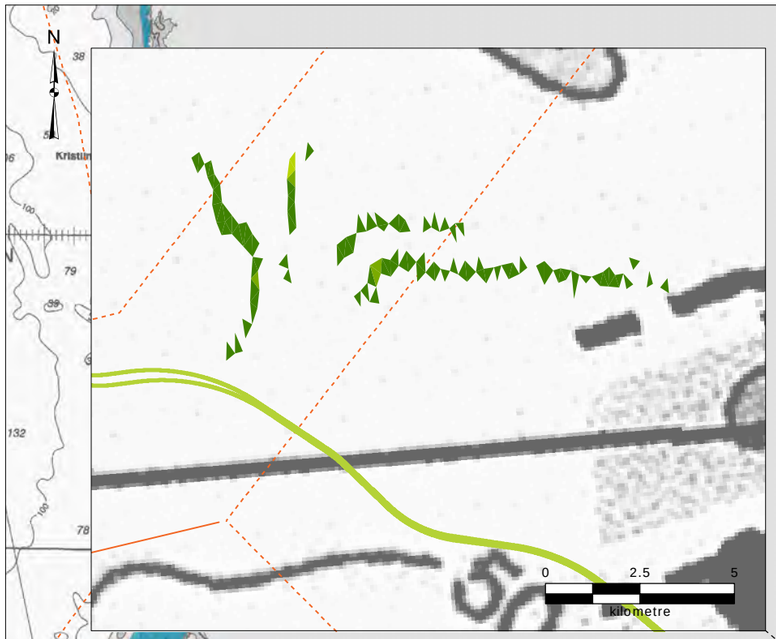
- 0 - 1
- > 1 - 3
- > 3 - 6
- > 6 - 9
- > 9 - 12
- > 12 - 24

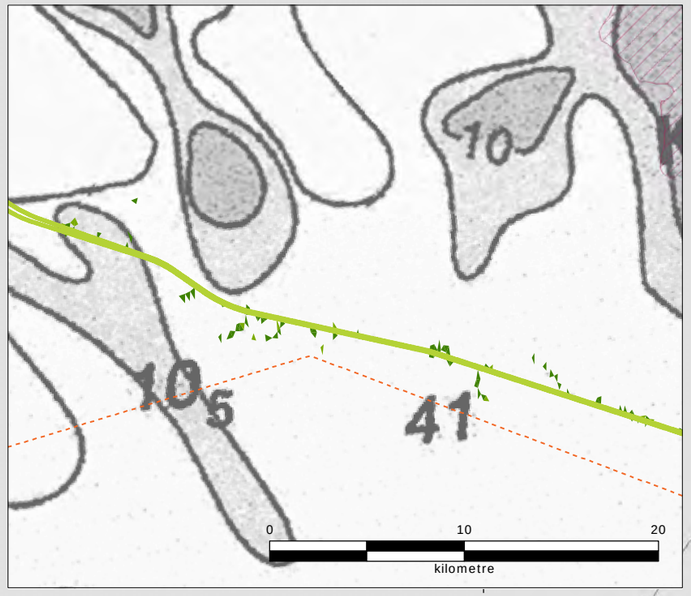
Version: 03
Date: 2017-02-23
Prepared: MIRS
Controlled: JLA

MO-02-Espoo

Duration of exceeding 10 mg/l from rock placement and dredging in Finnish and Russian waters

RAMBØLL





SUOMI
FINLAND

EESTI
ESTONIA

0
50
100
kilometre

Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Proposed extended Natura 2000 site in Finland:

- Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Munitions clearence - normal hydrography

Duration of exceeding threshold concentrations (10 mg/l) in hours:

- 0 - 1
- > 1 - 3
- > 3 - 6
- > 6 - 9
- > 9 - 12
- > 12 - 24

Note:
- Redistribution of sediments for normal scenario is shown
- Normal scenario refers to a period with normal hydrographic conditions with respect to flow velocities and stratification
- Zooms show examples of munitions clearence

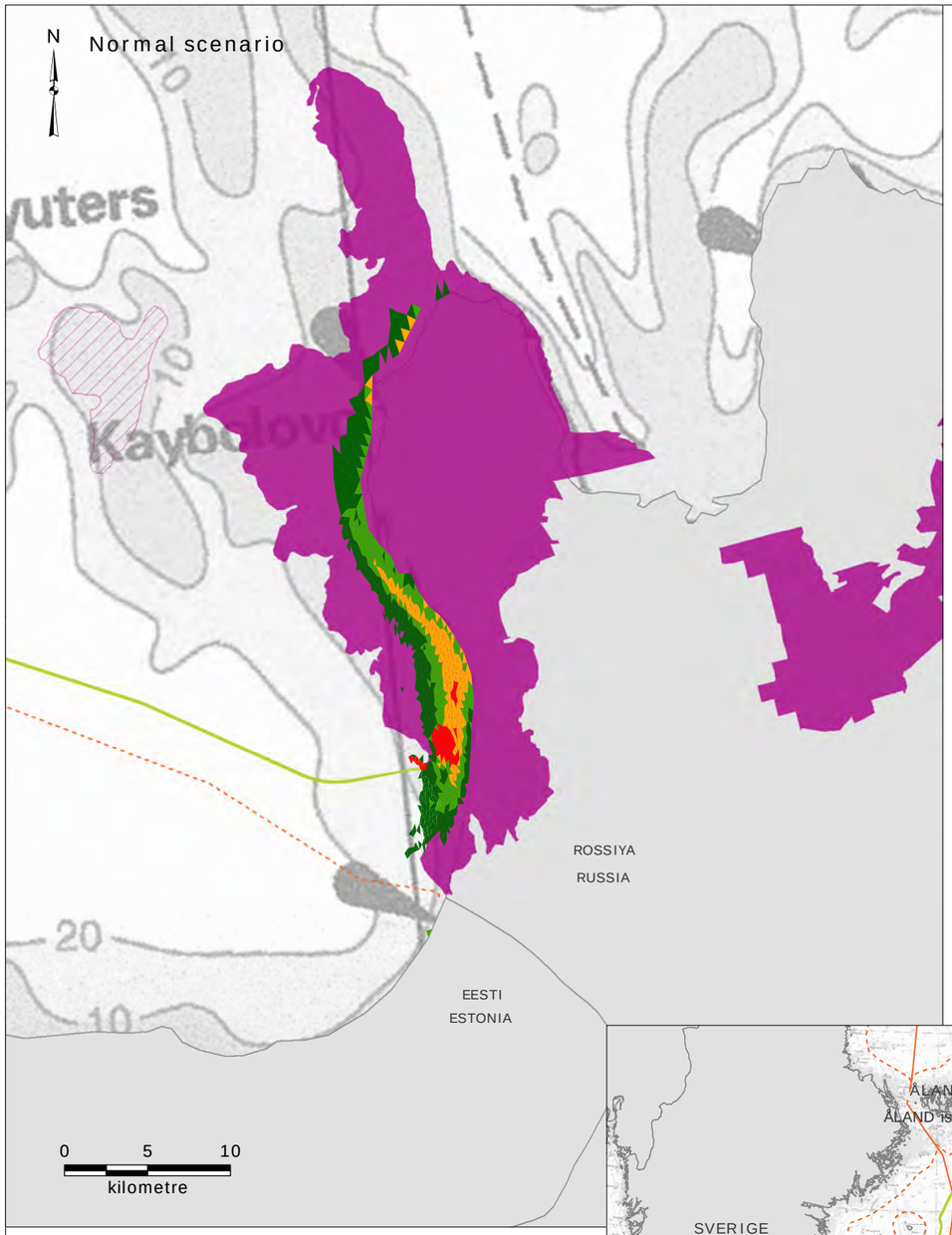
References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Modelling of sediment spill in Finland", Doc. no. W-PE-EIA-PFI-REP-805-030400EN-03
- Rambøll, "Modelling of sediment spill in Russia", Doc. no. W-PE-EIA-PRU-REP-805-070500EN-02

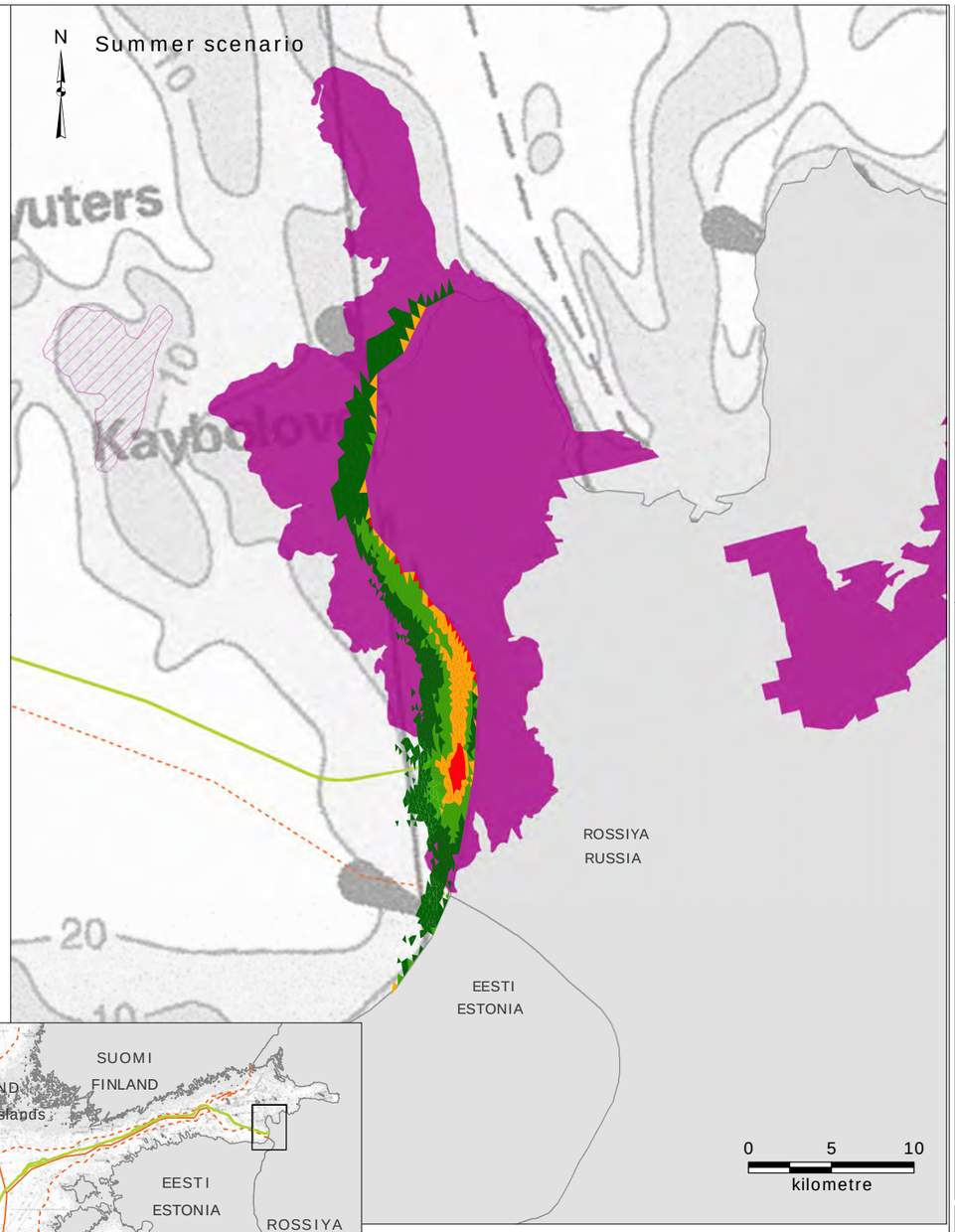
Version: 01
Date: 2017-02-23
Prepared: MIRS
Controlled: JLA

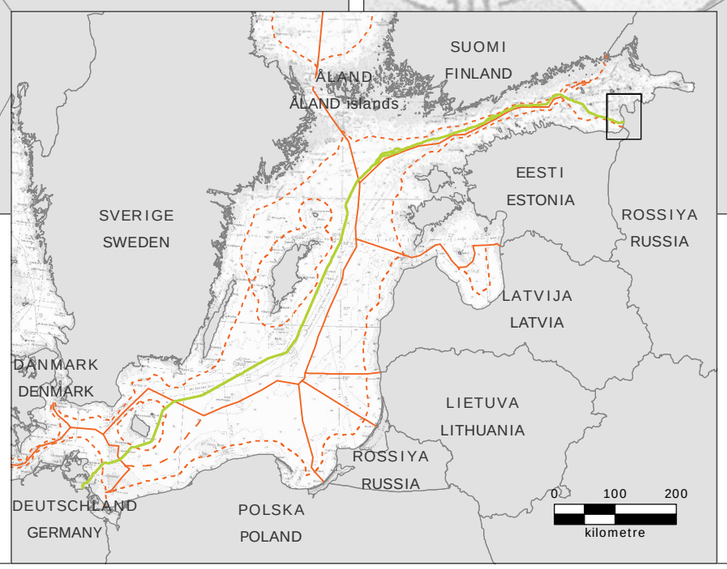
MO-03-Espoo

Duration of exceeding 10 mg/l from munition clearence in Finnish and Russian waters

RAMBØLL







Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Dioxin, Dredging (micro-tunnelling) - normal hydrography

Duration of exceedance of PNEC value in hours:

- 0 - 1
- > 1 - 24
- > 24 - 72
- > 72 - 168
- > 168 - 840

Note:
- Redistribution of sediments for normal and summer scenarios are shown
- Normal and summer scenarios refer to periods with normal or summer hydrographic conditions with respect to flow velocities and stratification

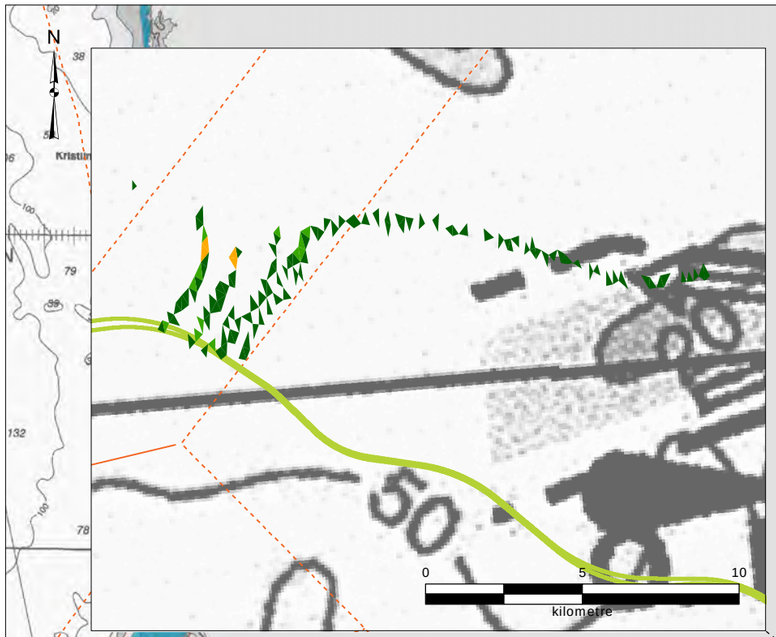
References:
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- Rambøll, "Modelling of sediment spill in Russia", Doc. no. W-PE-EIA-PRU-REP-805-070500EN-02

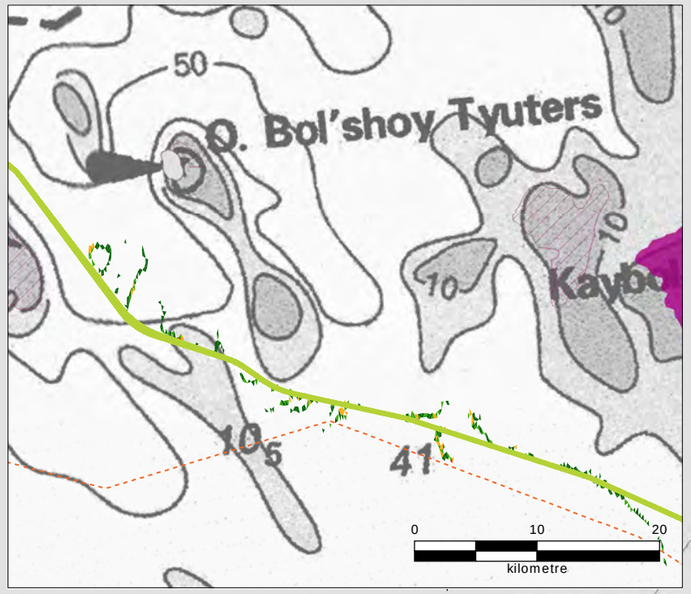
Version: 02
Date: 2017-02-23
Prepared: MIRS
Controlled: JLA

MO-04-Espoo

Duration of exceeding PNEC for WHO (2005) PCDD/F TEQ upper (Dioxins/Furans) from dredging at Russian landfall

RAMBØLL





Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Proposed extended Natura 2000 site in Finland:

- Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)

Dioxin, munition clearance
- normal hydrography

Duration of exceedance of PNEC value in hours:

- 0 - 1
- > 1 - 2
- > 2 - 6
- > 6 - 12

Note:
- Redistribution of sediments for normal scenario is shown
- Normal scenario refers to a period with normal hydrographic conditions with respect to flow velocities and stratification
- Zooms showing examples of munition clearence

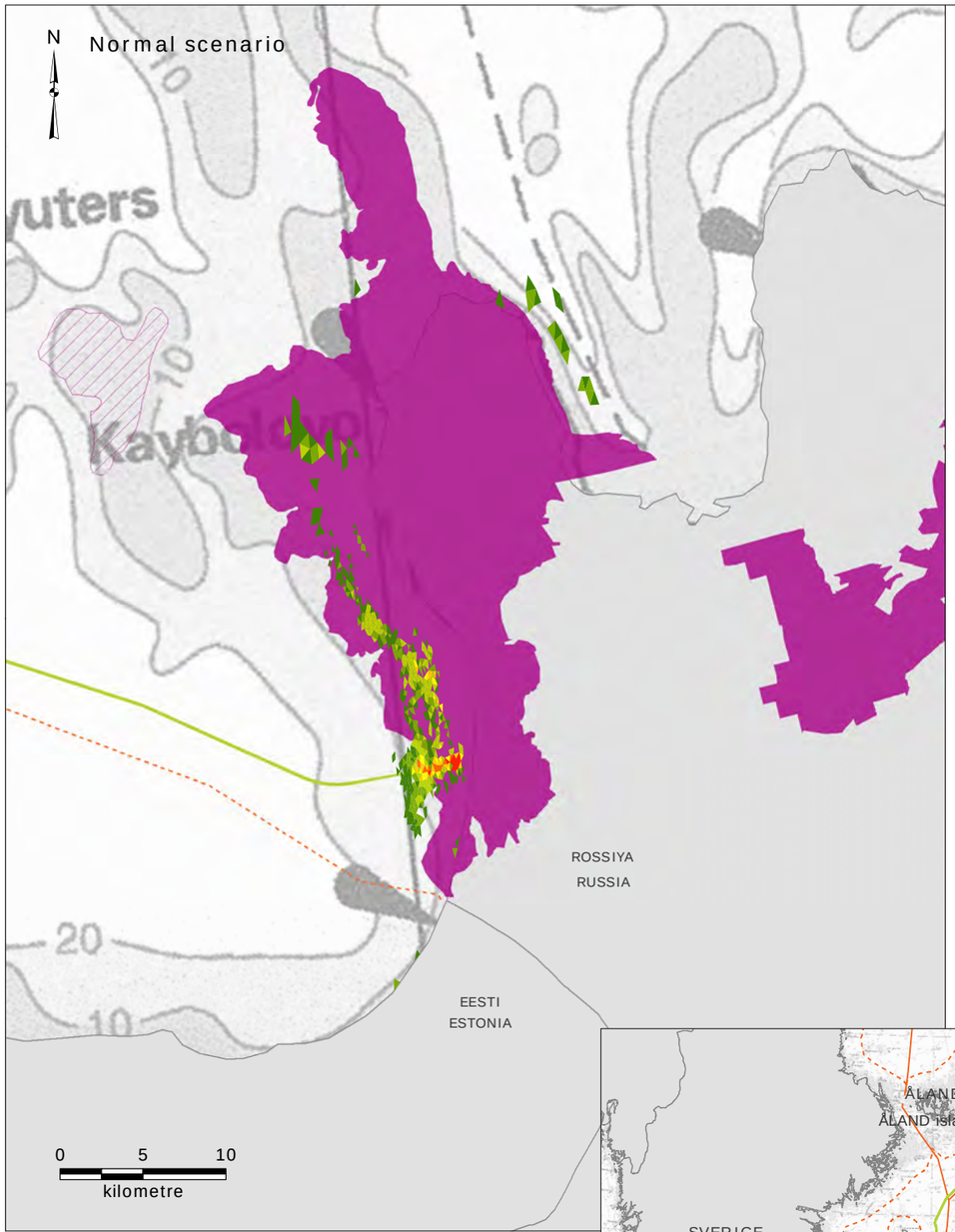
References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Modelling of sediment spill in Finland", Doc. no. W-PE-EIA-PFI-REP-805-030400EN-03
- Rambøll, "Modelling of sediment spill in Russia", Doc. no. W-PE-EIA-PRU-REP-805-070500EN-02

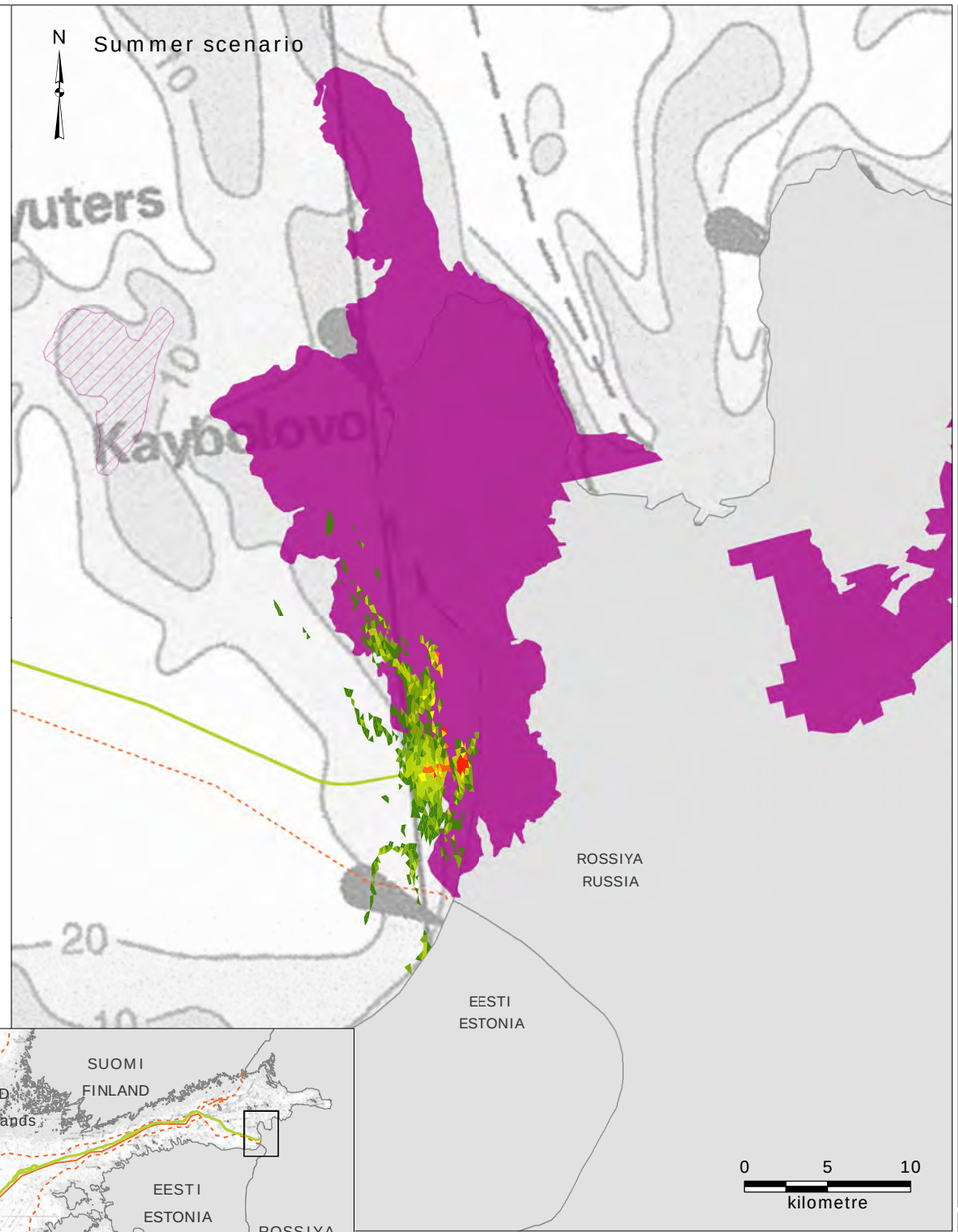
Version: 01
Date: 2017-02-22
Prepared: MIRS
Controlled: JLA

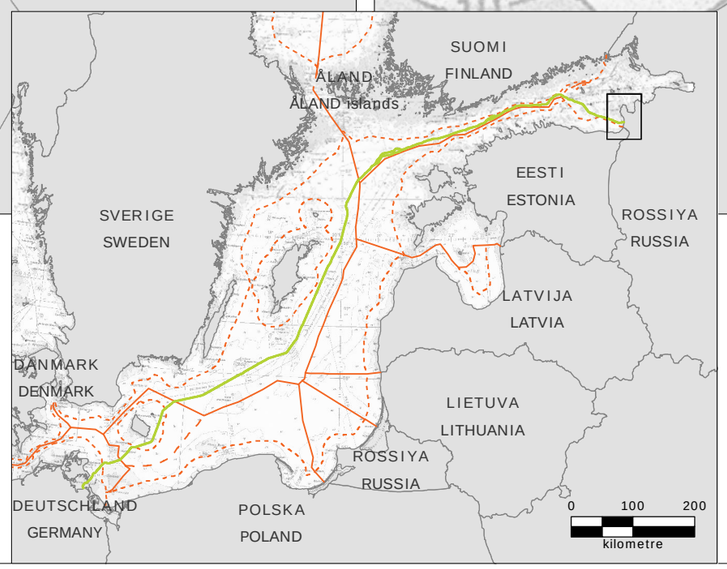
MO-05-Espoo

Duration of exceeding PNEC for WHO (2005) PCDD/F TEQ upper (Dioxins/Furans) from munitions clearence in Finnish and Russian waters

RAMBØLL







Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Protected areas in the Russian part of the Baltic Region:

- Protected site in Russia
- Proposed protected site in Russia

Dredging (Micro-tunnelling) - normal hydrography

Sedimentation (g/m^2):

- 0 - 50
- > 50 - 100
- > 100 - 200
- > 200 - 500
- > 500 - 1000
- > 1,000 - 2,000
- > 2,000 - 5,000
- > 5,000 - 10,000
- > 10,000 - 20,0000

Note:
- Redistribution of sediments for normal and summer scenarios are shown
- Normal and summer scenarios refer to periods with normal or summer hydrographic conditions with respect to flow velocities and stratification

References:
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- Rambøll, "Modelling of sediment spill in Russia", Doc. no. W-PE-EIA-PRU-REP-805-070500EN-02

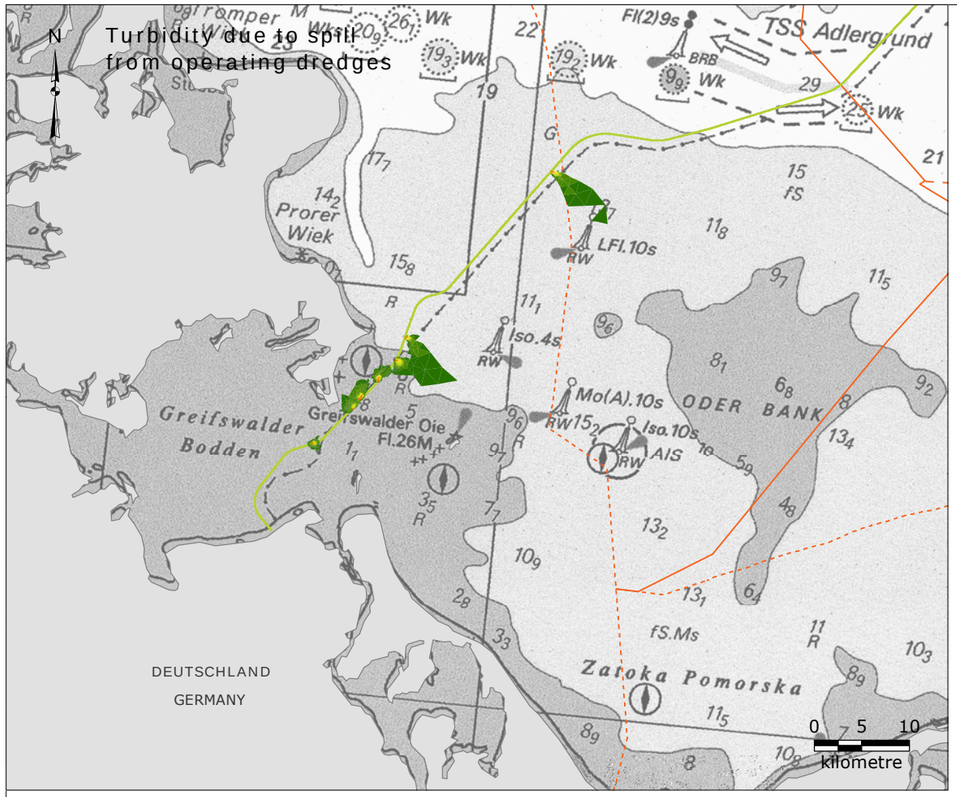
Version: 02
Date: 2017-02-22
Prepared: MIRS
Controlled: JLA

MO-06-Espoo

Sedimentation from dredging at Russian landfall

RAMBØLL

Turbidity due to spill from operating dredges

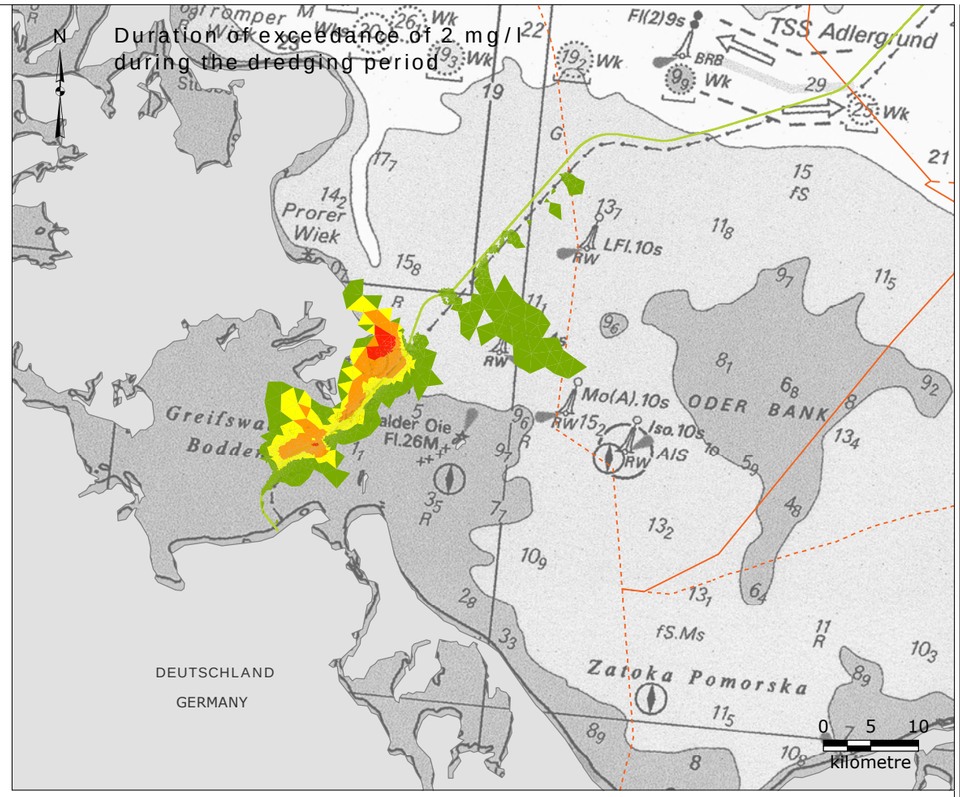


Legend:

Suspended sediment concentration (mg/l):

0 - 1	> 20 - 25
> 1 - 2	> 25 - 30
> 2 - 4	> 30 - 40
> 4 - 6	> 40 - 50
> 6 - 8	> 50 - 100
> 8 - 10	> 100 - 150
> 10 - 15	> 150 - 200
> 15 - 20	> 200

Duration of exceedance of 2 mg/l during the dredging period



Legend:

Duration of exceeding threshold concentration (2 mg/l) in days:

≤ 2
> 2 - 5
> 5 - 10
> 10 -20
> 20

Legend:

- NSP2 Route
- NSP Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland

Note:
- The model is set up for a period in autumn 2005. In this specific cast the modelling period was selected as 10-09-2005 – 10-11-2005.

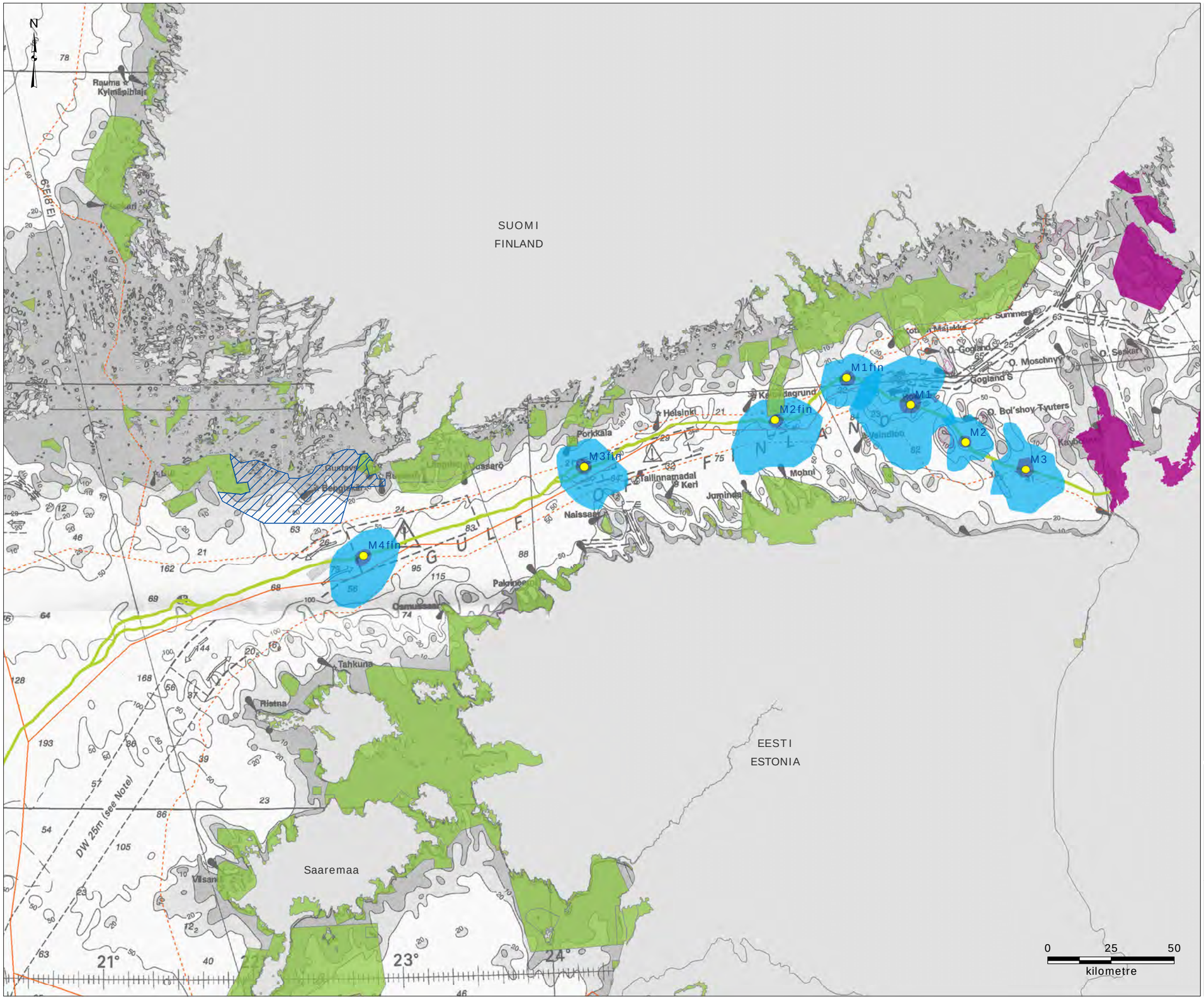
References:
- DHI, 2017 "Nord Stream 2 turbidity modelling", 2nd revision

Version: 02
Date: 2017-03-02
Prepared: MIRS
Controlled: JLA

MO-07-Espoo

Suspended sediment - German waters

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site
- Proposed extended Natura 2000 site in Finland
- Protected site in Russia
- Proposed protected site in Russia
- Noise modelling location

Russia & Finland ave., summer

SEL (linear), dB re 1µPa²s

- 164 dB
- 179 dB

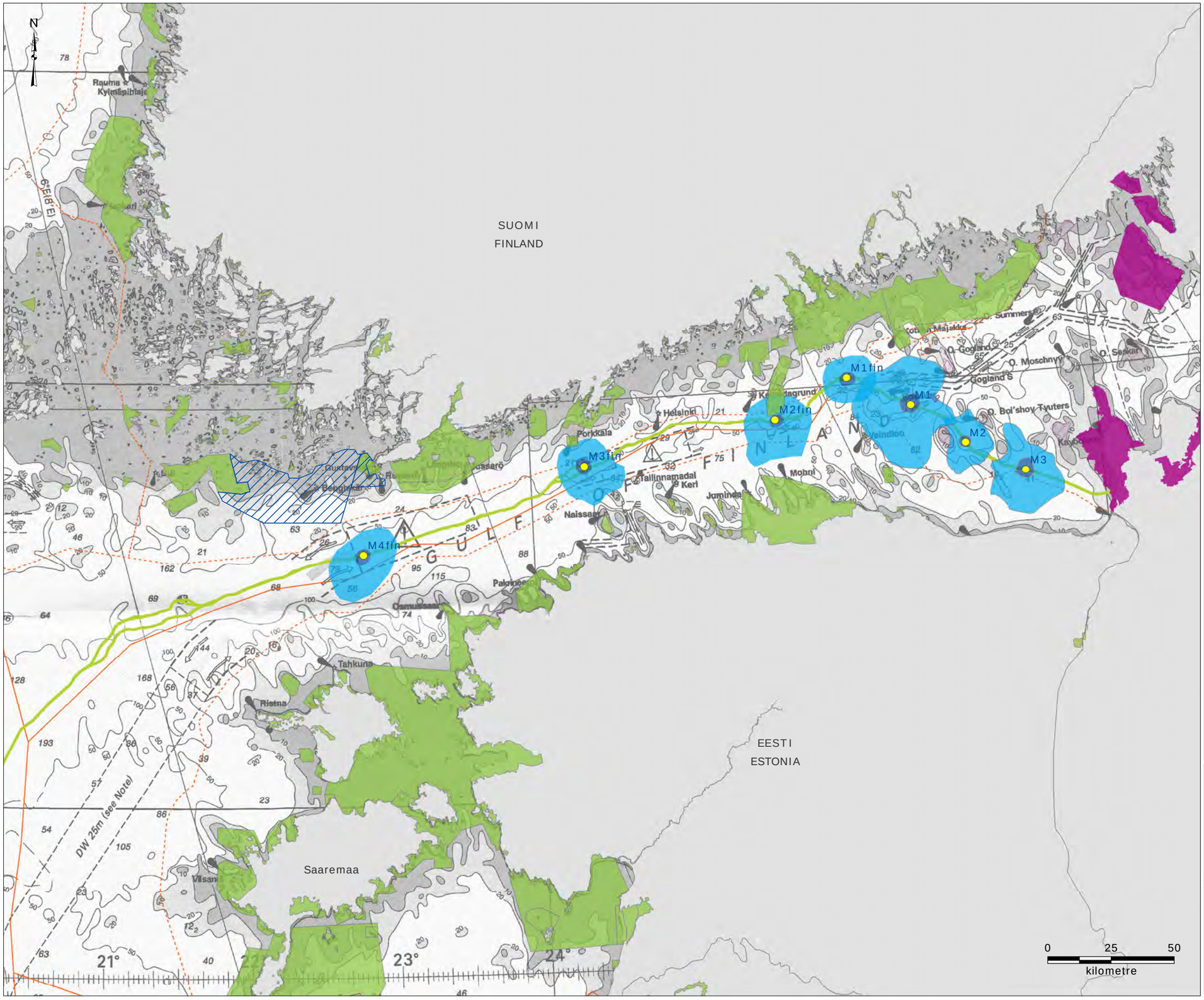
References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Underwater noise report for Finland", Doc. no. W-PE-EIA-PFI-REP-805-030600EN-05
- Rambøll, "Underwater noise report for Russia", Doc. no. W-PE-EIA-OFR-REP-805-070600EN-03

Version: 01
Date: 2017-01-12
Prepared: MIRS
Controlled: JLA

UN-01-Espoo

Underwater noise (ave.) during munitions clearance (Gulf of Finland) - summer scenario

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site
- Proposed extended Natura 2000 site in Finland
- Protected site in Russia
- Proposed protected site in Russia
- Noise modelling location

Russia & Finland ave., winter

SEL (linear), dB re 1µPa²s

- 164 dB
- 179 dB

References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Underwater noise report for Finland", Doc. no. W-PE-EIA-PFI-REP-805-030600EN-05
- Rambøll, "Underwater noise report for Russia", Doc. no. W-PE-EIA-OFR-REP-805-070600EN-03

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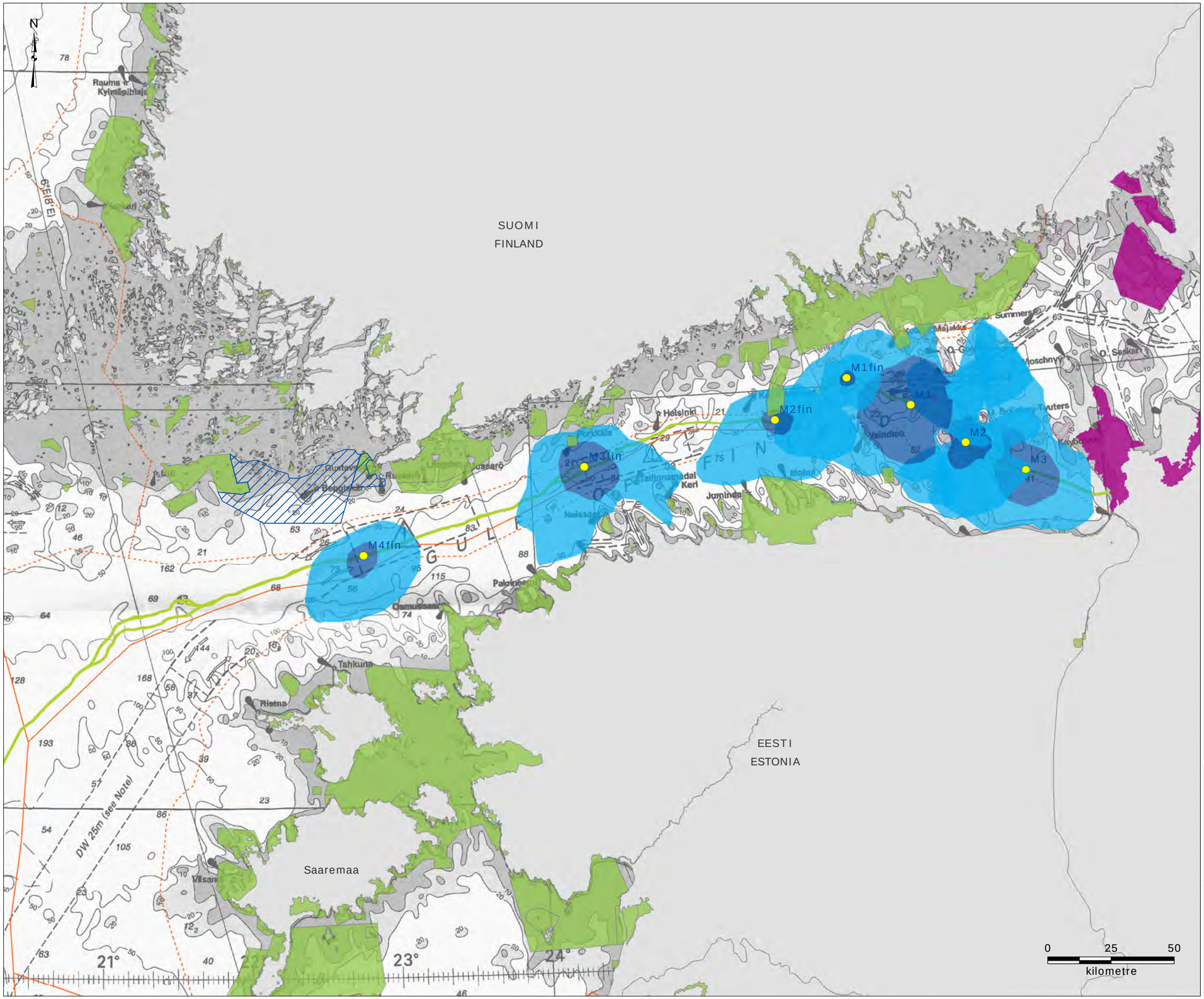
Controlled: JLA

UN-02-Espoo

Underwater noise (ave.) during munitions clearance (Gulf of Finland) - winter scenario

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site
- Proposed extended Natura 2000 site in Finland
- Protected site in Russia
- Proposed protected site in Russia
- Noise modelling location

Russia & Finland max., summer

SEL (linear), dB re 1µPa²s

- 164 dB
- 179 dB

References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Underwater noise report for Finland", Doc. no. W-PE-EIA-PFI-REP-805-030600EN-05
- Rambøll, "Underwater noise report for Russia", Doc. no. W-PE-EIA-OFR-REP-805-070600EN-03

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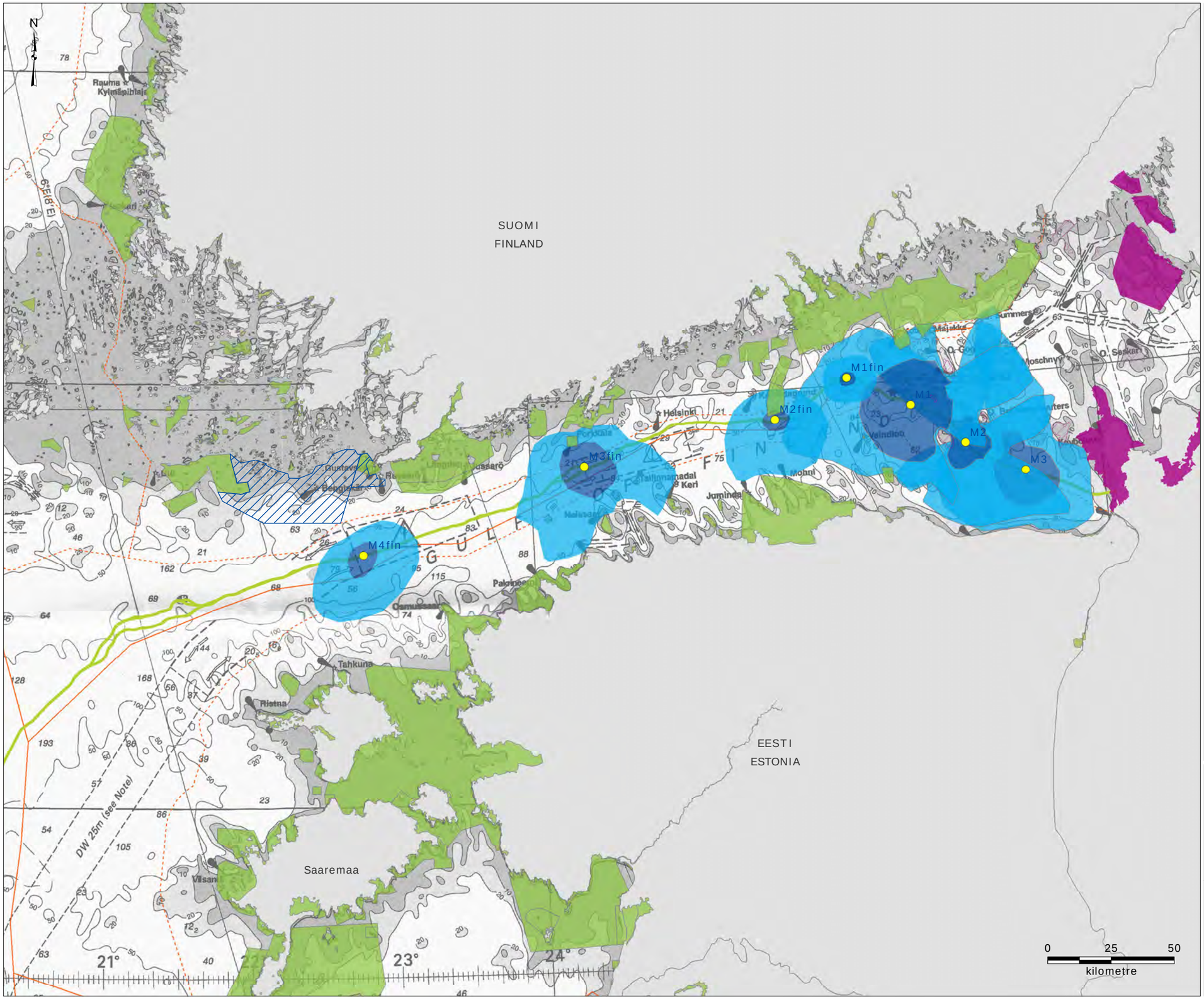
UN-03-Espoo

Underwater noise (max.) during munitions clearance (Gulf of Finland) - summer scenario

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Natura 2000 site
- Proposed extended Natura 2000 site in Finland
- Protected site in Russia
- Proposed protected site in Russia
- Noise modelling location

Russia & Finland max., winter

SEL (linear), dB re 1µPa²s

- 164 dB
- 179 dB

References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- Pogrebov, V., Sagitov, R., 2006, "Nature conservation atlas of the Russian part of the Gulf of Finland", Tuscarora, Russia, 60 pp.
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14
- Rambøll, "Underwater noise report for Finland", Doc. no. W-PE-EIA-PFI-REP-805-030600EN-05
- Rambøll, "Underwater noise report for Russia", Doc. no. W-PE-EIA-OFR-REP-805-070600EN-03

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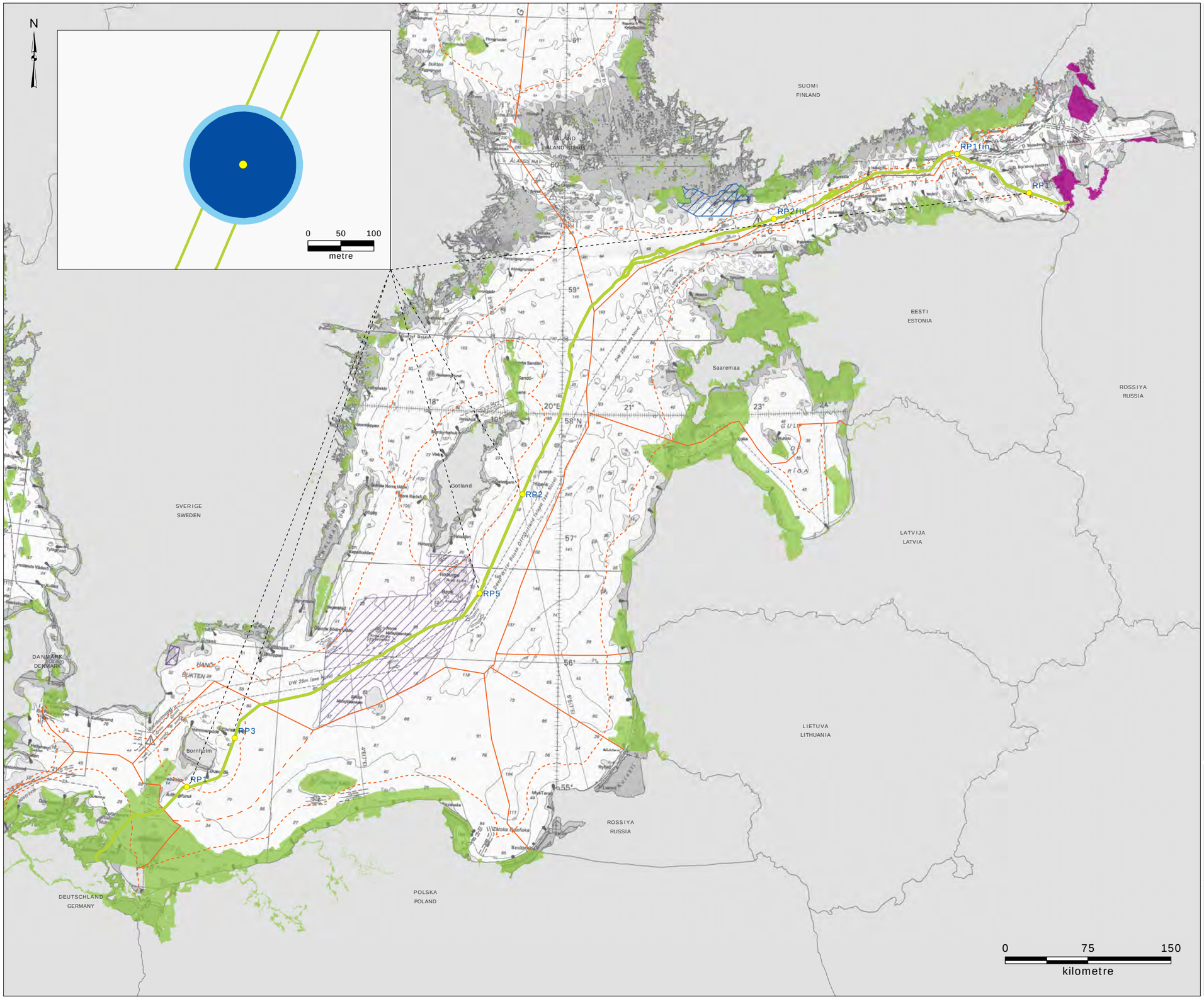
UN-04-Espoo

Underwater noise (max.) during munitions clearance (Gulf of Finland) - winter scenario

RAMBØLL



Legend:

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Natura 2000 site

Proposed extended Natura 2000 site in Sweden:

- Proposed new and extended Natura 2000-sites

Proposed extended Natura 2000 site in Finland:

- Special Protection Areas (SPA) and Special Area of Conservation/ Special Conservation Interests (SAC/SCI)
- Protected site in Russia
- Proposed protected site in Russia
- Noise modelling location

Rock placement, winter

Cumulative SEL (linear, two-hour), dB re 1µPa²s

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

Note:
- Examples of underwater noise dispersion from rock placement
- Underwater sound exposure levels. Noise level contour plots to TTS threshold limmits
- TTS (Temporary Threshold Shift) where there is a risk of temporary behavior impacts
- Underwater continuous noise levels contour plots (db re. 1µPa²s) (winter)

References:
- European Environment Agency, 2014, "Natura 2000 data - the European network of protected sites", http://www.eea.europa.eu/data-and-maps/data/natura-6, Date accessed: 2016-01-19
- SYKE, Finnish Environmental Institute, Date accessed: 2016-09-14

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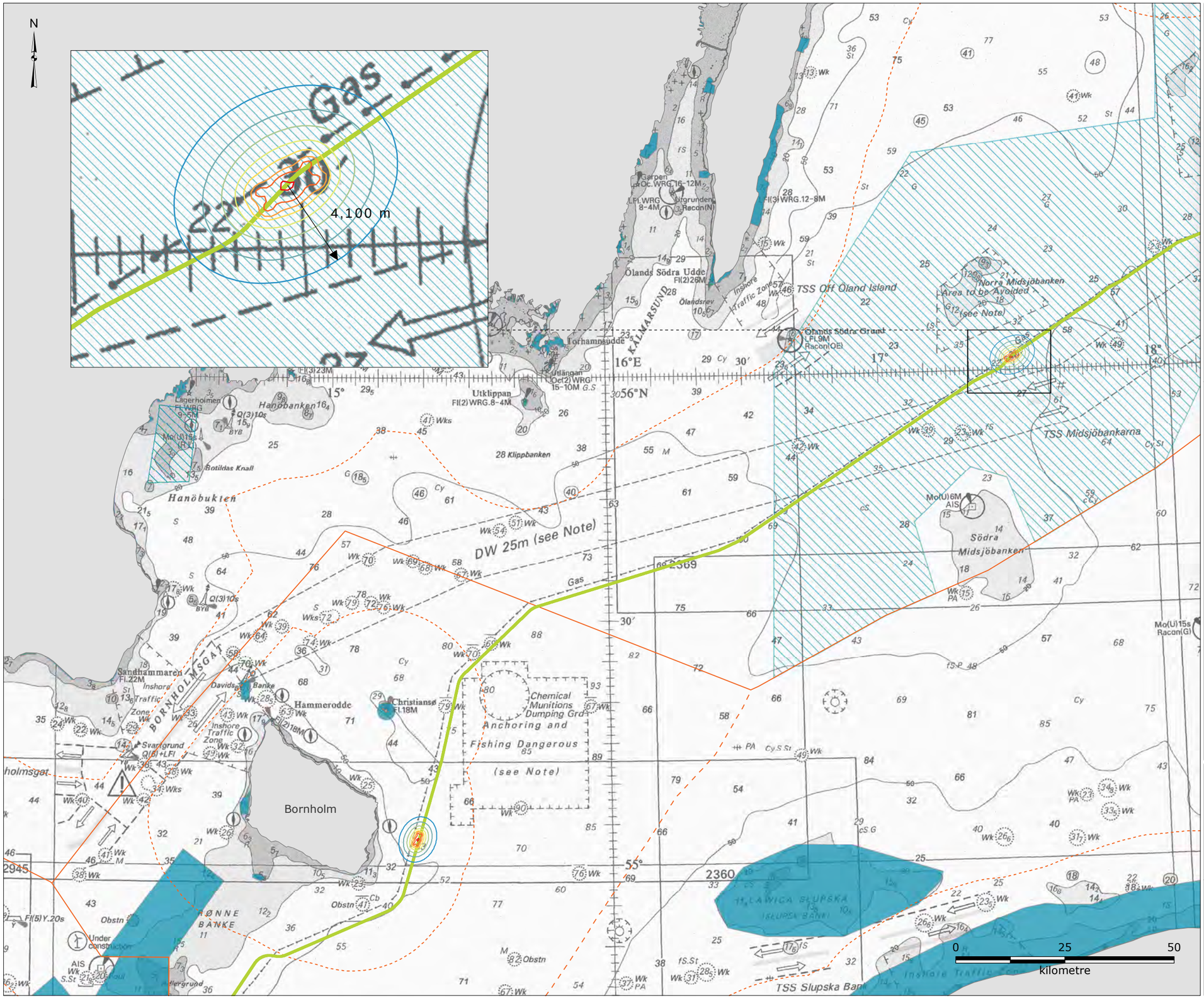
UN-05-Espoo

Underwater noise dispersion from rock placement

RAMBØLL



Legend

- NSP2 Route
- Territorial water border
- EEZ border
- Midline between Denmark and Poland
- Natura 2000 site
- Proposed new and extended Natura 2000 site in Sweden

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

Reference:
- Calculations according to Miljøstyrelsen, 1993, "Beregning af støj fra virksomheder. Fælles nordisk beregningsmetode", in Vejledning fra Miljøstyrelsen Nr. 5/1993

Version: 02
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NA-01-Espoo

Airborne noise propagation during NSP2 pipe laying

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