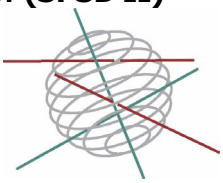
SCIENTIFIC SUPPORT PLAN FOR A SUSTAINABLE DEVELOPMENT POLICY (SPSD II)

GAUFRE



Mixed actions

Final report:

TOWARDS A SPATIAL STRUCTURE PLAN FOR SUSTAINABLE MANAGEMENT OF THE SEA

PART TWO: MAPS

MA/02/006

Coordinator and promotor:
Prof. Dr. F. Maes, Maritime Institute, University Gent

Promotors:
Prof. Dr. M. De Batist/Dr. V. Van Lancker, Renard Center of Marine Geology, University Gent
Ir. D. Leroy, Ecolas nv
Prof. Dr. M. Vincx, Marine Biology Section, University Gent

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Mariene Biologie Vakgroep Biologie

Belgian Science Policy

ECOLAS ENVIRONMENTAL CONSULTANCY & ASSISTANC

RCMG Renard Centre of Marine Geology RCMG

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SCIENTIFIC SUPPORT PLAN FOR A SUSTAINABLE DEVELOPMENT POLICY (SPSD II)

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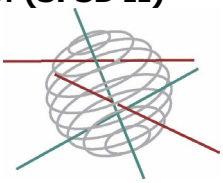

Mixed actions

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June 2005

LIST OF MAPS

Map I.0. Joint presentation of all spatial distribution maps

Original data source: cfr. all spatial distribution maps
Map preparation: RCMG - Ghent University

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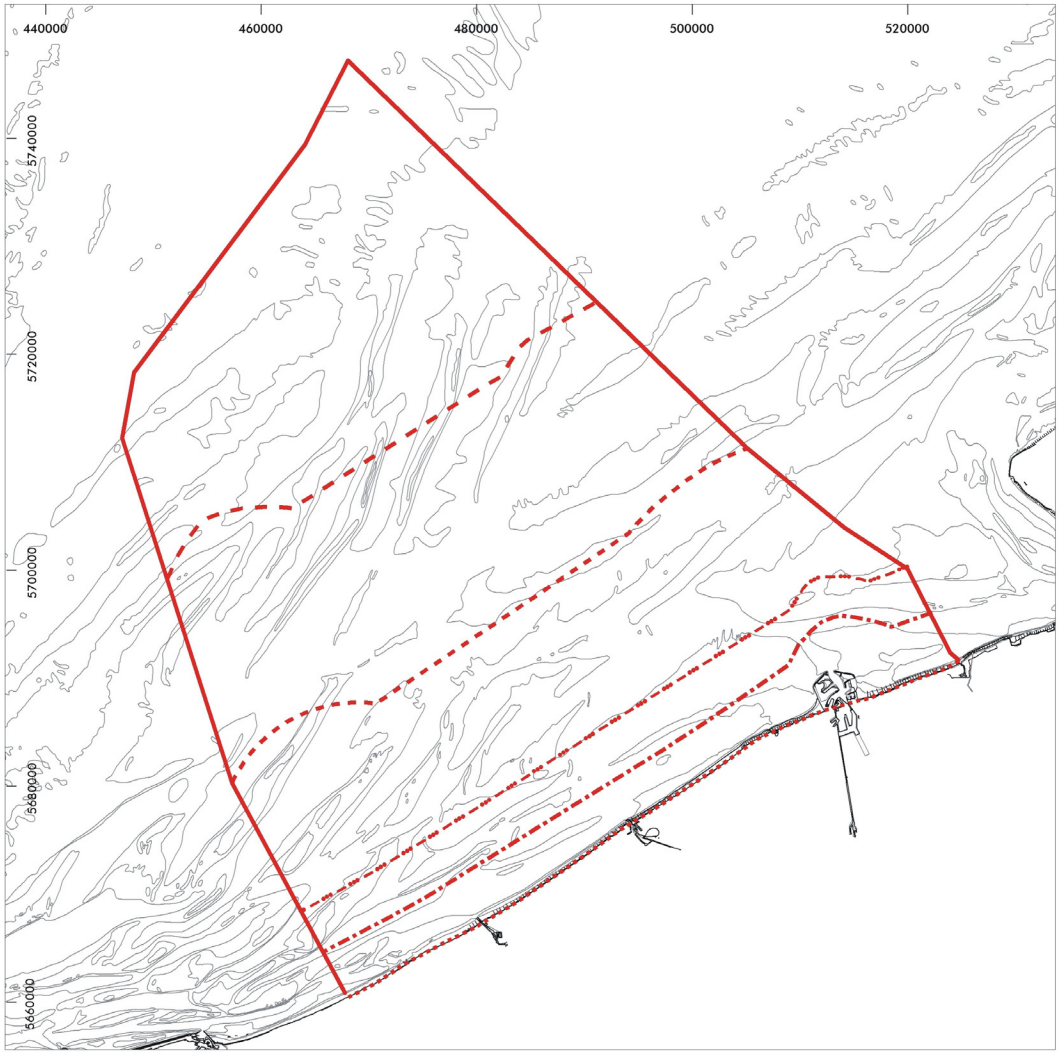
Map I.1.1a. Legal zonation in the Belgian part of the North Sea



Baseline
3 nautical mile
6 nautical mile
12 nautical mile: Belgian territorial sea
24 nautical mile: Contiguous zone
Belgian part of the North Sea including continental shelf and exclusive economic zone

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Maes et al., 2000. Limited Atlas of the Belgian Part of the North Sea, OSTC, 31 pp.
Map preparation: RCMG - Ghent University

May 2005

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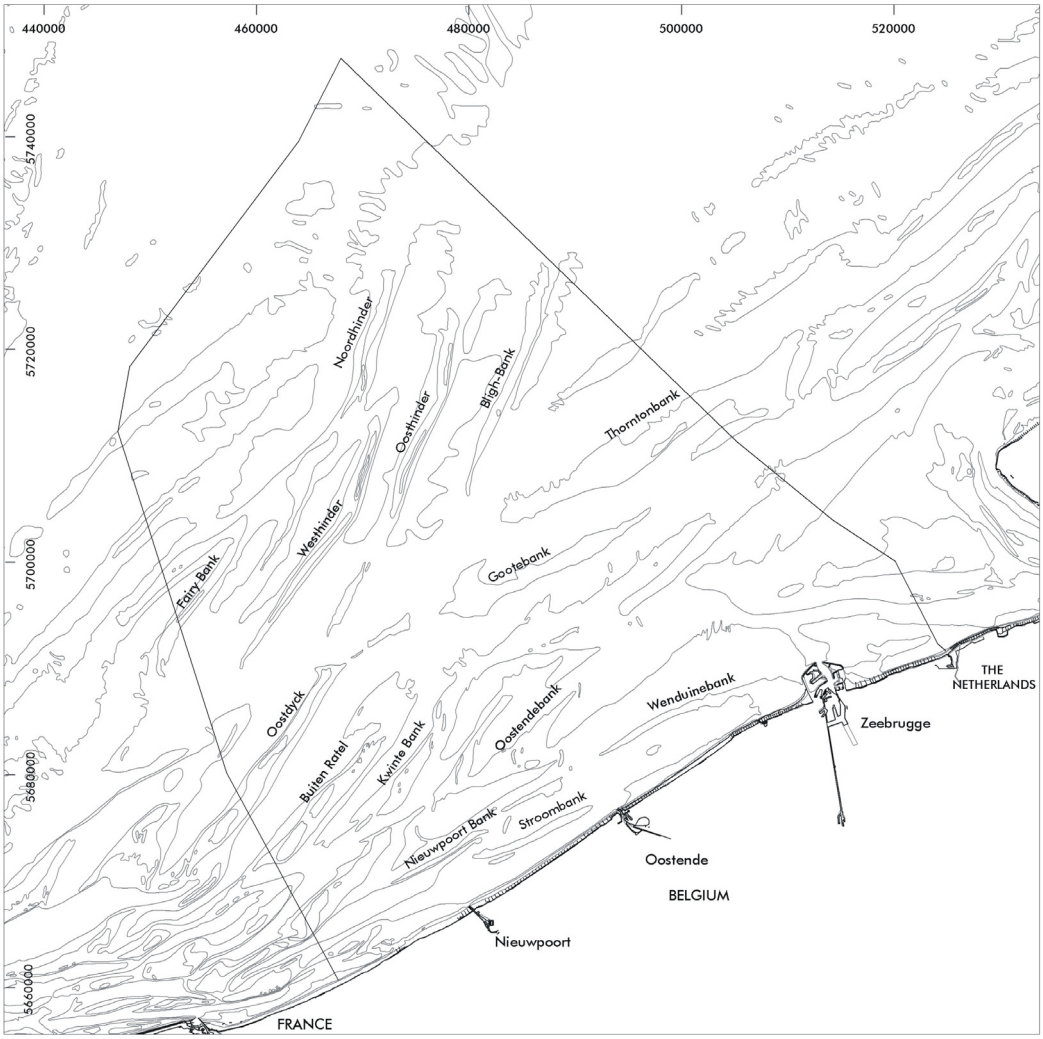
Map I.1.2a. Bathymetry of the Belgian part of the North Sea



Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Map preparation: RCMG - Ghent University

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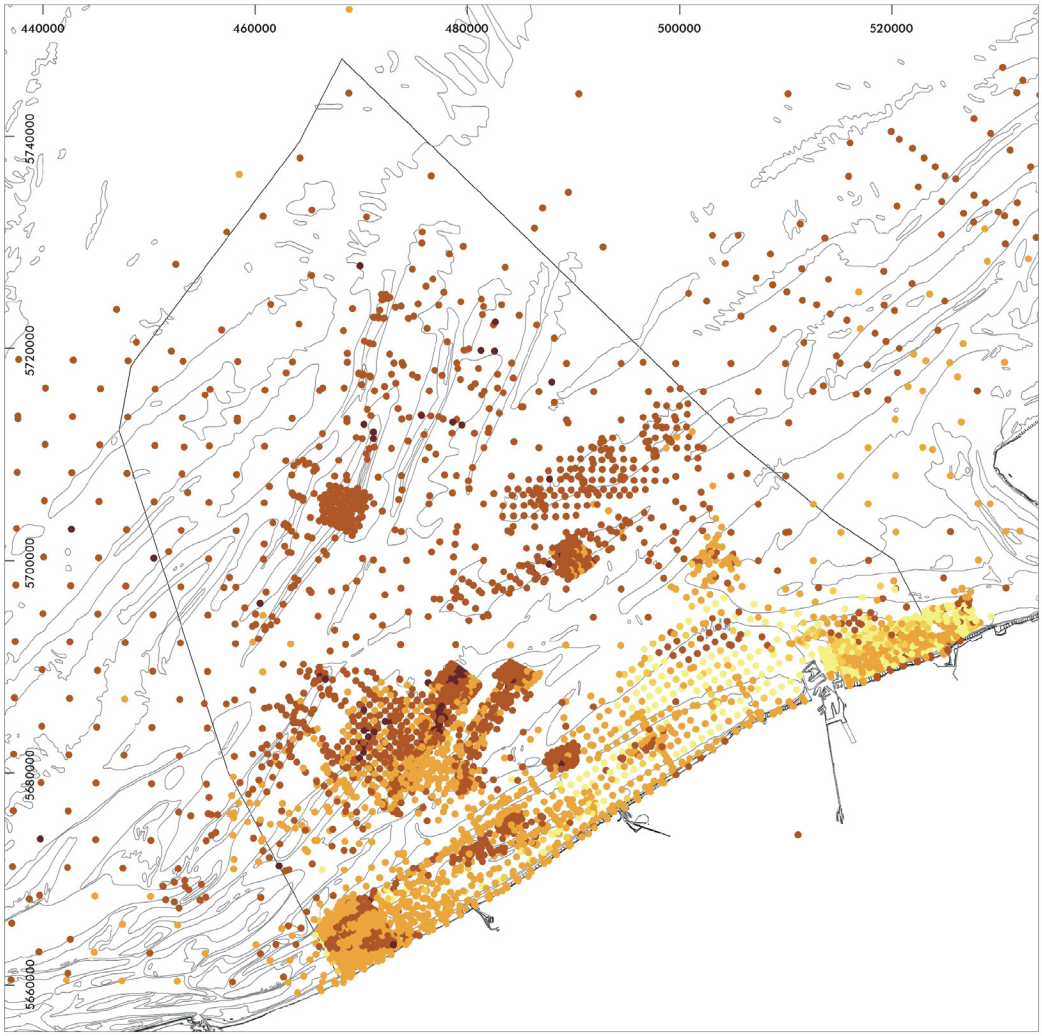
Map I.1.2b. Distribution of the surficial sediment sampling points. The colour gives an indication of their median grain-size (based on sedisurf@ database (1976-)



Median grain size (mu)

- 0 - 63
- 63- 125
- 125 - 250
- 250 - 500
- > 500

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Sedisurf database, Renard Centre of Marine Geology - Ghent University
Map preparation: RCMG - Ghent University

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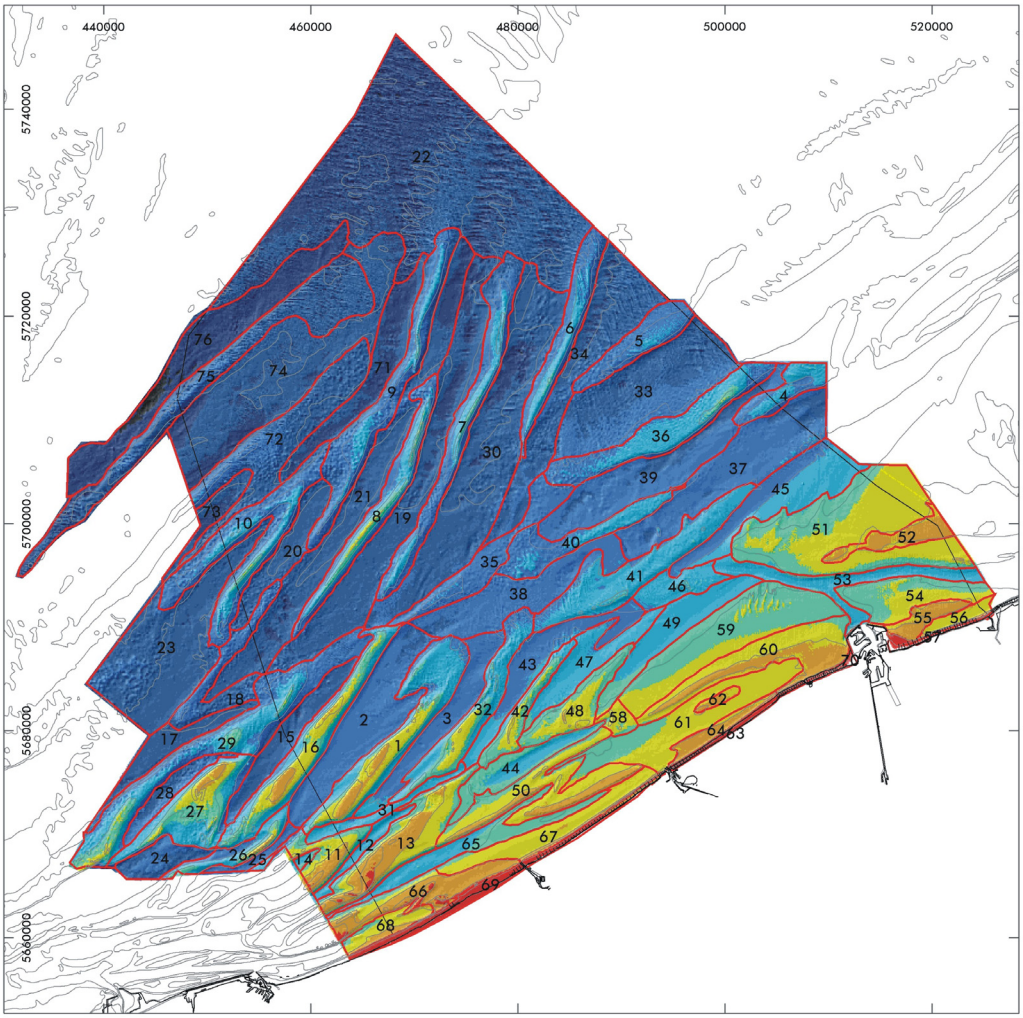
Map I.1.2c. Zonation of the Belgian part of the North Sea, superimposed on a bathymetry-based digital terrain model



zones

Bathymetry (m)

46

0

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Hydrographic Office of the Netherlands
United Kingdom Hydrographic Office
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

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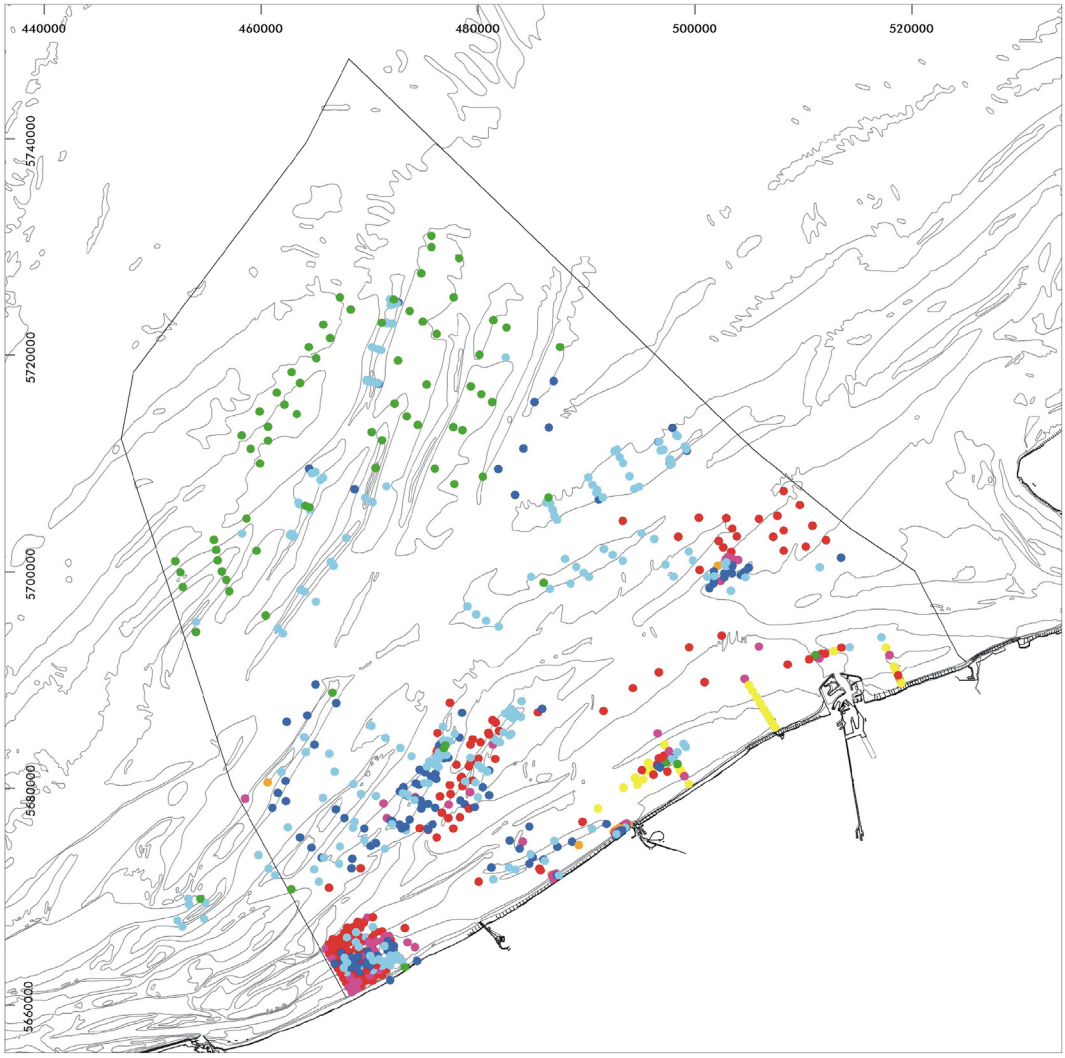
Map I.1.3a. Spatial distribution of the sample groups at the BPNS



Group A
Group B
Group C
Group D
Group E
Group F
Group G

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Marine Biology Section - Ghent University
Data analysis: Marine Biology Section - Ghent University
Map preparation: RCMG - Ghent University

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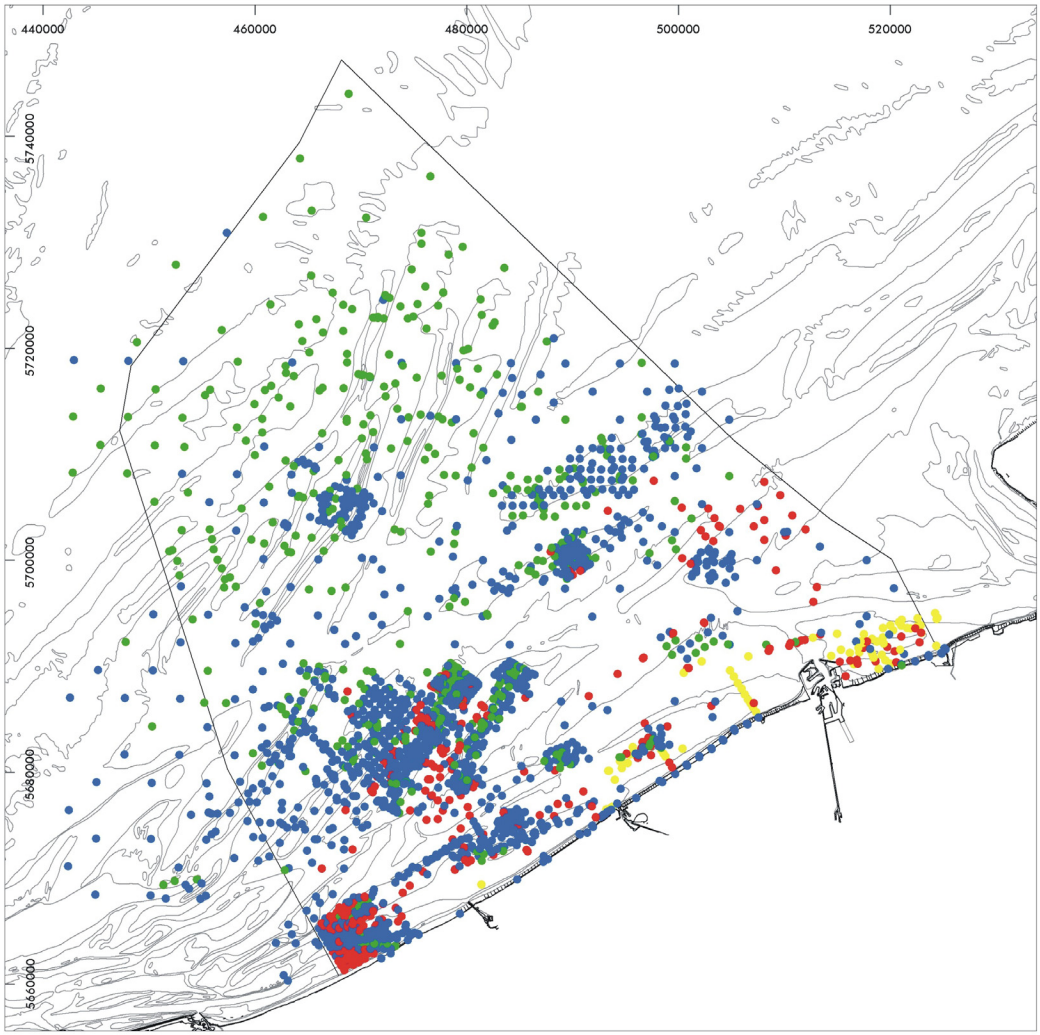
Map I.1.3b. Spatial distribution of the four soft-sediment macrobenthic communities in the Belgian part of the North Sea, based on direct (i.e. macrobenthos samples) as well as modeled



- *Macoma balthica* community
- *Abra alba - Mysella bidentata* community
- *Nepthys cirrosa* community
- *Ophelia limacina - Glycera lapidum* community

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Marine Biology Section - Ghent University
RCMG - Ghent University
Data analysis: Marine Biology Section- Ghent University
RCMG - Ghent University
Map preparation: RCMG - Ghent University

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Map I.2.1a. Cables and pipelines: spatial distribution

Pipelines

Cables:

In use

Disuse

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Map preparation: RCMG - Ghent University

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Map I.2.1b. Cables: use intensity

Use intensity of cables
(length of cable (m)/km²)

- 0: absent
- 1: =< 716
- 2: =< 1.063
- 3: =< 4.378

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

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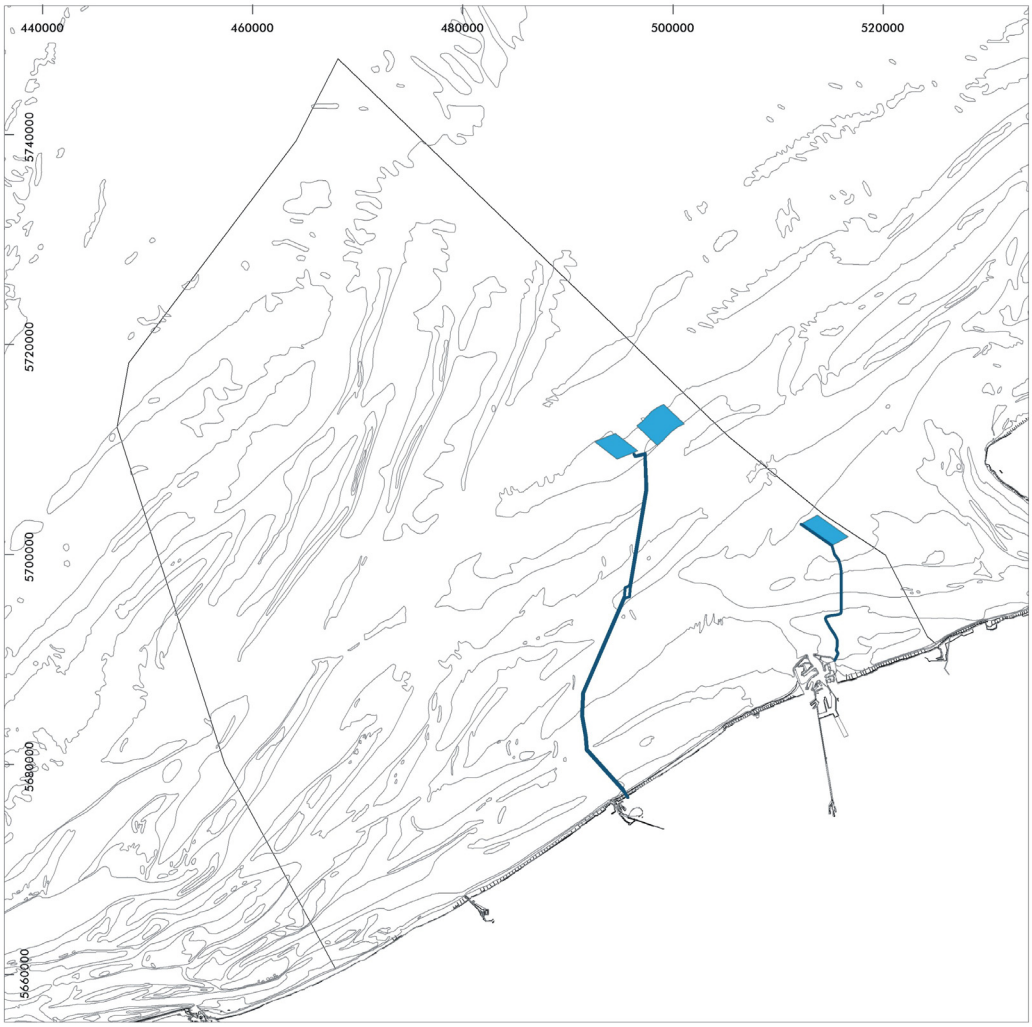
Map I.2.2a. Energy: spatial distribution



Electricity cables
Wind turbine concessions

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: C-power NV
TV Electrabel - Ondernemingen Jan de Nul
(Project Seanergy)
Map preparation: RCMG - Ghent University

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Map I.2.2b. Wind turbines: use intensity

Use of intensity of windturbine parks
(megawatt/km²)

- 0: absent
- 1: =< 7,2
- 2: =< 10,8
- 3: =< 14,4

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: C-power NV
TV Electrabel - Ondernemingen Jan De Nul
(Project Seanergy)
Data analysis: ECOLAS NV
RCMG - Ghent University
Map preparation: RCMG - Ghent University

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Map I.2.2c. Electricity cables for wind turbines: use intensity

Use intensity of windenergy electricity cables
(length of cable (m)/km²)

- 0: absent
- 1: =< 1.007
- 2: =< 1.943
- 3: =< 2.923

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: C-power NV
TV Electrabel - Ondernemingen Jan De Nul (Project Seanergy)
Data analysis: ECOLAS NV, RCMG - Ghent University
Map preparation: RCMG - Ghent University

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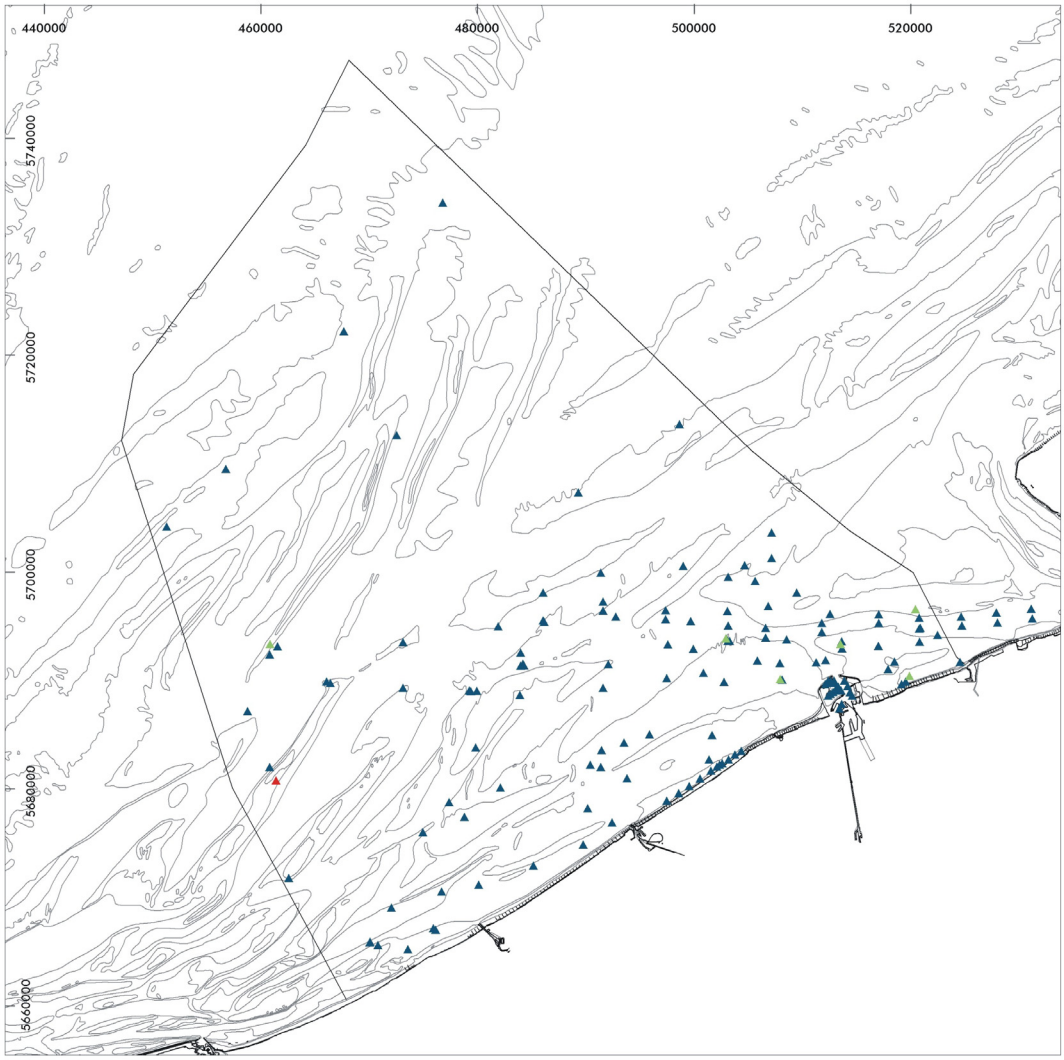
Map I.2.4a. Weather and radar masts, and buoys: spatial distribution



Weather masts
Buoys
Radar mast Oost Dyck

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Hydrometeo, "Overview of positions (WGS84) weather masts and radar mast Oost Dyck on nautical maps"
Map preparation: RCMG - Ghent University

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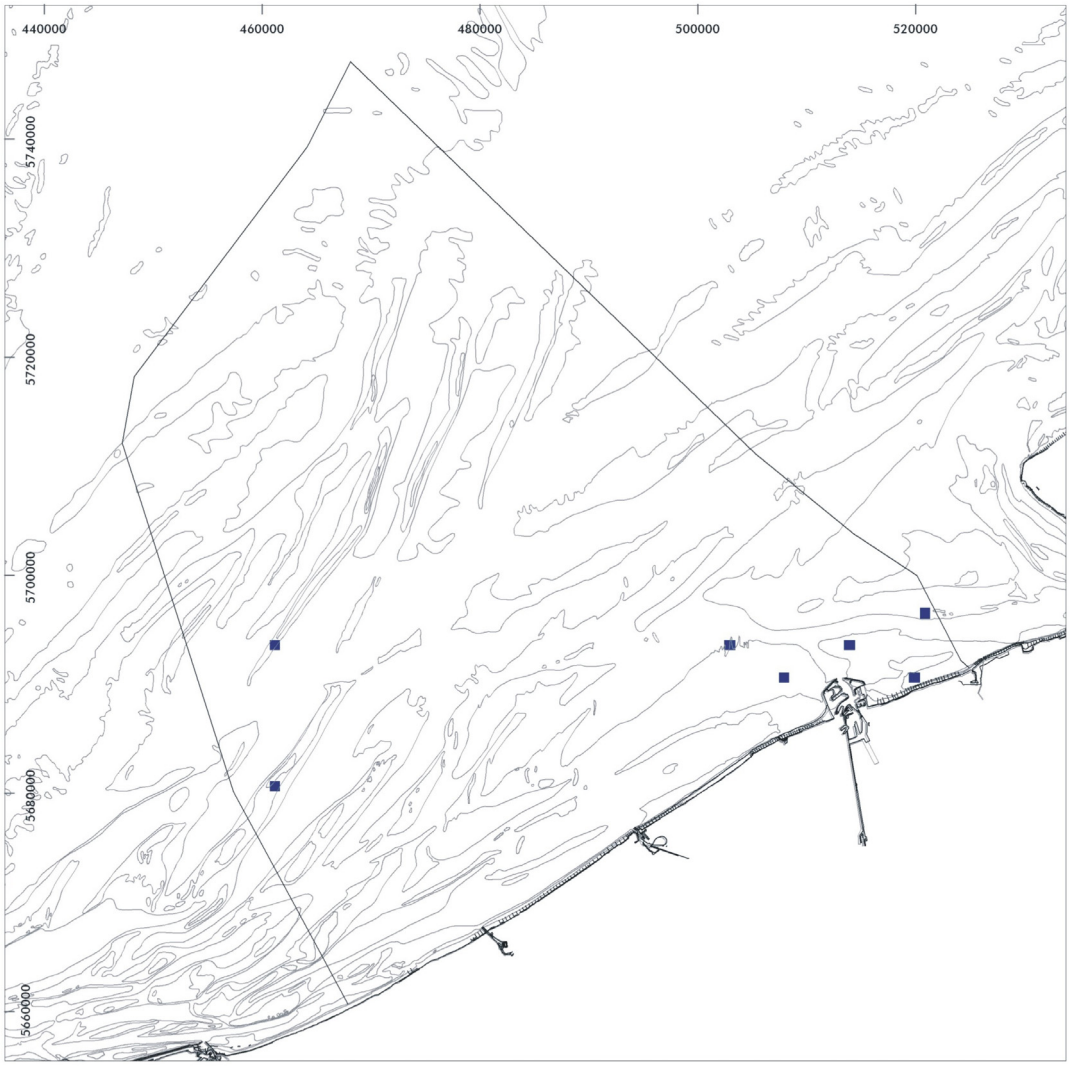
Map I.2.4b. Weather and radar masts: use intensity



Spatial distribution and use intensity of weather and radar masts
(number of weather and radar masts/km²)

0: absent

1: 1

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Hydrometeo, "Overview of positions (WGS84) weather masts and radar mast Oost Dyck on nautical maps"
Data analysis: Maritime Institute - Ghent University, RCMG - Ghent University
Map preparation: RCMG - Ghent University

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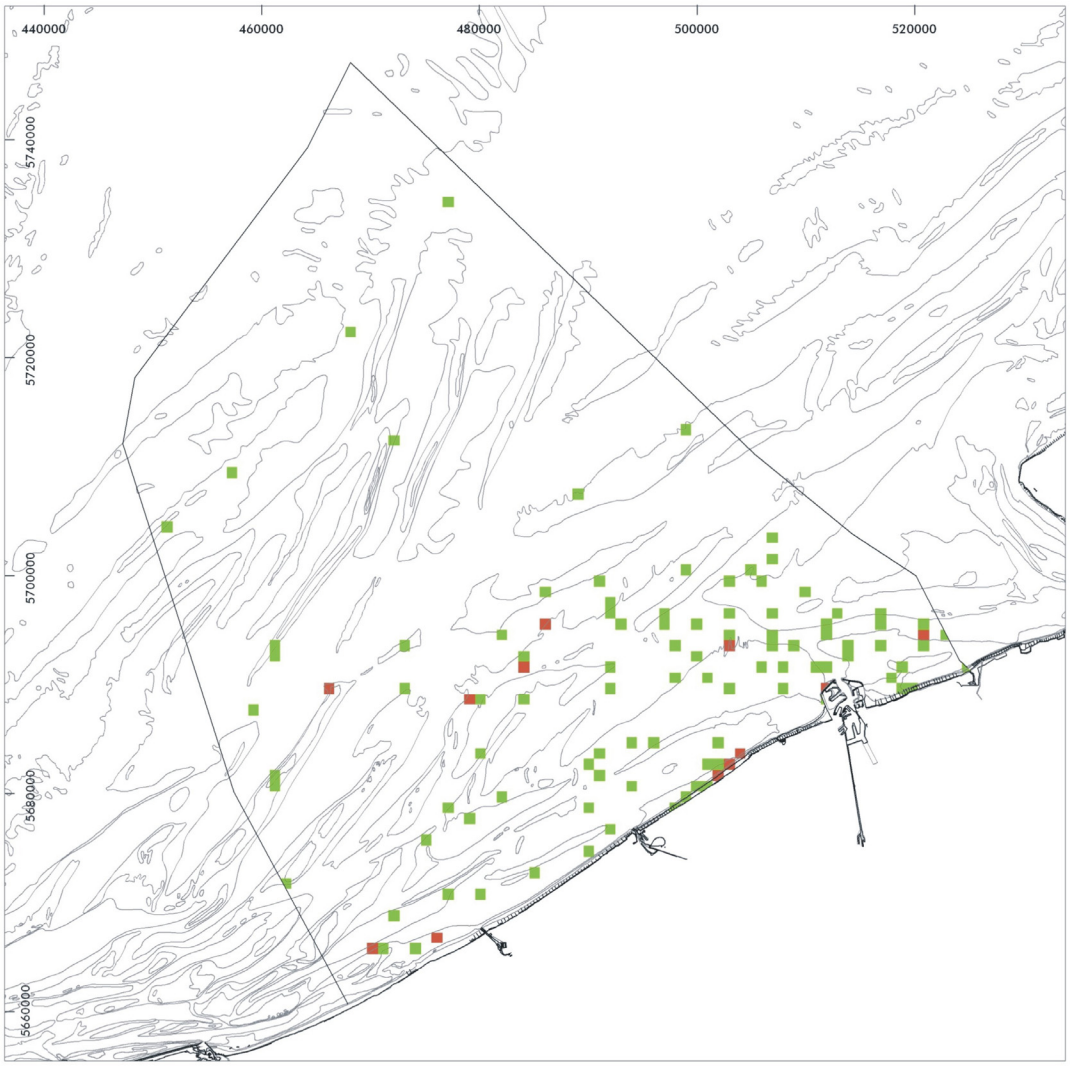
Map I.2.4c. Buoys: use intensity



Spatial distribution and use intensity of buoys
(number of buoys/km²)

- 0: absent
- 1: =< 1
- 2: =< 2
- 3: =< 6

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

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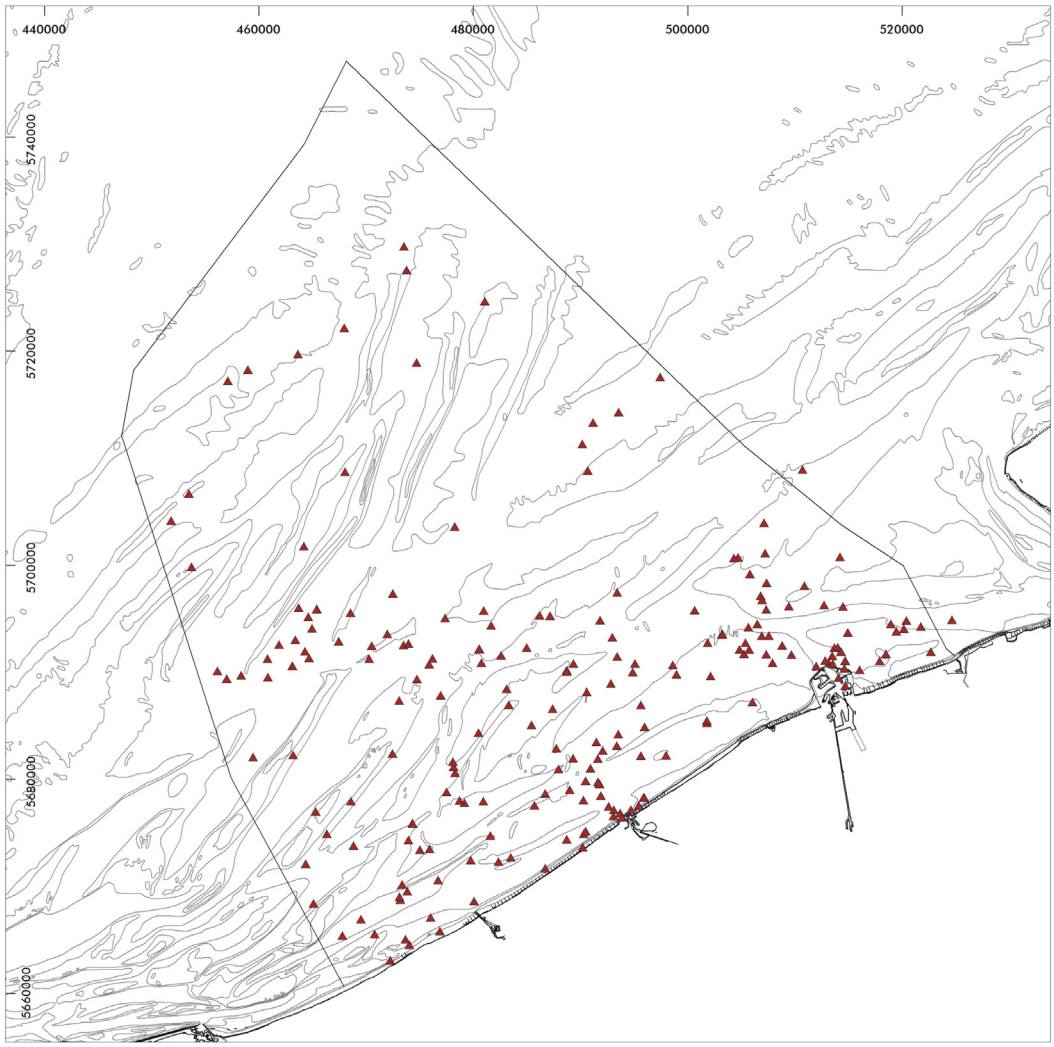
Map I.3.1a. Wrecks: spatial distribution



Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, "Wrecks on the Belgian Continental Shelf adapted up to BAZ 2003/07" (3 June 2003)
Map preparation: RCMG - Ghent University

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▲ Wrecks

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

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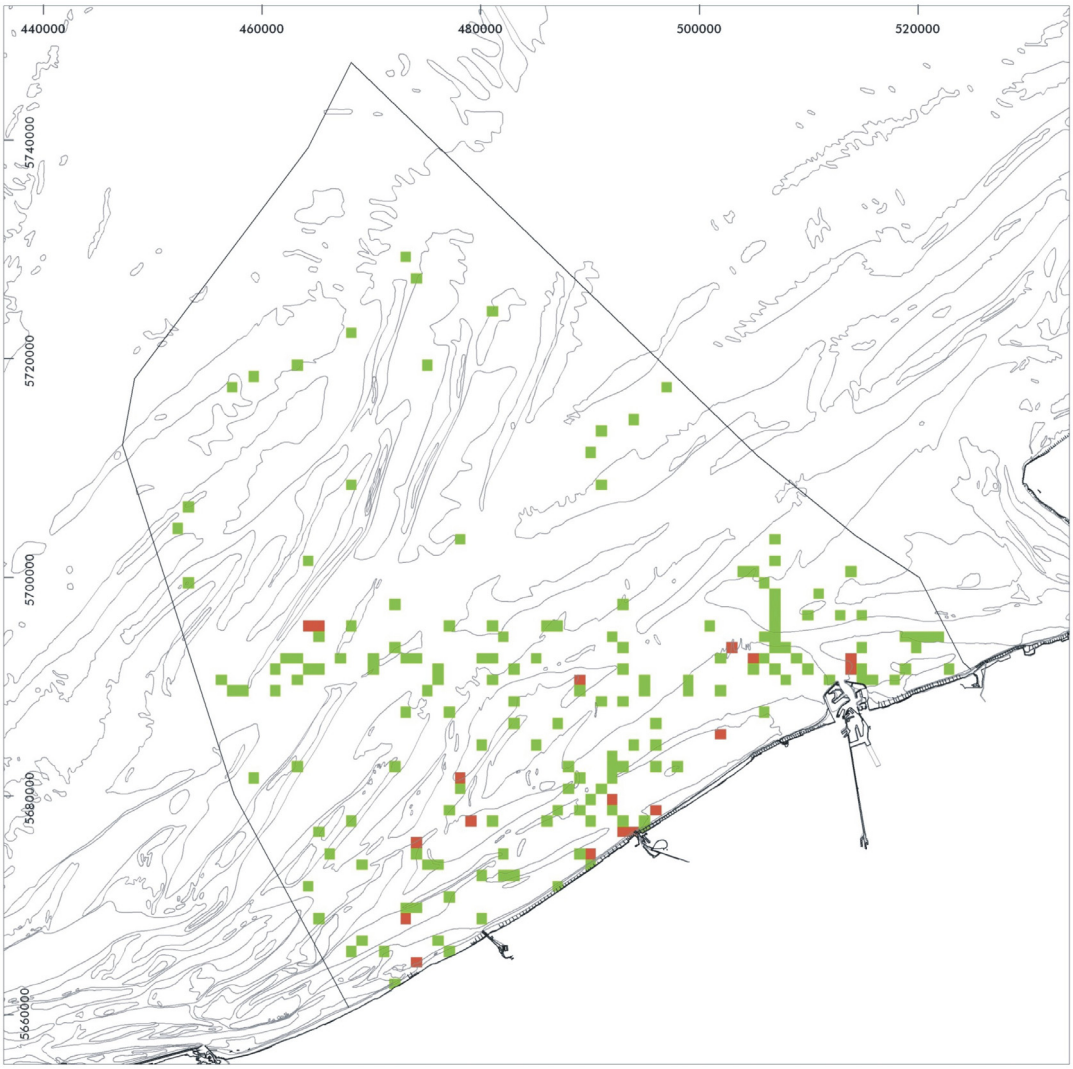
Map I.3.1b. Wrecks: use intensity



Use intensity of wrecks
(number of wrecks/km²)

- 0: absent
- 1: =< 1
- 2: =< 2
- 3: =< 3

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, "Wrecks on the Belgian Continental Shelf adapted up to BAZ 2003/07" (3 June 2003)
Data analysis: Maritime Institute - Ghent University
RCMG - Ghent University
Map preparation: RCMG - Ghent University

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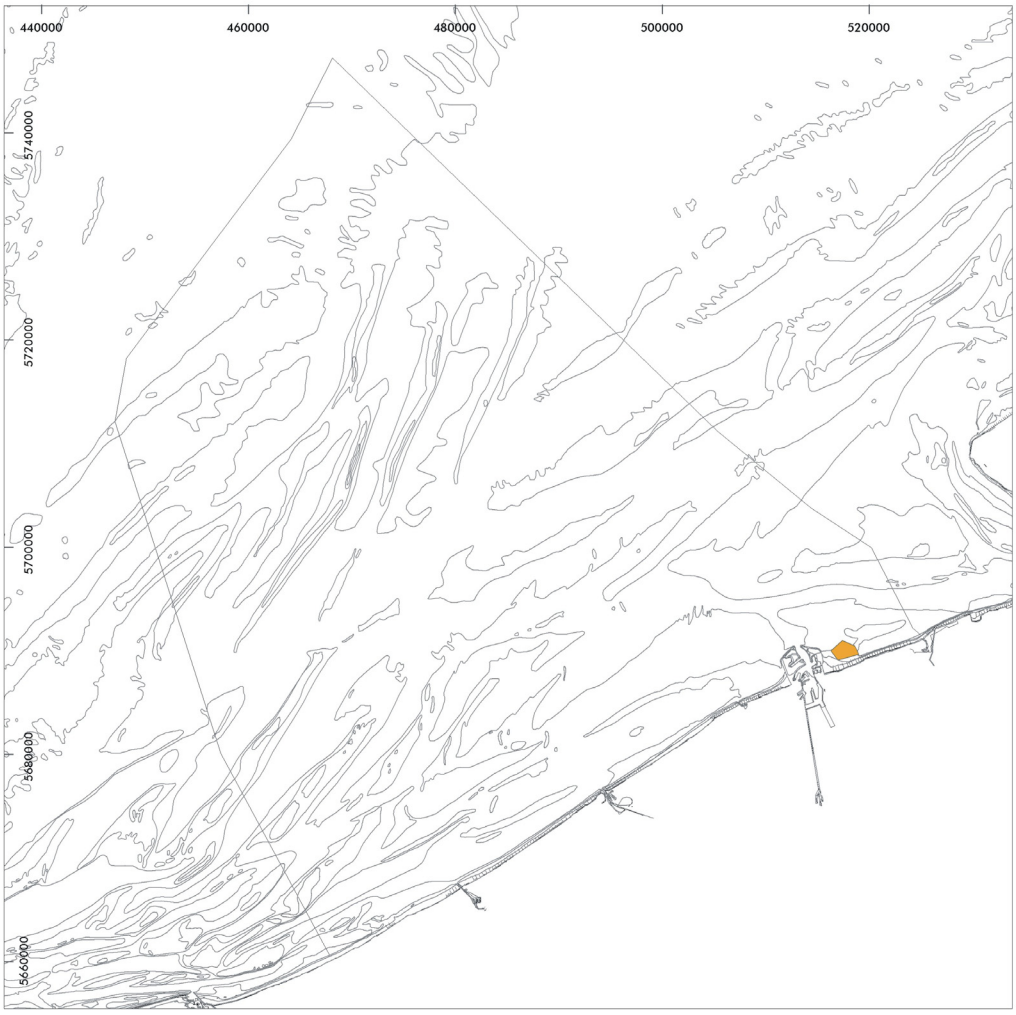
Map I.3.2a. Military ammunition: spatial distribution



Original data source: Tijdelijke Vereniging Bergingswerken NV, 1989. Magnetometrisch onderzoek op de Paardenmarkt. Intern rapport, 12 pp.

Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office

Map preparation: RCMG - Ghent University

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Former war munition dumping site

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

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Map I.3.3a. Shipping and anchorage: spatial distribution

Main shipping route
Shipping lanes
Anchorage area

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: International Maritime Organization, Ships' Routeing, London, IMO, 6th Edition, 2003
IVS-SRK (Ministry of the Flemish Community & Dutch Ministry of Transport, Public Works and Water Management)
Transeuropa Ferries, Ferryways
Map preparation: RCMG - Ghent University

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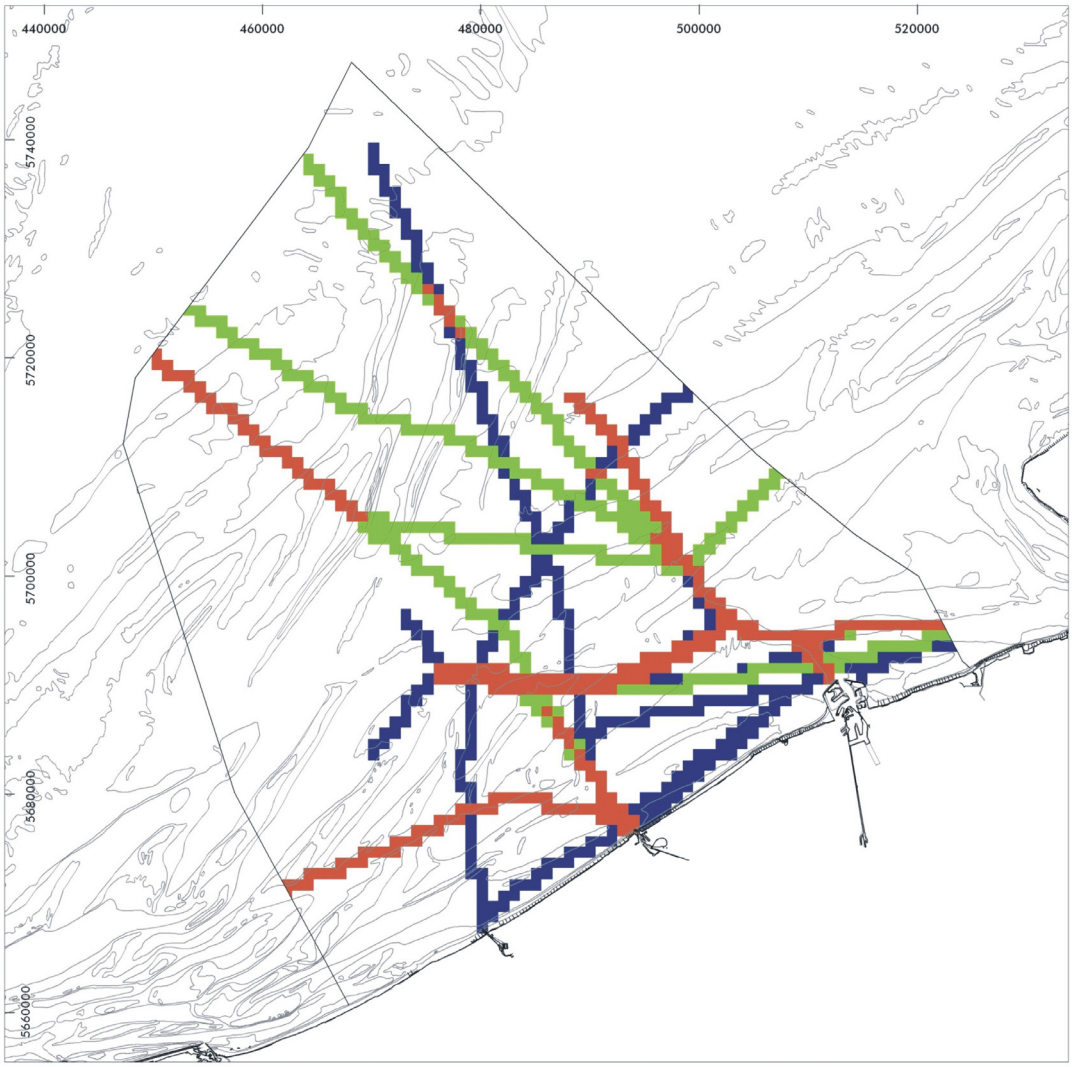
Map I.3.3b. Shipping: use intensity



Use intensity of shipping traffic
(number of shipping vessels/year/km²)

- 0: absent
- 1: =< 745
- 2: =< 3.109
- 3: =< 40.488

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: IVS-SRK (Ministry of the Flemish Community & Dutch Ministry of Transport, Public Works and Water Management)
Transeuropa Ferries, Ferryways
Data analysis: ECOLAS NV
Maritime Institute - Ghent University
Map preparation: RCMG - Ghent University

Shipping data cover merchant shipping from 01 April 2003 - 31 March 2004

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Map I.3.3c. Anchorage: use intensity

Use intensity of anchorage sites
(average number of vessels/day)

0: absent

1: =< 7

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: IVS-SRK (Ministry of the Flemish Community & Dutch Ministry of Transport, Public Works and Water Management)
Data analysis: RCMG - Ghent University
ECOLAS NV
Maritime Institute - Ghent University
Map preparation: RCMG - Ghent University

Data cover anchorage activities from 01 April 2003 - 31 March 2004

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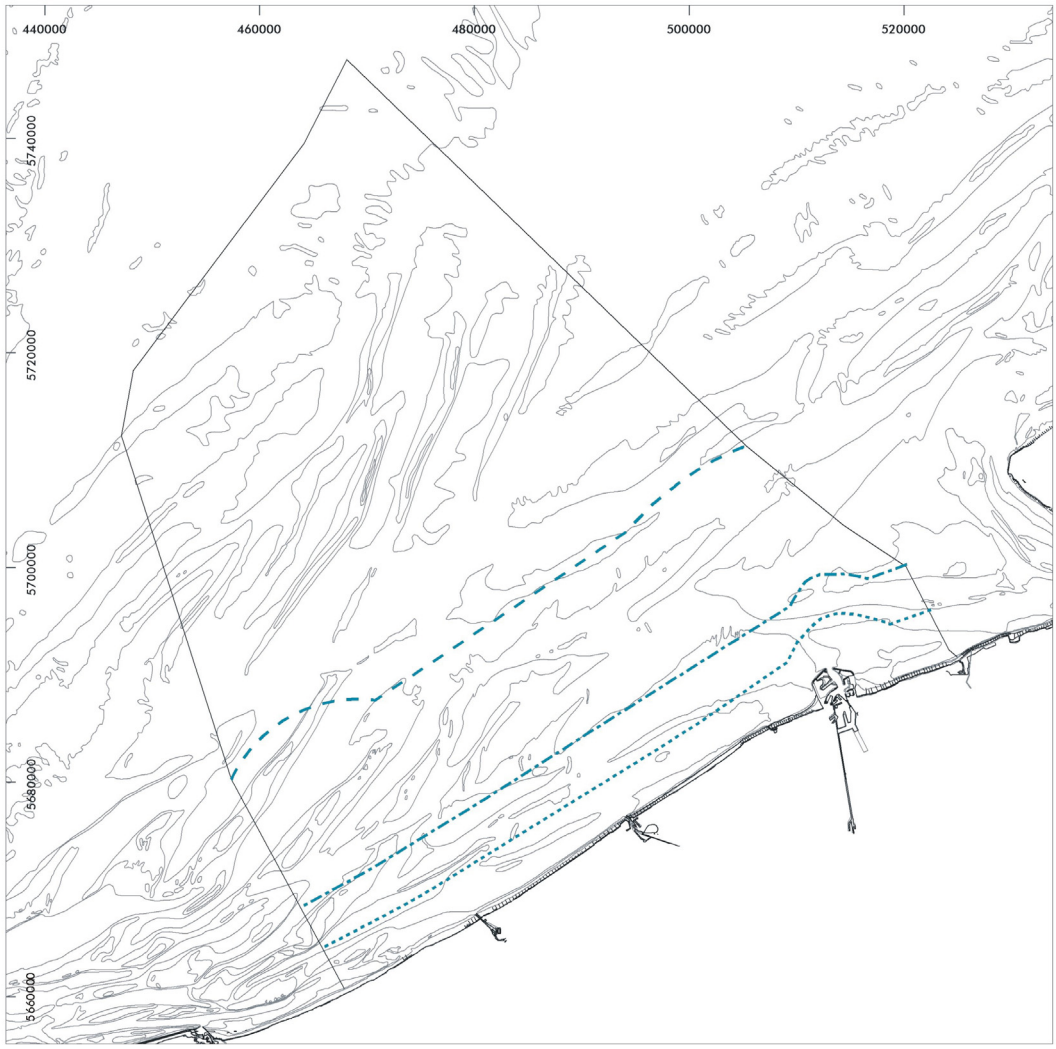
Map I.3.4a. Fisheries: zonation



3 nautical mile
6 nautical mile
12 nautical mile

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Map preparation: RCMG - Ghent University

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Map I.3.4b. Fisheries (fishing): spatial distribution and use intensity

Use intensity of commercial fisheries
(only vessels that are fishing)
(relative number of observed shipping vessels/year/km²)

- 0: absent
- 1: =< 0,003
- 2: =< 0,013
- 3: =< 0,33

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Institute for Nature Conservation
Data analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover observed commercial fishery activities from 30 September 1992 - 25 July 2003

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Map I.3.4c. Fisheries (fishing and non-fishing): spatial distribution and use intensity

Use intensity of commercial fisheries
(both non-fishing and fishing vessels)
(relative number of observed shipping vessels/year/km²)

- 0: absent
- 1: =< 0,004
- 2: =< 0,017
- 3: =< 2,146

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Institute for Nature Conservation
Data analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover observed commercial fishery activities from 30 September 1992 - 25 July 2003

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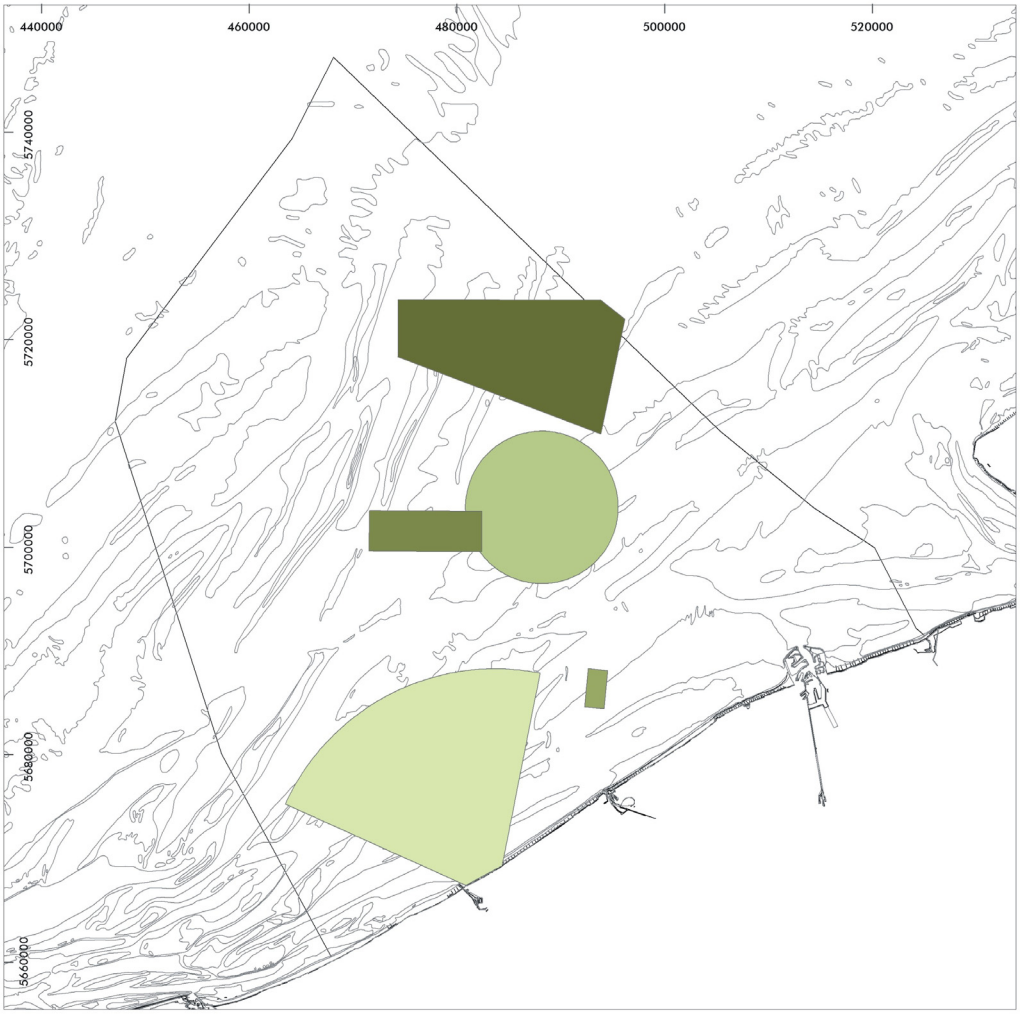
Map I.3.5a. Military exercises: spatial distribution



Shooting exercises

Zone for explosion of war ammuniton and exercise mines

Zone NBH10 (Wenduine) for mine laying-, mine hunting- and mine sweeping exercises

Zone NB01 (Westhinder)

North Sea - S sector shooting exercises on floating targets

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, BAZ
Map preparation: RCMG - Ghent University

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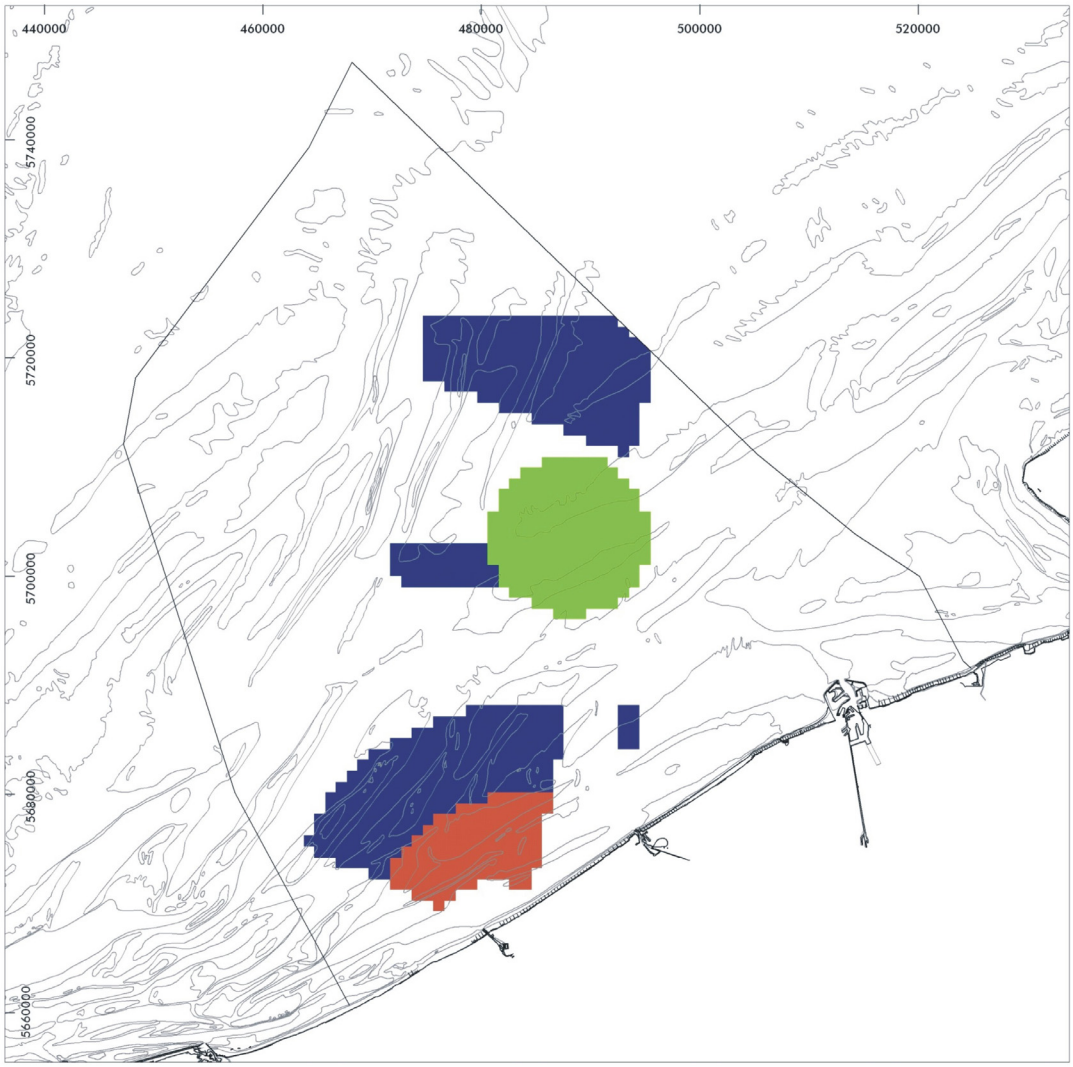
Map I.3.5b. Military exercises: use intensity



Use intensity of military exercises
(number of exercise days/year/km²)

- 0: absent
- 1: =< 9
- 2: =< 10
- 3: =< 78

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: spokesmen of the Army, Air Force and Navy Components, Federal Government Department of Defence
Data analysis: Marine Biology Section - Ghent University
RCMG - Ghent University
Map preparation: RCMG - Ghent University

Data cover military exercises from 01 January 2001- 31 December 2001

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Map I.3.6a. Sand and gravel extraction: spatial distribution

Control zones sand extraction
Exploration zone
Past concession zones

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Map preparation: RCMG - Ghent University

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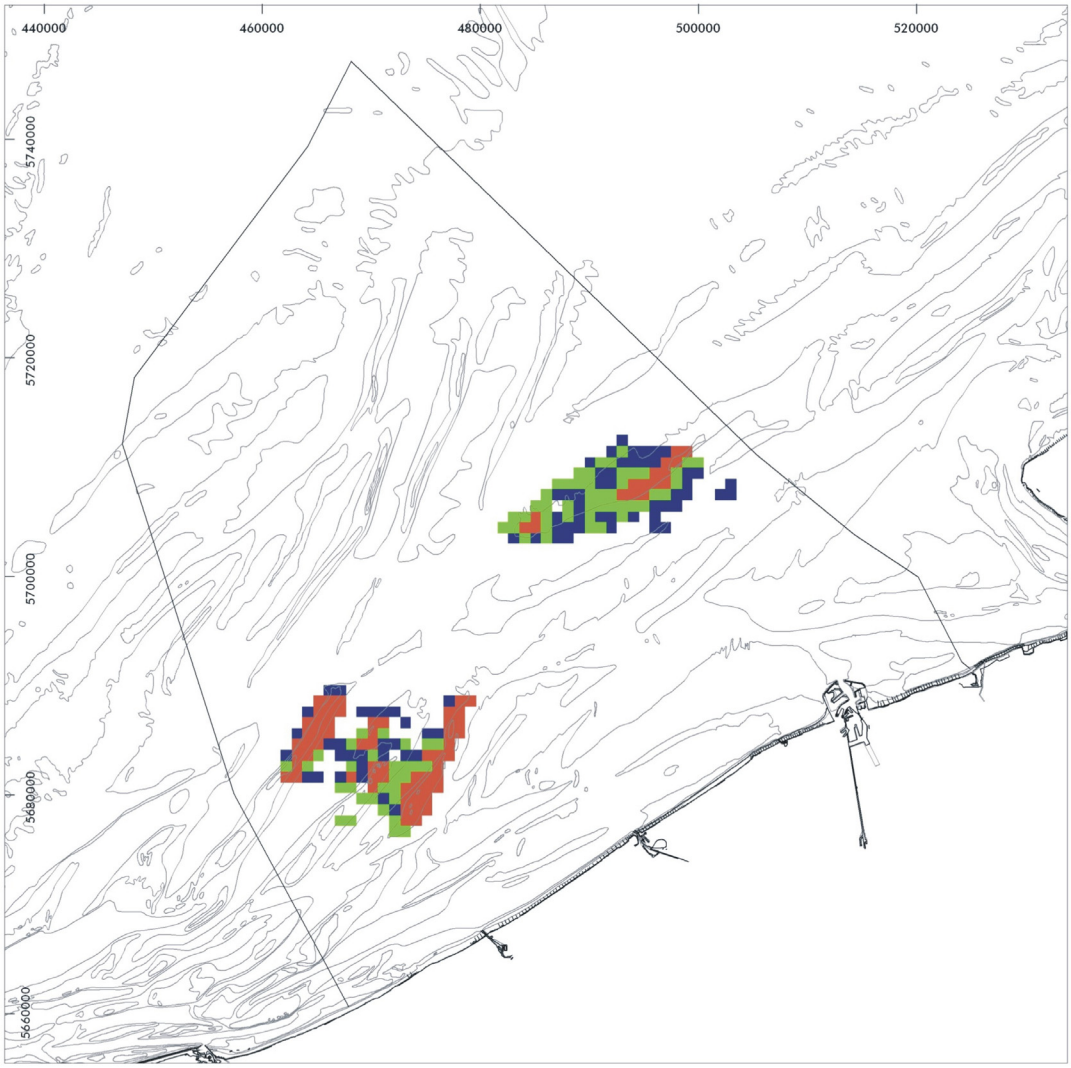
Map I.3.6b. Sand and gravel extraction: use intensity



Use intensity of sand extraction
(number of min/km²)

- 0: absent
- 1: =< 13,89
- 2: =< 70,16
- 3: =< 17.639

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: ZAGRI database
Federal Public Service Economy, SMEs,
Self-employed and Energy
Ministry of the Flemish Community, Department of
Environment and Infrastructure, Waterways and
Marine Affairs Administration: Division Coast -
Hydrographic Office
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

Data cover sand extraction activities from
01 June 2002 - 31 December 2003

May 2005

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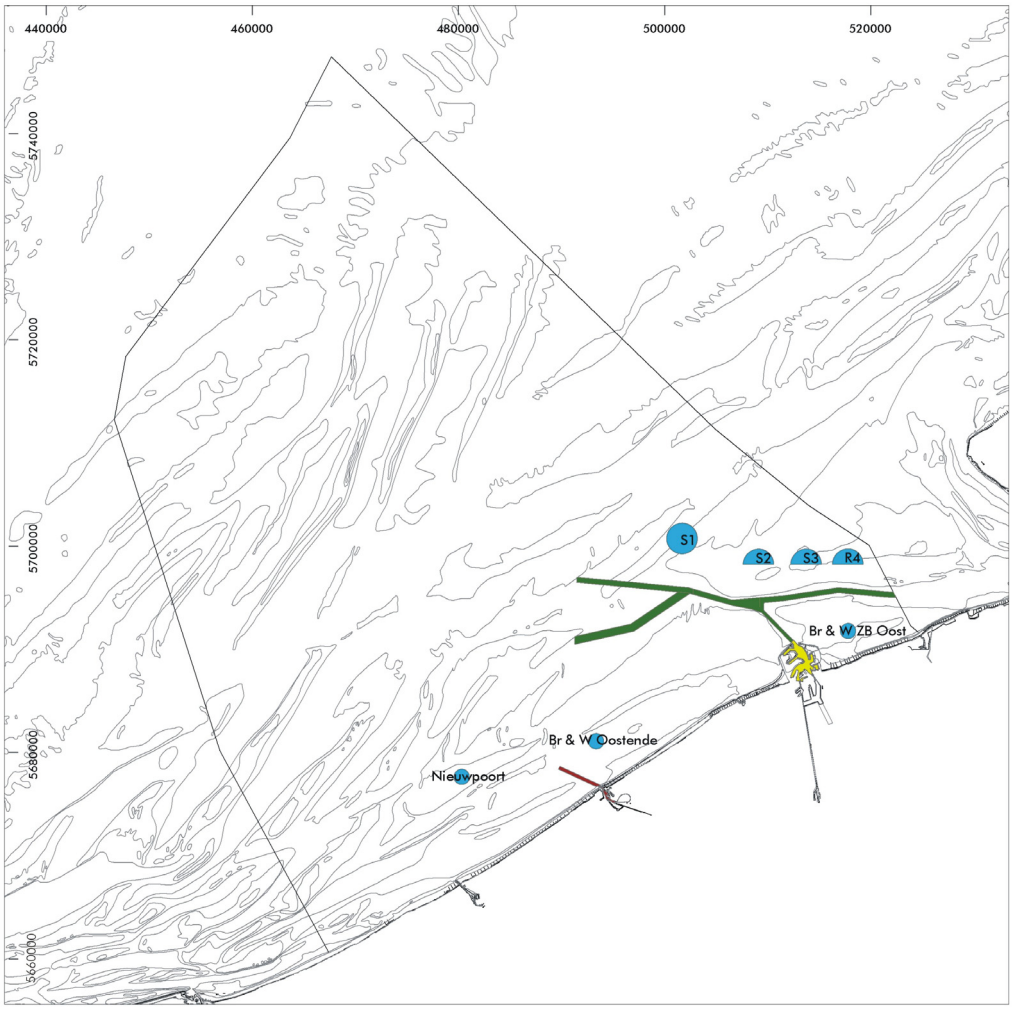
Map I.3.7a. Dredging and disposal of dredged material: spatial distribution



Shipping lanes
Harbour Zeebrugge
Harbour Oostende
Dumping sites

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Maritime Entrance Division
Map preparation: RCMG - Ghent University

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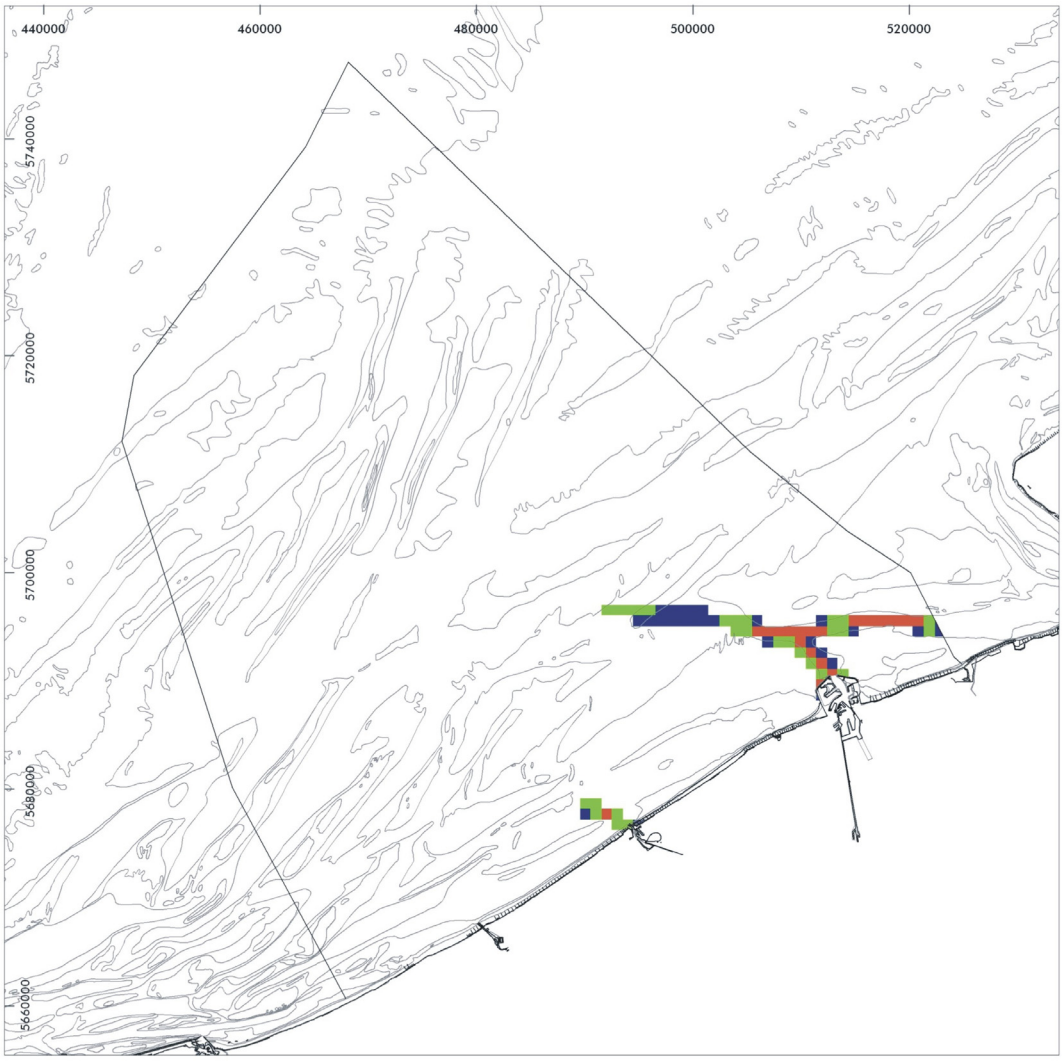
Map I.3.7b. Dredging: use intensity



Use intensity of dredging
(ton dry material(m^3)/year/km^2)

- 0: absent
- 1: =< 197.647
- 2: =< 776.064
- 3: =< 5.508.590

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Maritime Entrance Division
GEMS International N.V.
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

Data cover dredging activities from 01 April 1998 - 31 March 2003

May 2005

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Map I.3.7c. Disposal of dredged material: use intensity

Use intensity of disposal of dredged material
(ton dry material (m^3)/year/km^2)

- 0: absent
- 1: =< 59.138
- 2: =< 985.643
- 3: =< 9.611.052

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration: Division Coast, Hydrographic Office & Maritime Entrance Division
GEMS International N.V.
Data analysis: RCMG - Ghent University
Map preparation: RCMG - Ghent University

Data cover disposal activities from 01 April 1998 - 31 March 2003

May 2005

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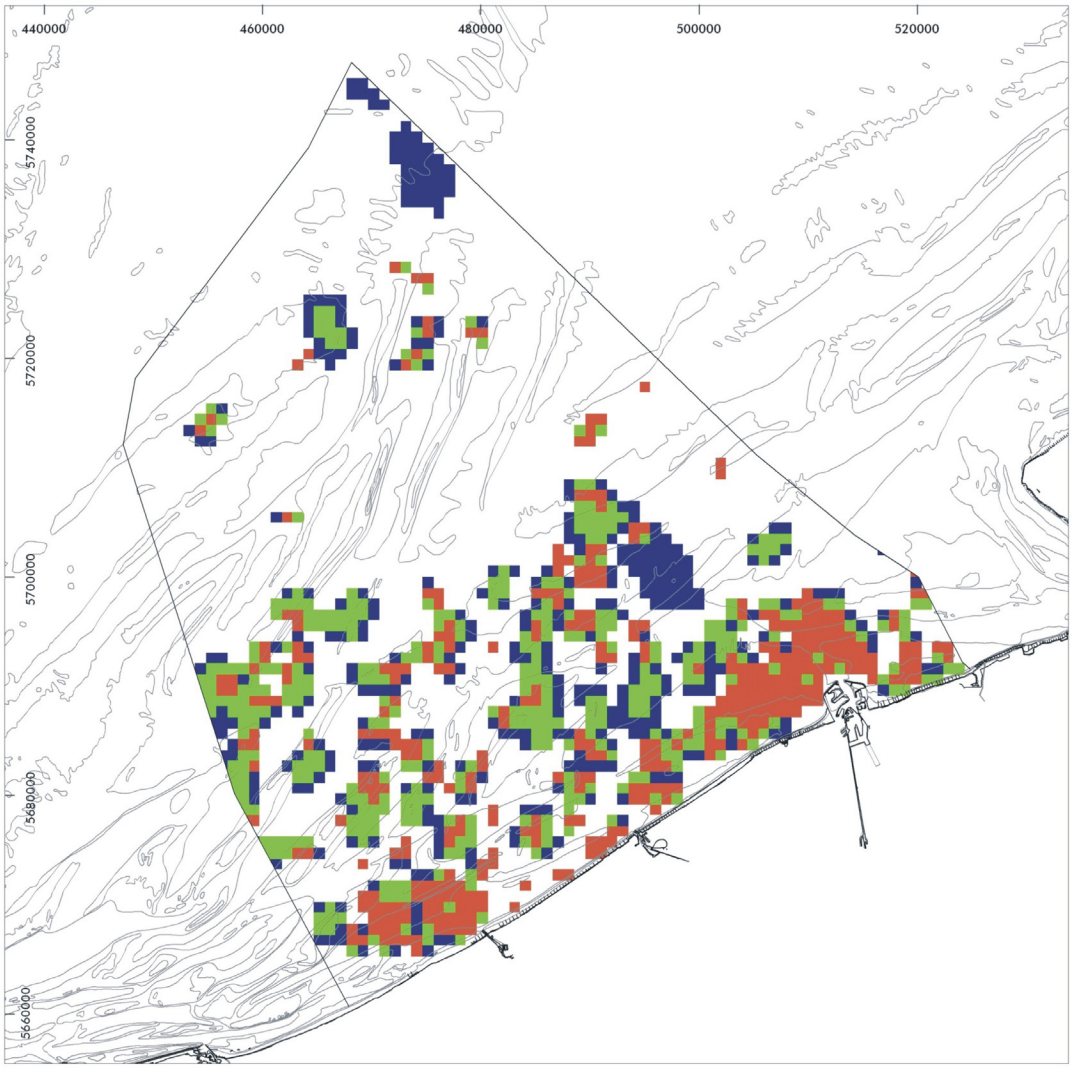
Map I.3.9a. Recreation and tourism at sea (recreational fisheries): spatial distribution and use intensity



Use intensity of recreational fishing at sea
(relative number of observed recreational fishing vessels/year/km²)

- 0: absent
- 1: =< 0,004
- 2: =< 0,016
- 3: =< 1,29

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Institute for Nature Conservation
Data analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover observed commercial fishery activities from 30 September 1992 - 25 July 2003

May 2005

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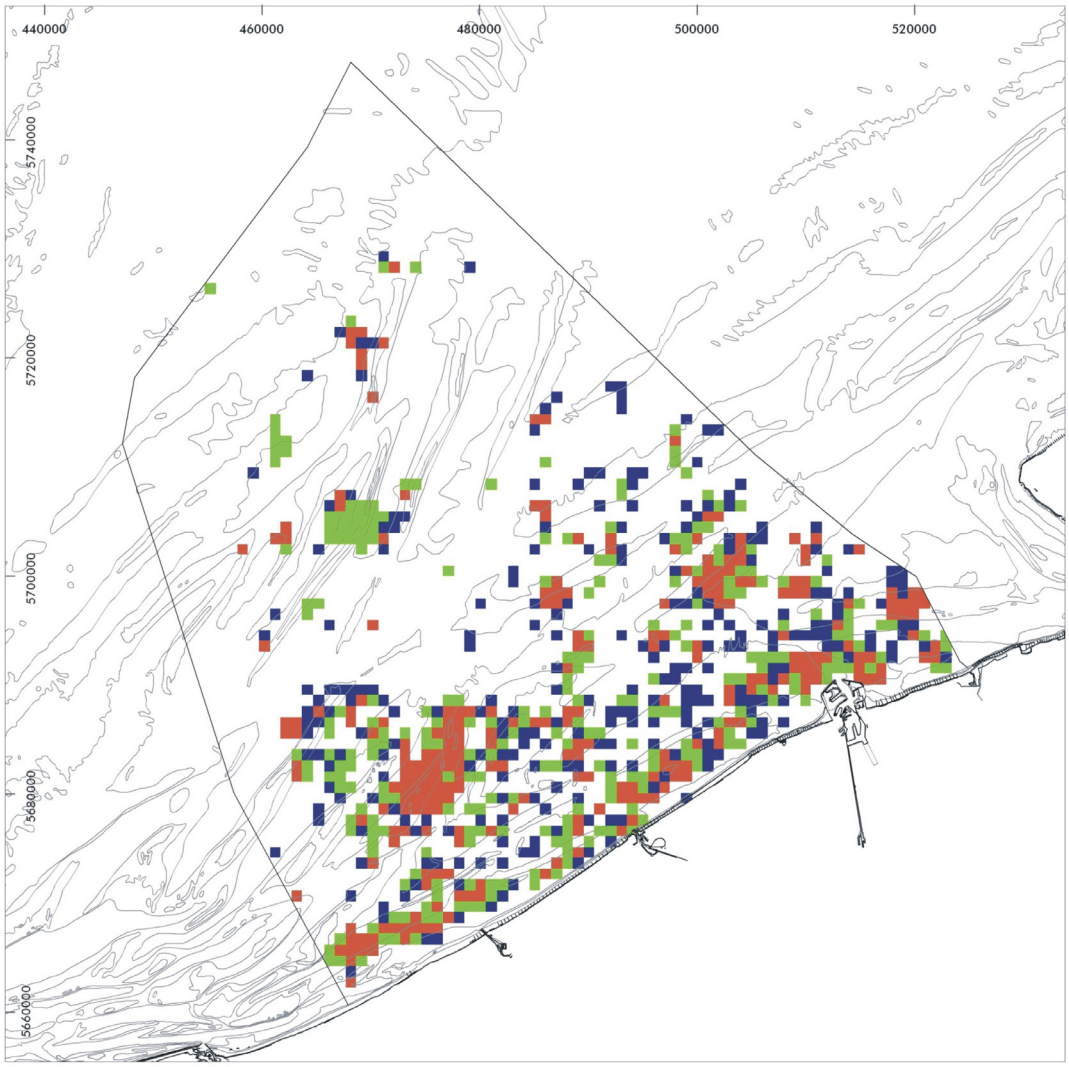
Map I.3.11a. Scientific research (slow): spatial distribution and use intensity



Use intensity of research (speed over ground =< 1 knot
(mean presence time/years(hours)/km²)

- 0: absent
- 1: =< 0,03
- 2: =< 0,18
- 3: =< 23,67

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

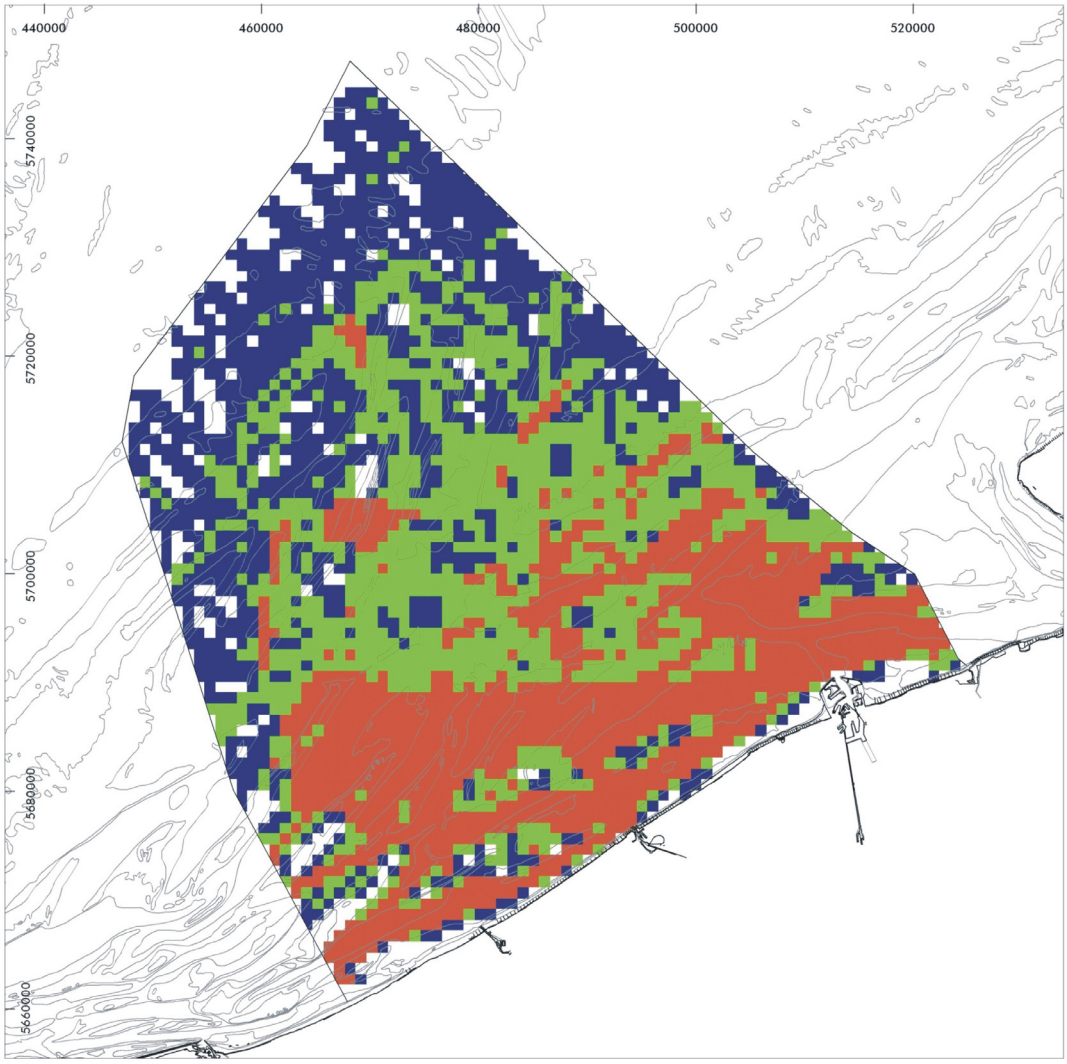
Original data source: Flanders Marine Institute
Management Unit of the North Sea Mathematical Models
Data analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover research activities from 01 January 2002 - 31 December 2003

May 2005

GAUFRE

Map I.3.11b. Scientific research (fast): spatial distribution and use intensity



Use intensity of research (speed over ground > 1 knot
(mean presence time/years(hours)/km²)

- 0: absent
- 1: =< 0,08
- 2: =< 0,30
- 3: =< 10,98

0 2.5 5 10 km

N

UTM31N - WGS84 coordinates

Original data source: Flanders Marine Institute
Management Unit of the North Sea Mathematical Models
Data analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover research activities from 01 January 2002 - 31 December 2003

May 2005

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Map I.3.12a. Nature conservation: spatial distribution

Ramsar area

Trapegeer - Stroombank area

N

0 2.5 5 10 km

UTM31N - WGS84 coordinates

Original data source: Haelters et al. (2004). Ornitologisch belang van de Belgische zee-gebieden. Bulletin van het Koninklijk Belgisch Instituut voor Natuurwetenschappen, Biologie, vol. 74 (suppl.).

Map preparation: RCMG - Ghent University

May 2005

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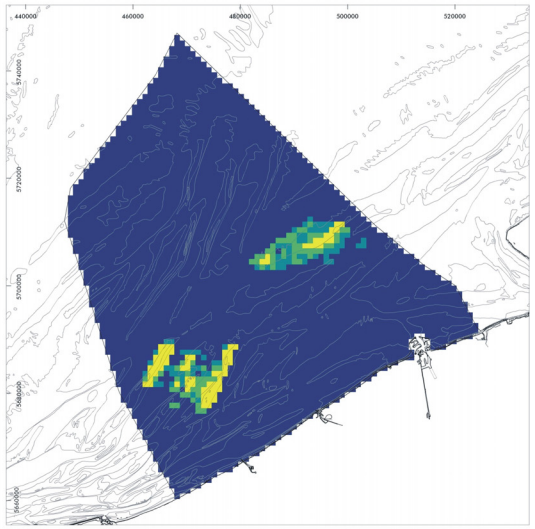
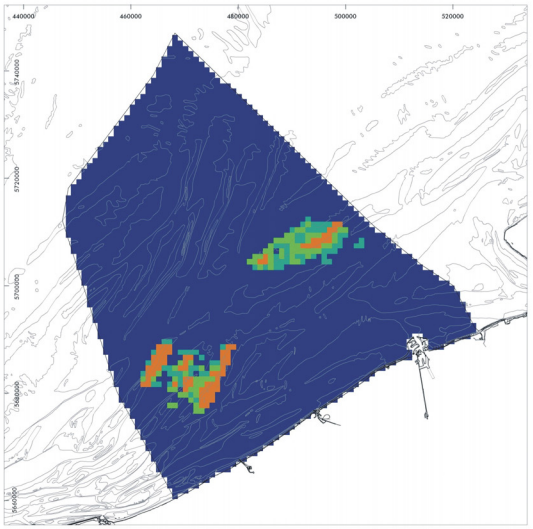
Impact maps - Sand extraction

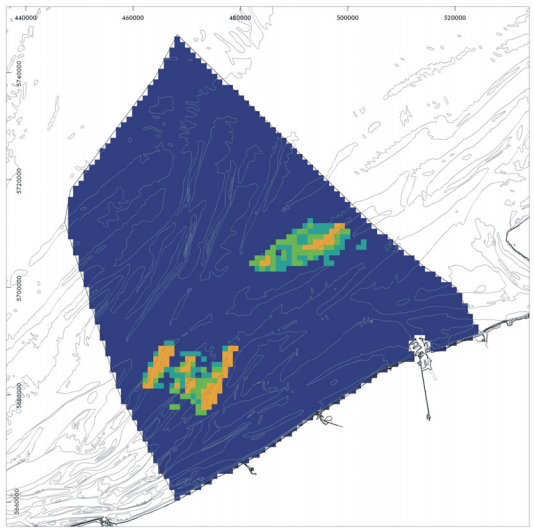
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure,
Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

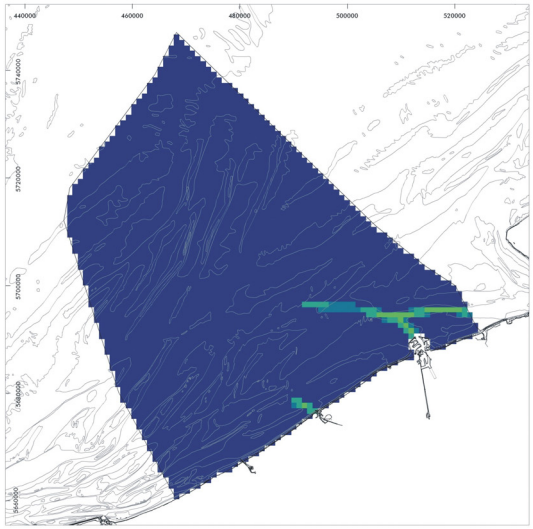
Data cover sand extraction activities from 01 June 2002 - 31 December 2003

May 2005

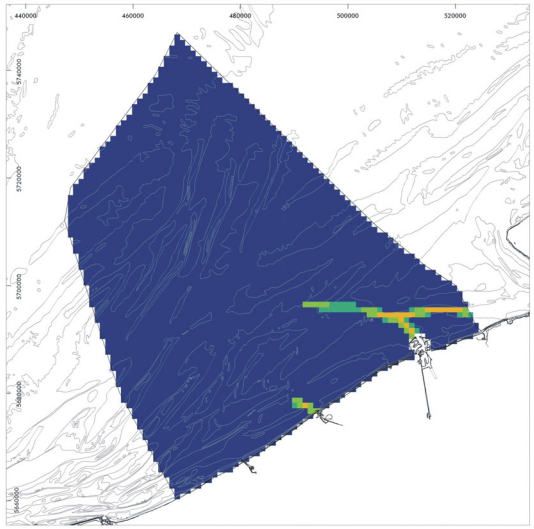
GAUFRE

Impact maps - Dredging

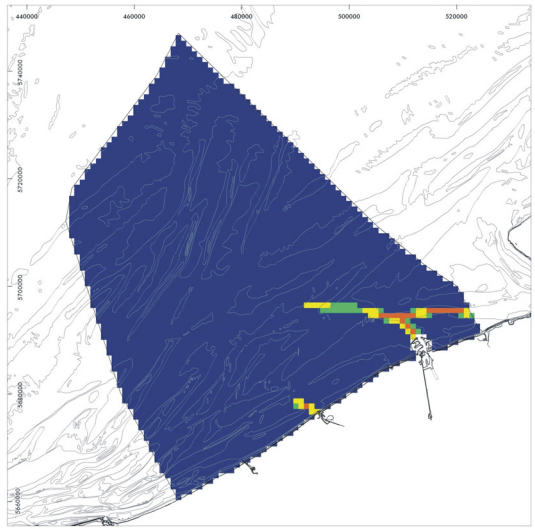
Chemical impact



Ecological impact



Physical impact



Relative impact value

High: 9

Low: 0

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Maritime Entrance Division
GEMS International N.V.
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover dredging activities from 01 April 1998 - 31 March 2003

May 2005

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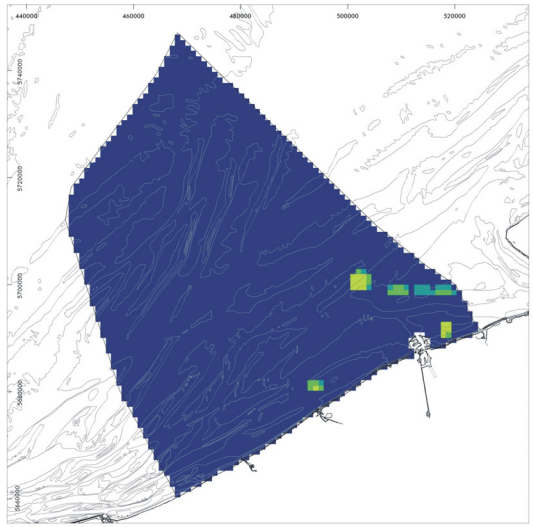
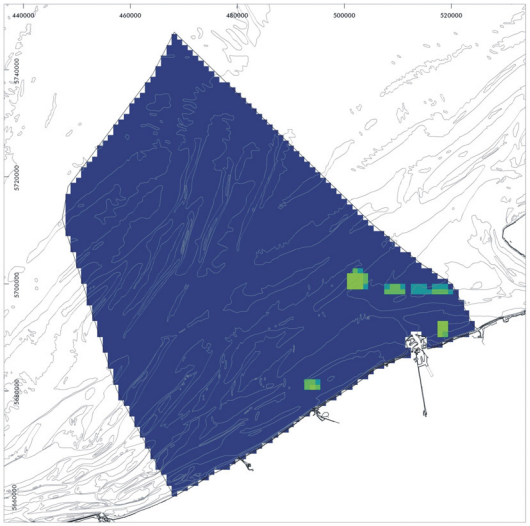
Impact maps - Disposal of dredged material

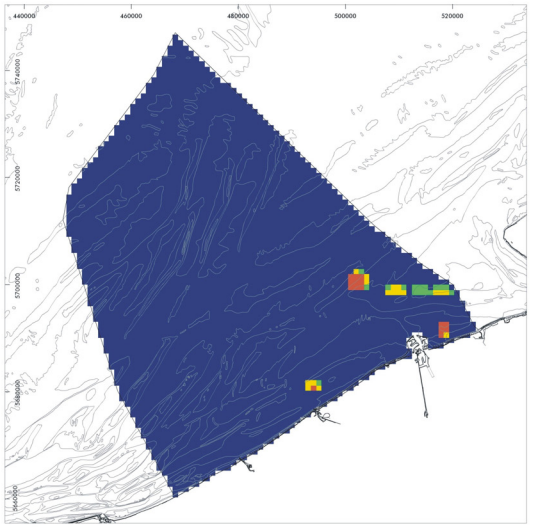
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Maritime Entrance Division
GEMS International N.V.
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover disposal activities from 01 April 1998 - 31 March 2003

May 2005

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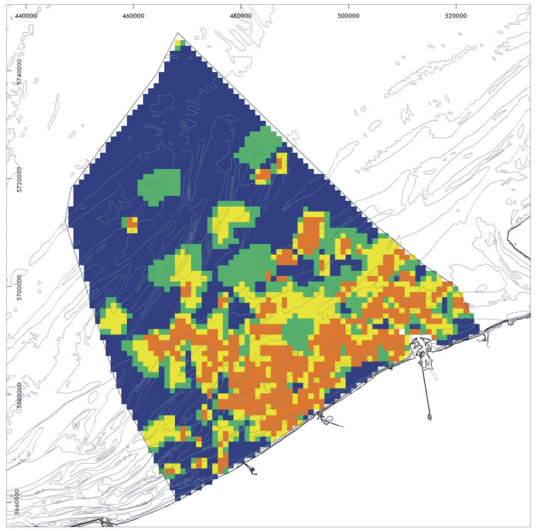
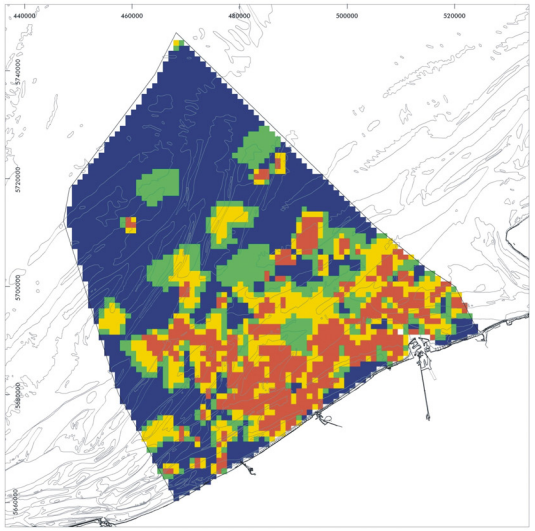
Impact maps - Commercial fisheries

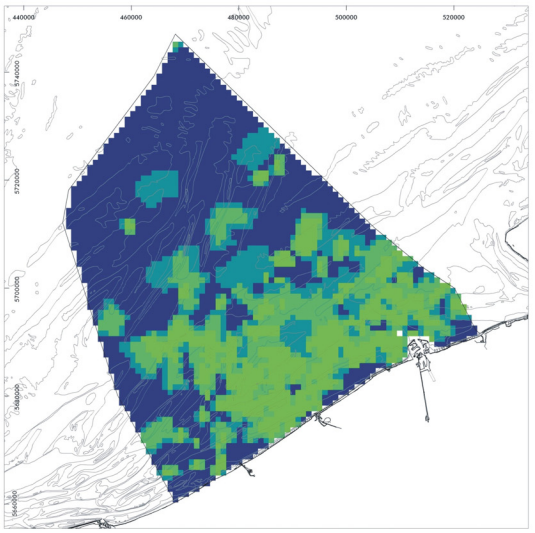
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Institute for Nature Conservation
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover observed commercial fishery activities from 30 September 1992 - 25 July 2003

May 2005

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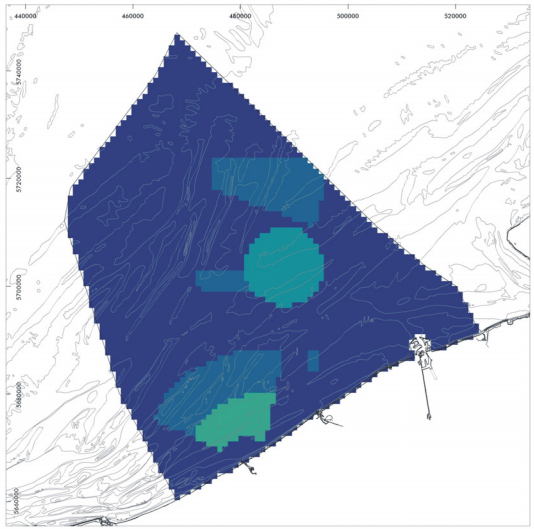
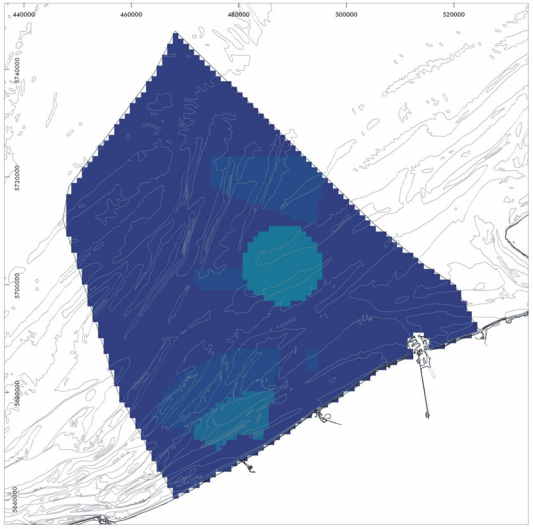
Impact maps - Military exercises

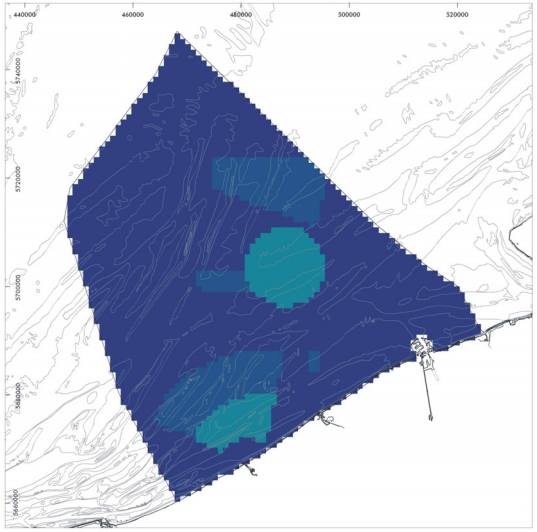
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: spokesmen of the Army, Air Force and Navy Components, Federal Government Department of Defence
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Data cover military exercises from 01 January 2001- 31 December 2001

May 2005

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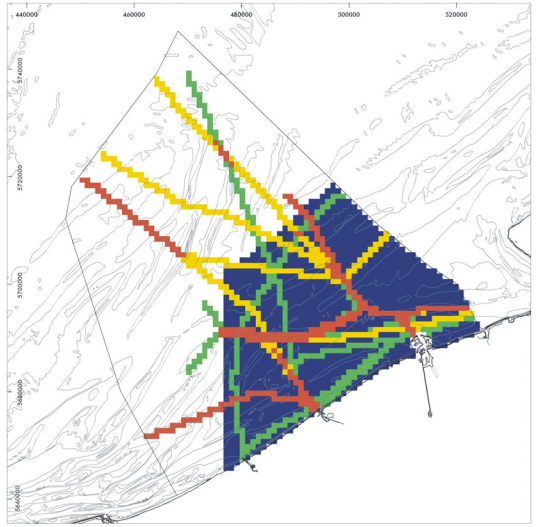
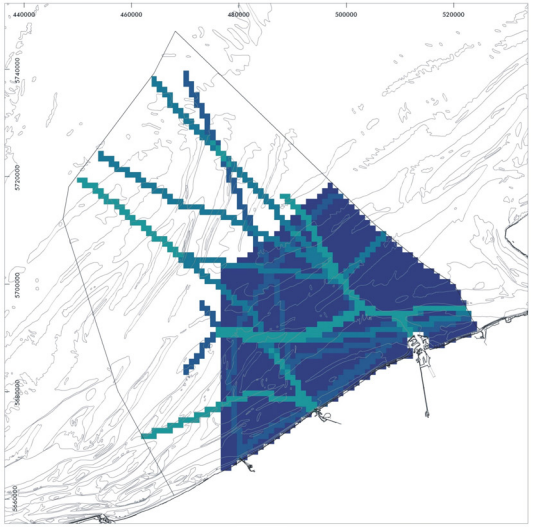
Impact maps - Shipping

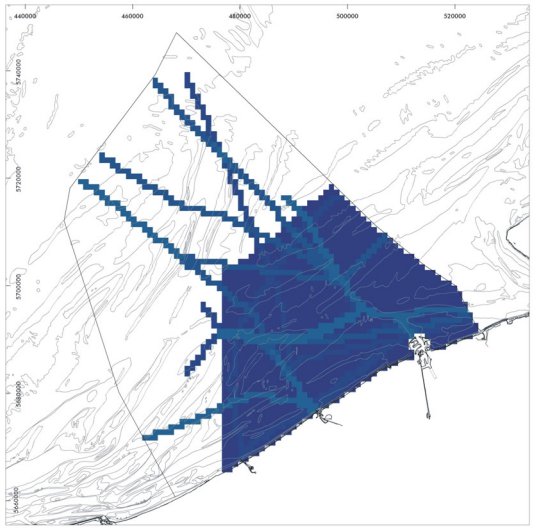
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: IVS-SRK (Ministry of the Flemish Community & Dutch Ministry of Transport, Public Works and Water Management)
Transeuropa Ferries, Ferryways
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

Shipping data cover merchant shipping from 01 April 2003 - 31 March 2004

May 2005

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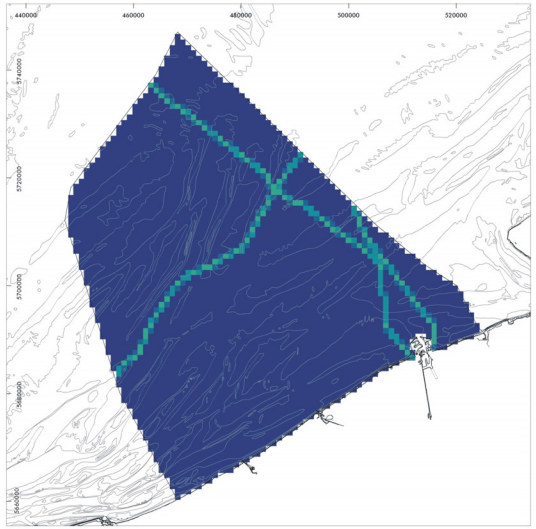
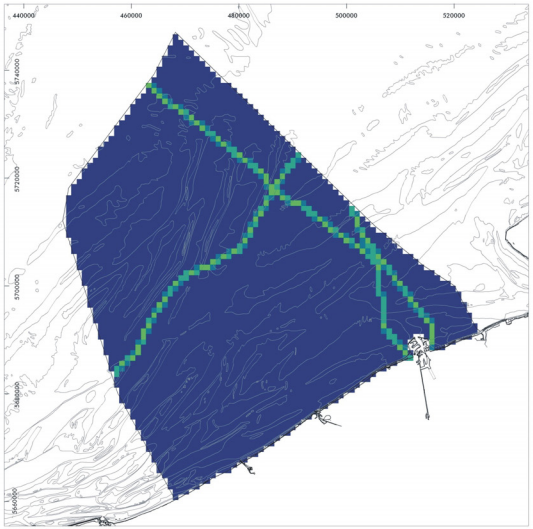
Impact maps - Pipeline construction

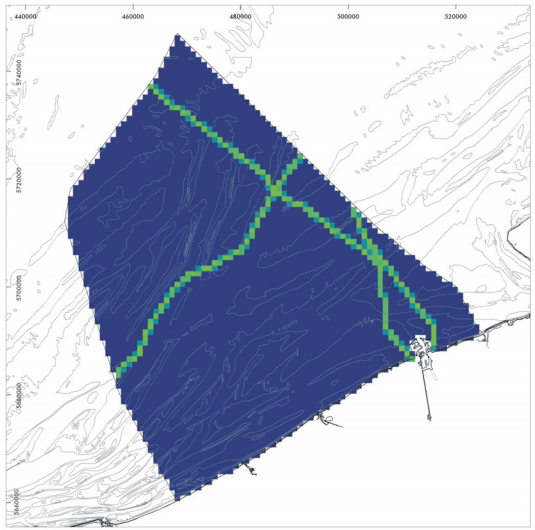
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure,
Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

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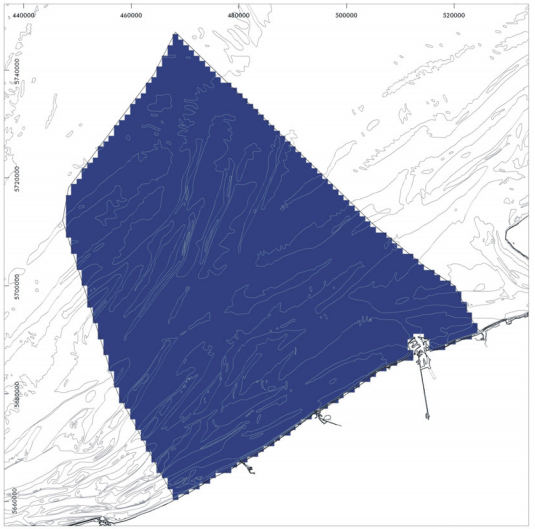
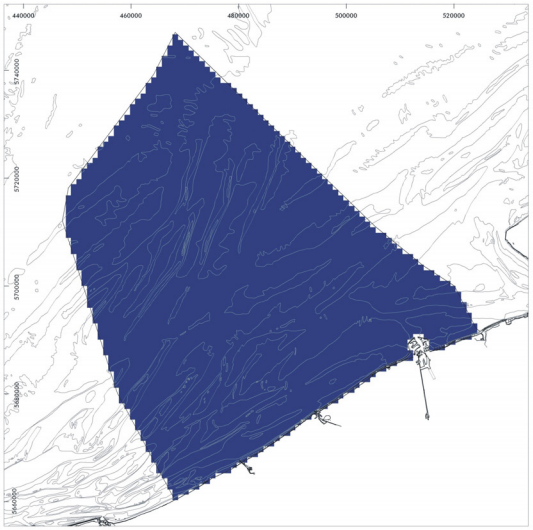
Impact maps - Pipeline exploitation

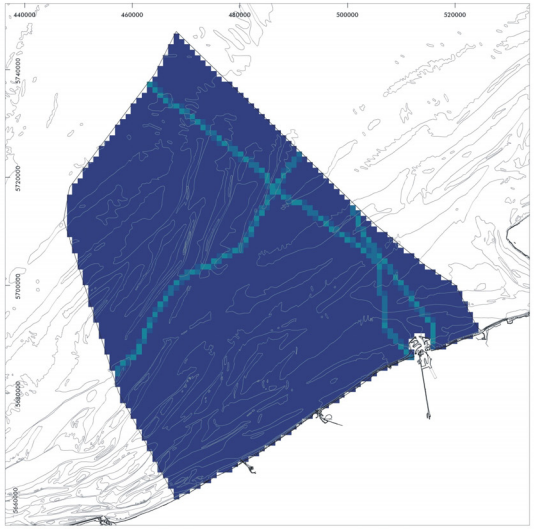
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

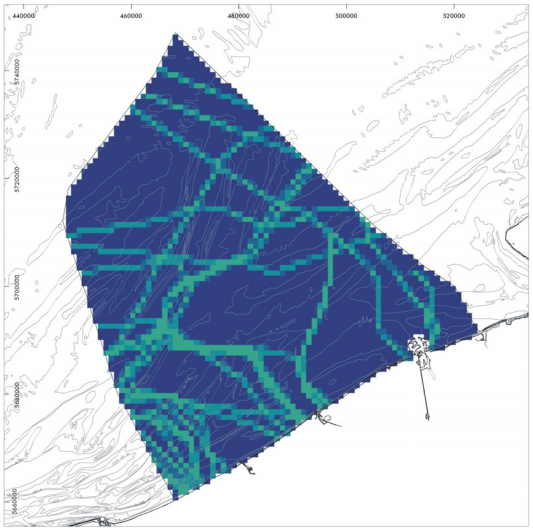
Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure,
Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

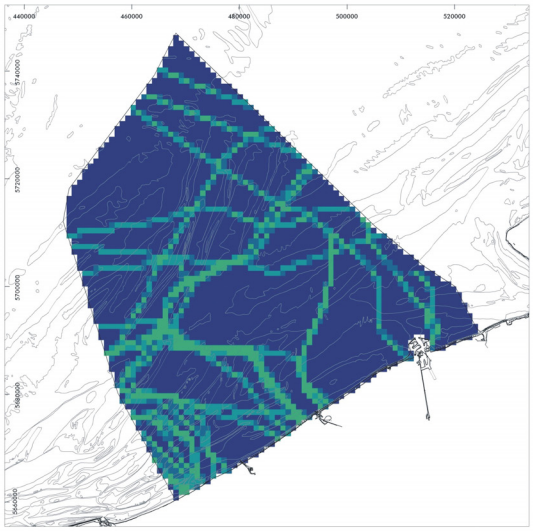
GAUFRE

Impact maps - Electricity and telecom cable construction

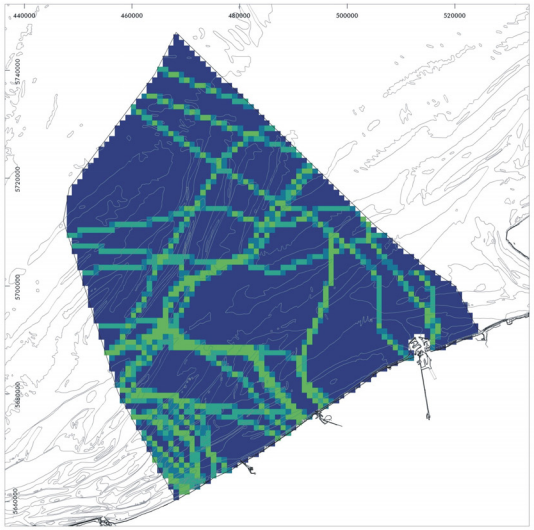
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

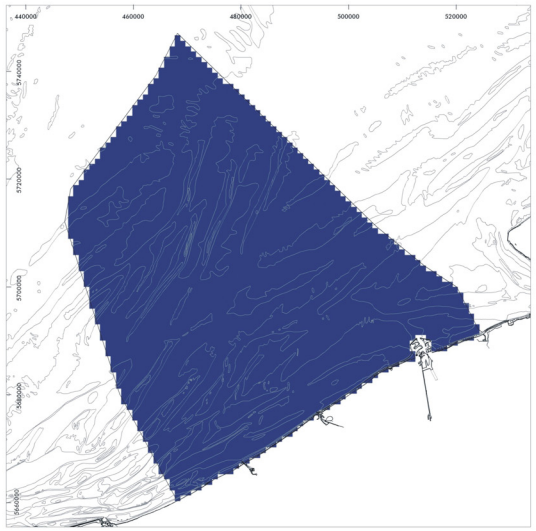
Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
C-power NV
TV Electrabel - Ondernemingen Jan De Nul (Project Seanergy)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

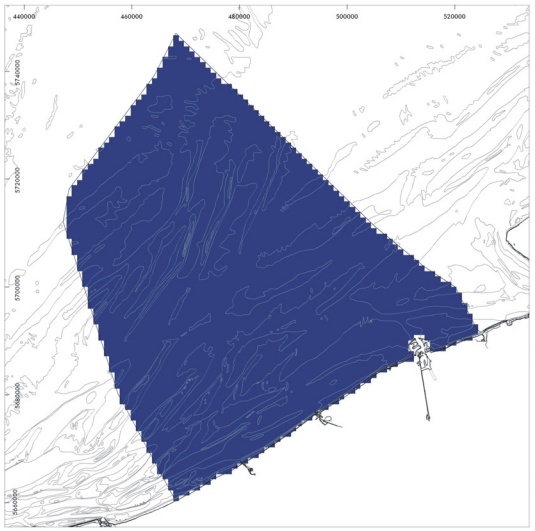
GAUFRE

Impact maps - Electricity and telecom cable exploitation

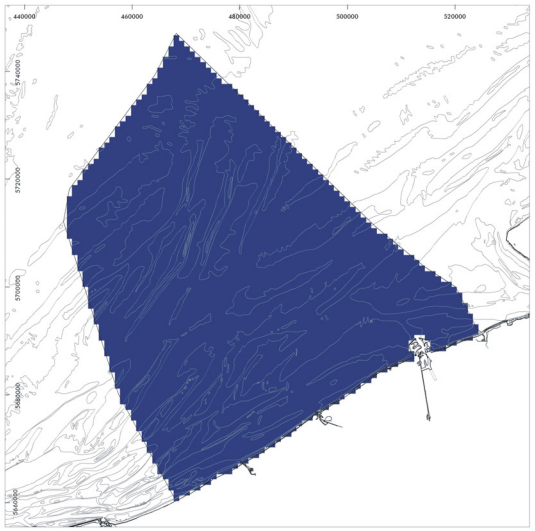
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy
Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office
C-power NV
TV Electrabel - Ondernemingen Jan De Nul (Project Seanergy)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

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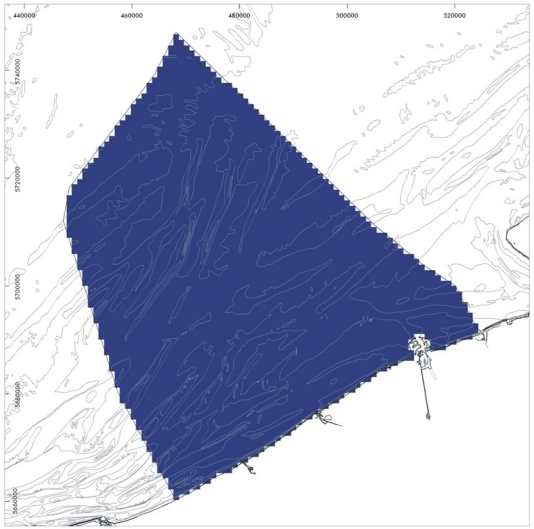
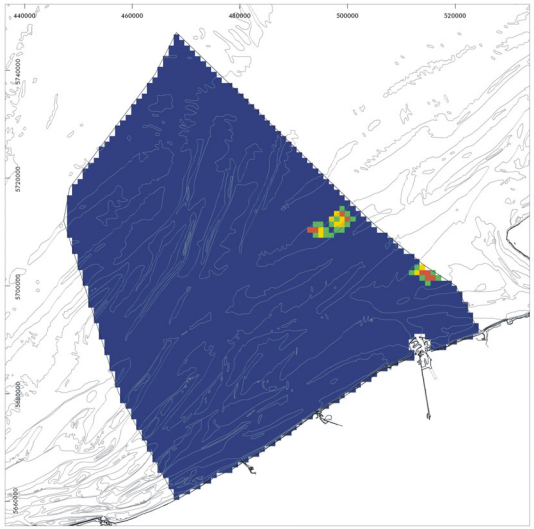
Impact maps - Wind turbine construction

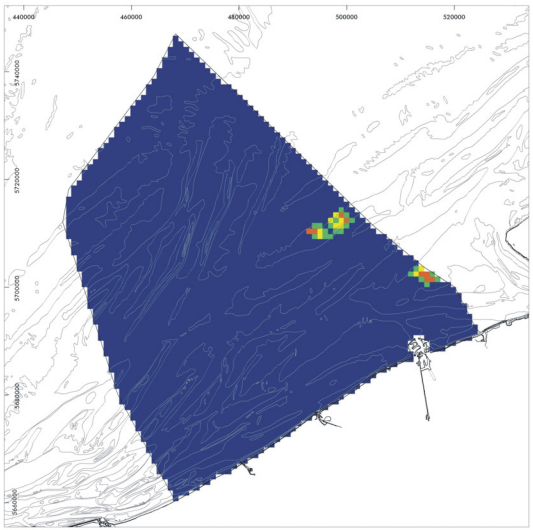
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

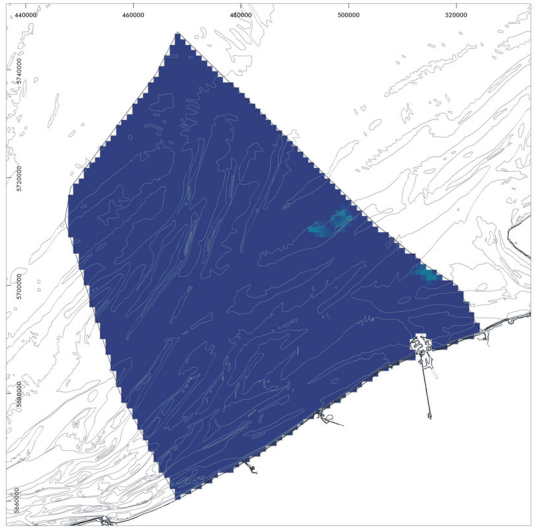
Original data source: C-power NV
TV Electrabel - Ondernemingen Jan De Nul (Project Seanergy)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

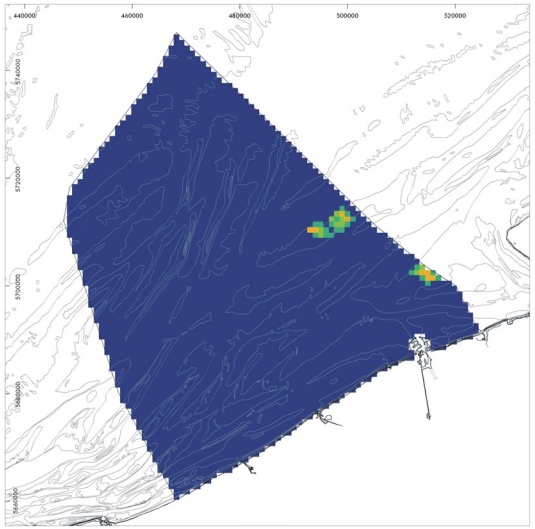
GAUFRE

Impact maps - Wind turbine exploitation

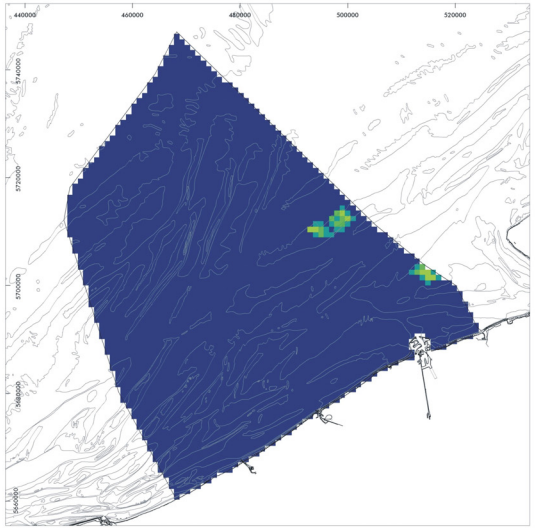
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

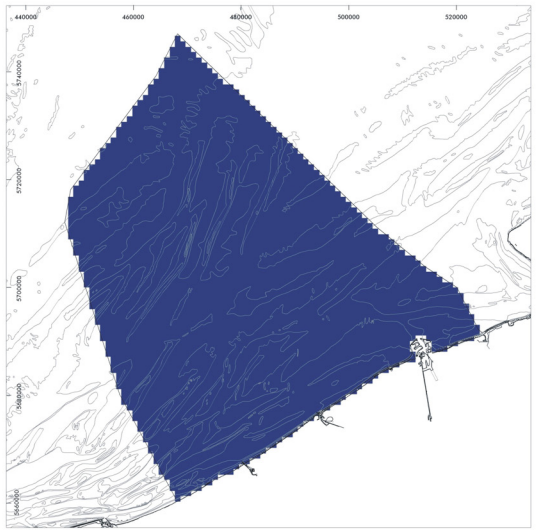
Original data source: C-power NV
TV Electrabel - Ondernemingen Jan De Nul (Project Seanergy)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

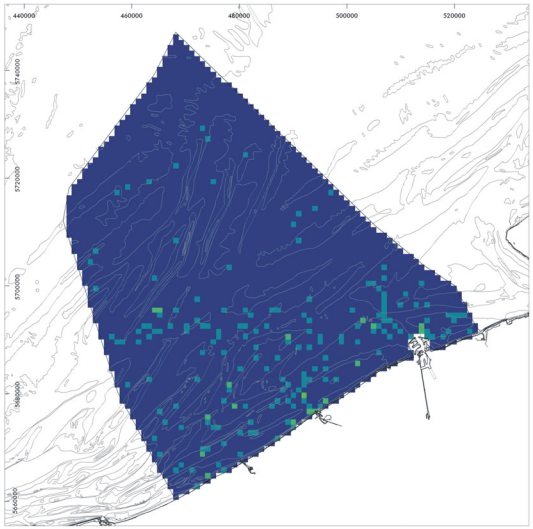
GAUFRE

Impact maps - Wrecks

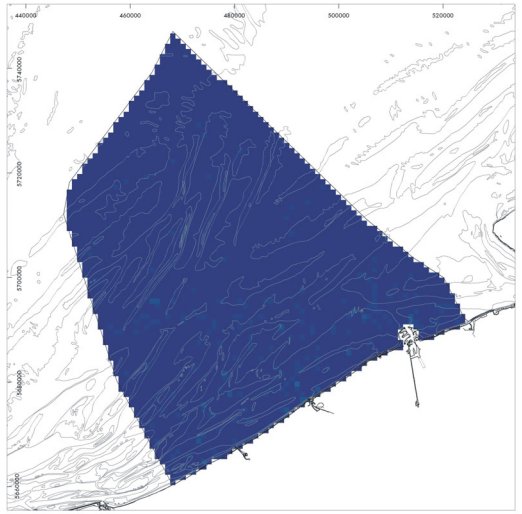
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

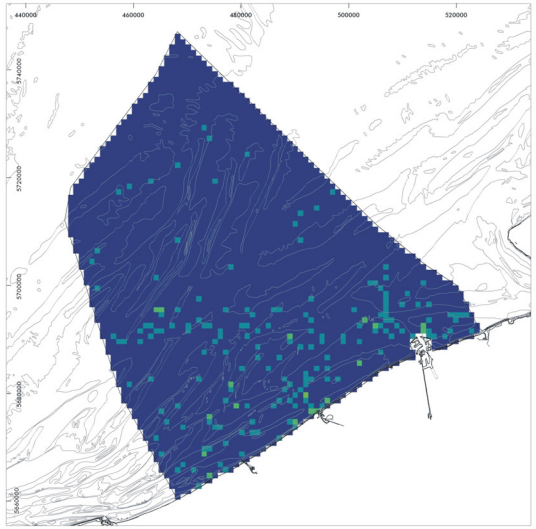
Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, "Wrecks on the Belgian Continental Shelf adapted up to BAZ 2003/07" (3 June 2003)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

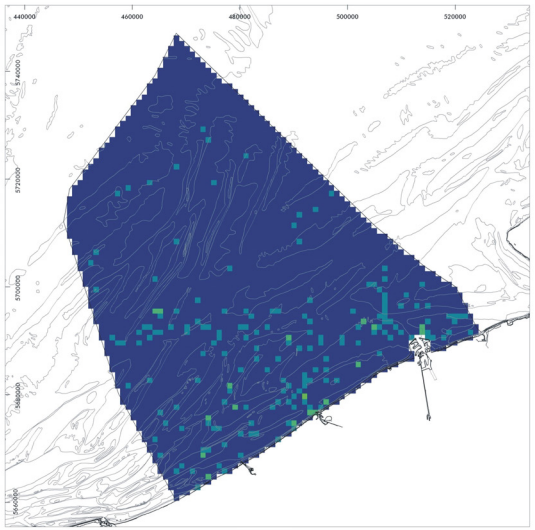
GAUFRE

Impact maps - Wreck salvage

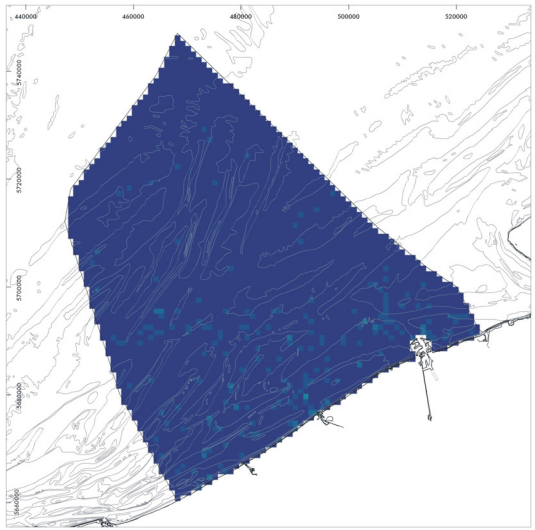
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, "Wrecks on the Belgian Continental Shelf adapted up to BAZ 2003/07" (3 June 2003)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

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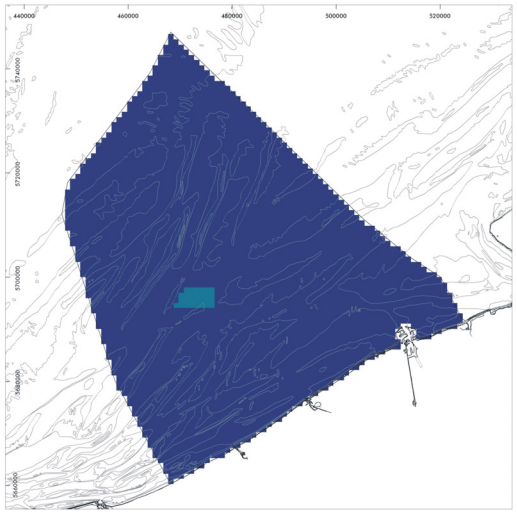
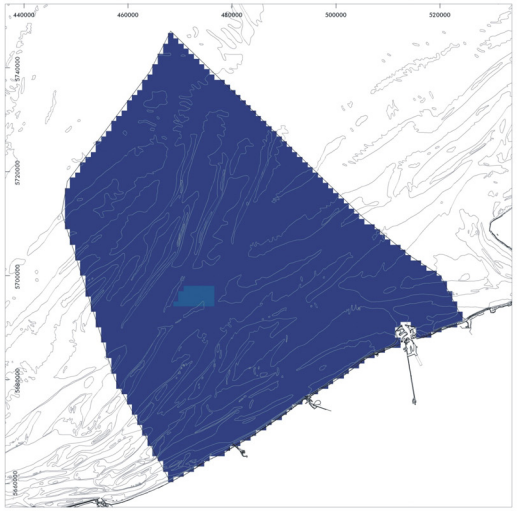
Impact maps - Anchorage area

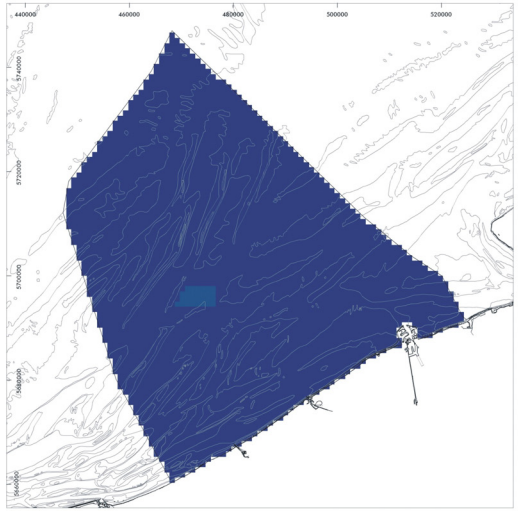
Chemical impact



Ecological impact



Physical impact



Relative impact value

High: 9

Low: 0

Original data source: IVS-SRK (Ministry of the Flemish Community & Dutch Ministry of Transport, Public Works and Water Management)
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

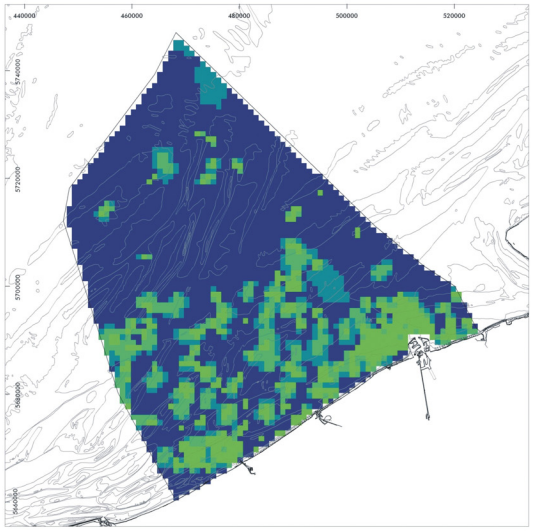
Data cover anchorage activities from 01 April 2003 - 31 March 2004

May 2005

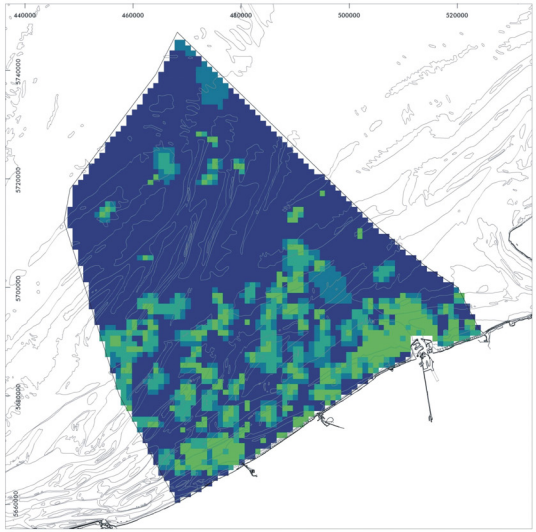
GAUFRE

Impact maps - Recreational fisheries

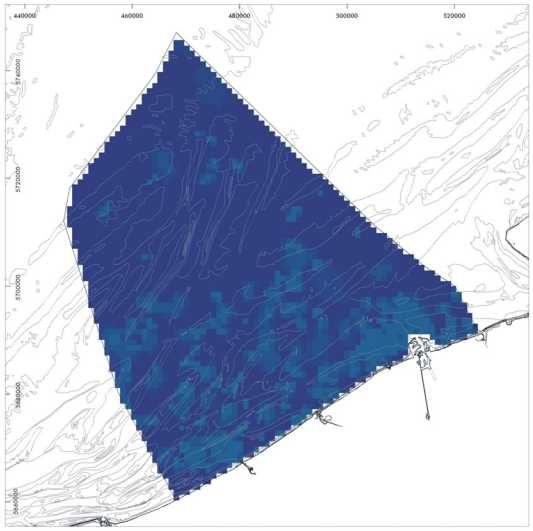
Chemical impact



Ecological impact



Physical impact



0 5 10 20 km

N

Relative impact value

High: 9

Low: 0

Original data source: Institute for Nature Conservation
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

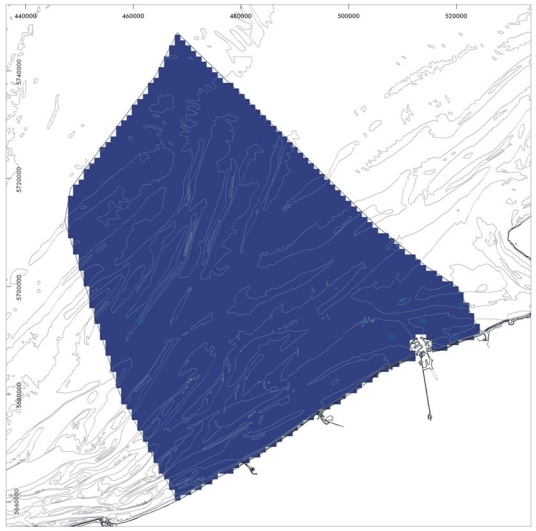
Data cover observed recreational fishery activities from 30 September 1992 - 25 July 2003

May 2005

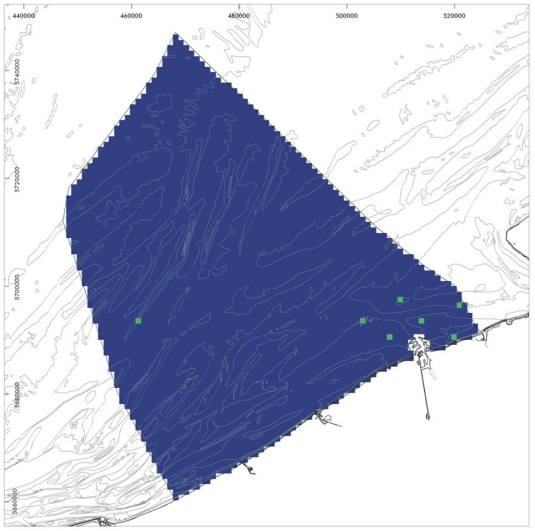
GAUFRE

Impact maps - Weather mast construction

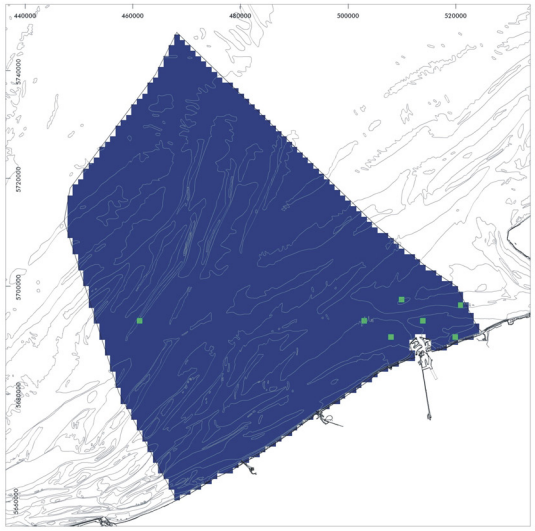
Chemical impact



Ecological impact



Physical impact



Relative impact value

High: 9

Low: 0

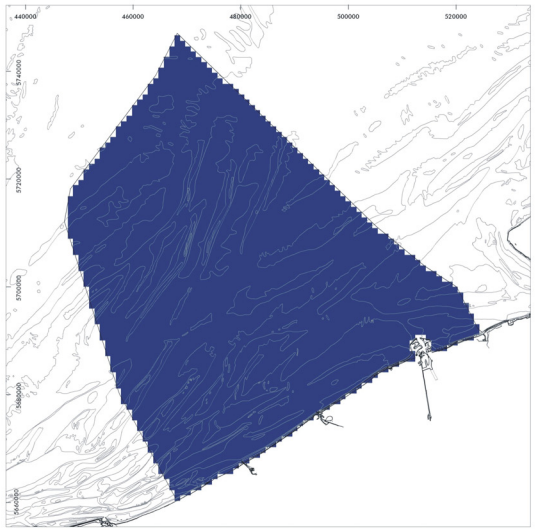
Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Hydrometeo, "Overview of positions (WGS84) weather masts and radar mast Oost Dyck on nautical maps"
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

May 2005

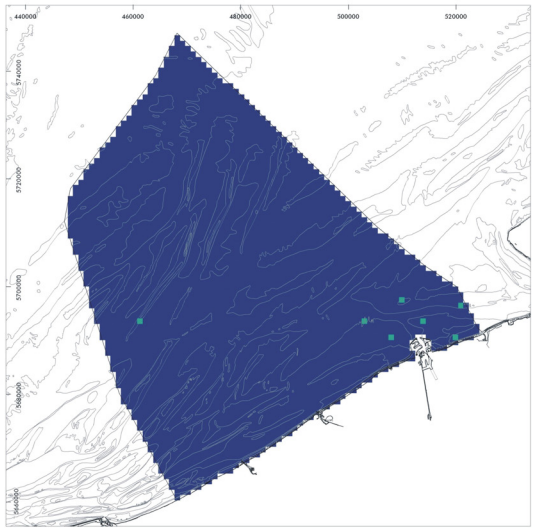
GAUFRE

Impact maps - Weather mast exploitation

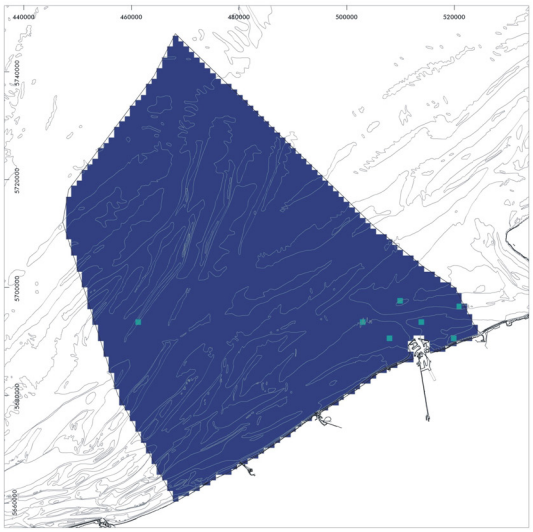
Chemical impact



Ecological impact



Physical impact



Relative impact value

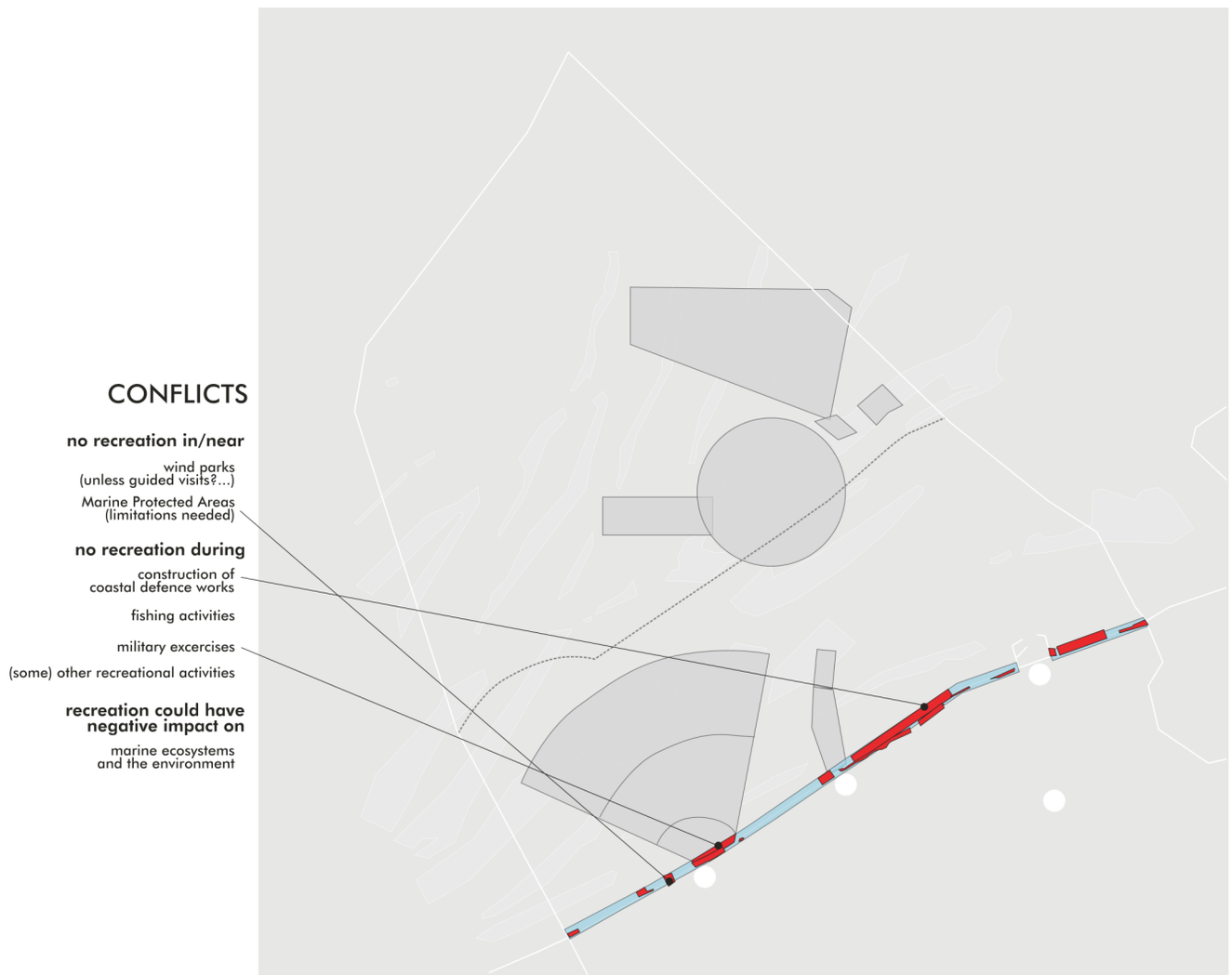
High: 9

Low: 0

Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Hydrometeo, "Overview of positions (WGS84) weather masts and radar mast Oost Dyck on nautical maps"
Impact analysis: ECOLAS NV
Map preparation: RCMG - Ghent University

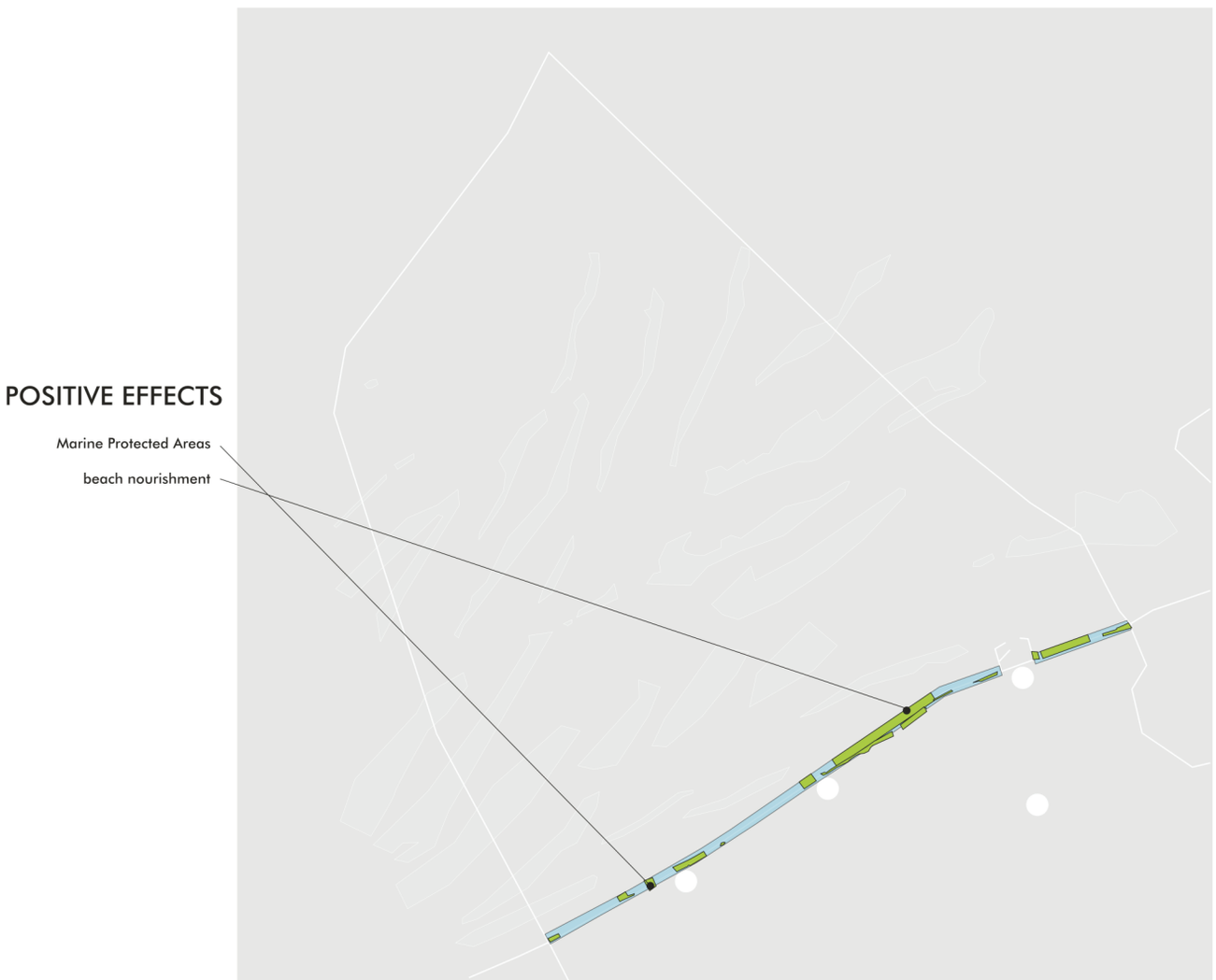
May 2005

GAUFRE



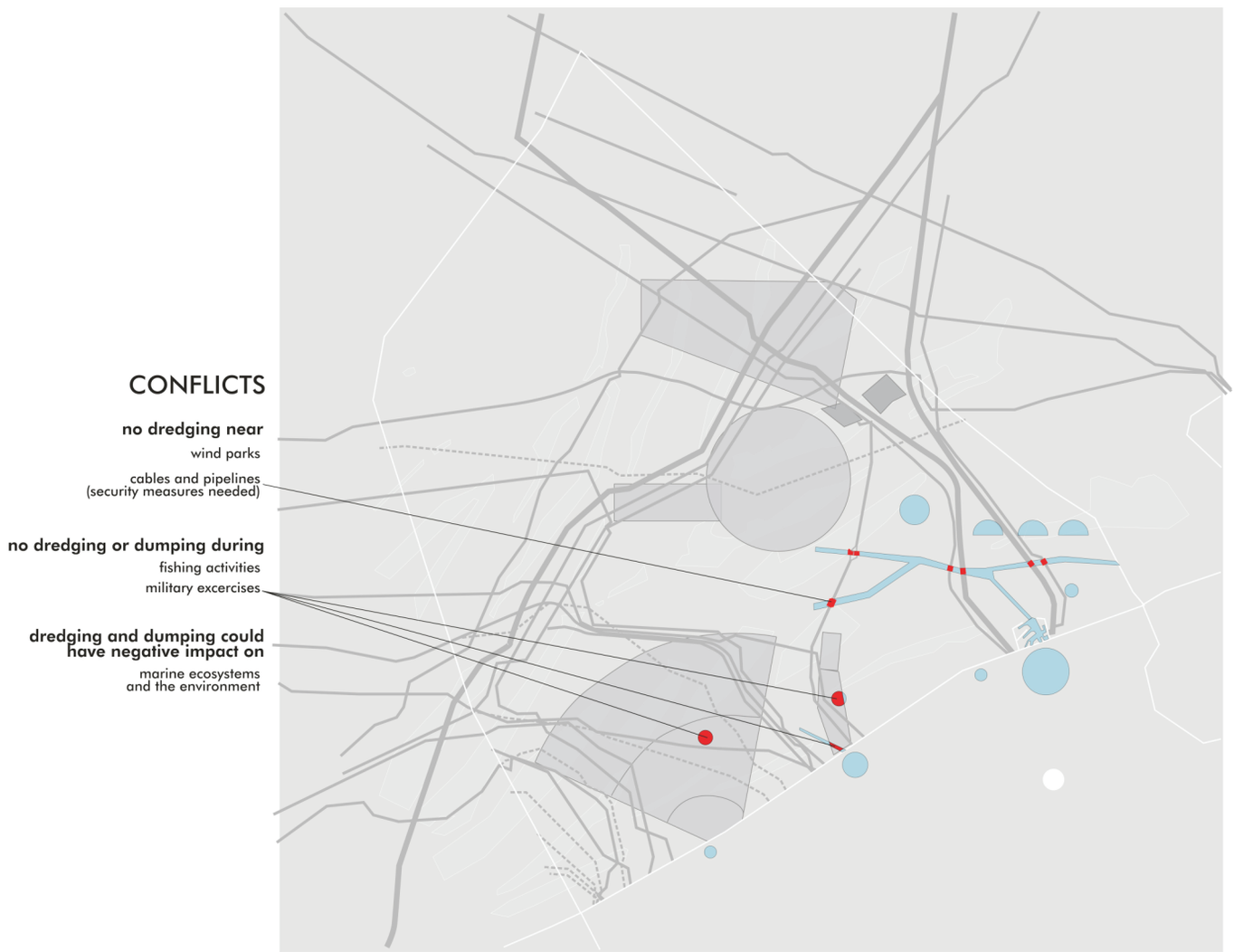
Map II.4a. Tourism and recreation in the coastal strip: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

conflicts



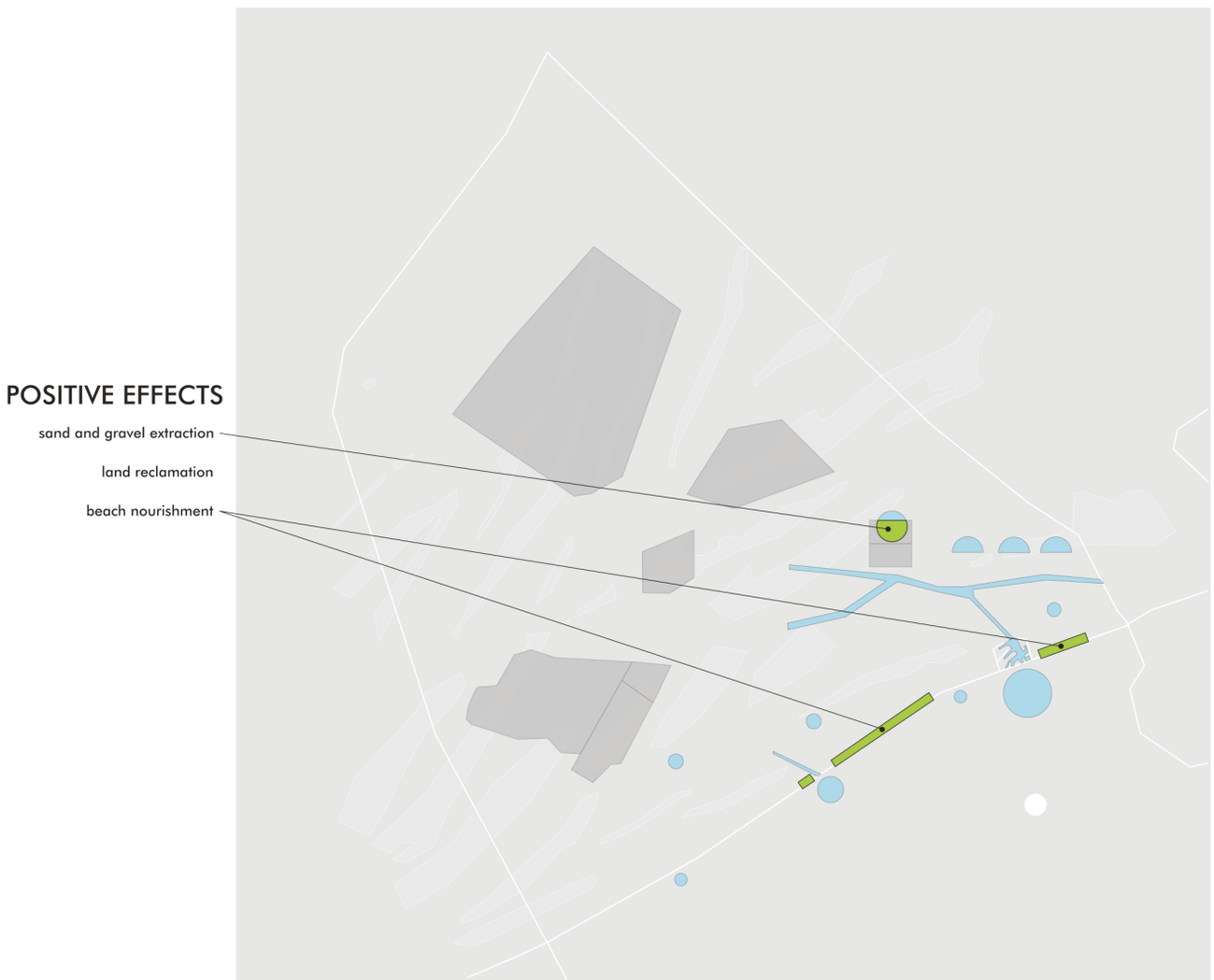
Map II.4b. Tourism and recreation in the coastal strip: positive interactions with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

positive interactions



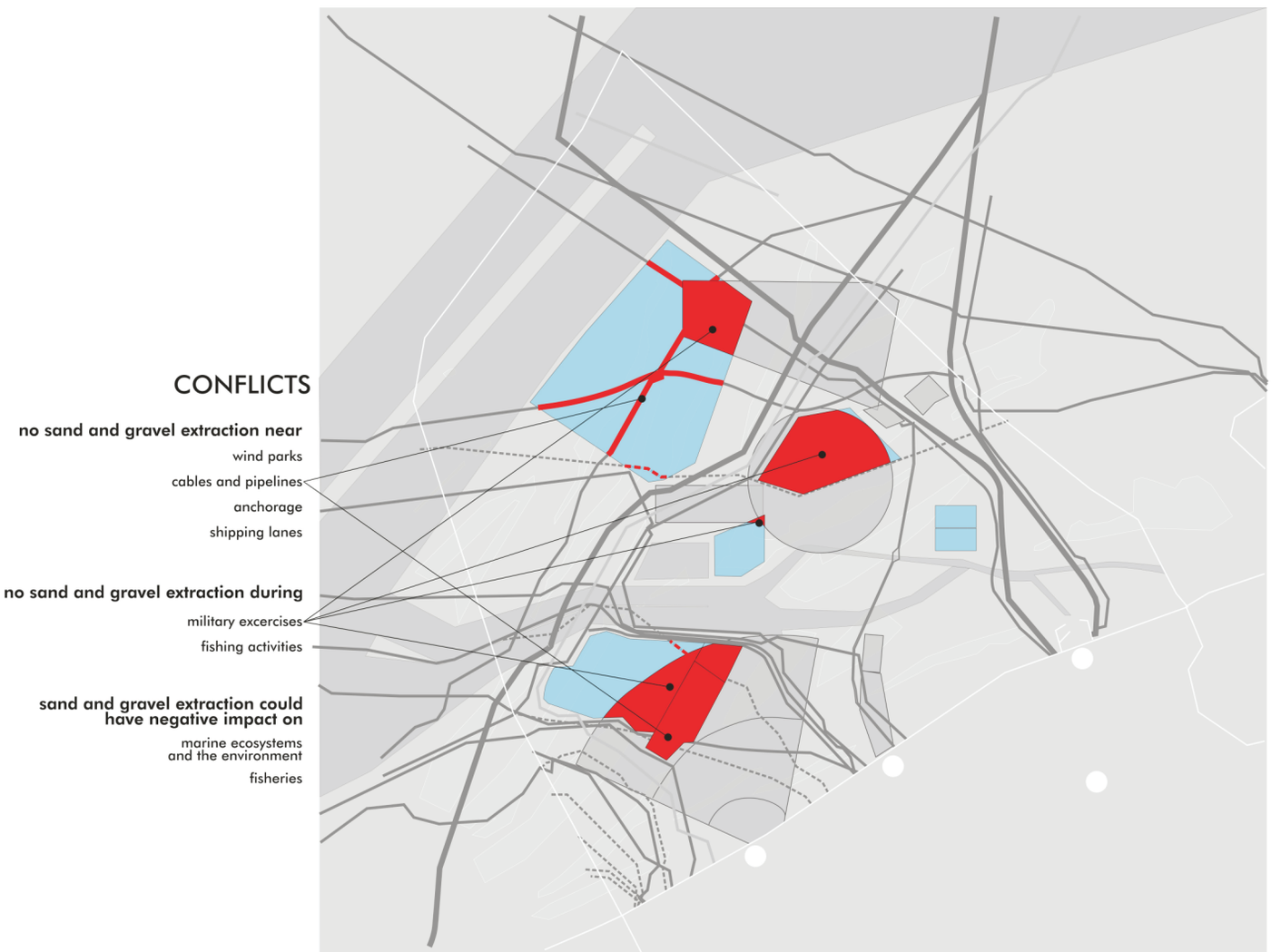
Map II.4c. Dredging and dumping of dredge disposal: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

conflicts



Map II.4d. Dredging and dumping of dredge dispoasal: positive interactions with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

positive interactions

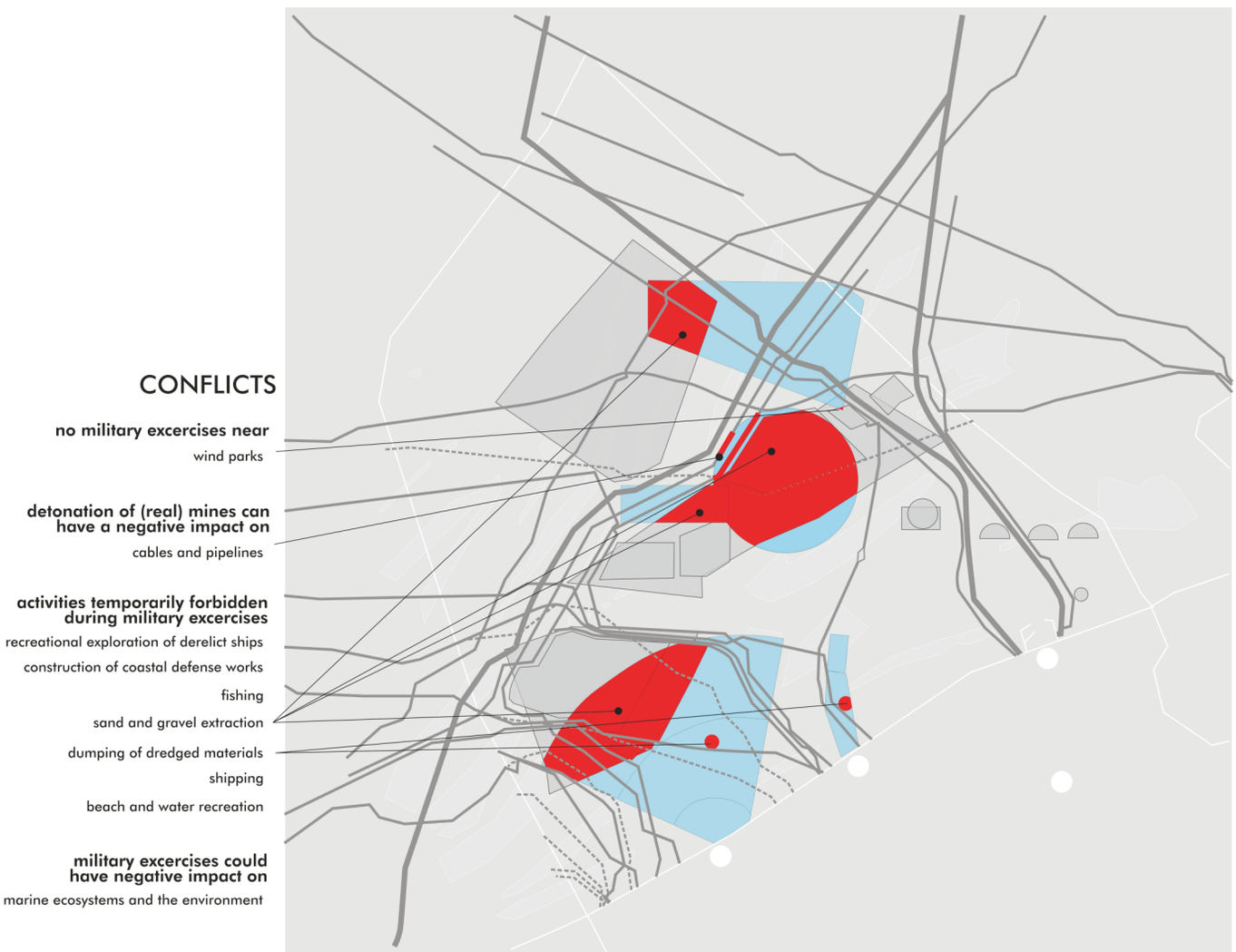


Map II.4e. Sand and gravel extraction: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

conflicts

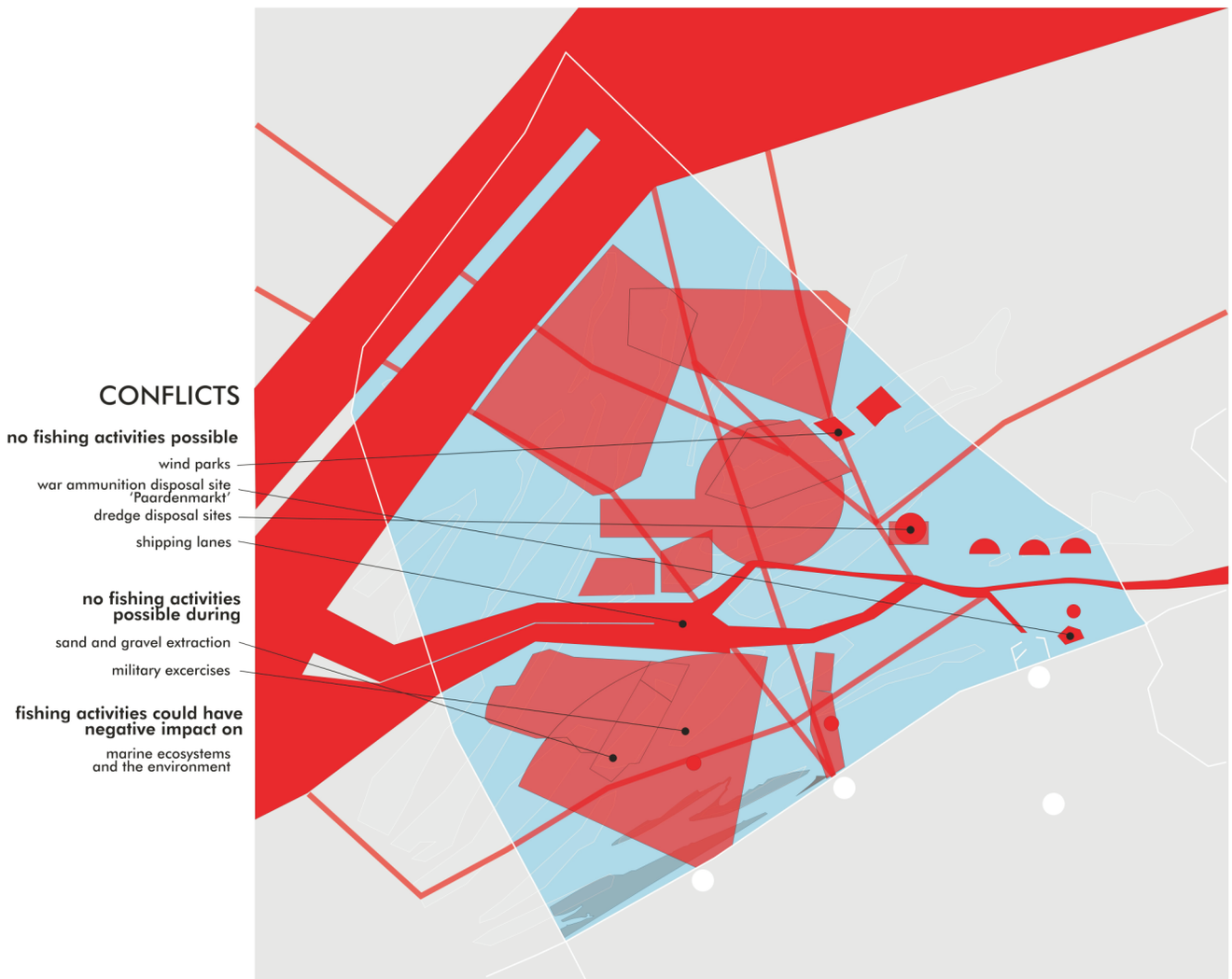
Map II.4f. Sand and gravel extraction: positive interactions with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

positive interactions



Map II.4g. Military exercises: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

conflicts



Map II.4h. Fisheries: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

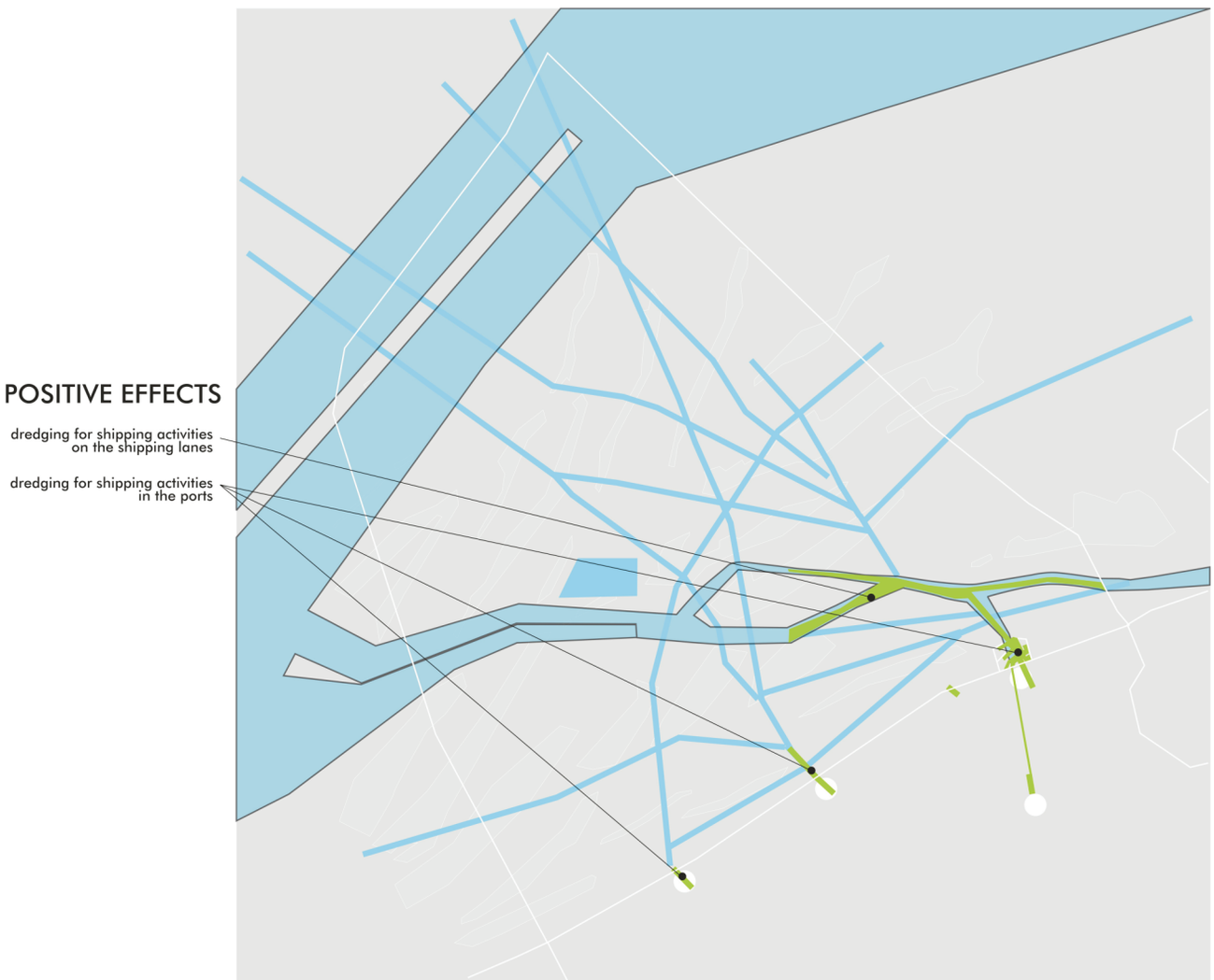
conflicts

Map II.4i. Fisheries: positive interactions with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

positive interactions

Map II.4j. Shipping: conflicts with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

conflicts



Map II.4k. Shipping: positive interactions with other uses
(Data analysis and Map preparation: Maritime Institute - Gent University)

positive interactions

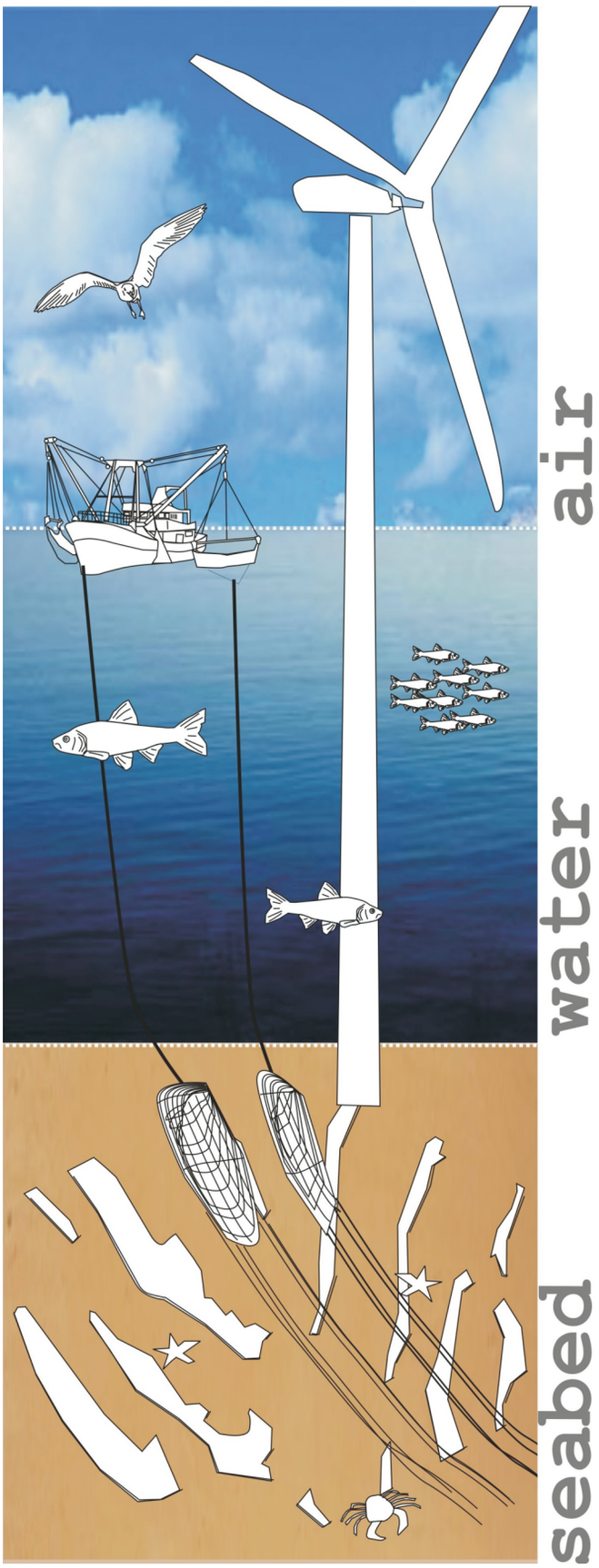
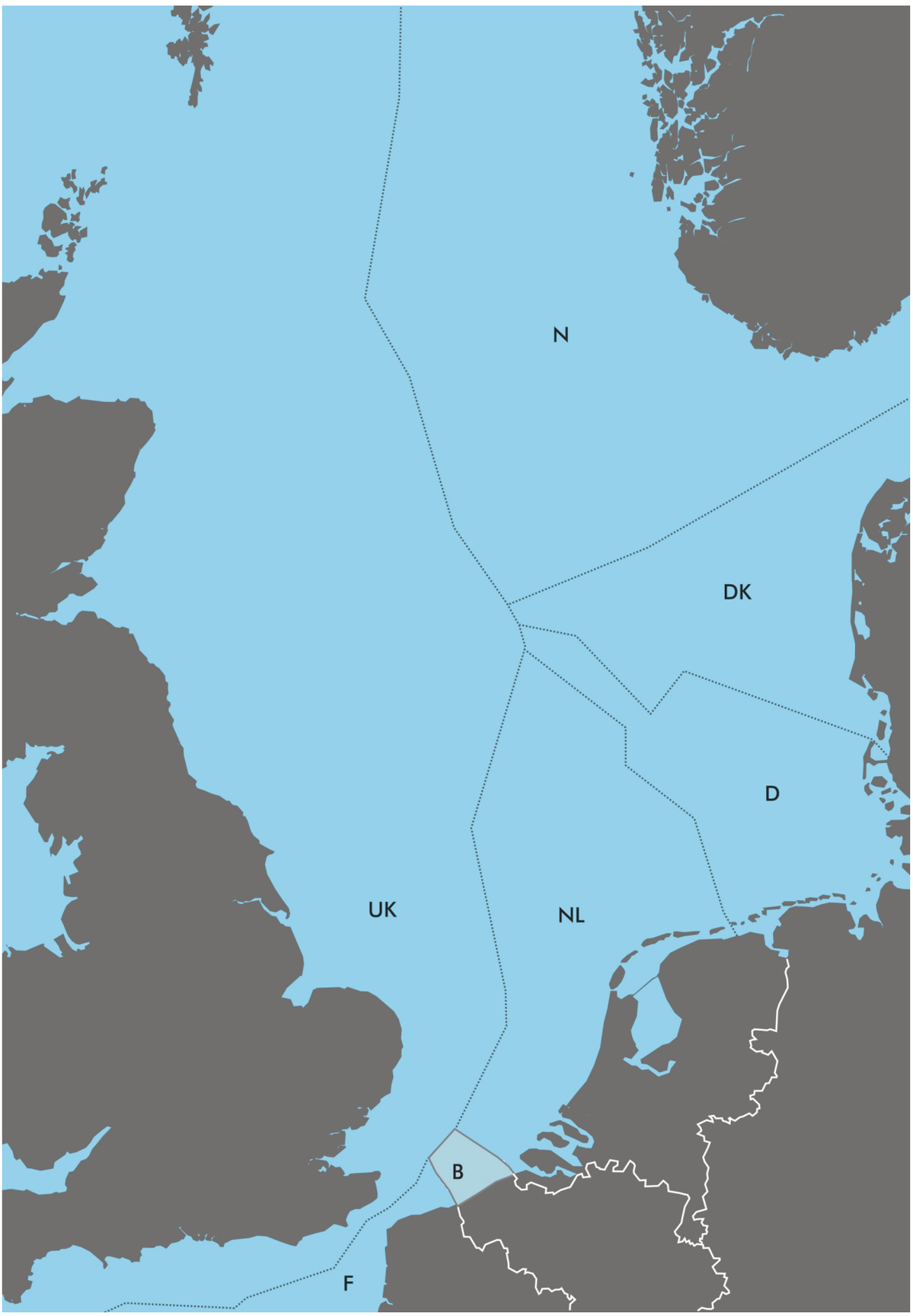
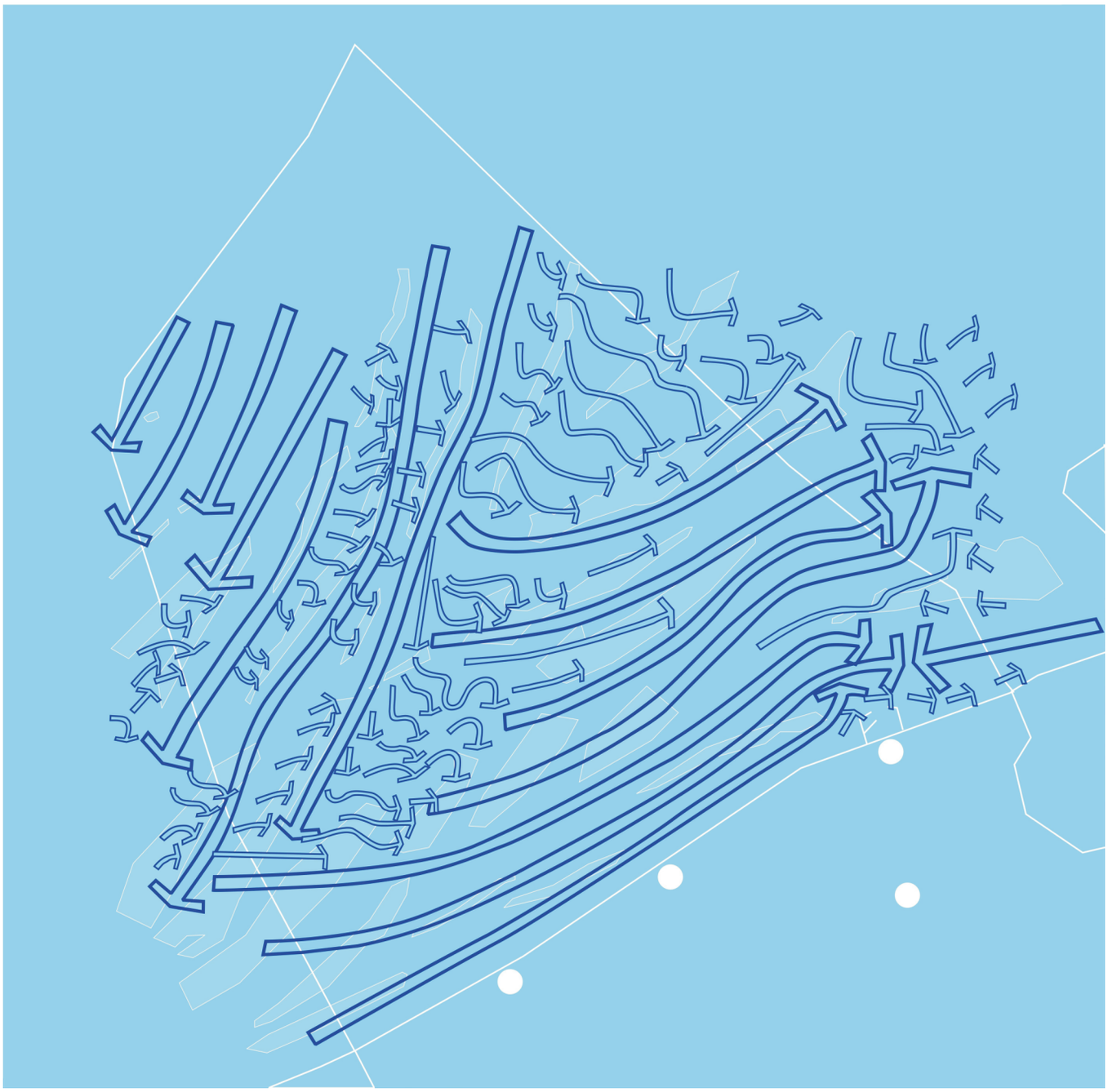


Figure III.1.1a. Mutual interaction between seabed, water column and air
(Maritime Institute - Gent University)



Map III.1.1a. The BPNS situated in the North Sea



Map III.1.1b. Conceptual view of the main sand transport directions on the seabed
(Original data source: Lanckneus, J., Van Lancker, V., Moerkerke, G., Van Den Eynde, D., Fettweis, M., De Batist, M. and Jacobs, P. (2001). Investigation of natural sand transport on the Belgian continental shelf, BUDGET (Beneficial usage of data and geo-environmental techniques). Final report. Federal Office for Scientific, Technical and Cultural Affairs (OSTC);
Map: Maritime Institute - Gent University)

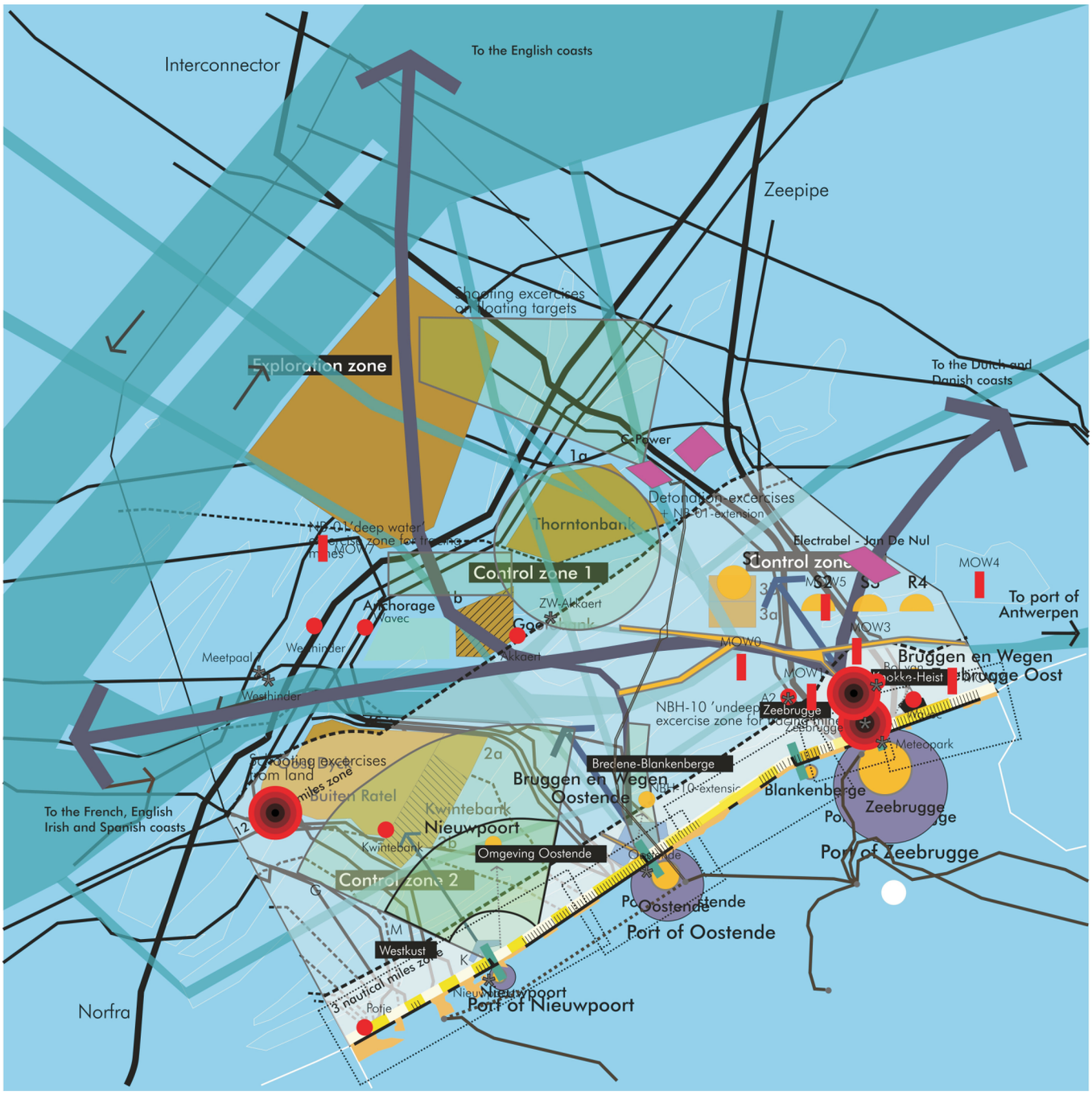
Map III.1.1c. Planning aspects: sites and areas with a legal status in the BPNS
(Map: Maritime Institute - Gent University)

International framework:

- shipping lanes: international traffic separation scheme
- anchorage
- Ramsar area

National framework:

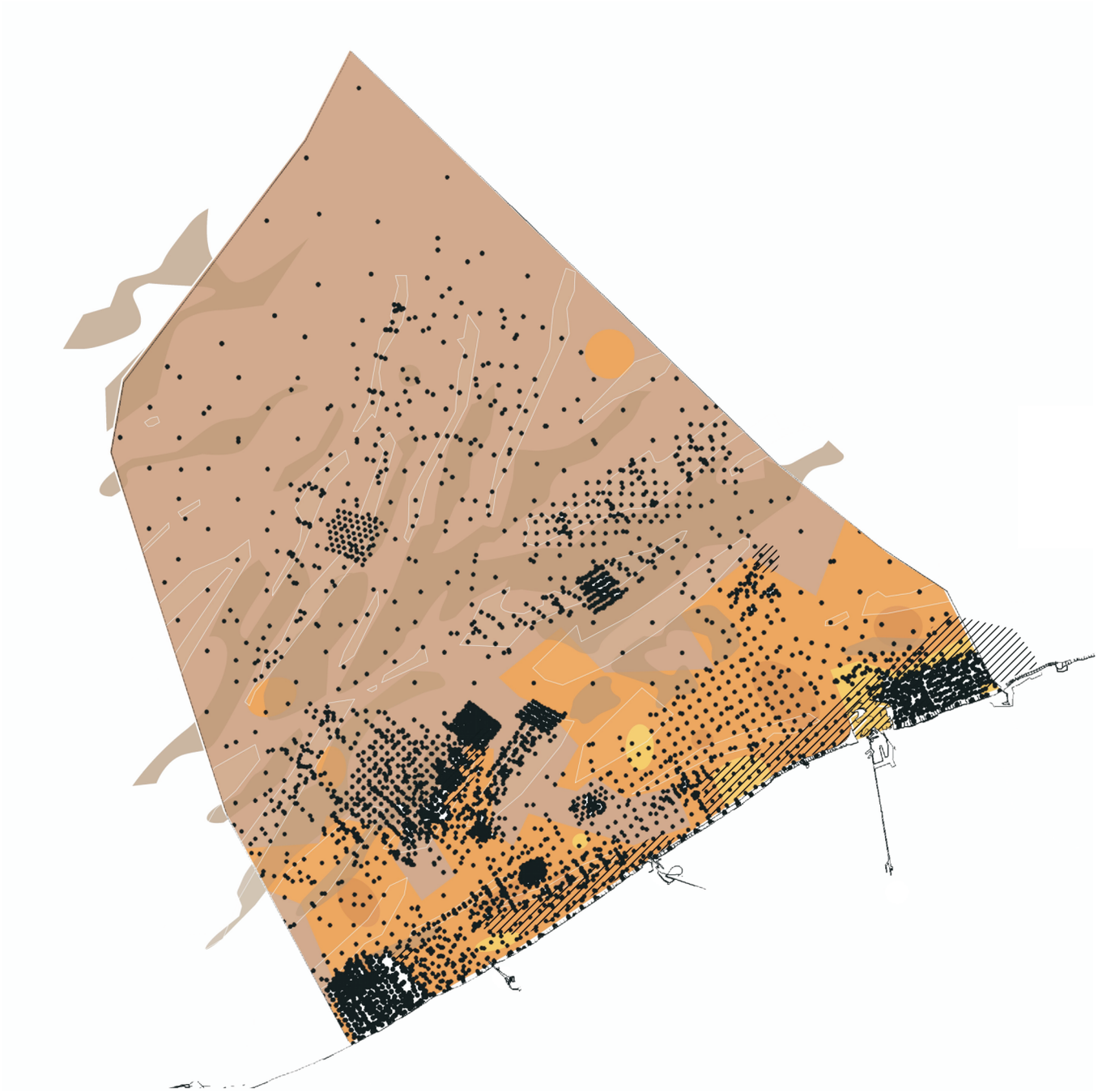
- zones for military use
- licence zones for wind parks
- licence zones for sand and gravel extraction
- dumping sites for dumping of dredgings
- fishery zones
- Paardenmarkt: historical war munition dump site



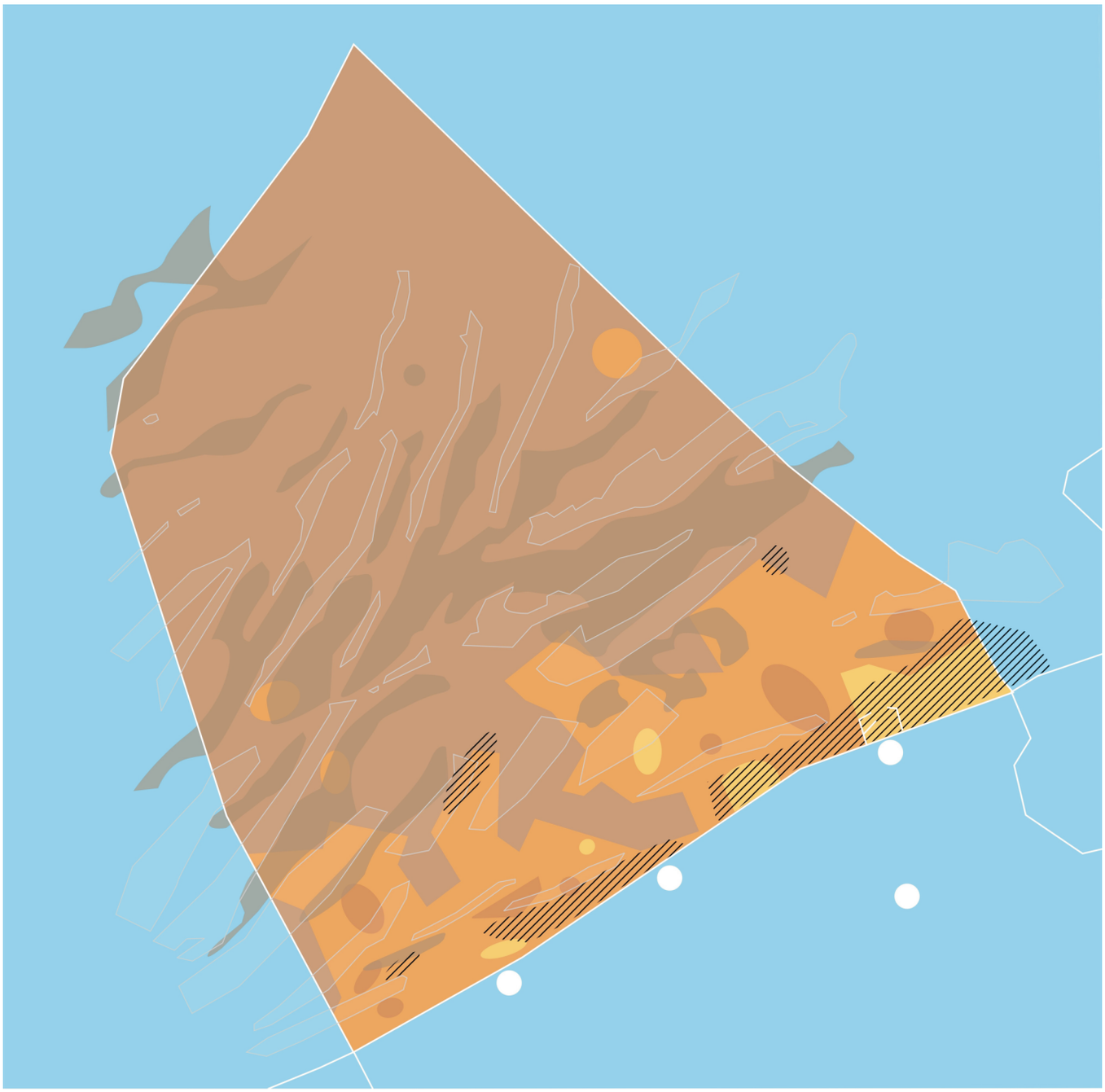
Map III.1.1d. 'Mare Liberum': all uses of the BPNS in an overlay
(cables and pipelines, sand and gravel extraction, shipping, fishing, military use, dredging and dumping of dredge disposal, tourism and recreation, coastal defense, windparks, survey and monitoring)
(Map: Maritime Institute - Gent University)

Map III.1.2.1a. Water depth in the BPNS
(Original data source: www.mumm.ac.be/EN/Management/Atlas/bath_sandbanks.php;
Structure map: Maritime Institute - Gent University)

- 0-20 m depth with sandbanks up to - 2 m depth
- 20-30 m depth with sandbanks up to - 10 m depth
- 20-30 m depth without sandbanks
- 20-40 m depth with sandbanks up to - 10 m depth
- 20-40 m depth with sandbanks up to - 20 m depth
- 30-40 m depth without sandbanks



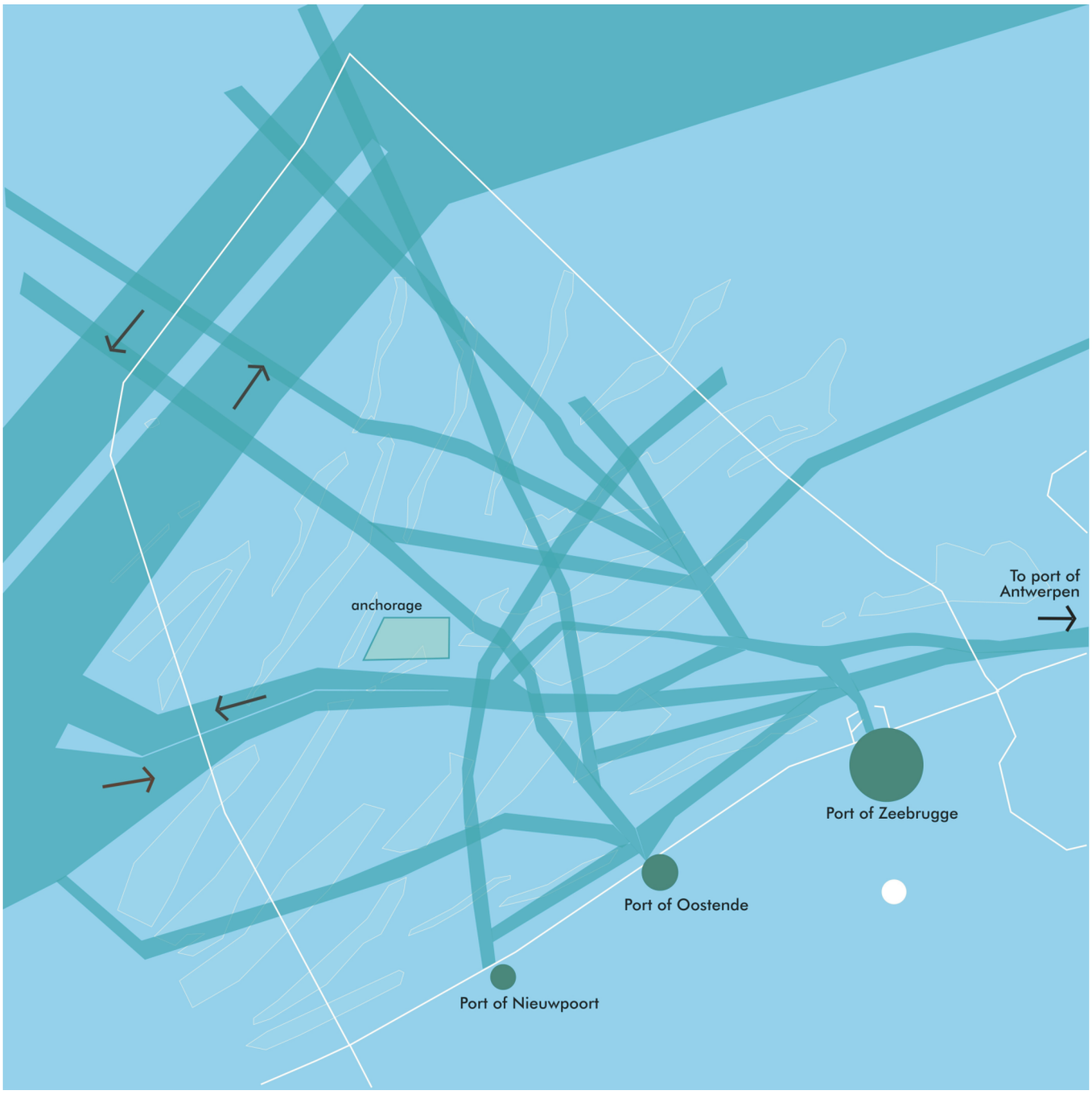
Map III.1.2.1b. Median grain size of the sand fraction in overlay with locations of sediment samples
(Original data source: sedisurf@database, hosted by RCMG - Gent University; Data analysis: RCMG - Gent University; Map: Maritime Institute - Gent University)



Map III.1.2.1c. Median grain size of the sand fraction
(Original data source: sedisurf@database, hosted by RCMG - Gent University; Data analysis: RCMG - Gent University; Structure map: Maritime Institute - Gent University)

Map III.1.2.1d. Location and names of the sandbanks in the BPNS
(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

Map III.1.2.1e. Groups of sandbanks
(Structure map: Maritime Institute - Gent University)



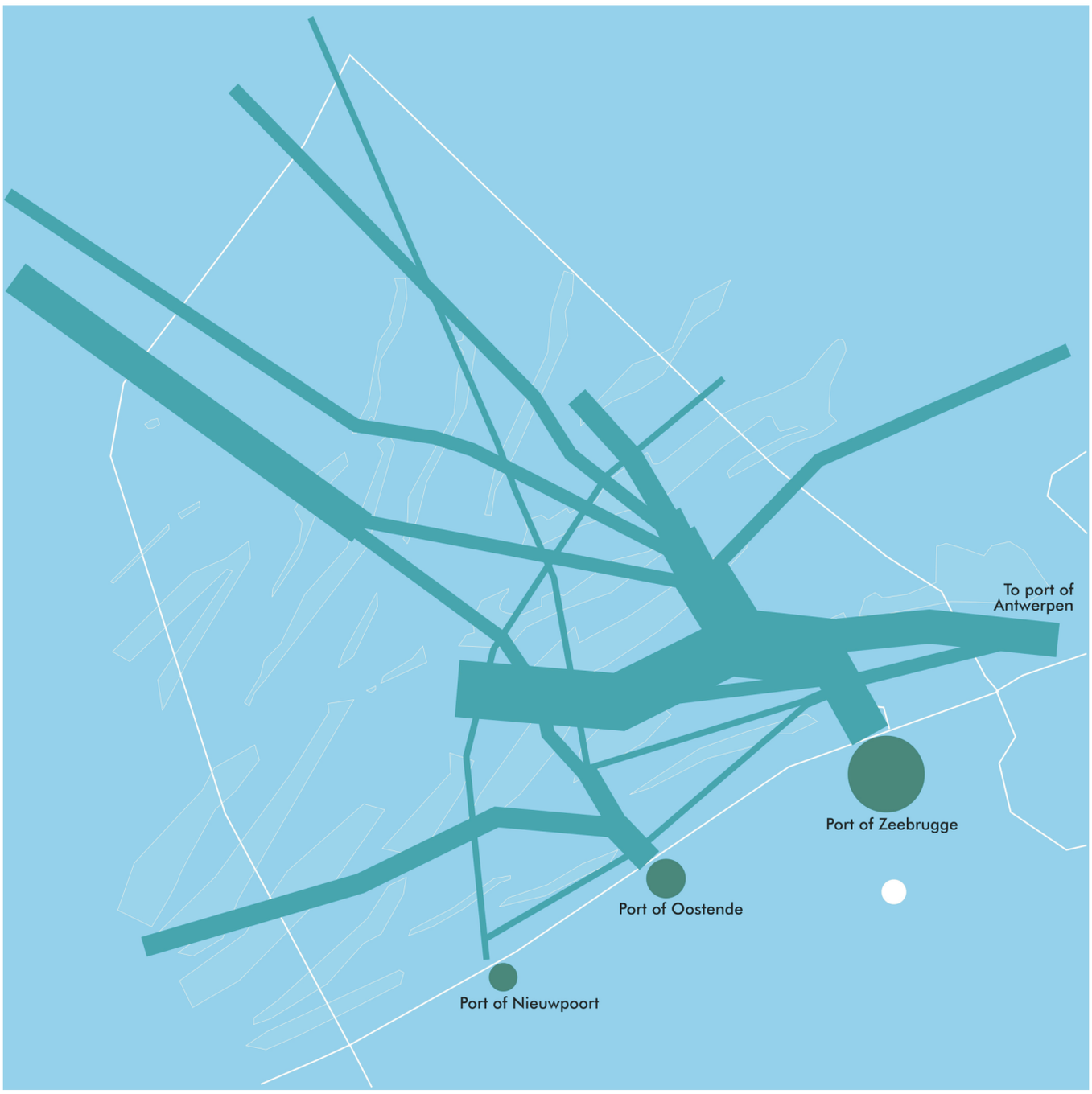
Map III.1.2.2a. Shipping in the BPNS
(Original data source: International Maritime Organisation, Ships' Routeing, London, 6th Edition, 2003 / IVS-SRK, Ministry of the Flemish Community and Dutch Ministry of Transport, Public Works and Water Management / Transeuropa Ferries, Ferryways;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

international traffic separation scheme

shipping lanes

anchorage area

ports



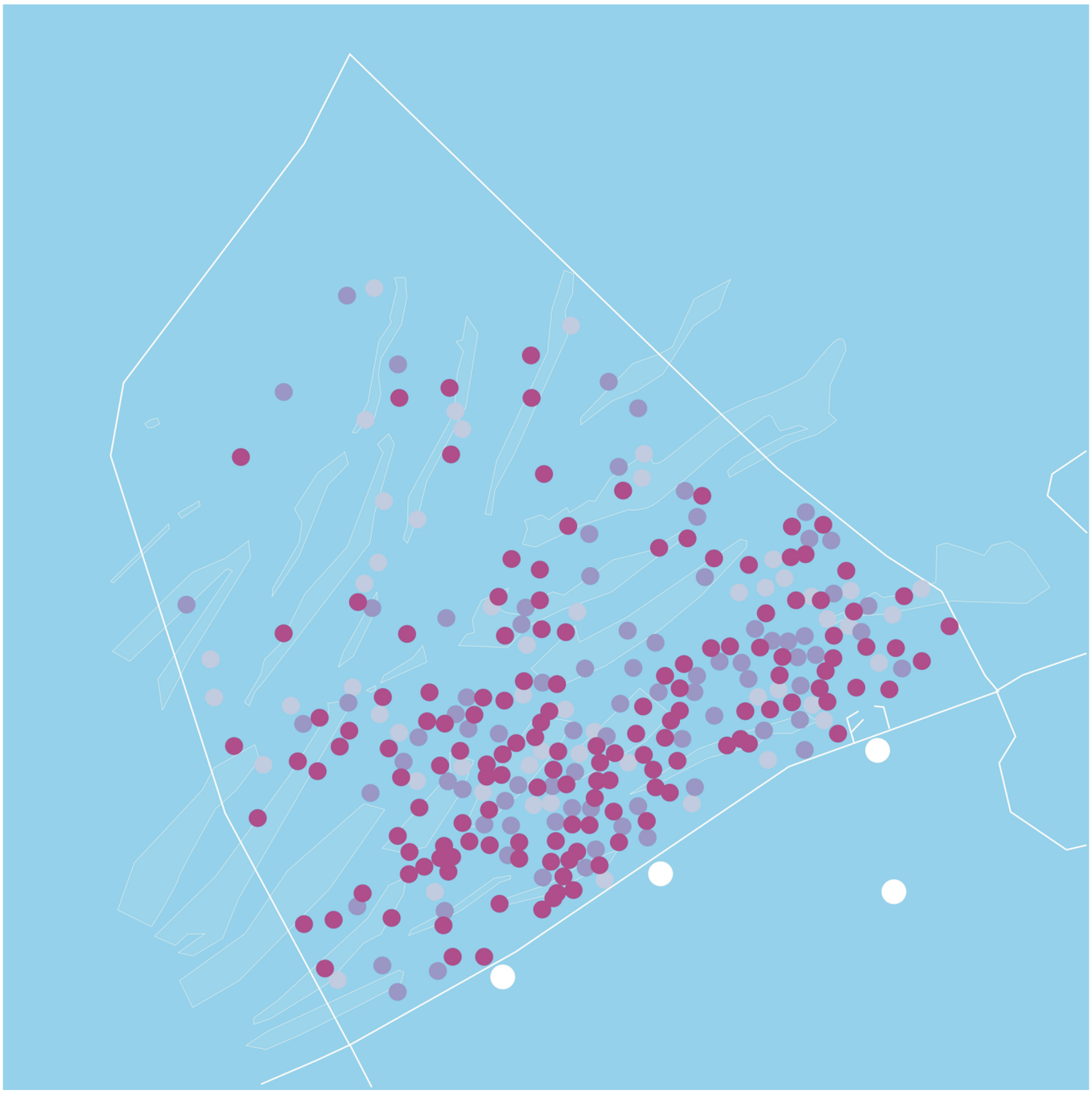
Map III.1.2.2b. Shipping intensities in the BPNS
(Original data source: IVS-SRK, Ministry of the Flemish Community and Dutch Ministry of Transport, Public Works and Water Management / Transeuropa Ferries, Ferryways; Data analysis: Ecolas nv / Maritime Institute - Gent University; Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

low intensity of shipping
(up to 1.735 ships/year/km²)

average intensity of shipping
(up to 4.264 ships/year/km²)

high intensity of shipping
(up to 50.784 ships/year/km²)

ports
(size of symbol in accordance with importance for shipping)

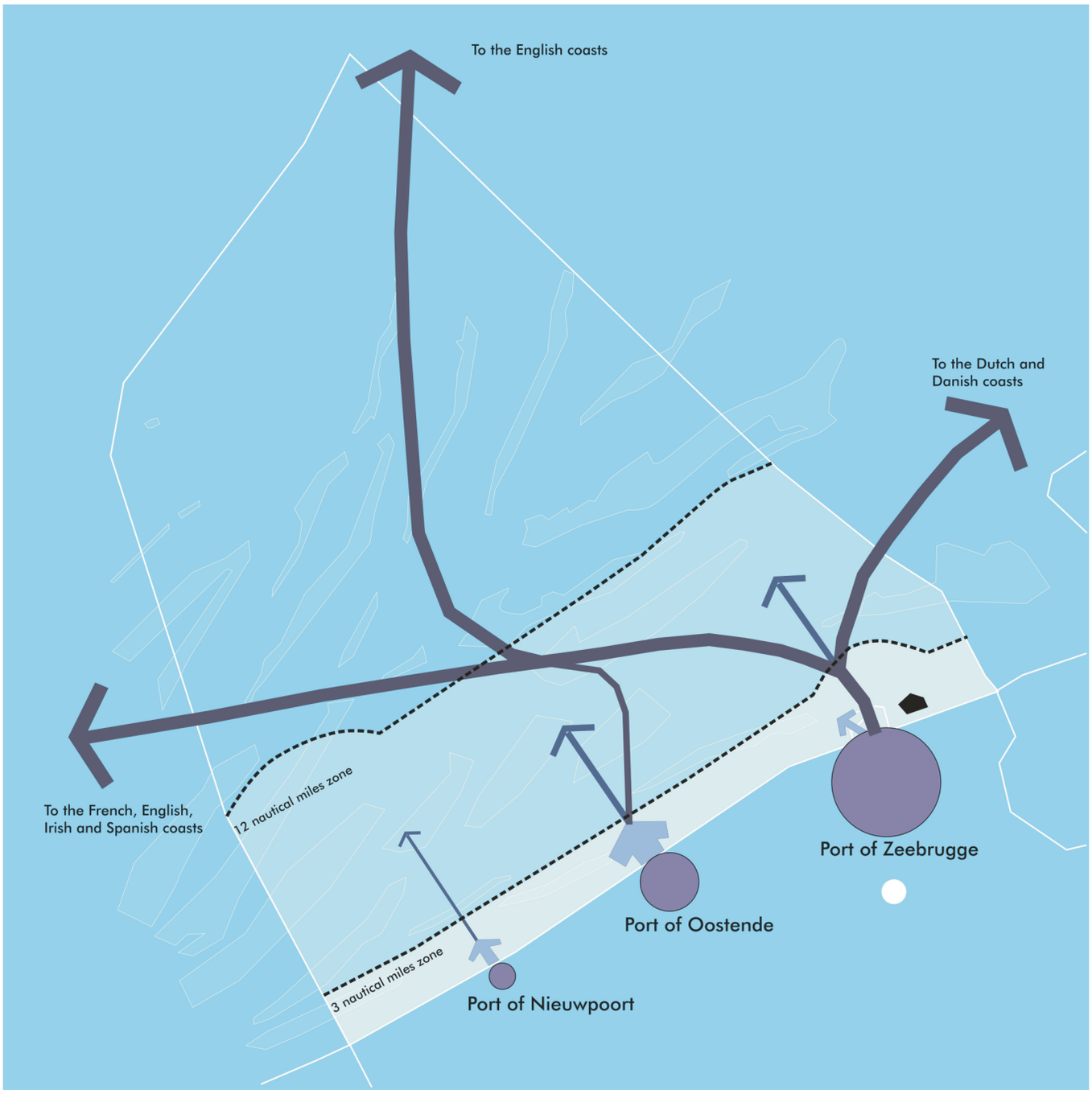


Map III.1.2.2c. Fishing intensities in the BPNS
(Original data source: Institute for Nature Conservation; Data analysis: Ecolas nv;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

high intensity

medium intensity

low intensity



Map III.1.2.2d. Fishing activities in the BPNS

(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office / Ministry of the Flemish Community, Agriculture Administration, Division of Fisheries, De Belgische Zeevisserij: Aanvoer en besomming, 2003, p 15.;
Data analysis and structure map: Maritime Institute - Gent University)

large segment
of the fishing fleet

medium segment
of the fishing fleet

small segment
of the fishing fleet

fishing port (size of symbol in accordance with importance for fish landings -
fish landings 2003: Nieuwpoort 296, Oostende 6.184, Zeebrugge 13.627)

Paardenmarkt (war amunition depot):
fishing prohibited

large segment: large fishing boats with a capacity over 221 kW (300 PK) and a gross tonnage over 70 GT. These ships stay on average 10 days at sea.

medium segment: these fishing boats have a capacity up to 221 kW (300 PK) and a gross tonnage slightly over 70 GT. These ships are not allowed within the 3 nautical miles zone. Usually they sail within the 12 nautical miles zone.

small segment: these fishing boats also have a capacity up to 221 kW (300 PK), but their gross tonnage is smaller compared with the medium segment (below 70 GT). These boats usually sail within the 3 nautical miles zone and usually stay no longer than 24 hours at sea.

Map III.1.2.2e. Military exercises in the BPNS

(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, BAZ / spokesmen of the Army, Air Force and Navy sections, Federal Government Department of Defense;
Data analysis: Marine Biology Section - Gent University / RCMG - Gent University;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

low intensity of military use
(max. 10 days/year)

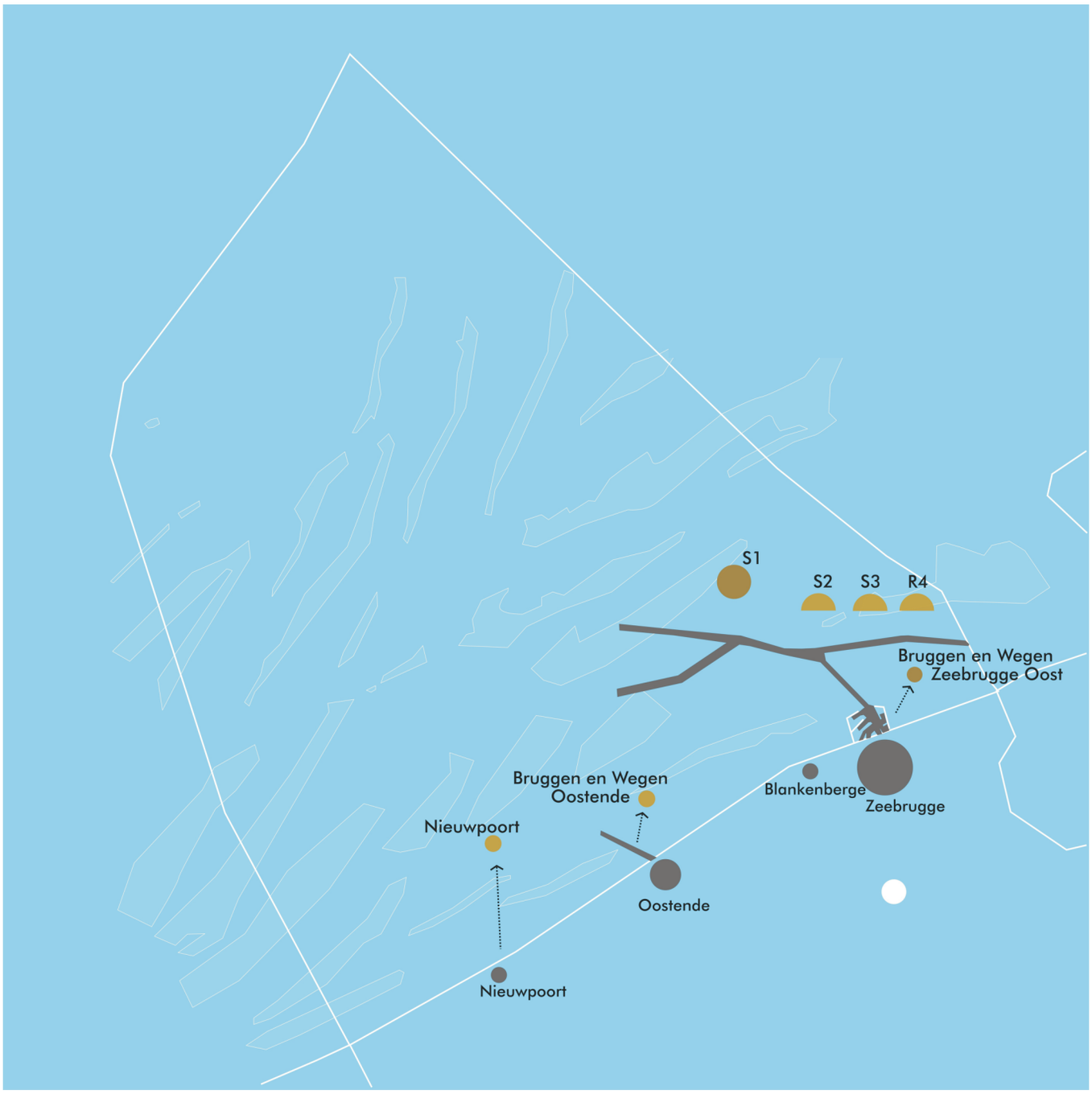
higher intensity of military use
(78 days in 2001)

Map III.1.2.2f. Sand and gravel extraction in the BPNS (situation since 2004)
(Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy / Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

control and exploration zones

rotation system:
closed until Feb 2006

limitations: no extraction
in March, April and May



Map III.1.2.2g. Dredging and dumping of dredge disposal in the BPNS
(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Maritime Entrance Division / GEMS International nv / Data analysis: RCMG - Gent University;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

Dredged areas:

ports
(size of symbol in accordance with intensity of dredging)

channels

Sites for dredge disposal:

occasionally used sites

most intensely used sites
(S1 and 'Bruggen en Wegen Zeebrugge Oost')

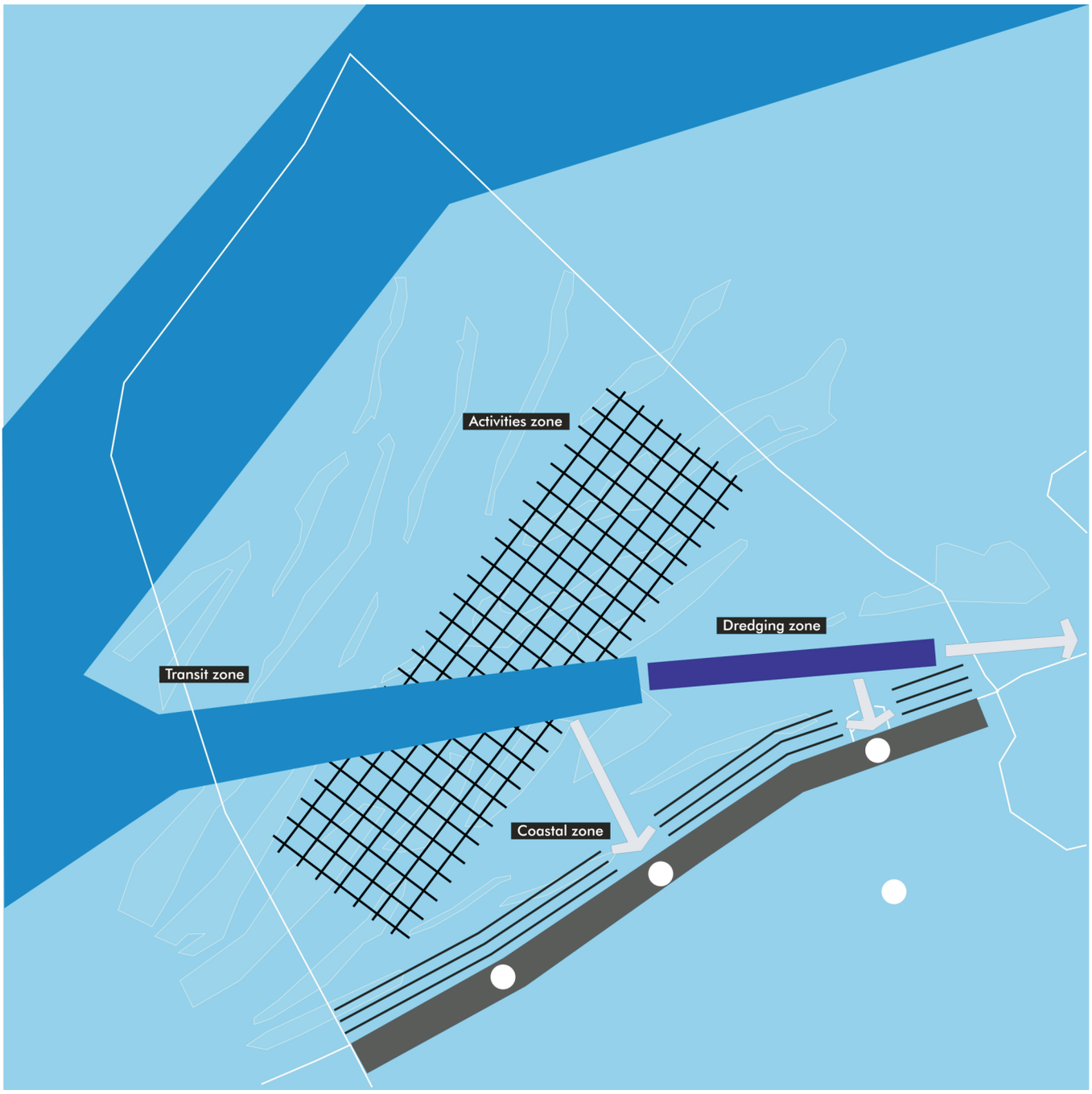
Map III.1.2.2h. Tourism and recreation in the Belgian coastal strip
(Original data sources: Provincie West-Vlaanderen, Dienst Ruimtelijke Planning en Mobiliteit (2004) / Maes, F, Douvere, F., and Schrijvers, J. (MAREDASM), 2002/ WES consultancy, 2004;
Map: Maritime Institute - Gent University)

low tourist pressure

average tourist pressure

important seaside resort
(high tourist pressure)

marina



Map III.1.2.2i. Existing spatial structure: dynamics in the BPNS
(Structure map: Maritime Institute - Gent University)

Map III.1.2.3a. Primary ecological valorisation of the BPNS in overlay with locations of macrobenthic samples
(Original data source: Marine Biology Section - Gent University; Data analysis: Marine Biology Section - Gent University; Map: Maritime Institute - Gent University)

low ecologic value

ecologic value

high ecologic value

locations of macrobenthic samples

Map III.1.2.3b. Primary ecological valorisation of the BPNS
(Original data source: Marine Biology Section - Gent University; Data analysis: Marine Biology Section - Gent University; Structure map: Maritime Institute - Gent University)

low ecologic value

ecologic value

high ecologic value

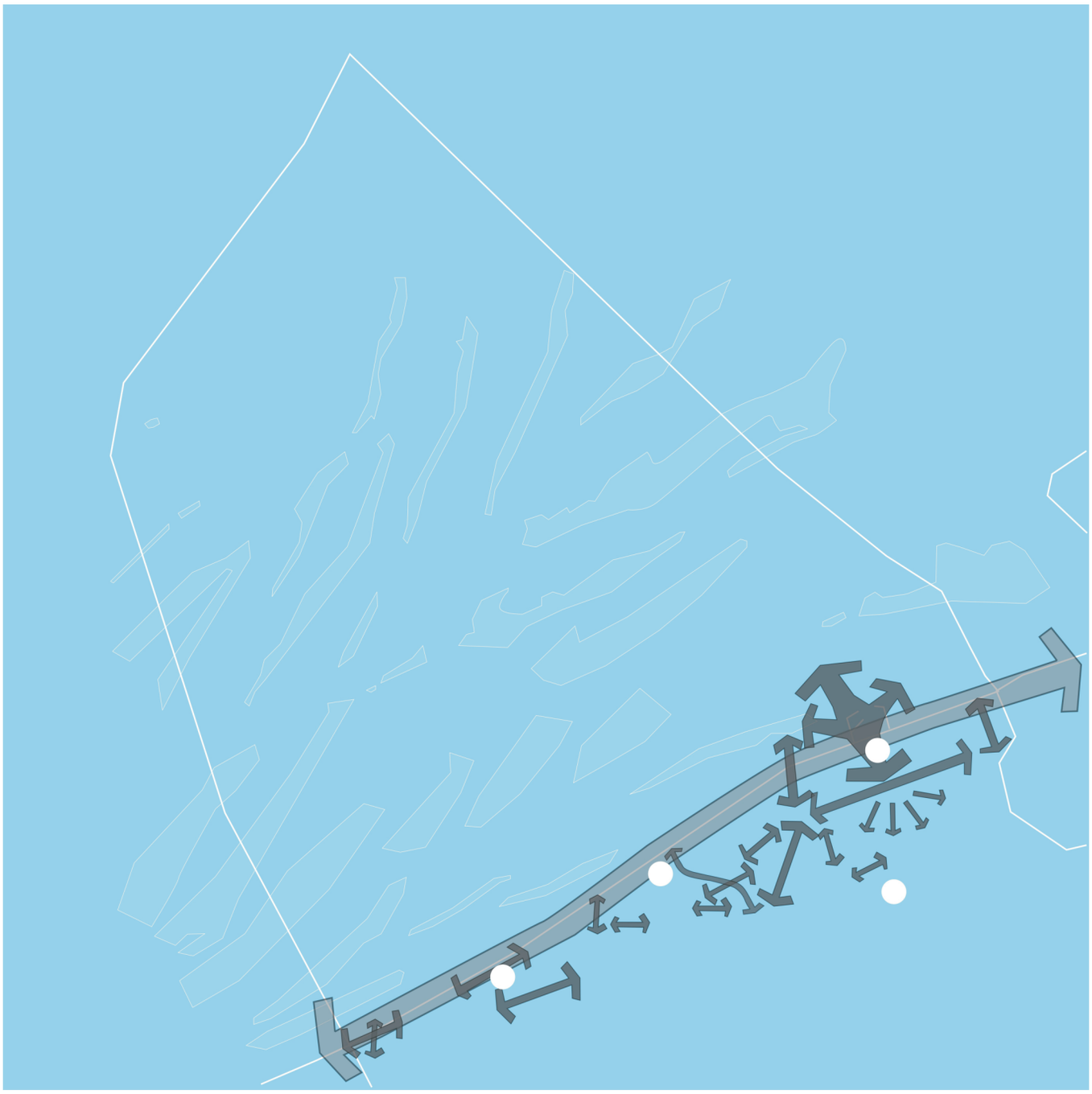
Map III.1.2.3c. Important locations for birds (seaside and landside)
(Original data source: www.gisvlaanderen.be/geo-vlaanderen/vogelatlas;
Map: Maritime Institute - Gent University)

Important locations for birds:

- areas with important breeding, stopping and/or sleeping grounds
- nesting ground

(Proposed) protected locations for birds:

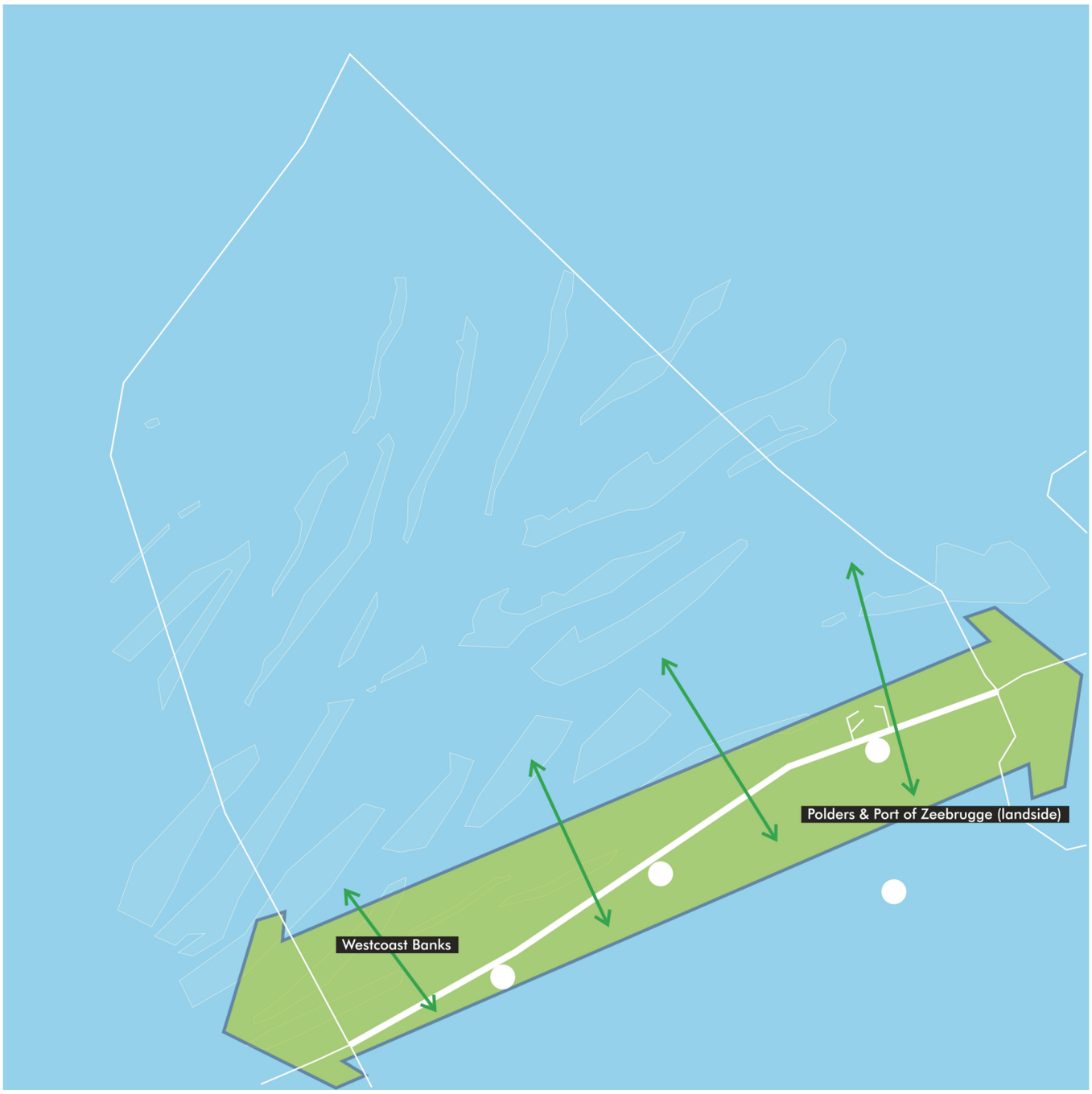
- Bird Directive areas
- Ramsar areas (at sea: Kustbanken - Het Zwin)
- proposed Habitat Directive area



Map III.1.2.3d. Most important (known) bird routes in the Belgian coastal area
(Original data source: www.gisvlaanderen.be/geo-vlaanderen/vogelatlas;
Map: Maritime Institute - Gent University)

seasonal migration

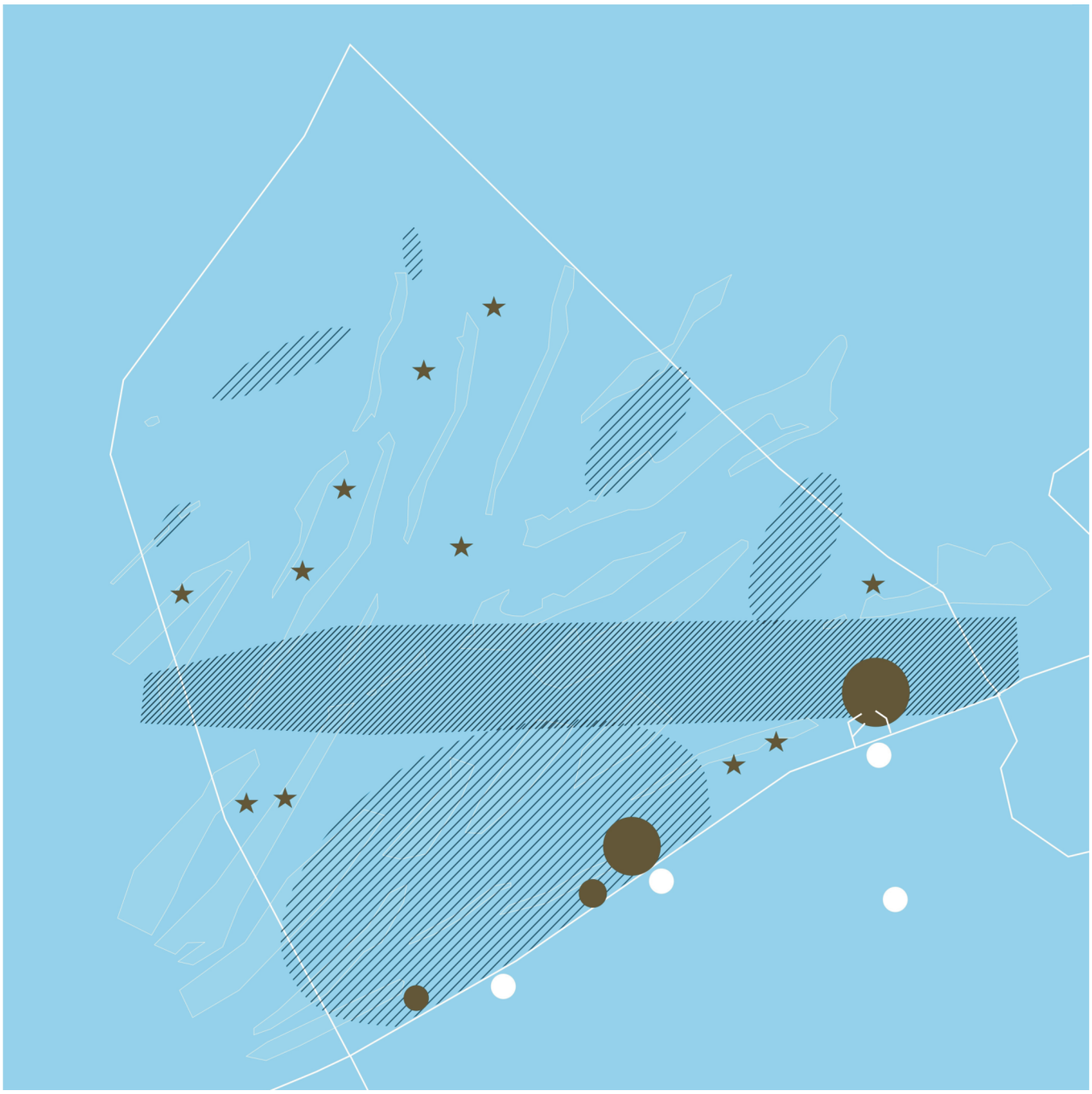
sleeping and feeding migration



Map III.1.2.3e. Existing spatial structure: natural values in the BPNS
(Structure map: Maritime Institute - Gent University)

high natural values parallel to the coastal strip

natural relations between seaside and landside

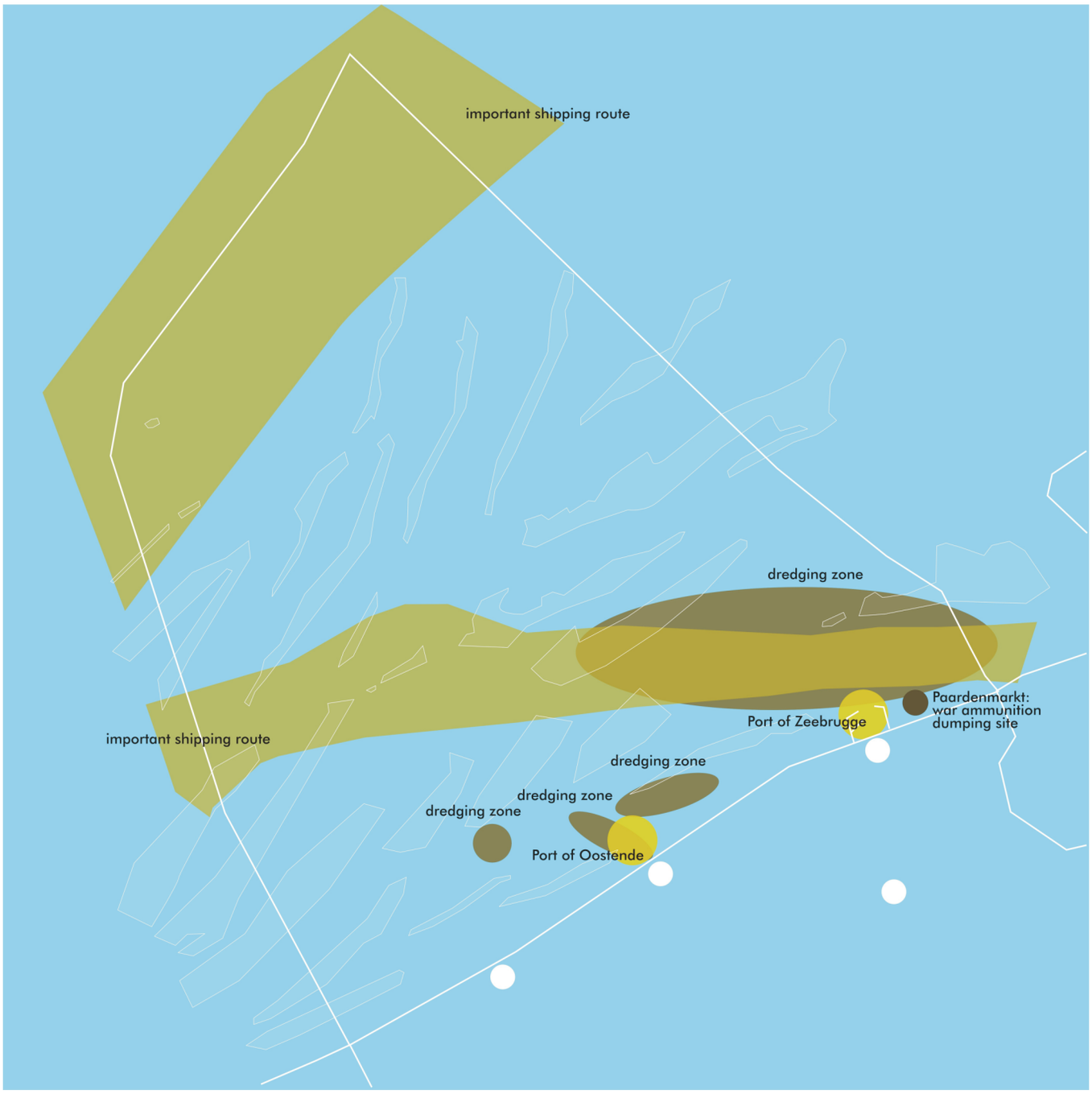


Map III.1.2.3f. Location of ship wrecks
(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office, "Wrecks on the Belgian Continental Shelf adapted up to BAZ 2003/07" (3 June 2003);
Structure map: Maritime Institute - Gent University)

areas with a high concentration of ship wrecks

areas with a concentration of ship wrecks

solitary ship wrecks



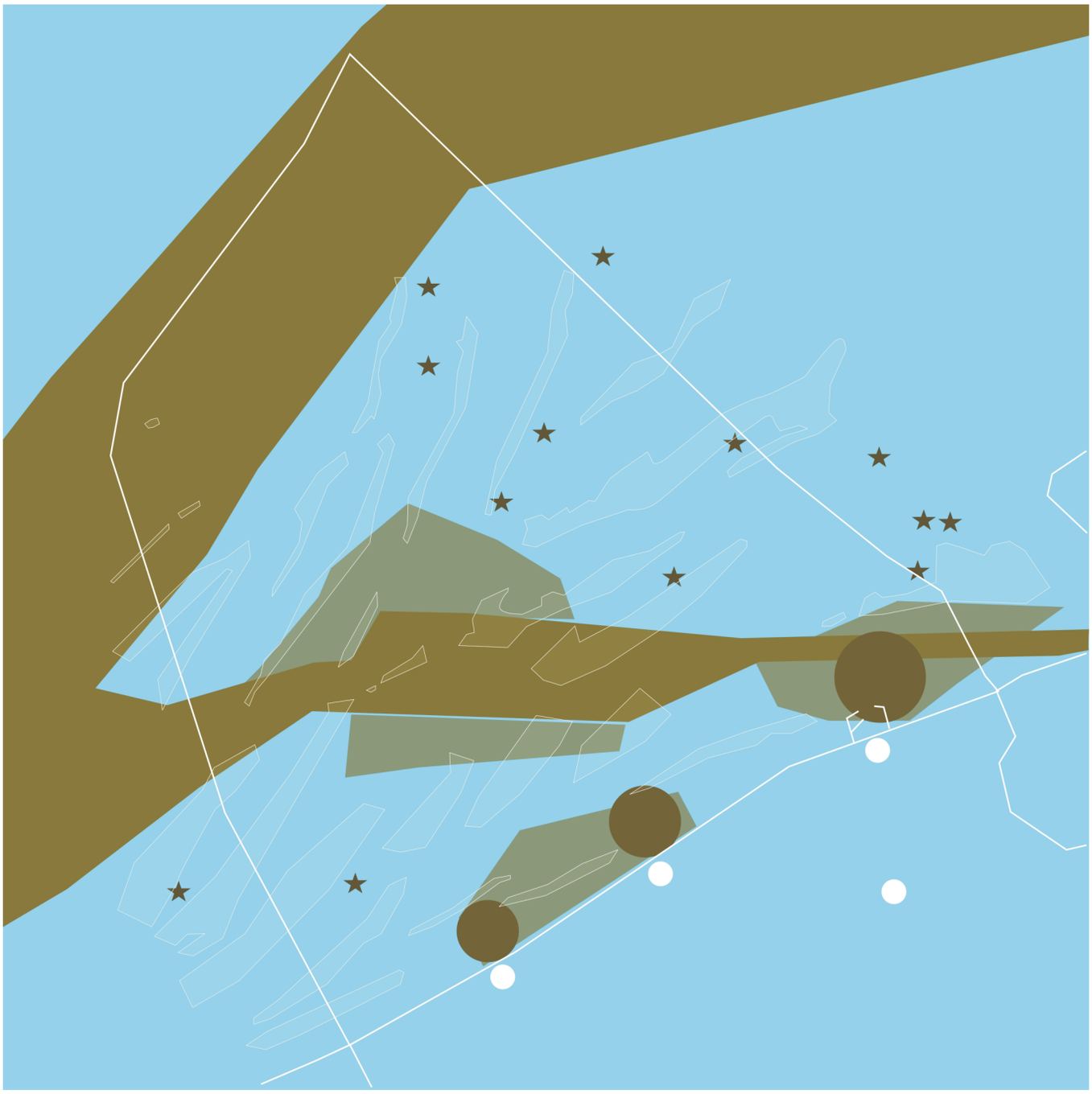
Map III.1.2.3g. Pollution and disturbance of the seabed
(Structure map: Maritime Institute - Gent University, based on information from Chapter II.3 of this report)

former dumping site of war ammunition

pollution in the harbour

pollution and disturbance caused by dredging

pollution caused by shipping



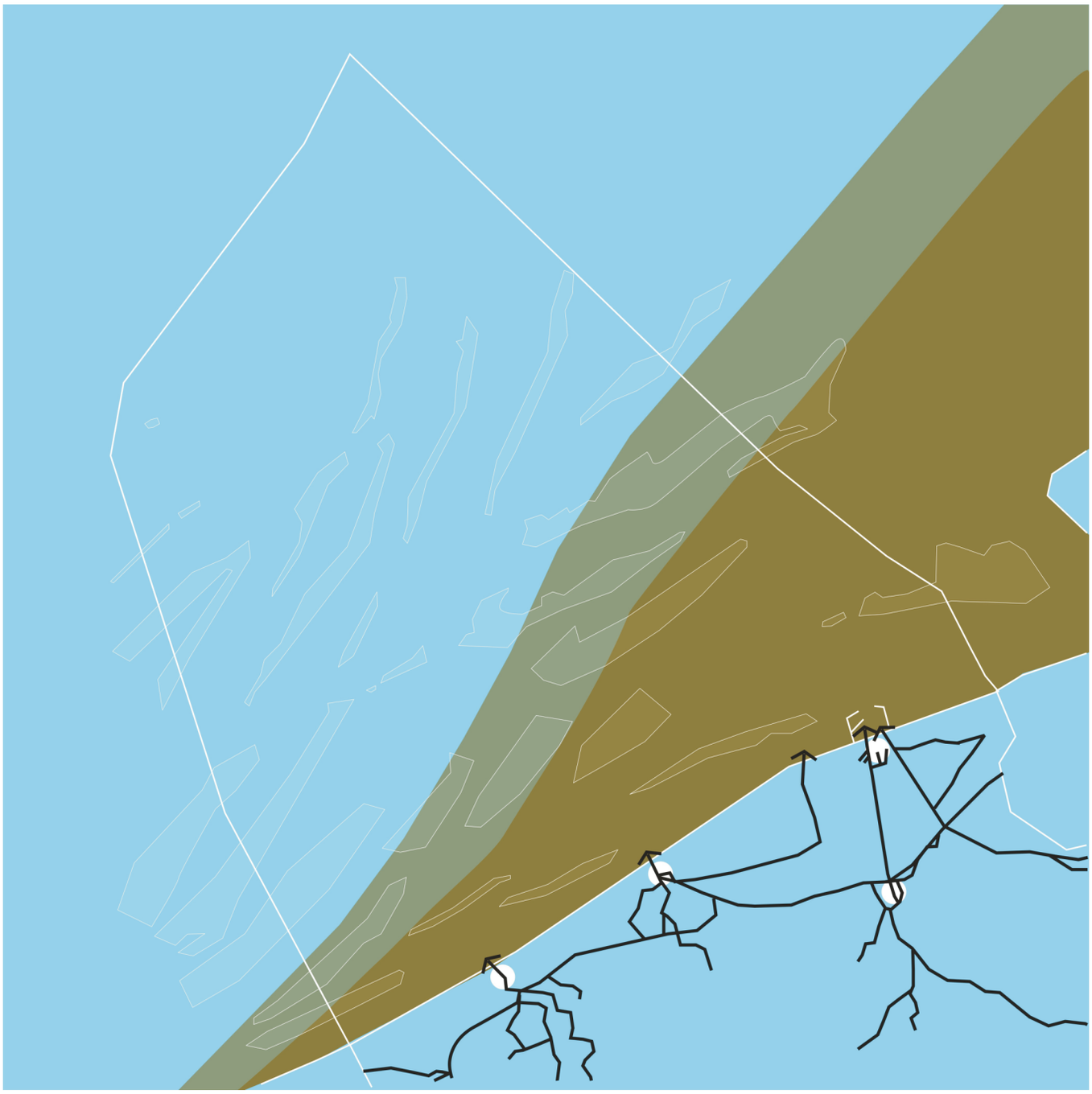
Map III.1.2.3h. Pollution and disturbance of the water column: oil pollution at sea, based on observations of oil slicks 1996-2002
(Original data: www.mumm.ac.be/EN/Monitoring/Aircraft/results.php;
Map: Maritime Institute - Gent University)

area with frequent oil slicks

area with less frequent oil slicks

port (frequent oil pollution)

occasional oil slicks

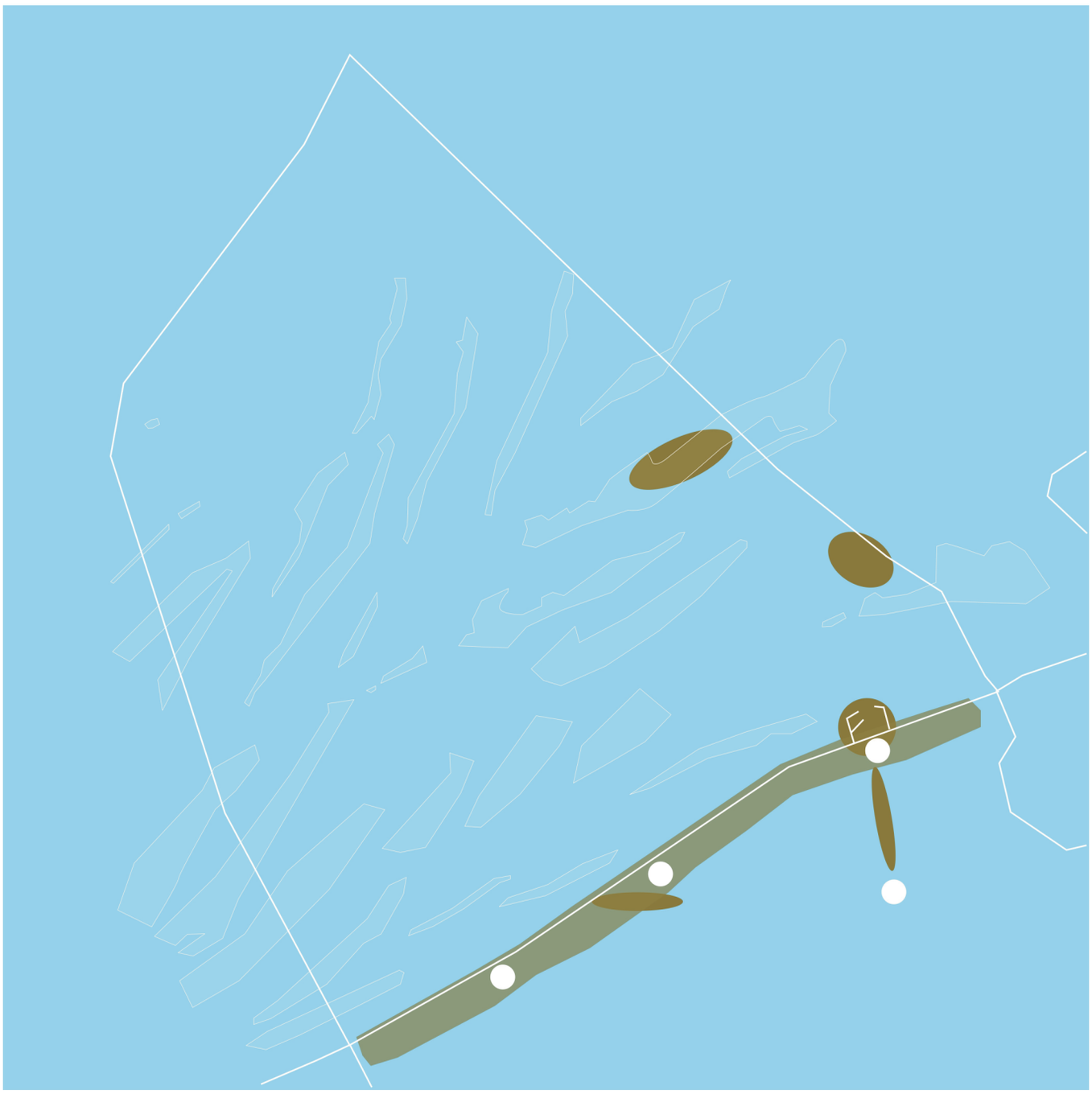


Map III.1.2.3i. Pollution and disturbance of the water column: land borne pollution, based on observations
(Original data: www.mumm.ac.be/EN/Models/Development/Ecosystem/how.php#nitrates;
Map: Maritime Institute - Gent University)

area with a lot of land borne pollution

area with regular land borne pollution

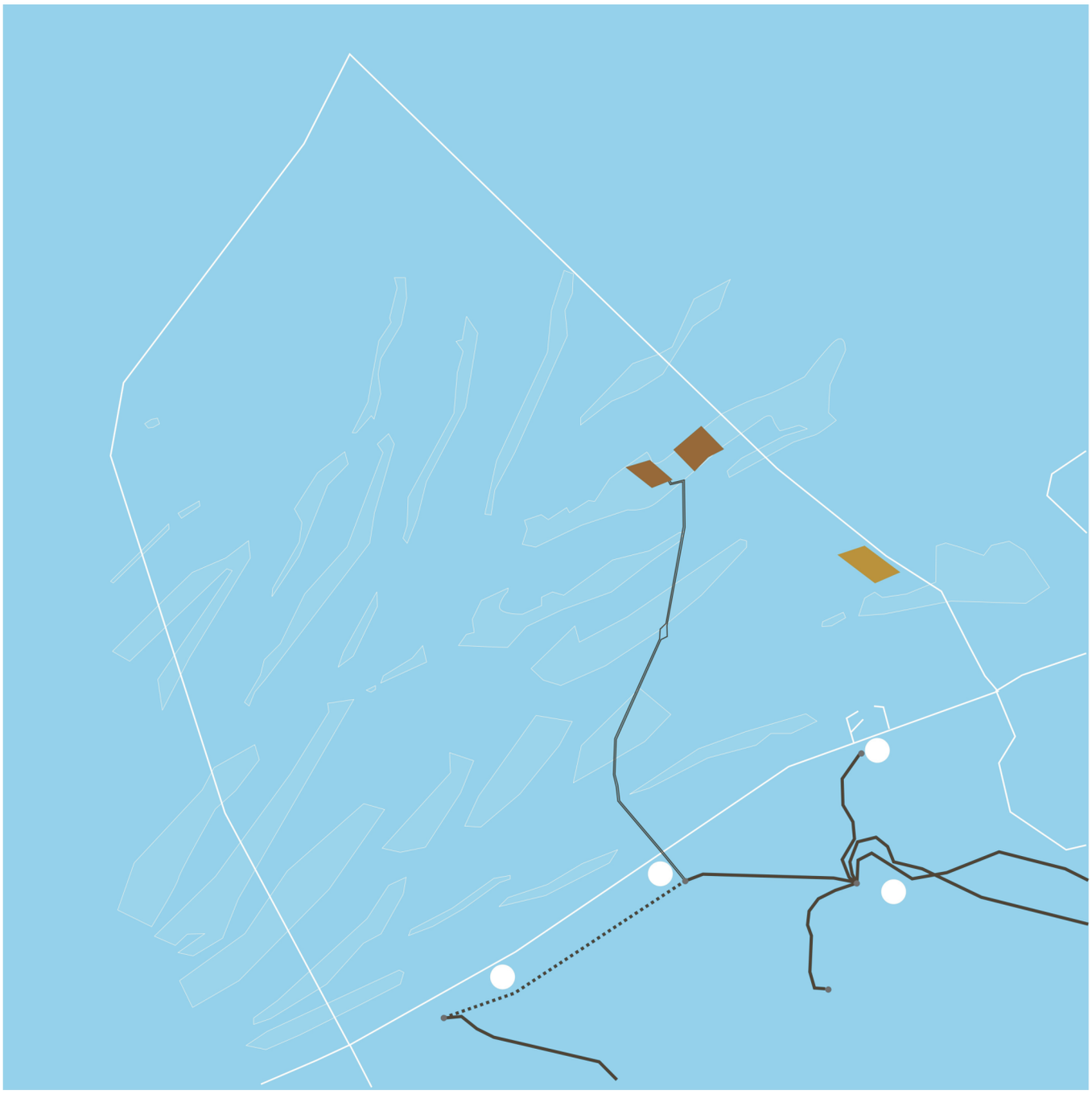
waterways: influx of land borne pollution



Map III.1.2.3j. Aerial disturbance: (future) potential obstacles for birds above the BPNS
(Map: Maritime Institute - Gent University, based on information from Chapter II.3 of this report)

area with (planned) wind parks

abstraction of the 'Atlantic Wall'
(urbanized coastal area as possible obstacle)



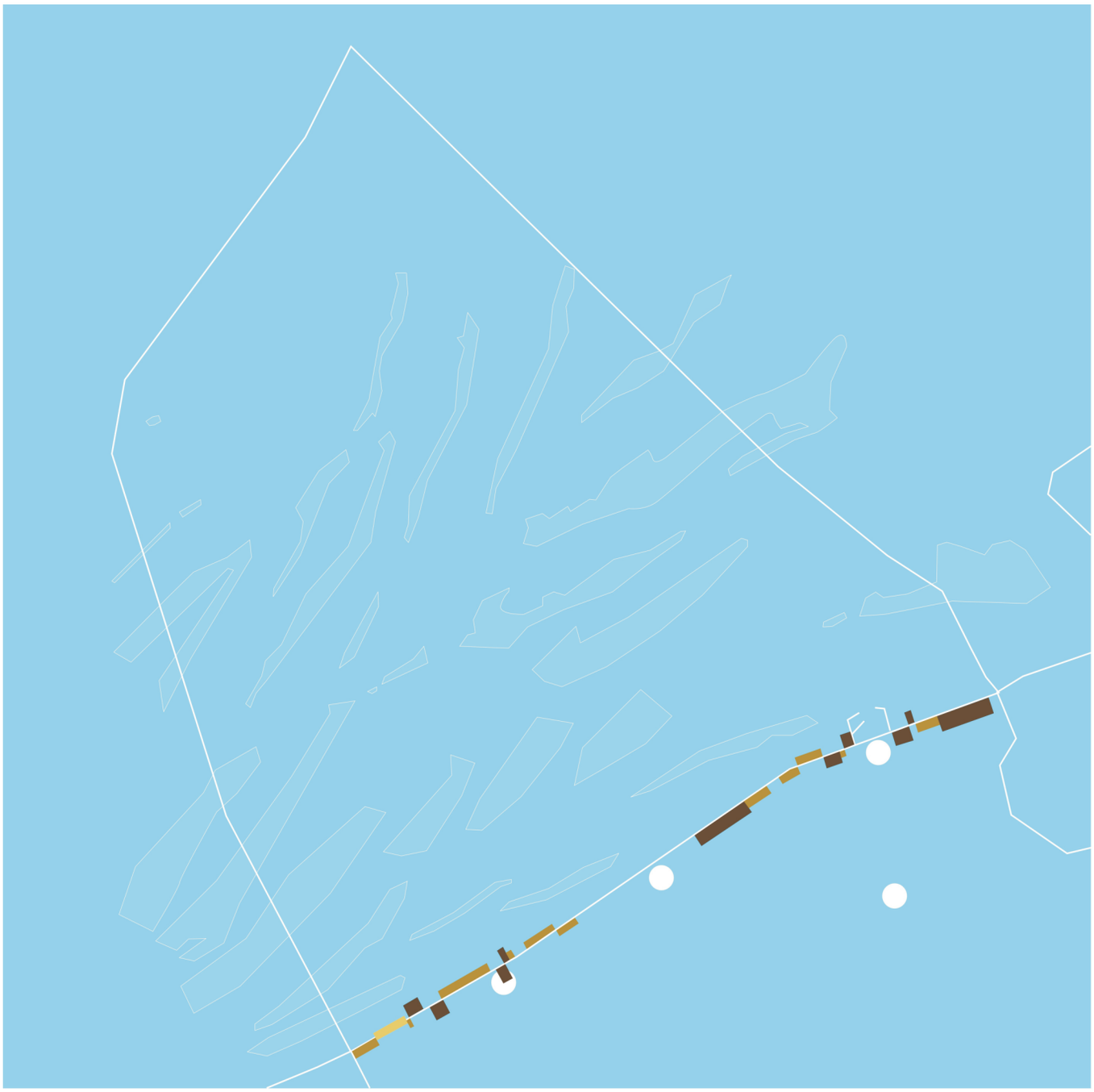
Map III.1.2.4a. Planned wind turbine parks in the BPNS
(Original data source: C-Power nv / TV Electrabel - Ondernemingen Jan de Nul (Project Seanergy);
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

planned wind turbine park
Electrabel - Jan de Nul I (license suspended)

planned wind turbine park (+ electricity cable)
C-Power II

high-voltage cable on land

planned high-voltage cable
on land



Map III.1.2.4b. Coastal defense in the BPNS: evolution of the coastline
(Map: Maritime Institute - Gent University adapted from Belpaeme & Konings (eds.) (2004) The Coastal Atlas Flanders-Belgium. Coordination Center for ICZM, Oostende, Belgium)

local erosion

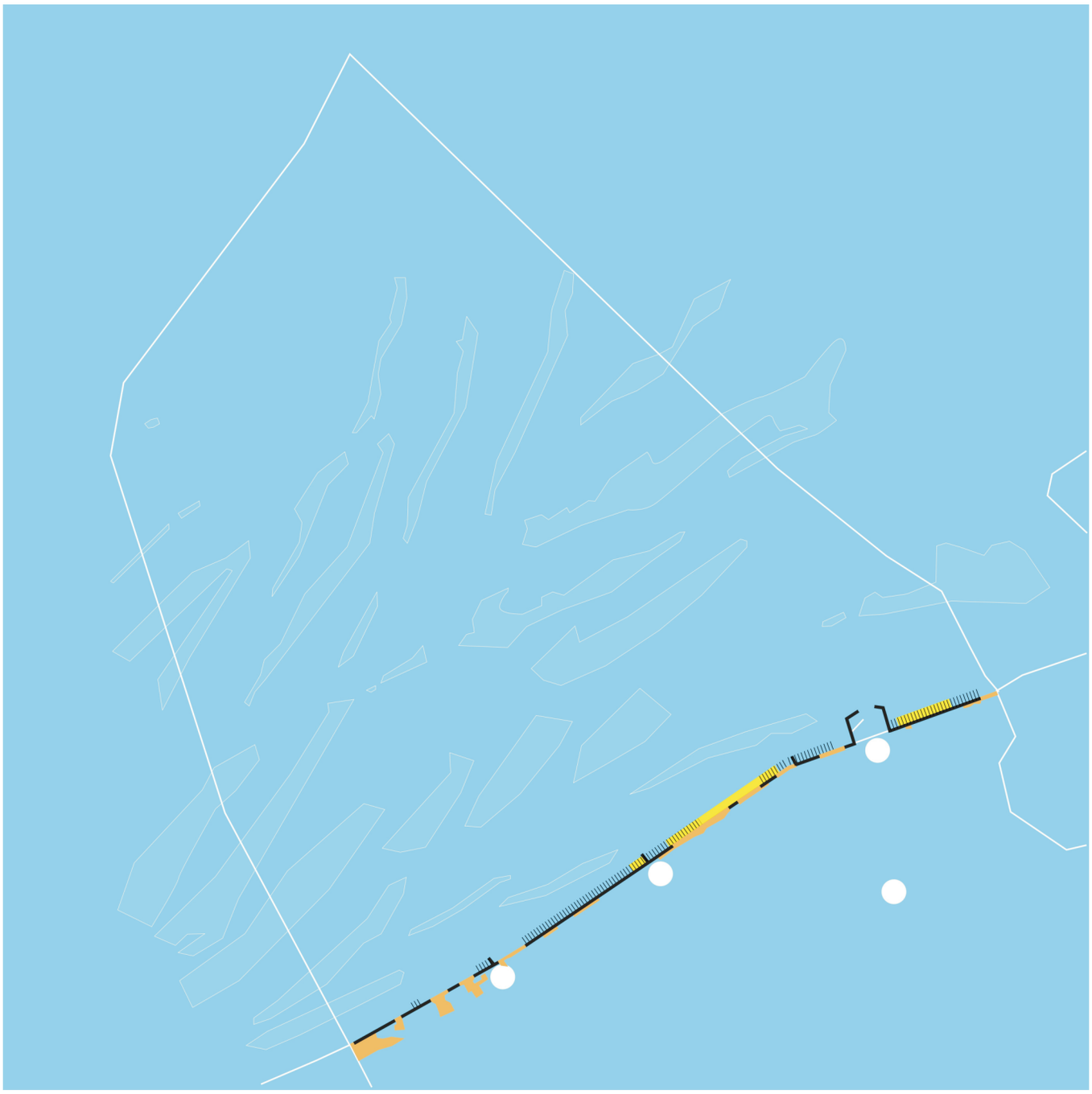
general erosion

local sedimentation

general sedimentation

stable

generally stable



Map III.1.2.4c. Coastal defense in the BPNS
(Original data source: Anoniem, 1998. Kustlijnkaarten. Evolutie tot mei 1999. Deel1: Franse grens tot Oostende en deel 2: Oostende tot Cadzand, door de N.V. Eurosense in opdracht van AWZ afdeling Waterwegen Kust. Ministerie van de Vlaamse Gemeenschap; Data analysis: RCMG - Gent University;
Map: Maritime Institute - Gent University, adapted from RCMG - Gent University)

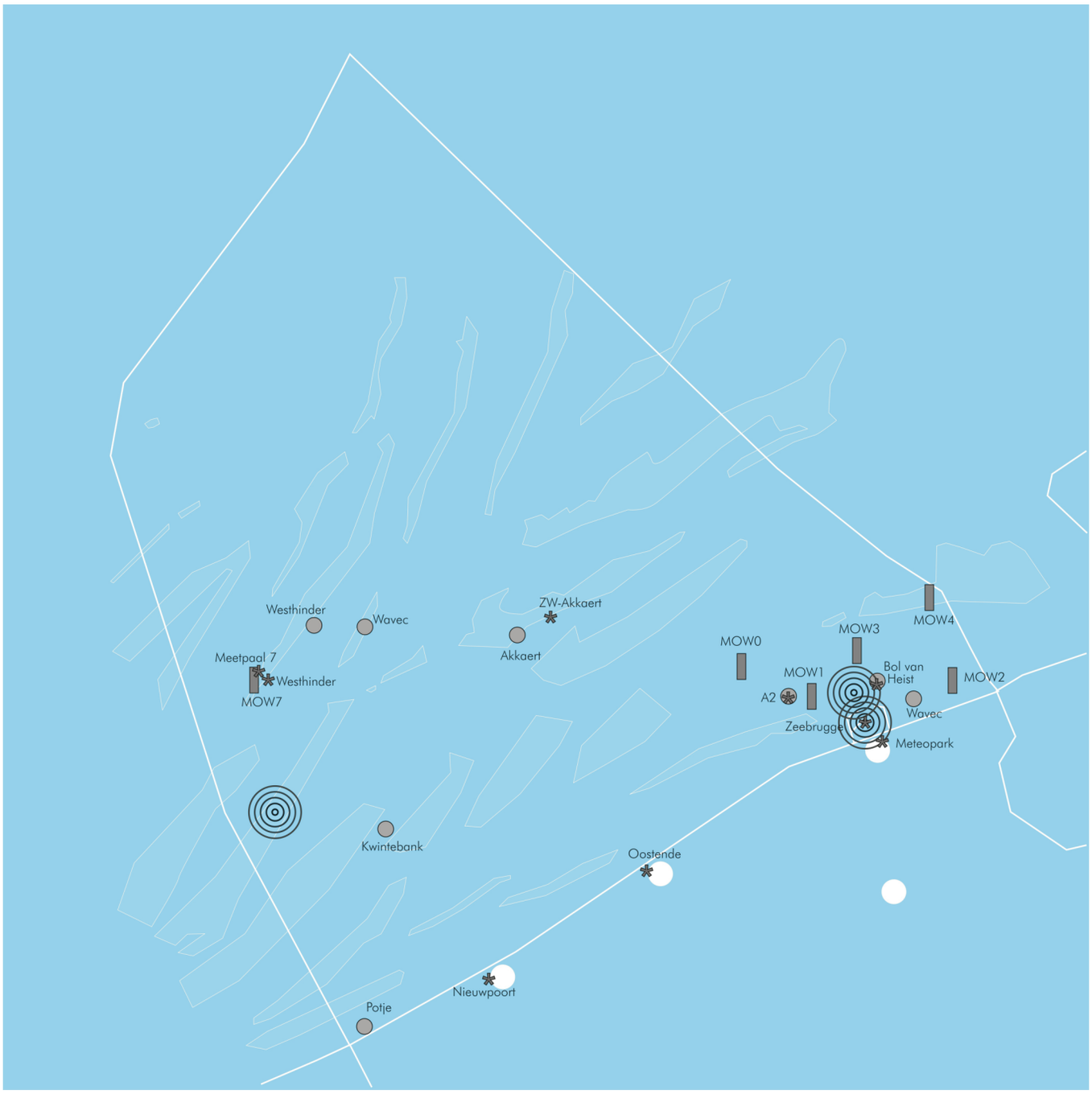
soft coastal defense
(large amounts of sand)

dunes

breakwaters

embankment

port constructions
(jetty, pier,...)



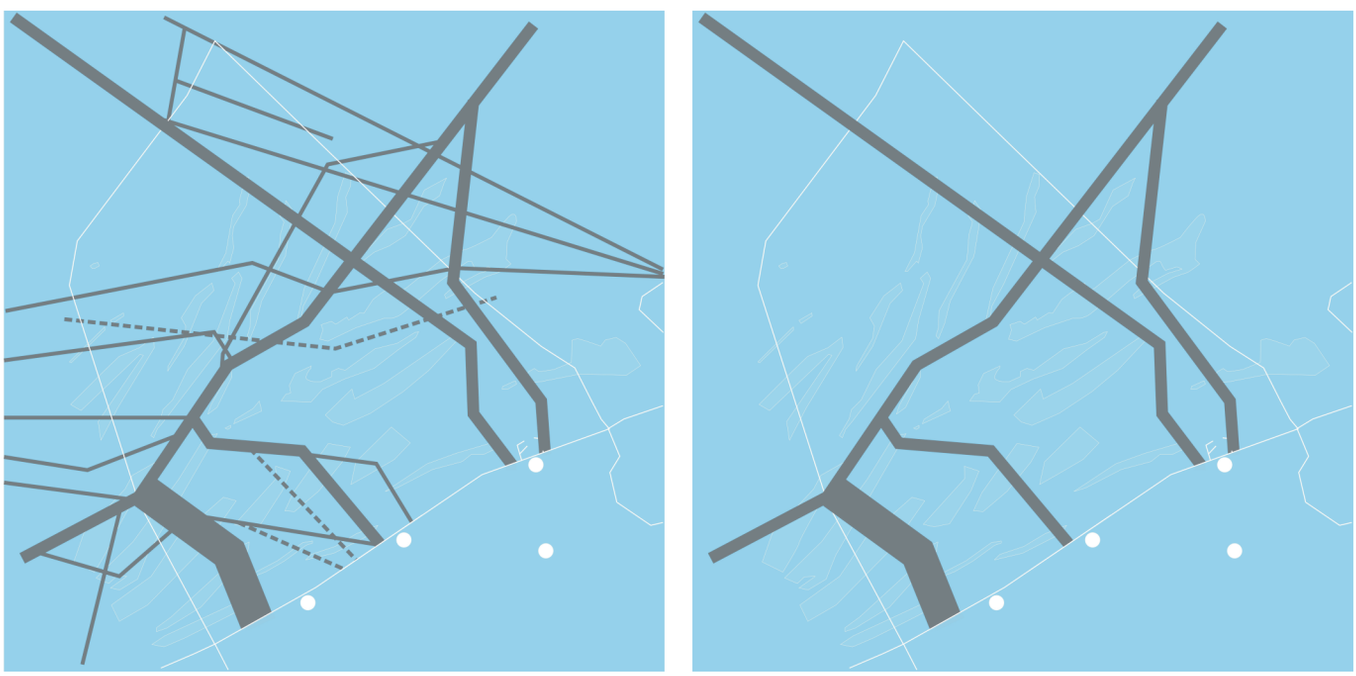
Map III.1.2.4d. Radar, survey and monitoring infrastructure in the BPNS
(Original data source: Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office & Hydrometeo, "Overview of positions (WGS84) weather masts and radar mast Oost Dyck on nautical maps";
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

survey platform

Wavec / Waverider

survey point

radar mast

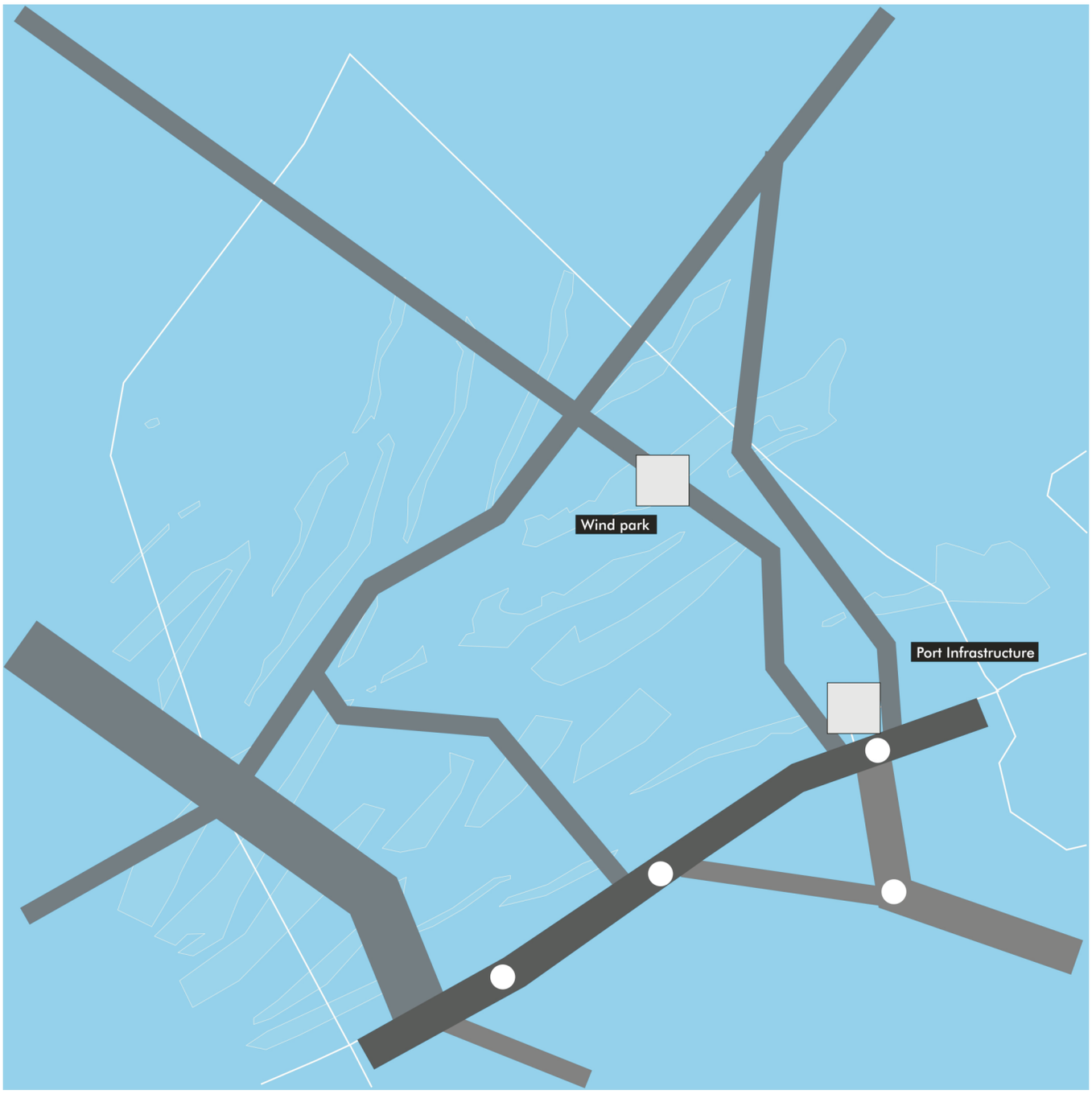


Map III.1.2.4e. Cables and pipelines in the BPNS: all cables and pipelines (left) and the main bundles (right)
(Original data source: Federal Public Service Economy, SMEs, Self-employed and Energy / Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Marine Affairs Administration, Division Coast, Hydrographic Office;
Data analysis: RCMG - Gent University;
Map: Maritime Institute - Gent University adapted from RCMG - Gent University)

bundles of cables and pipelines

solitary cables

cables in disuse

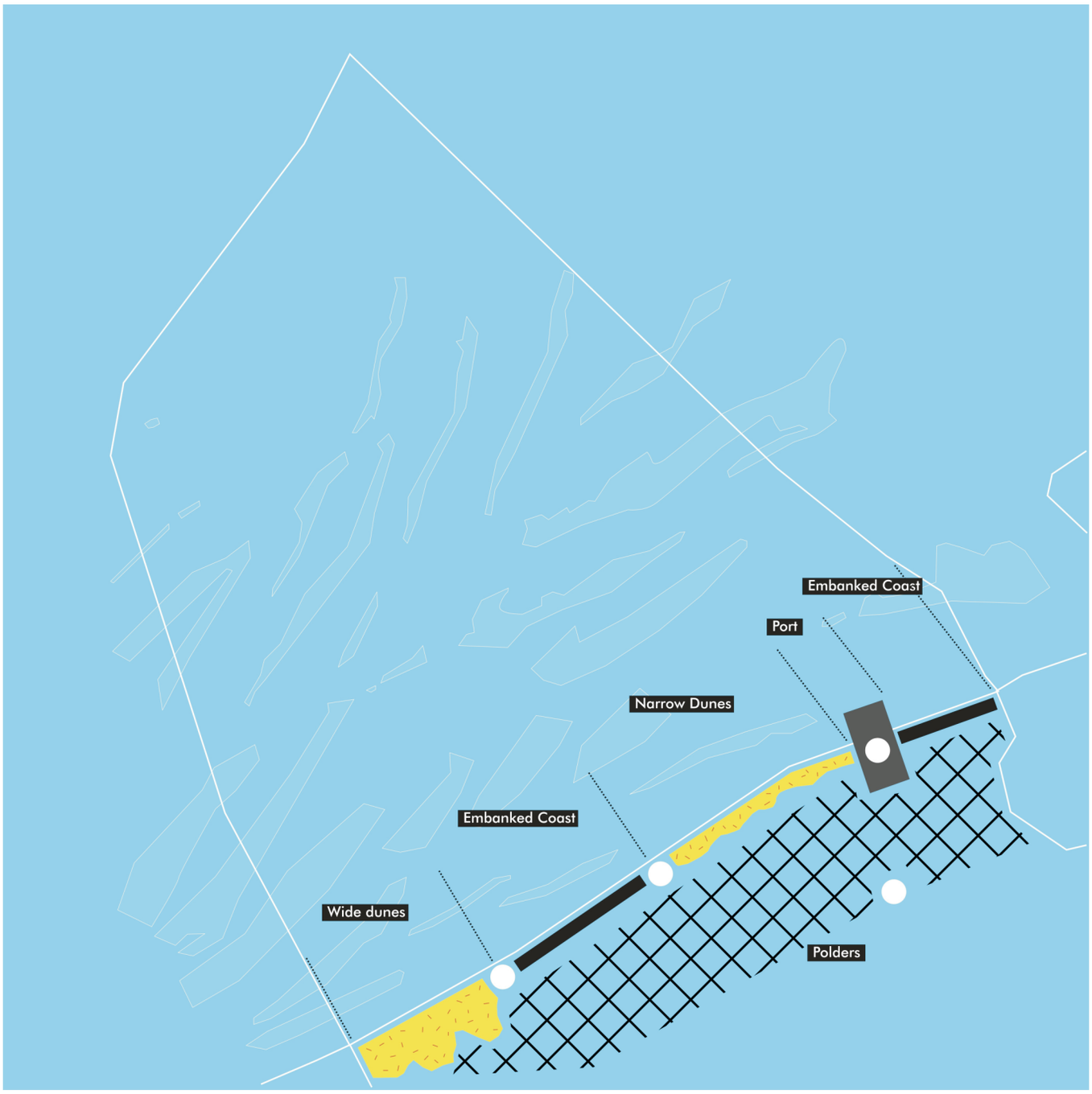


Map III.1.2.4f. Existing spatial structure: fixed infrastructure in the BPNS
(Structure map: Maritime Institute - Gent University)

bundles of cables
and pipelines

the coastal strip:
urbanisation (tramway, roads) parallel to the
coastline and coastal defense

(planned) wind turbine park



Map III.1.2.5a. Existing spatial structure of the Belgian coastal strip
(Structure map: Maritime Institute - Gent University)

hard coastal defense zone

dune zone

port zone

polders

Figure III.1.4.1a. Demand for space in the BPNS, based on legislation and on the condition that all space would be both available and suitable (abstract and simplified scheme)
(Maritime Institute - Gent University)

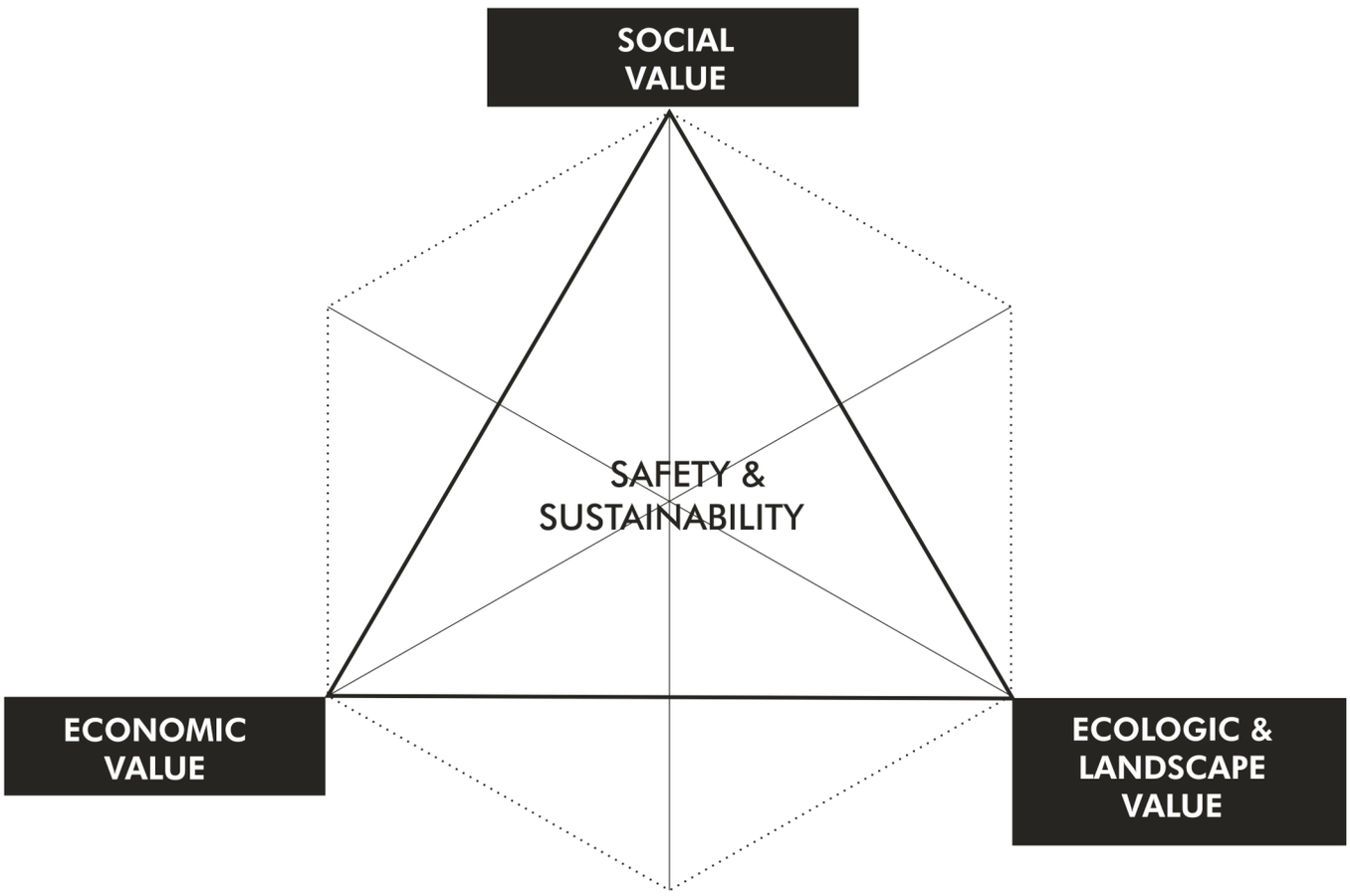


Figure III.1.4.2a. Developing scenarios based on the three core values and relation with the values of safety and sustainability
(Maritime Institute - Gent University)

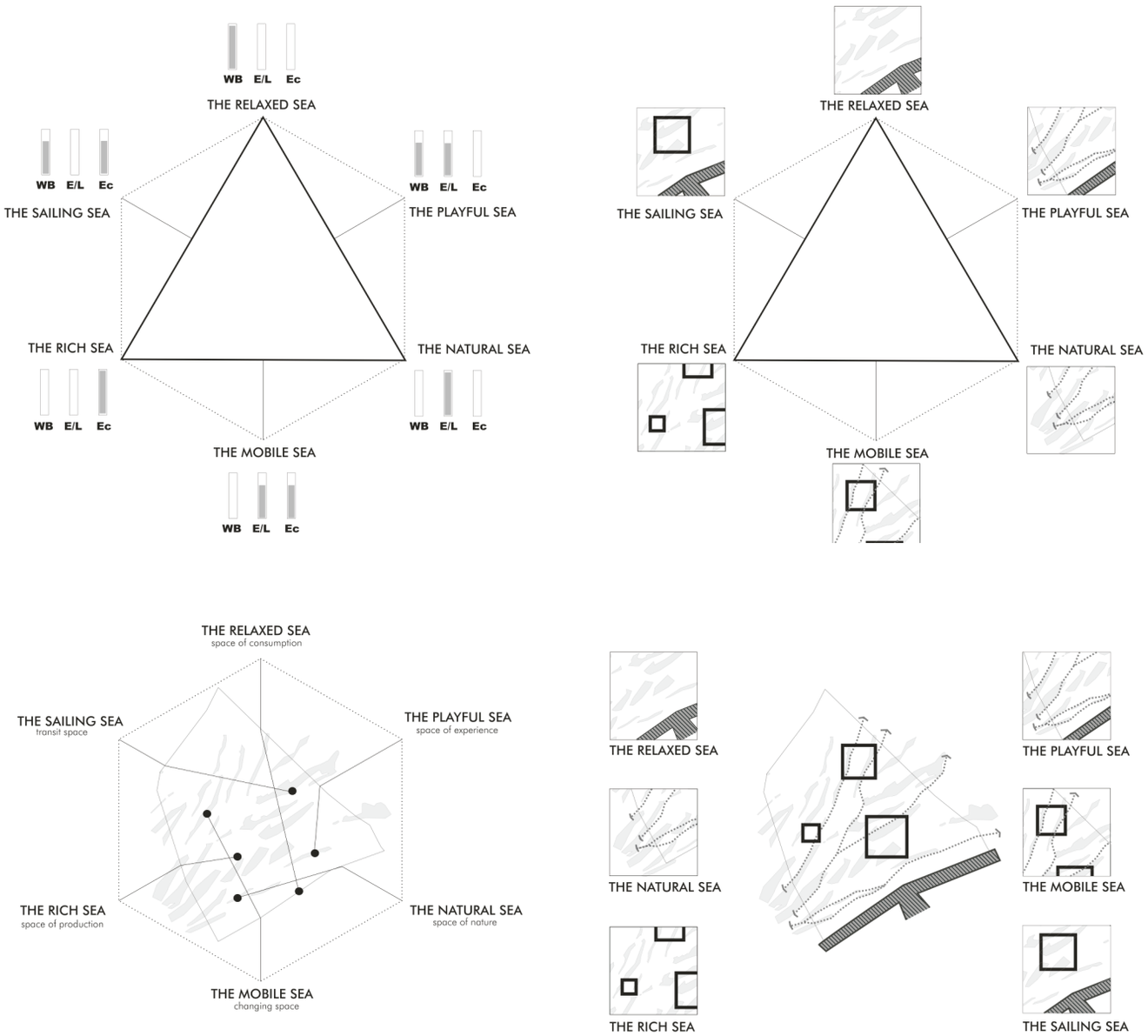


Figure III.1.4.2b. Developing six scenarios for the future of the BPNS
(Maritime Institute - Gent University)

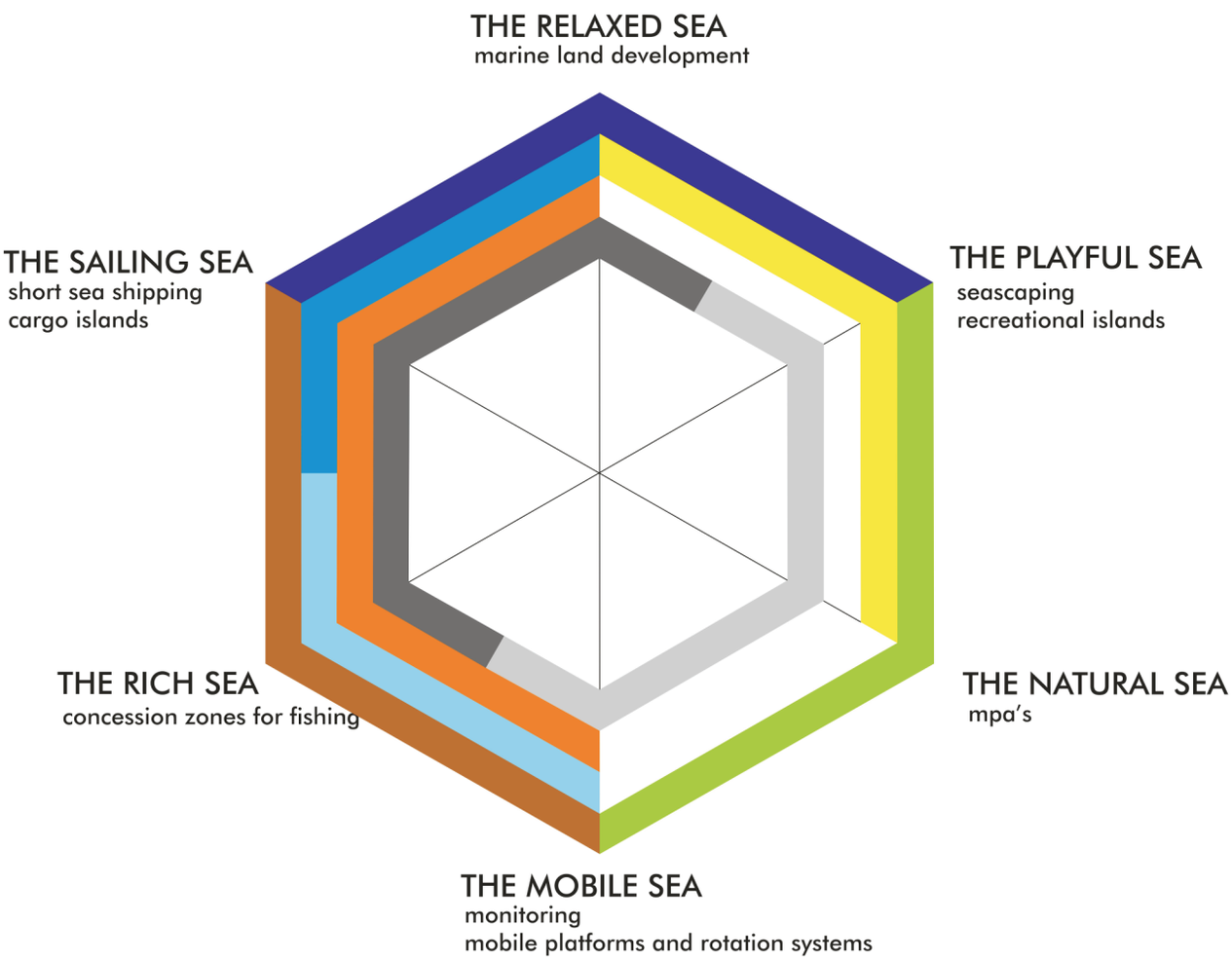
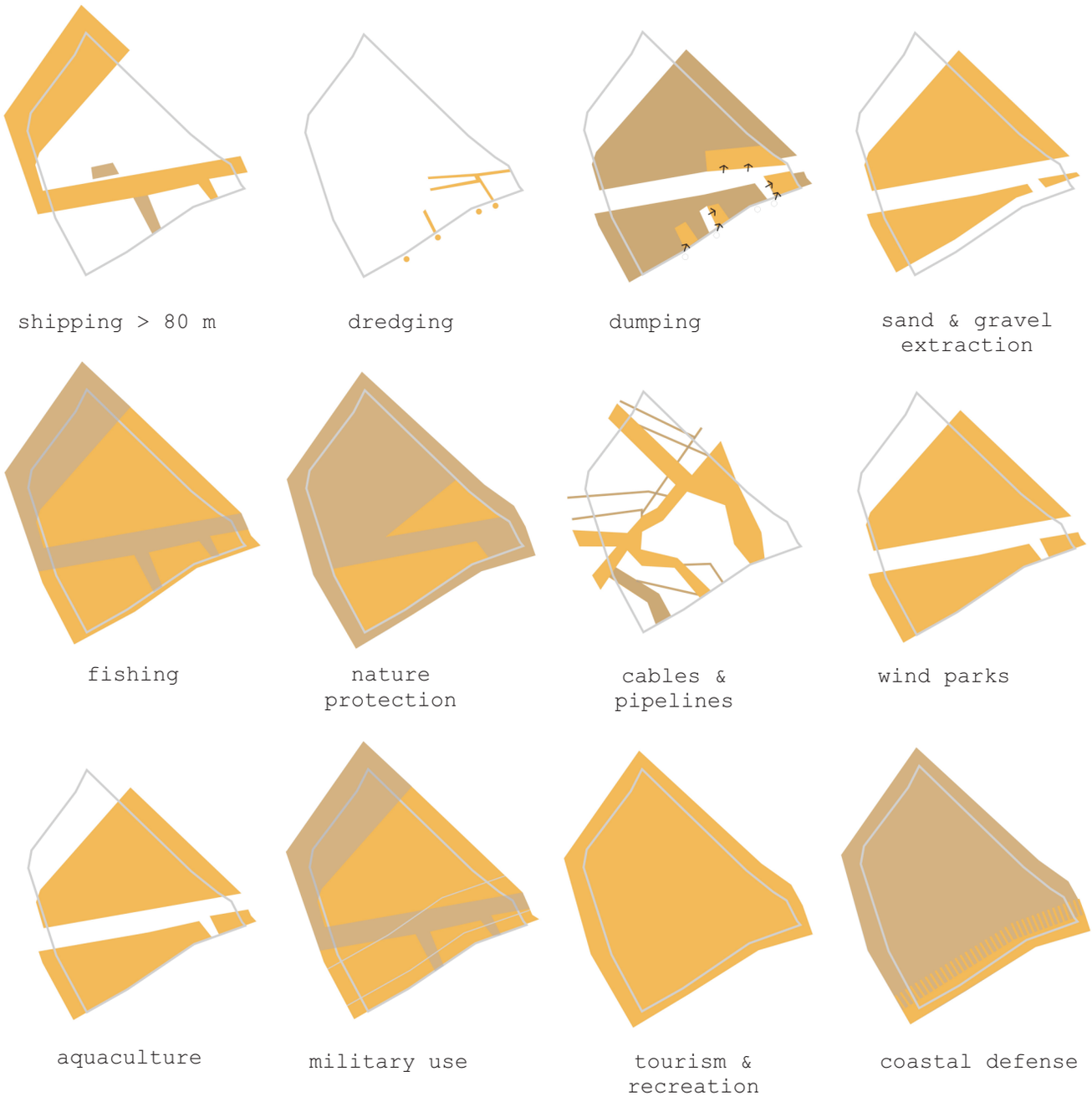


Figure III.1.4.2c. Six scenarios for the future of the BPNS
(Maritime Institute - Gent University)



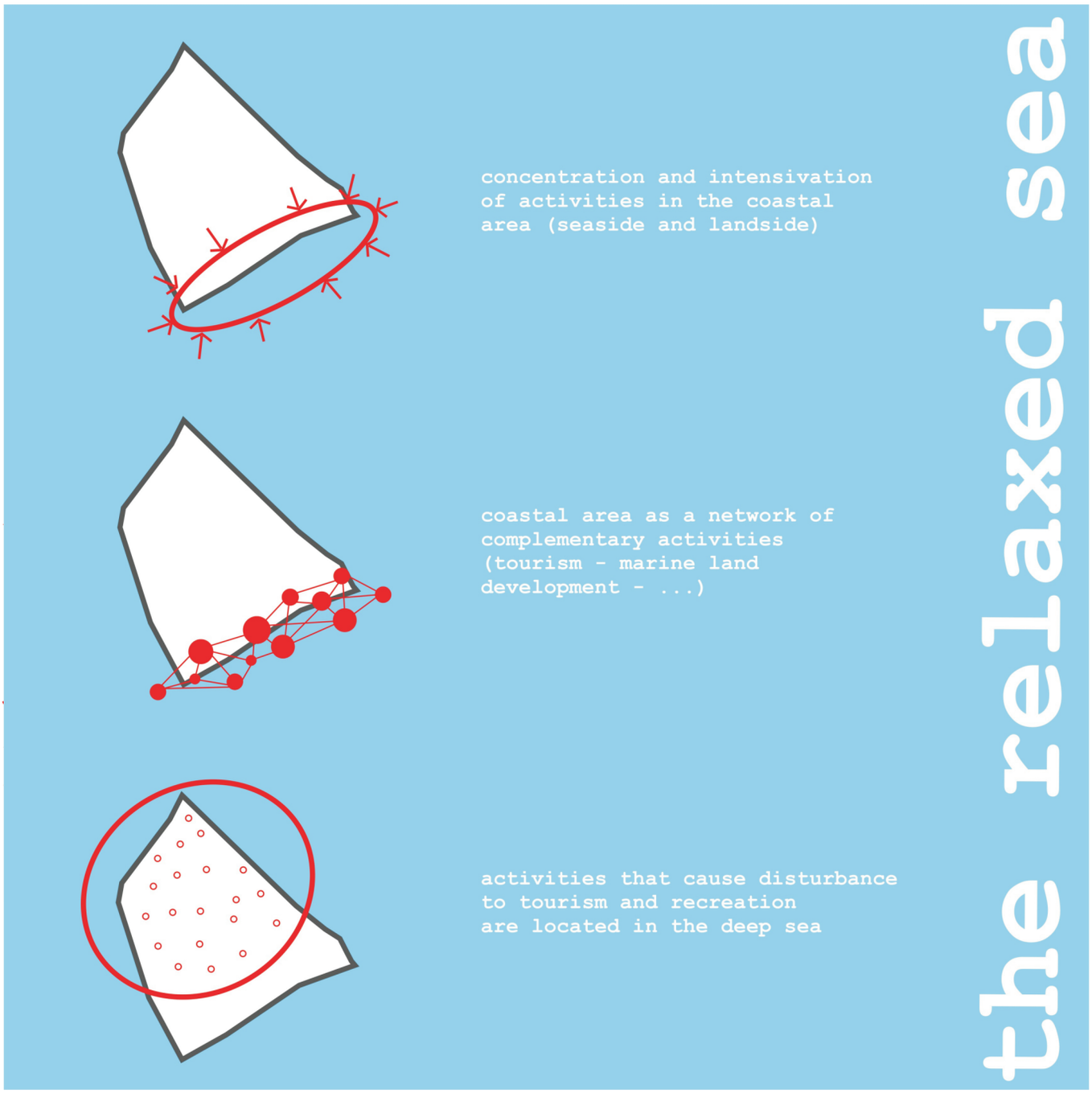
Map III.1.4.2a. General decision rules applicable to the six scenarios
(Maps: Maritime Institute - Gent University)

not allowed or not applicable

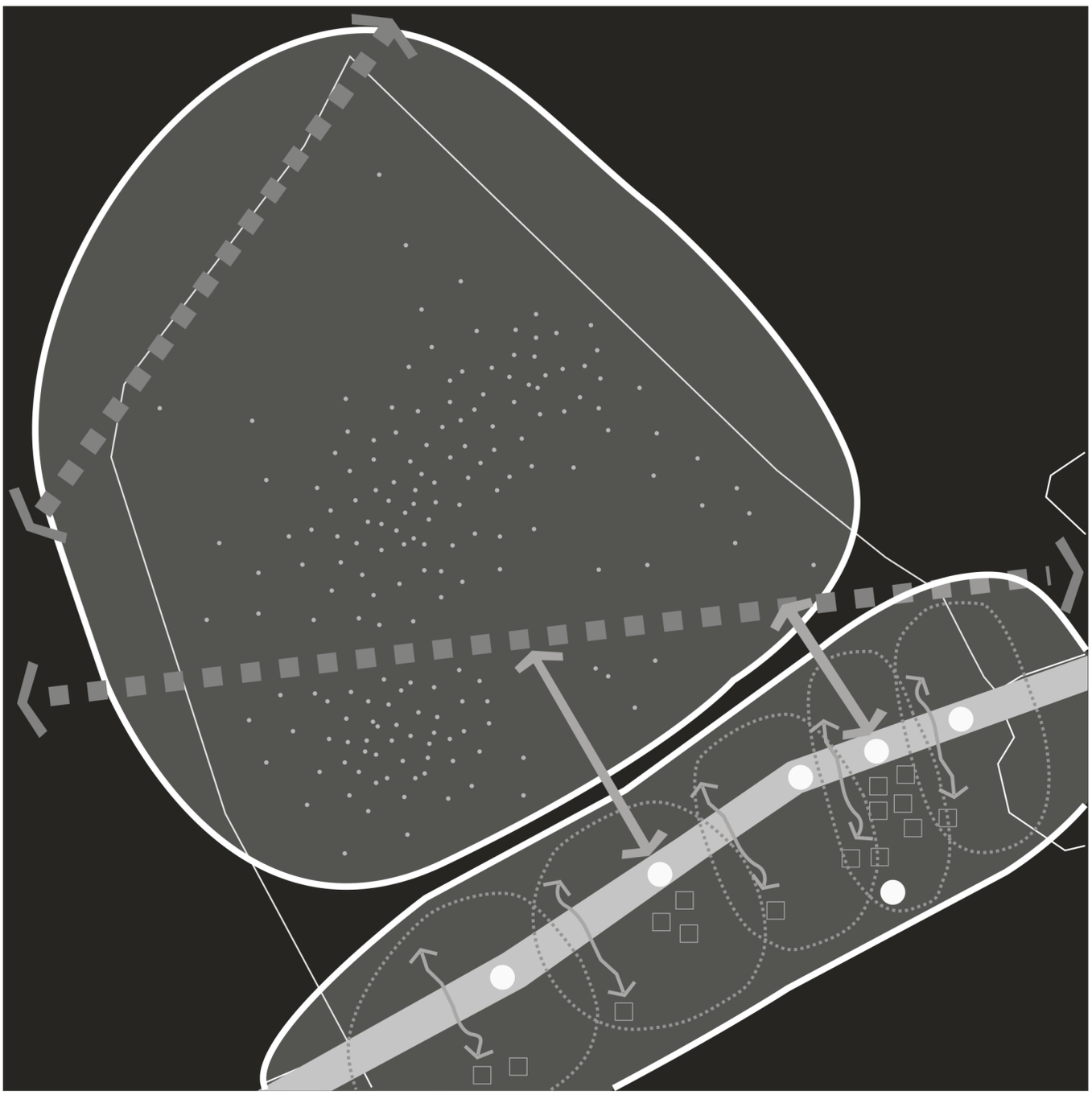
allowed, but with restrictions

allowed or preferred

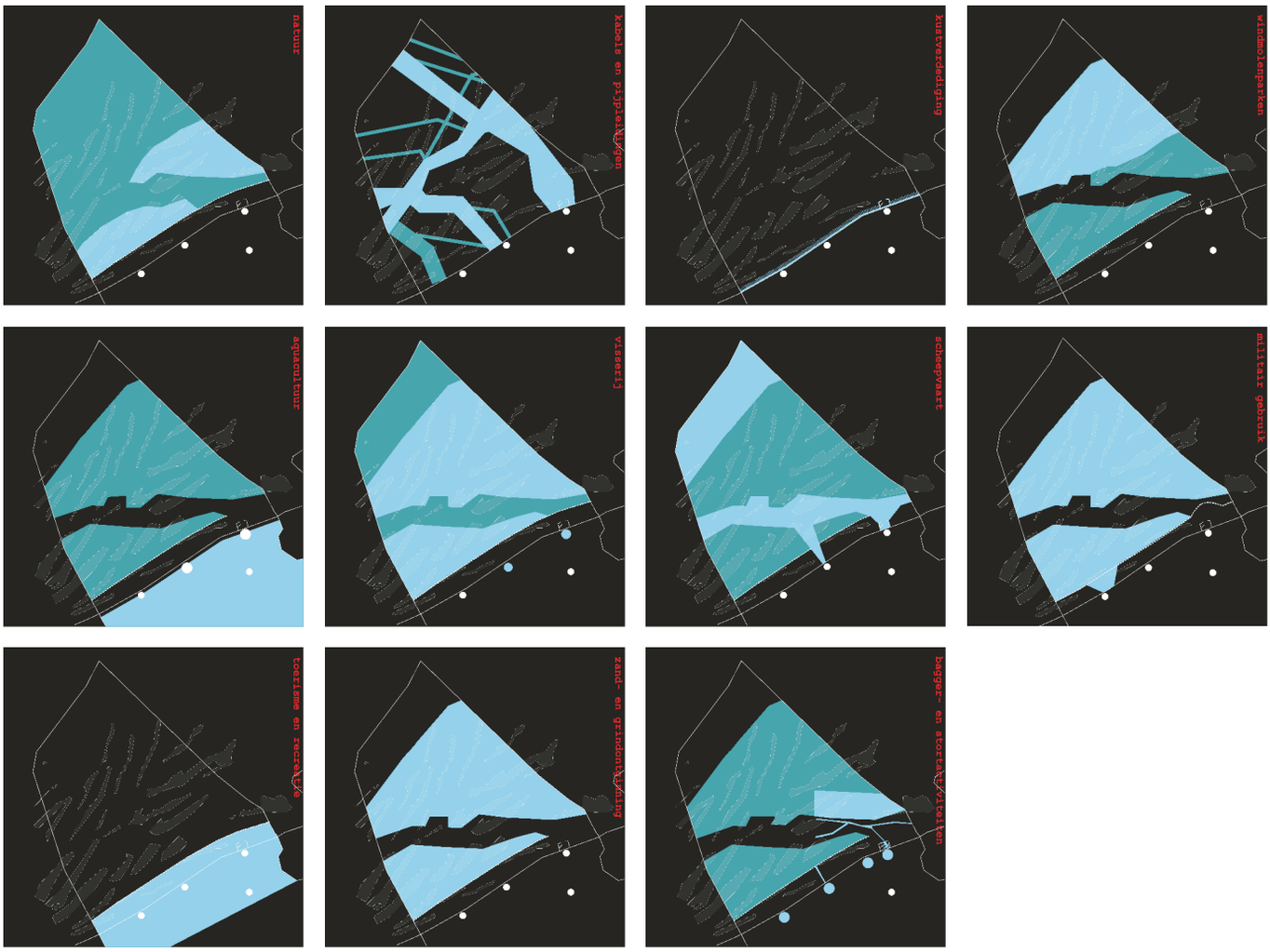
Map III.1.4.2b. Scenario 1: The Relaxed Sea - the broader context
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2c. Scenario 1: The Relaxed Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2d. Scenario 1: The Relaxed Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2e. Scenario 1: The Relaxed Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

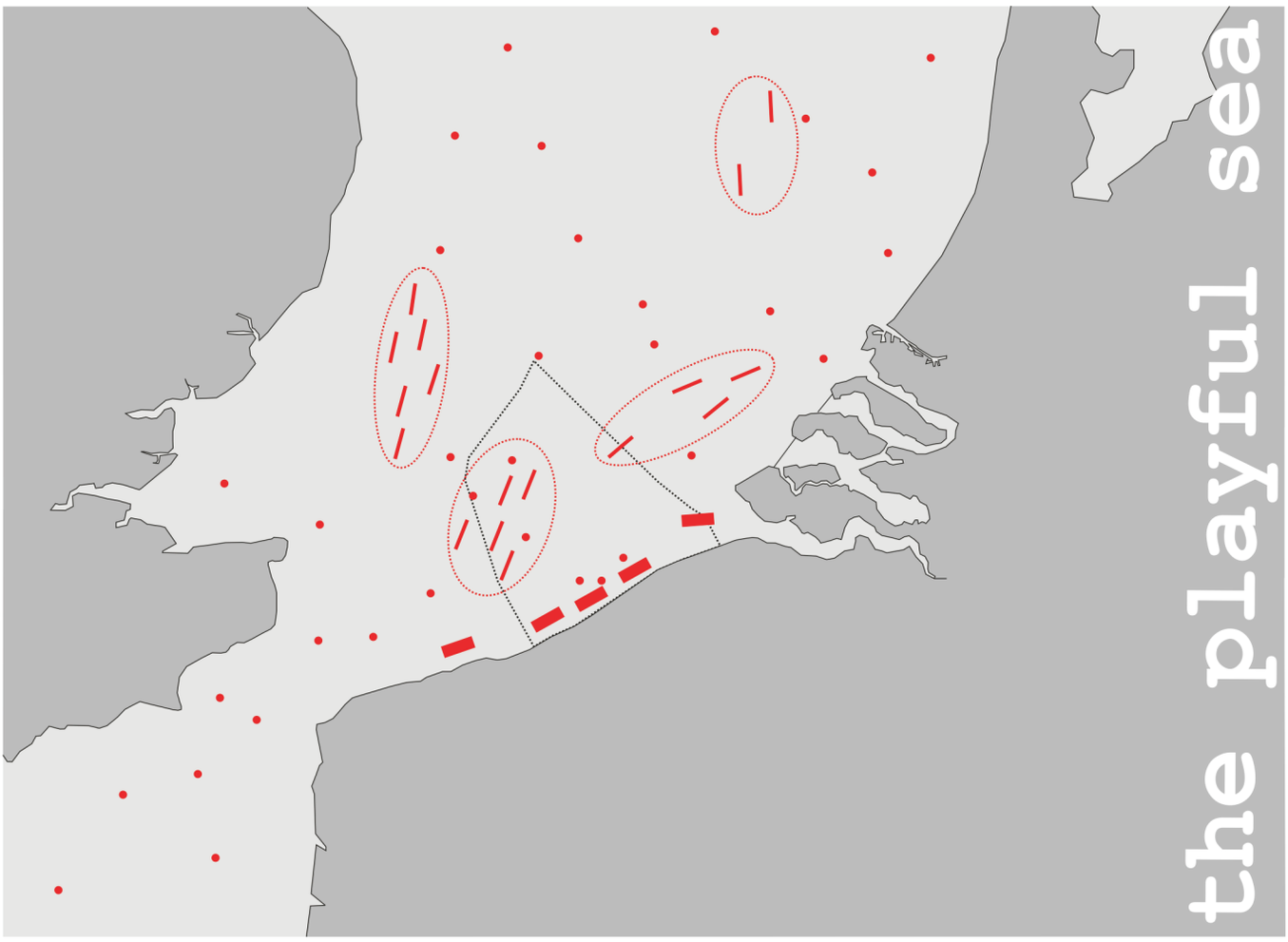
not suitable / not allowed

suitable but with limitations / conditions

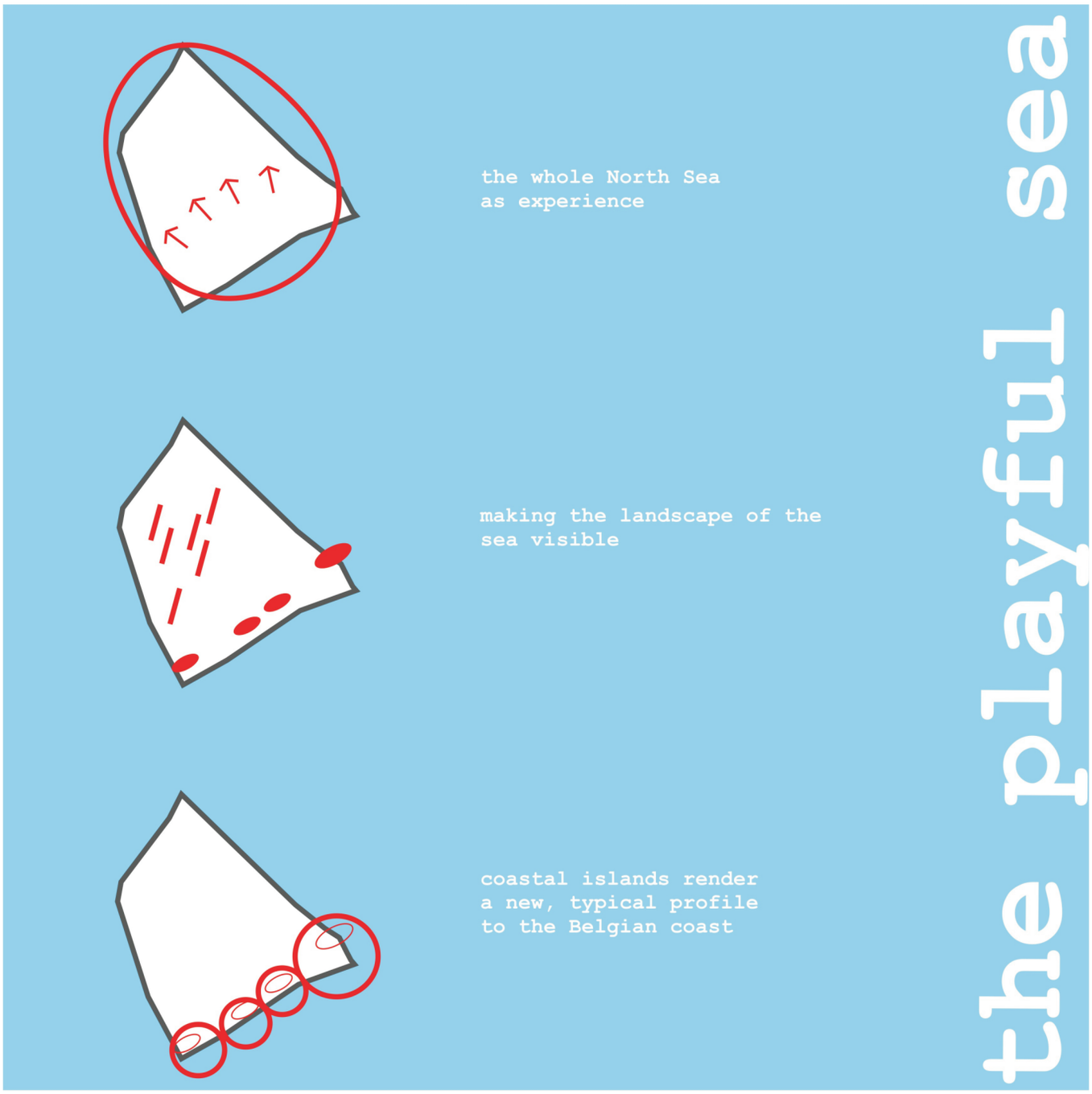
suitable

highly suitable / preferential location
specific action

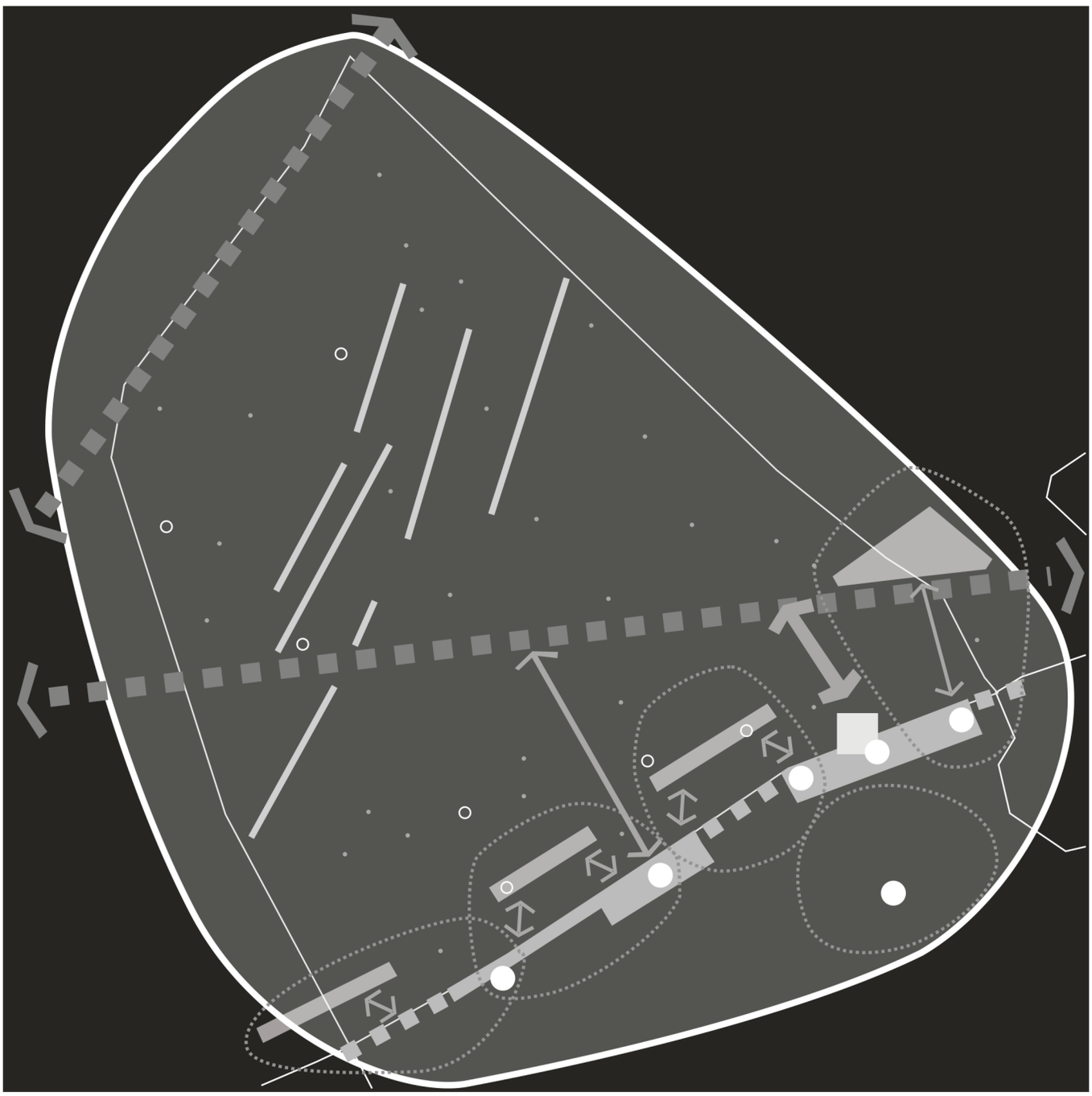
Figure III.1.4.2d. Scenario 1: The Relaxed Sea - atmospheric image
(Maritime Institute - Gent University)



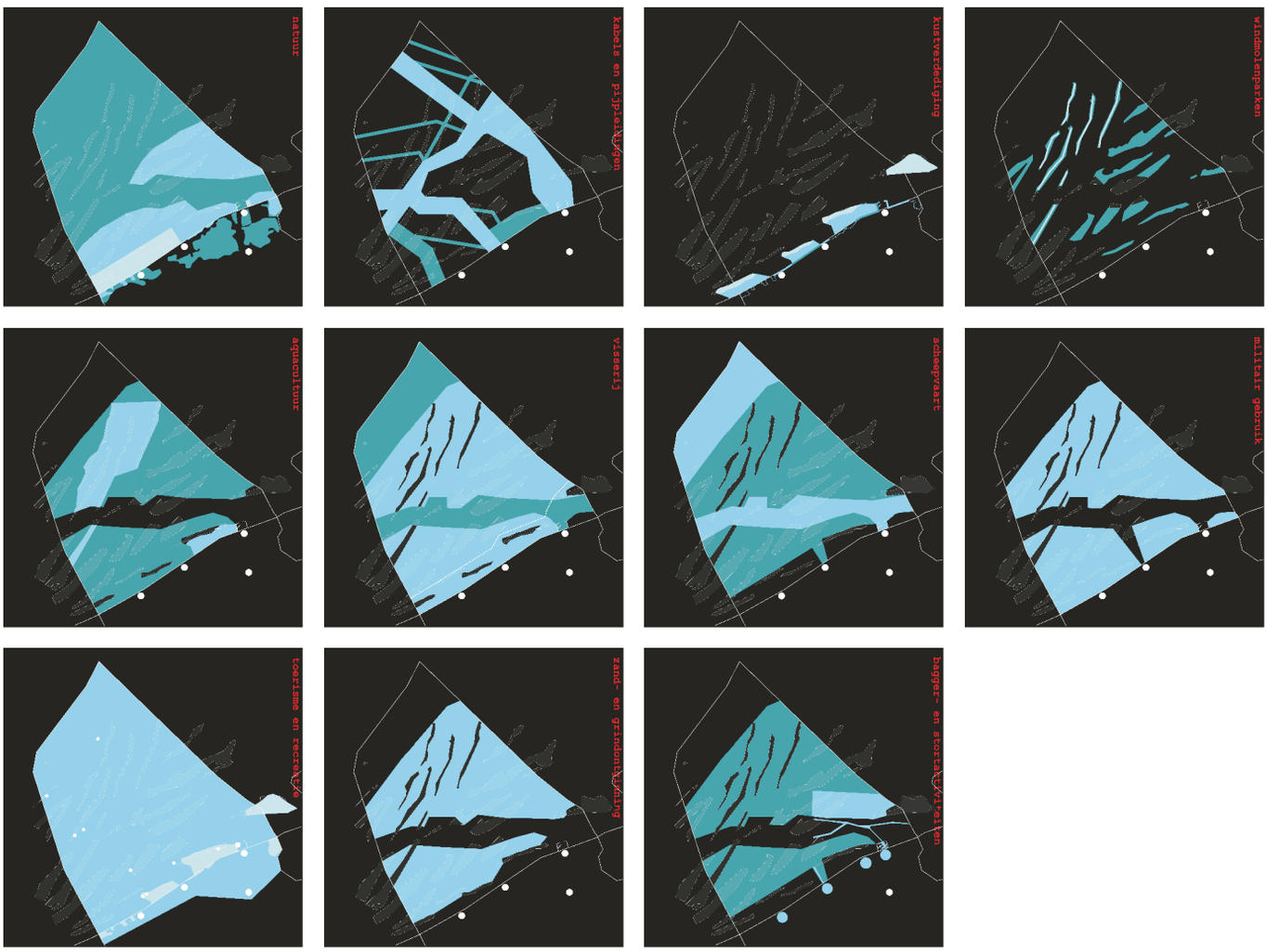
Map III.1.4.2f. Scenario 2: The Playful Sea - the broader context
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2g. Scenario 2: The Playful Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2h. Scenario 2: The Playful Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2i. Scenario 2: The Playful Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

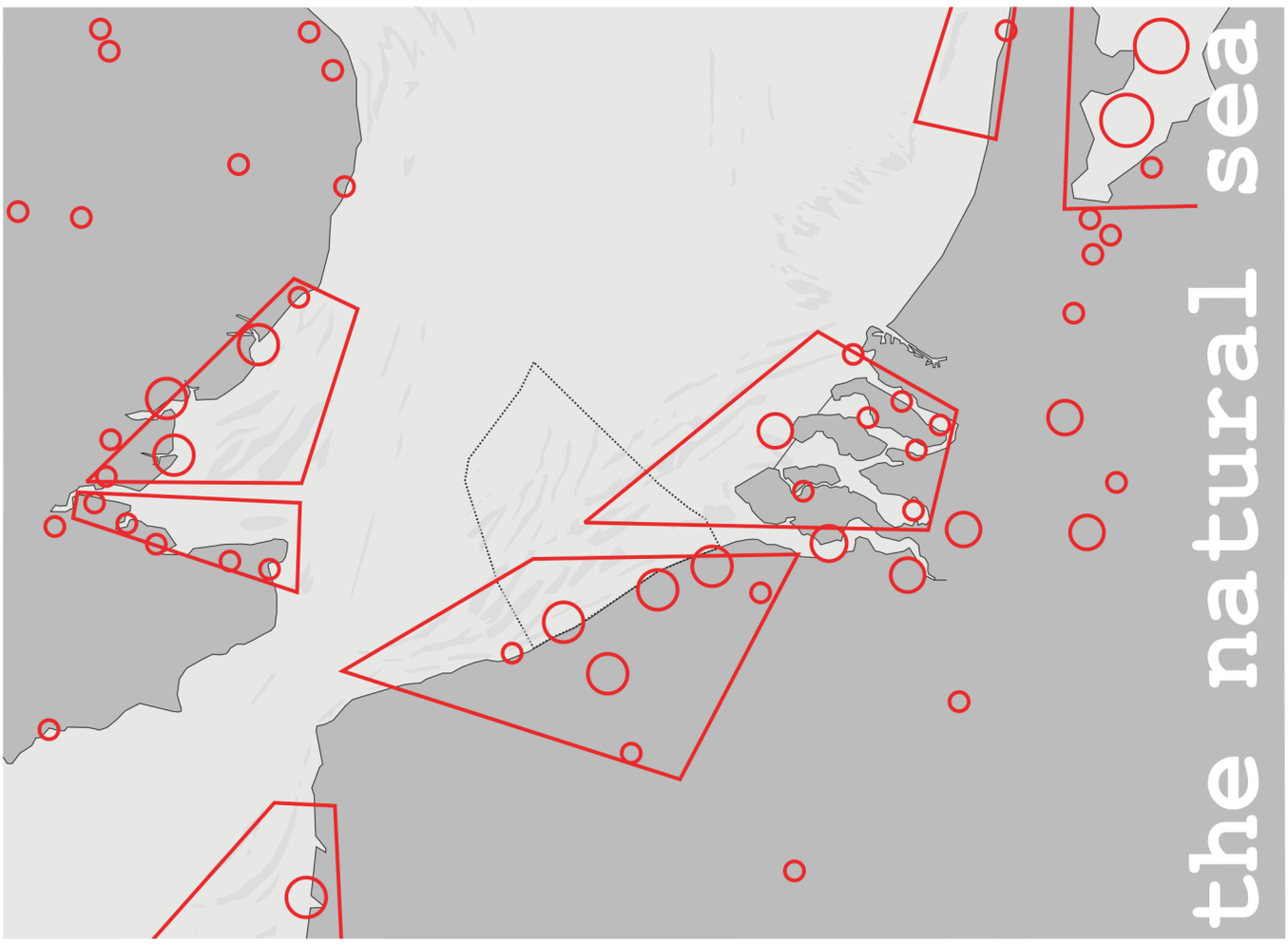
not suitable / not allowed

suitable but with limitations / conditions

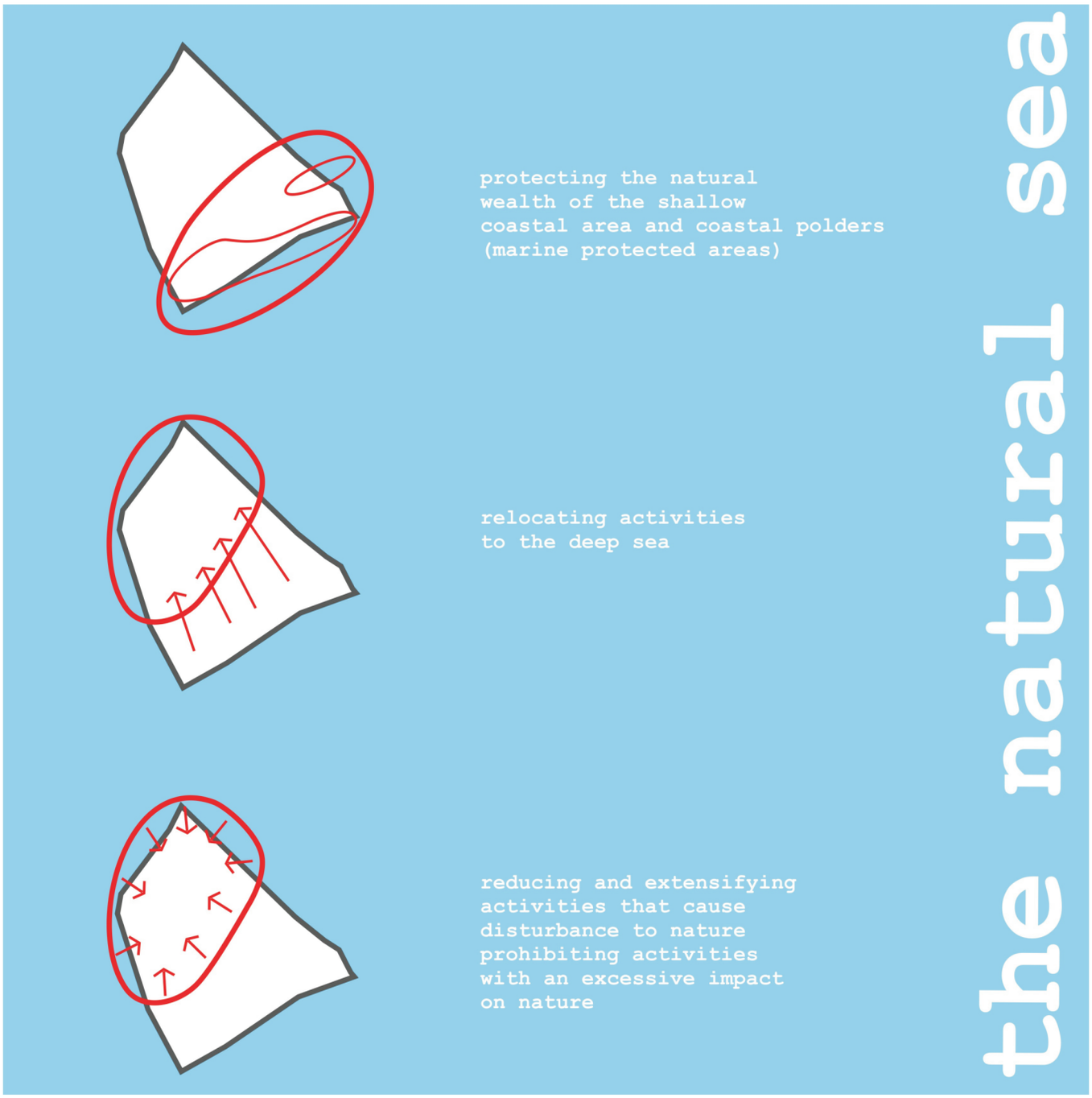
suitable

highly suitable / preferential location
specific action

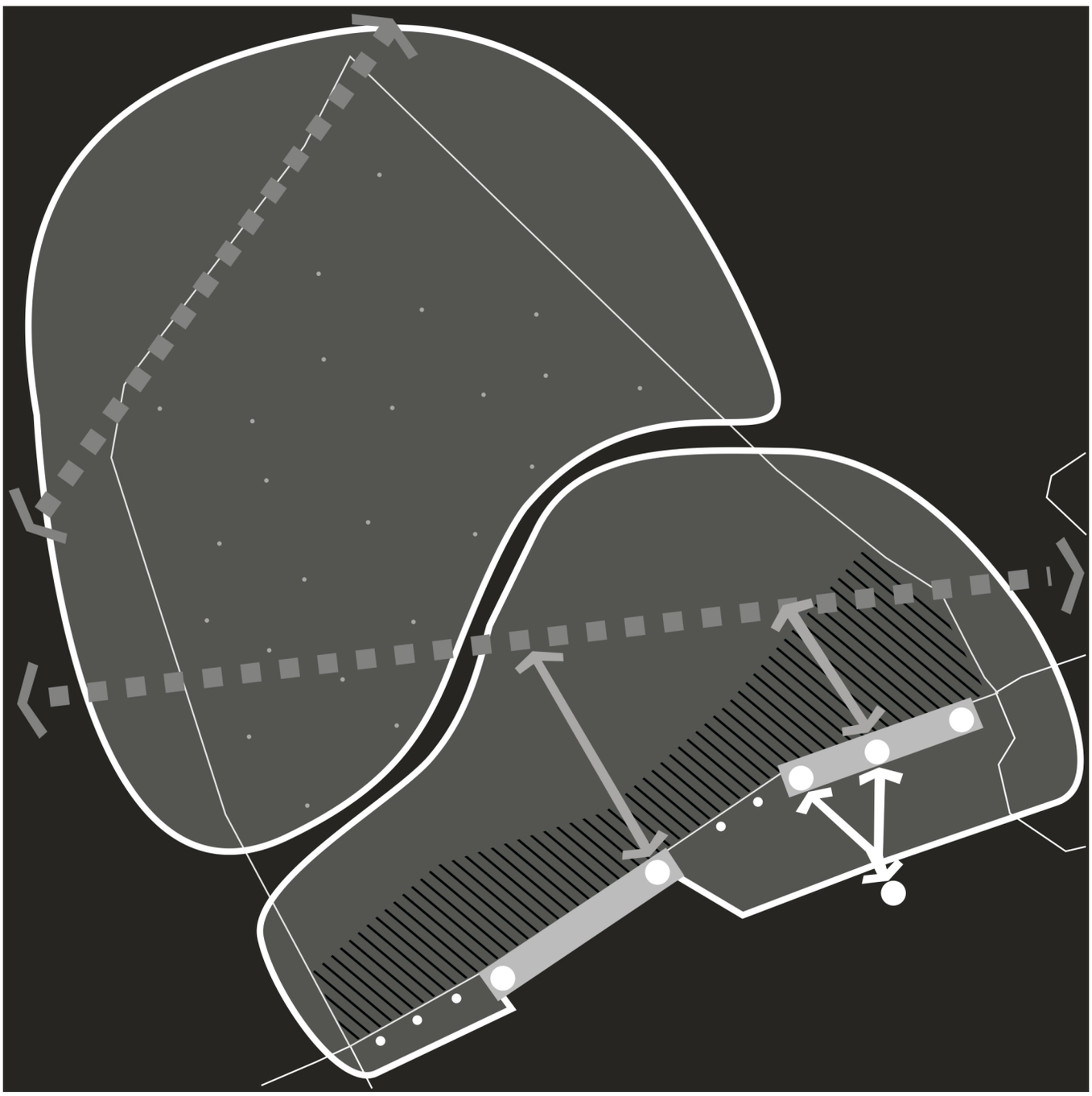
Figure III.1.4.2e. Scenario 2: The Playful Sea - atmospheric image
(Maritime Institute - Gent University)



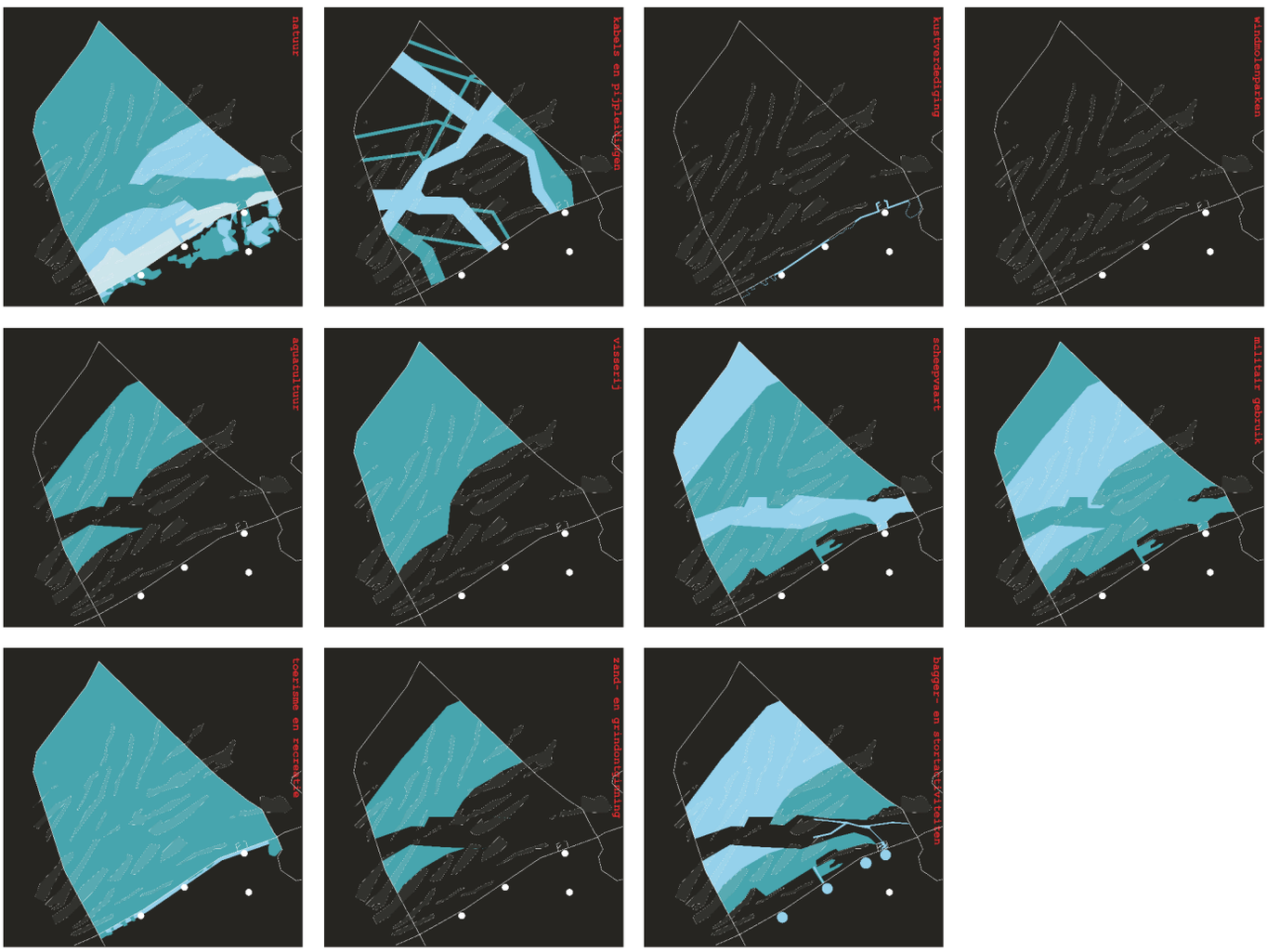
Map III.1.4.2j. Scenario 3: The Natural Sea - the broader context
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2k. Scenario 3: The Natural Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2l. Scenario 3: The Natural Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2m. Scenario 3: The Natural Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

not suitable / not allowed

suitable but with limitations / conditions

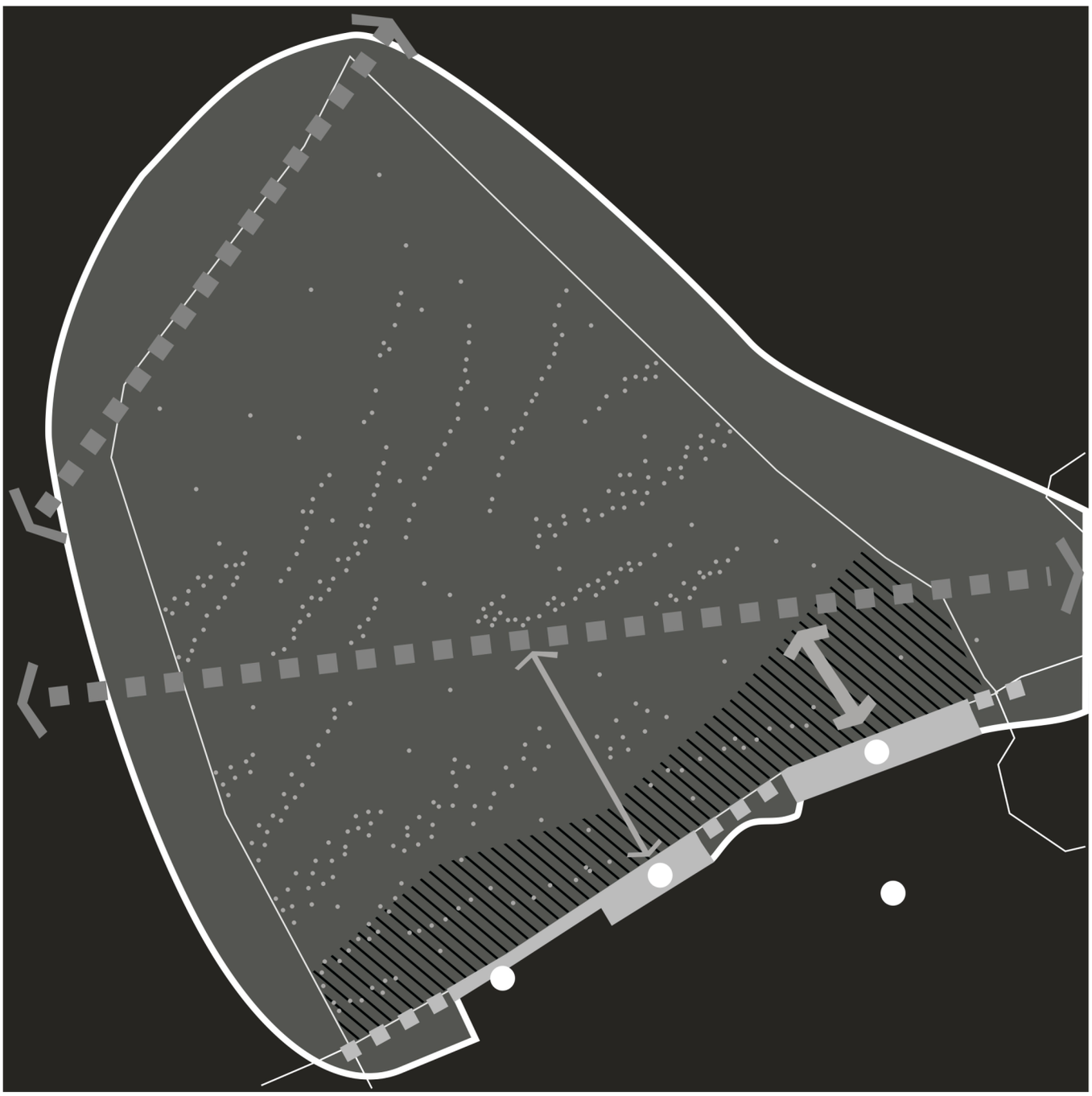
suitable

highly suitable / preferential location
specific action

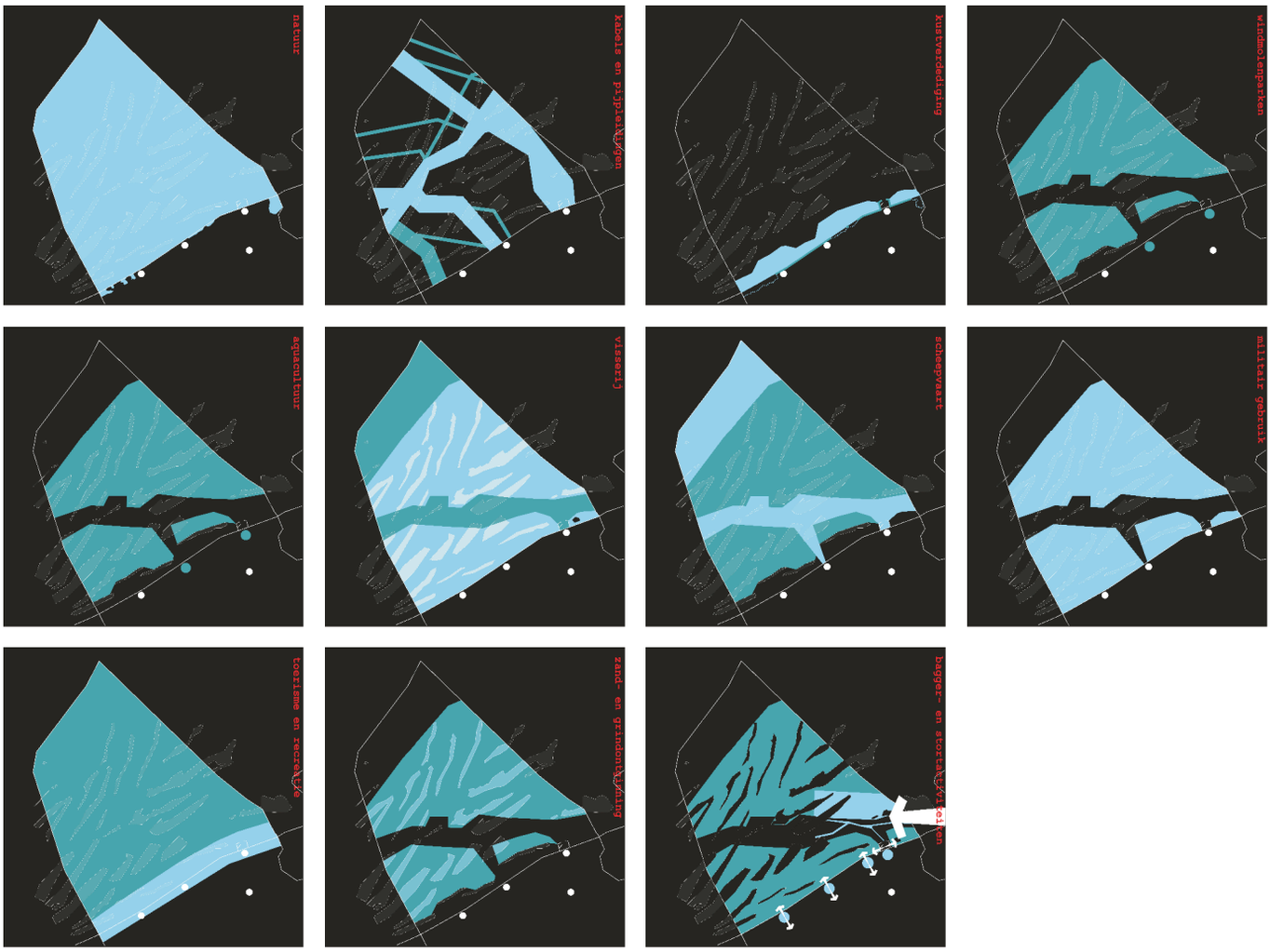
Figure III.1.4.2f. Scenario 3: The Natural Sea - atmospheric image
(Maritime Institute - Gent University)

Map III.1.4.2n. Scenario 4: The Mobile Sea - the broader context
(Structure map: Maritime Institute - Gent University)

Map III.1.4.2o. Scenario 4: The Mobile Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2p. Scenario 4: The Mobile Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2q. Scenario 4: The Mobile Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

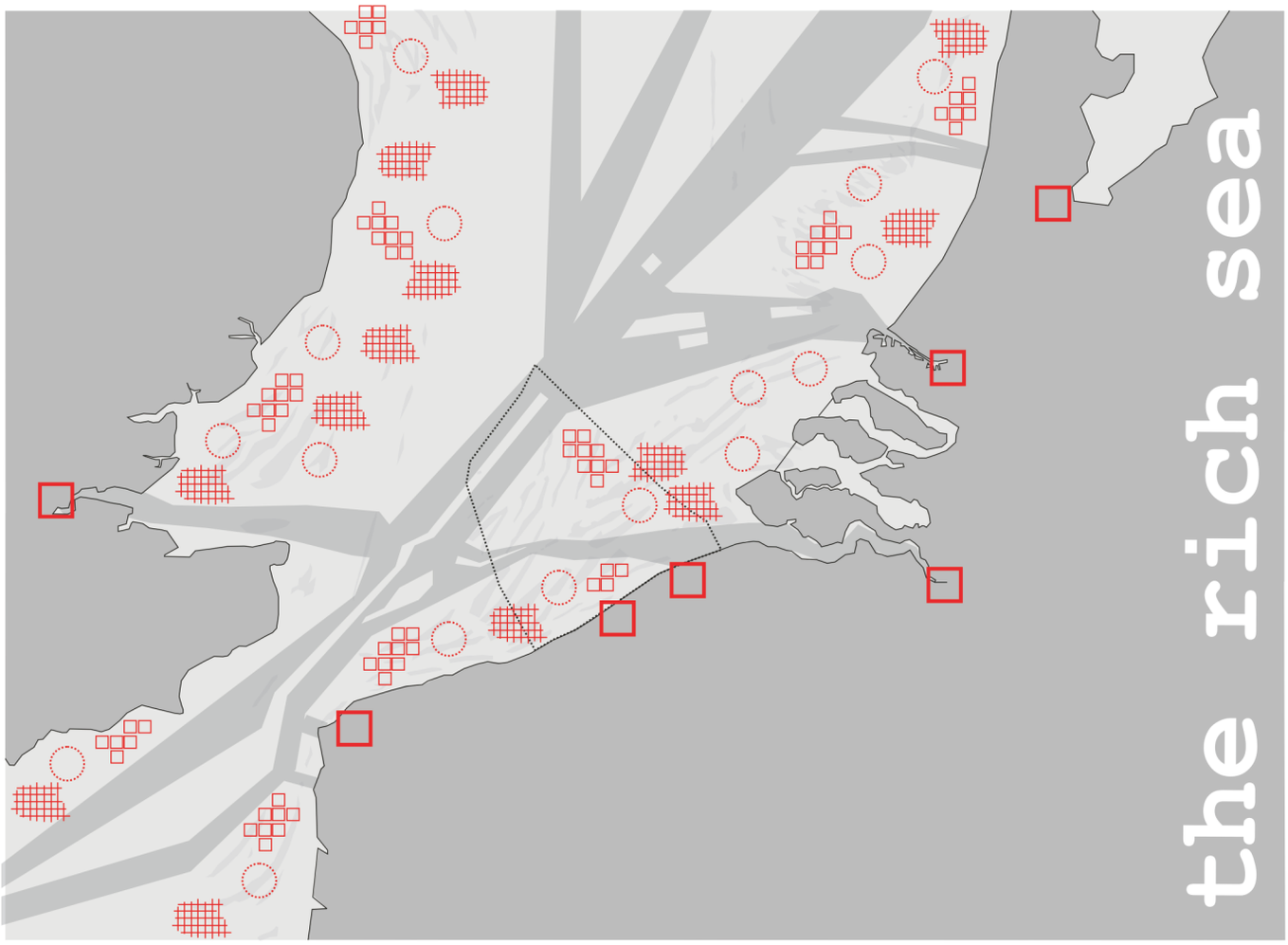
not suitable / not allowed

suitable but with limitations / conditions

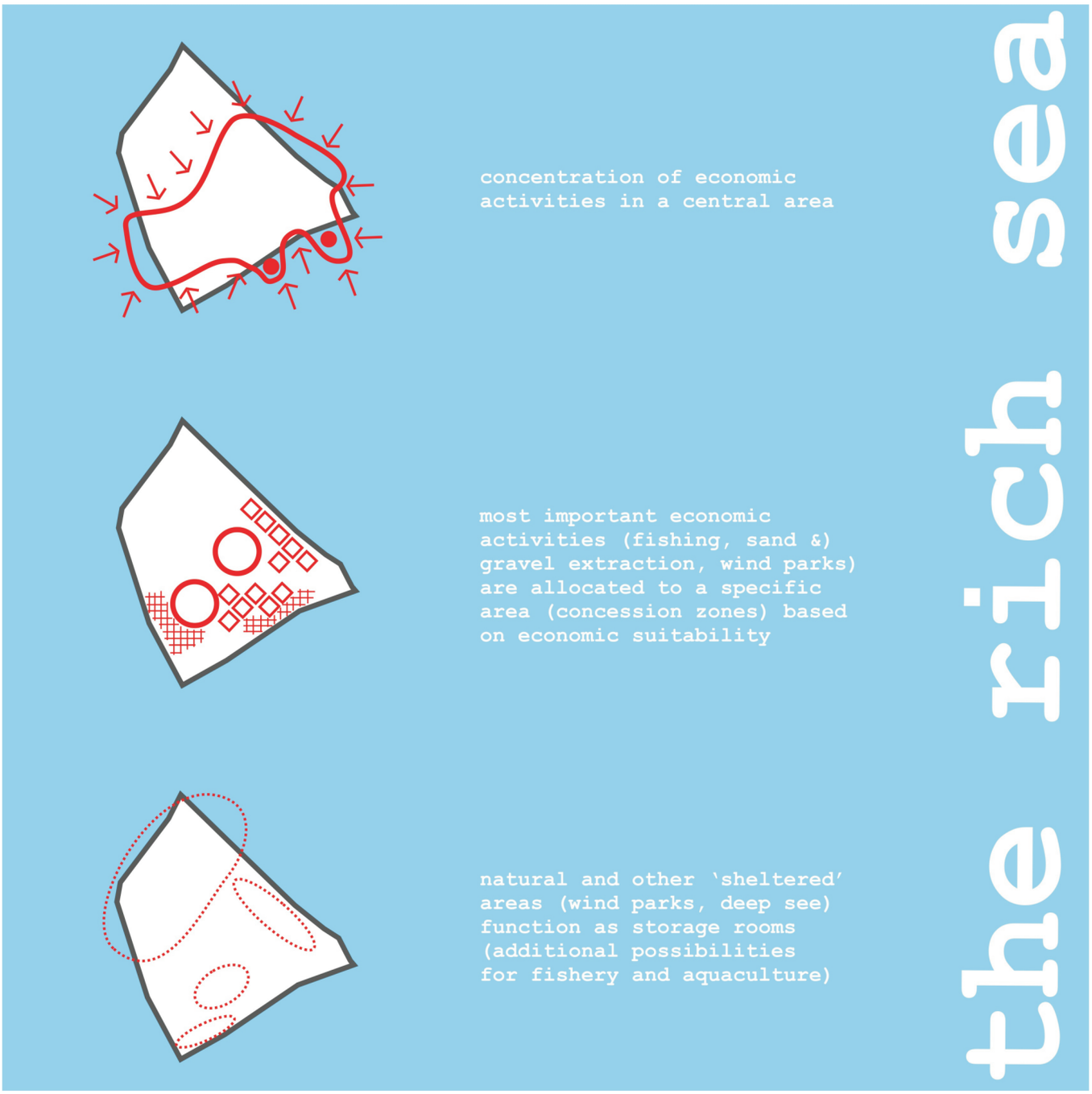
suitable

highly suitable / preferential location
specific action

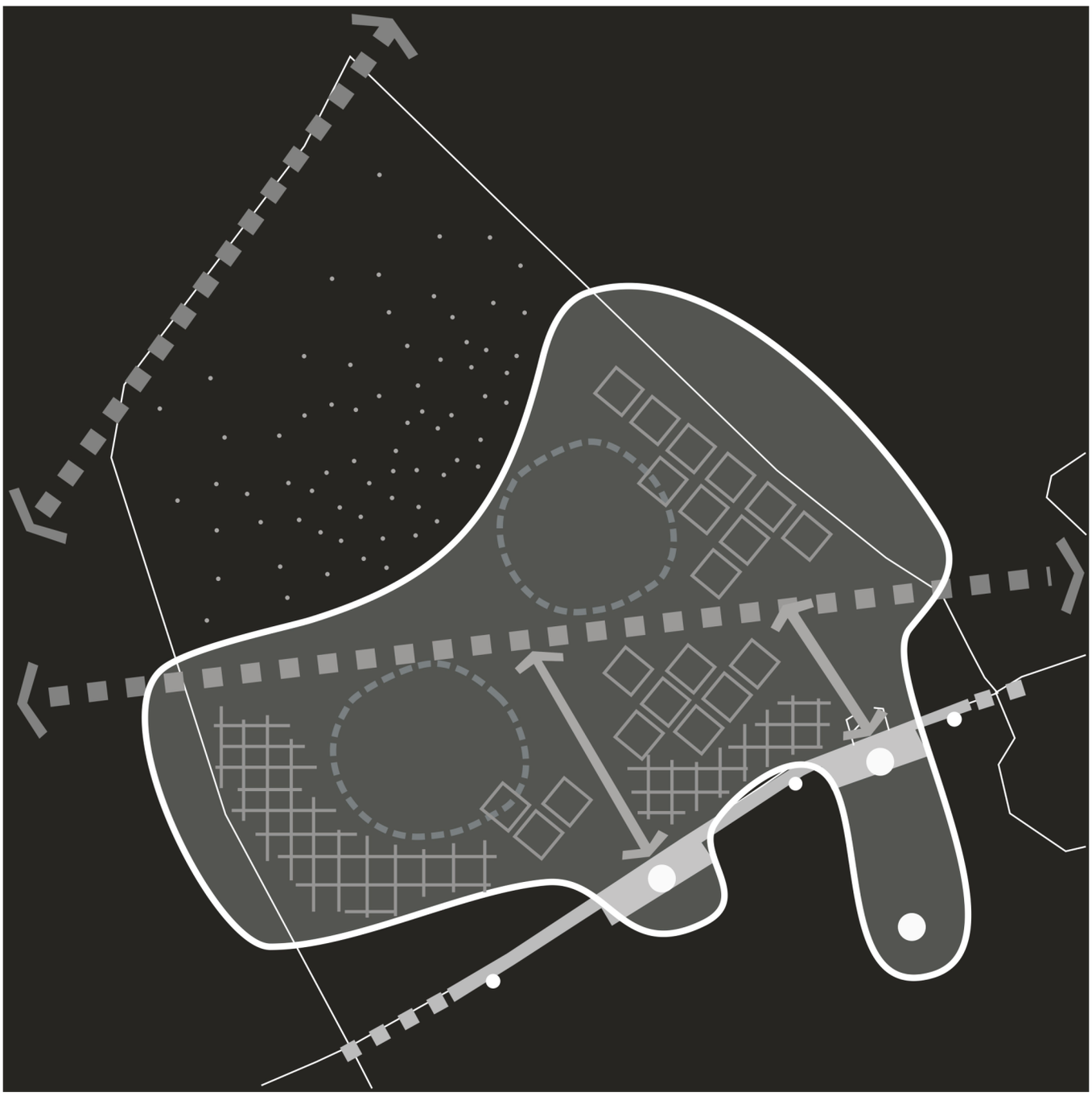
Figure III.1.4.2g. Scenario 4: The Mobile Sea - atmospheric image
(Maritime Institute - Gent University)



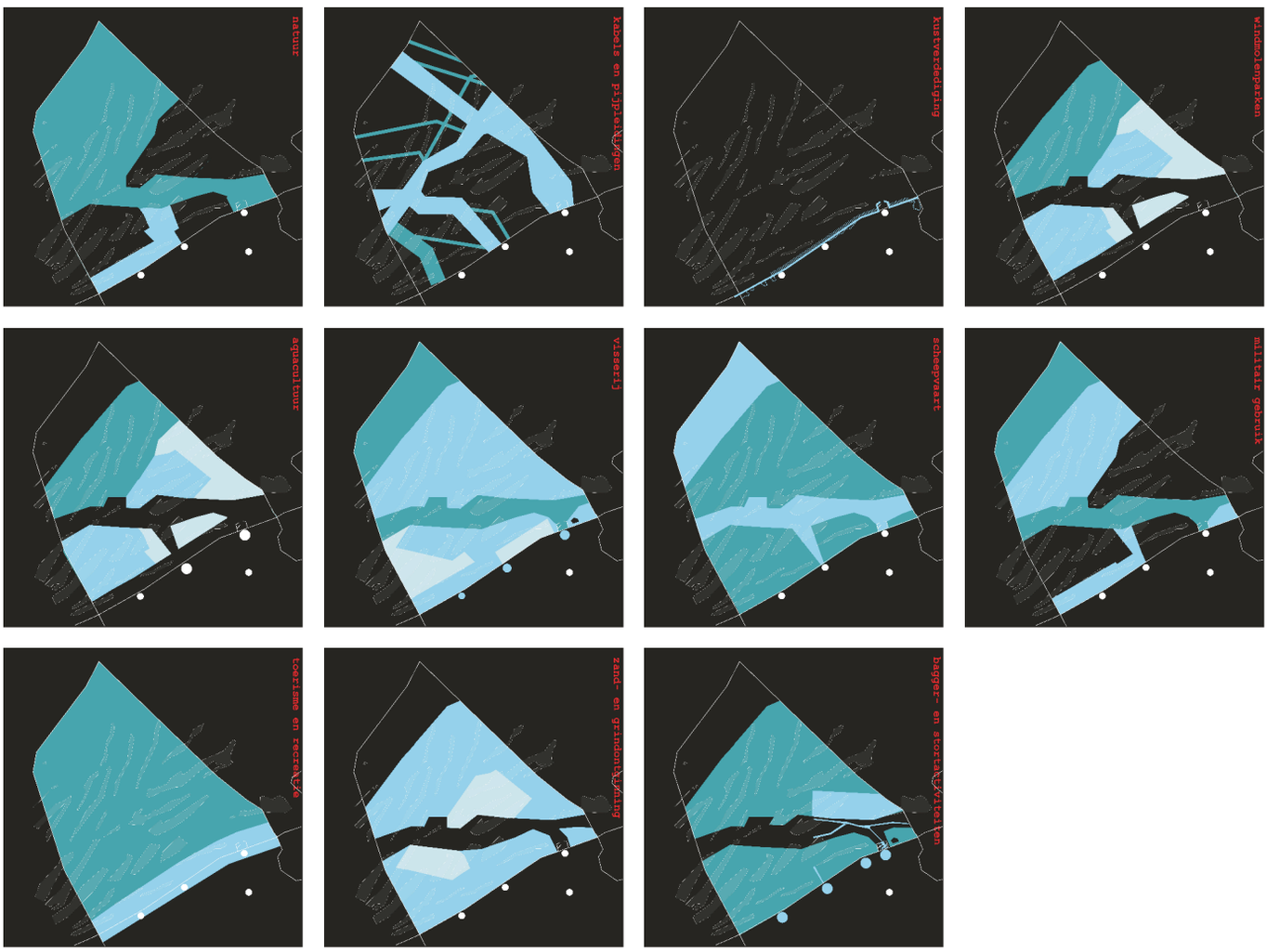
Map III.1.4.2r. Scenario 5: The Rich Sea - the broader context
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2s. Scenario 5: The Rich Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2t. Scenario 5: The Rich Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2u. Scenario 5: The Rich Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

not suitable / not allowed

suitable but with limitations / conditions

suitable

highly suitable / preferential location
specific action

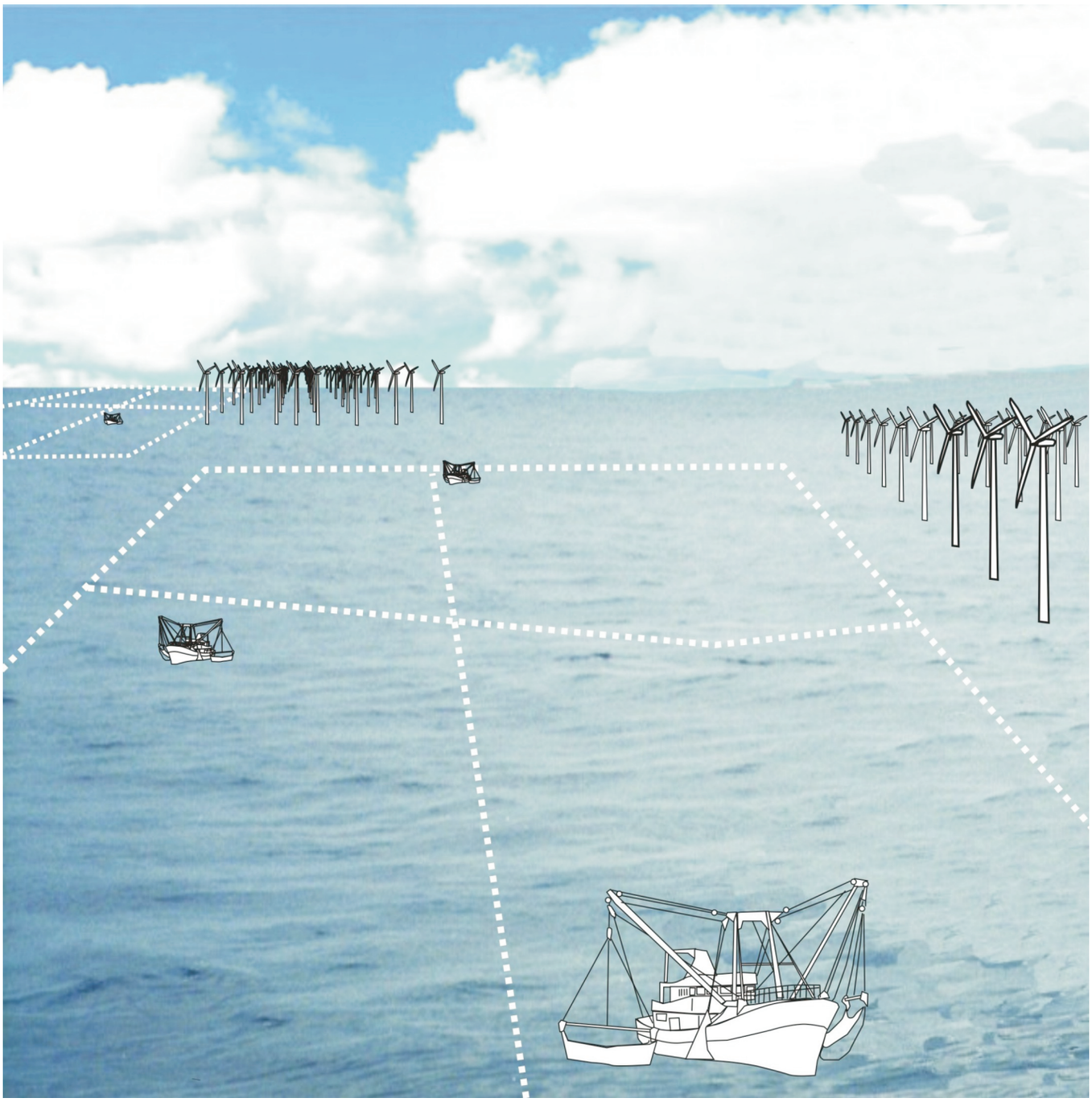
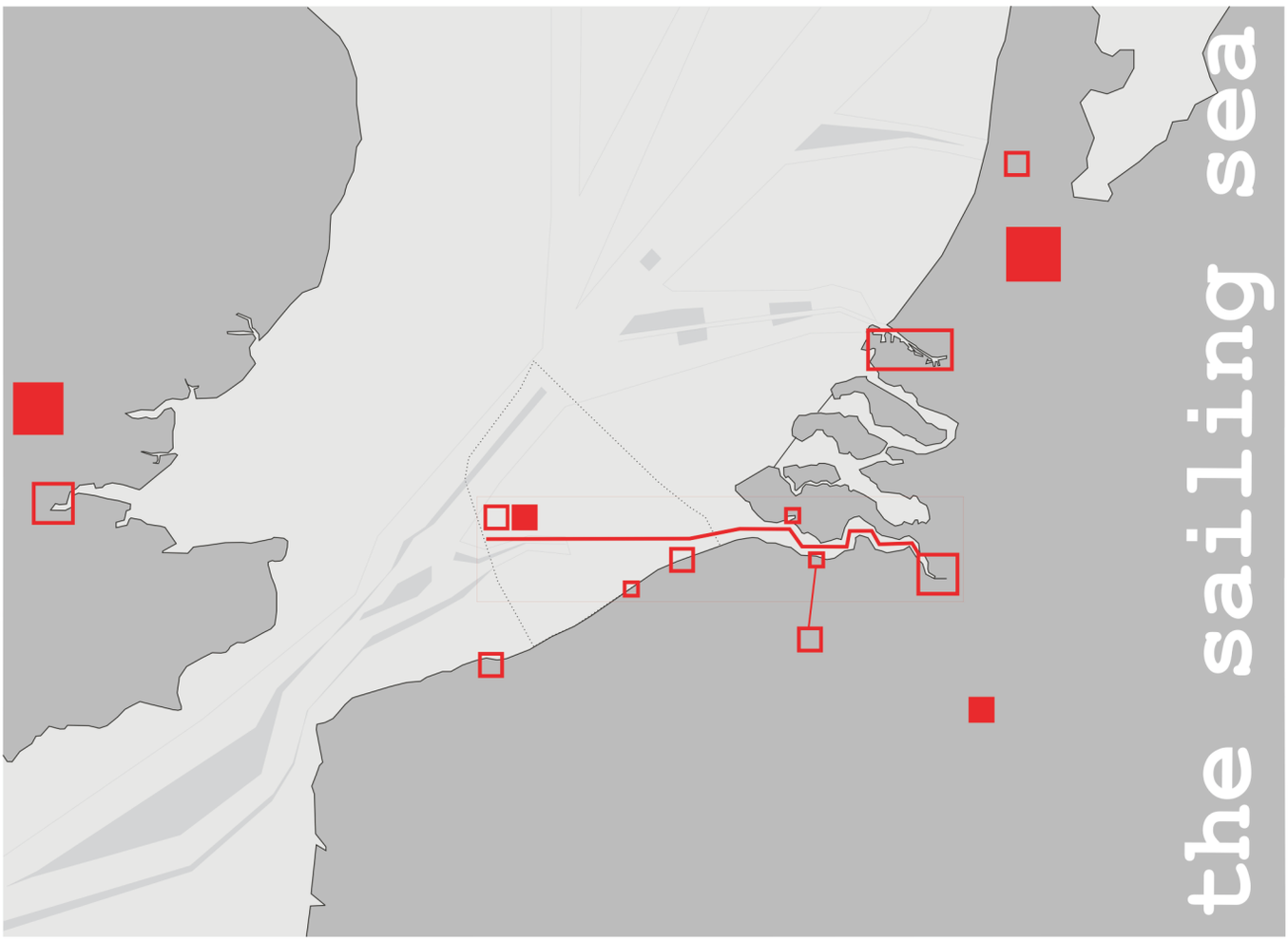
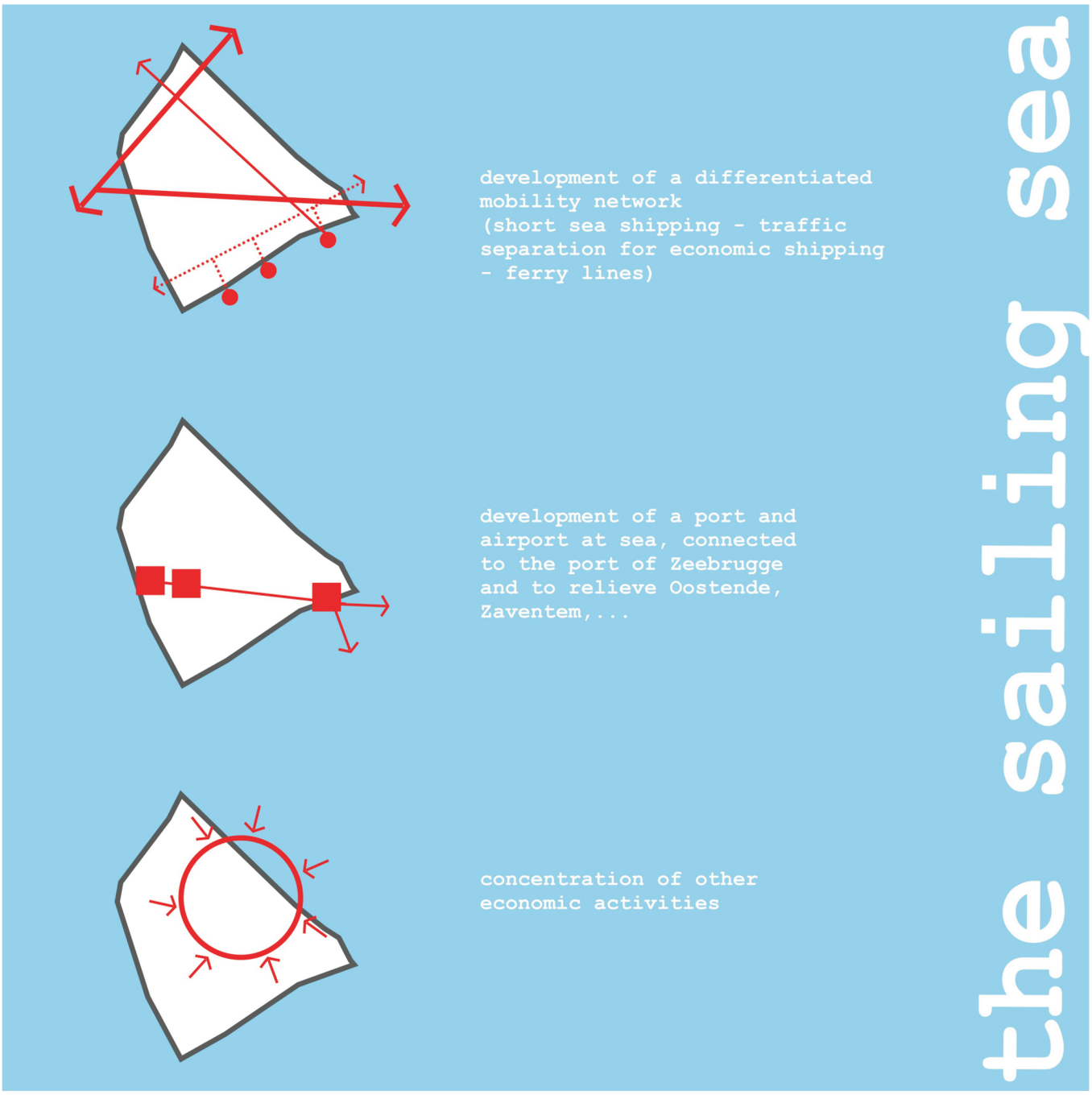


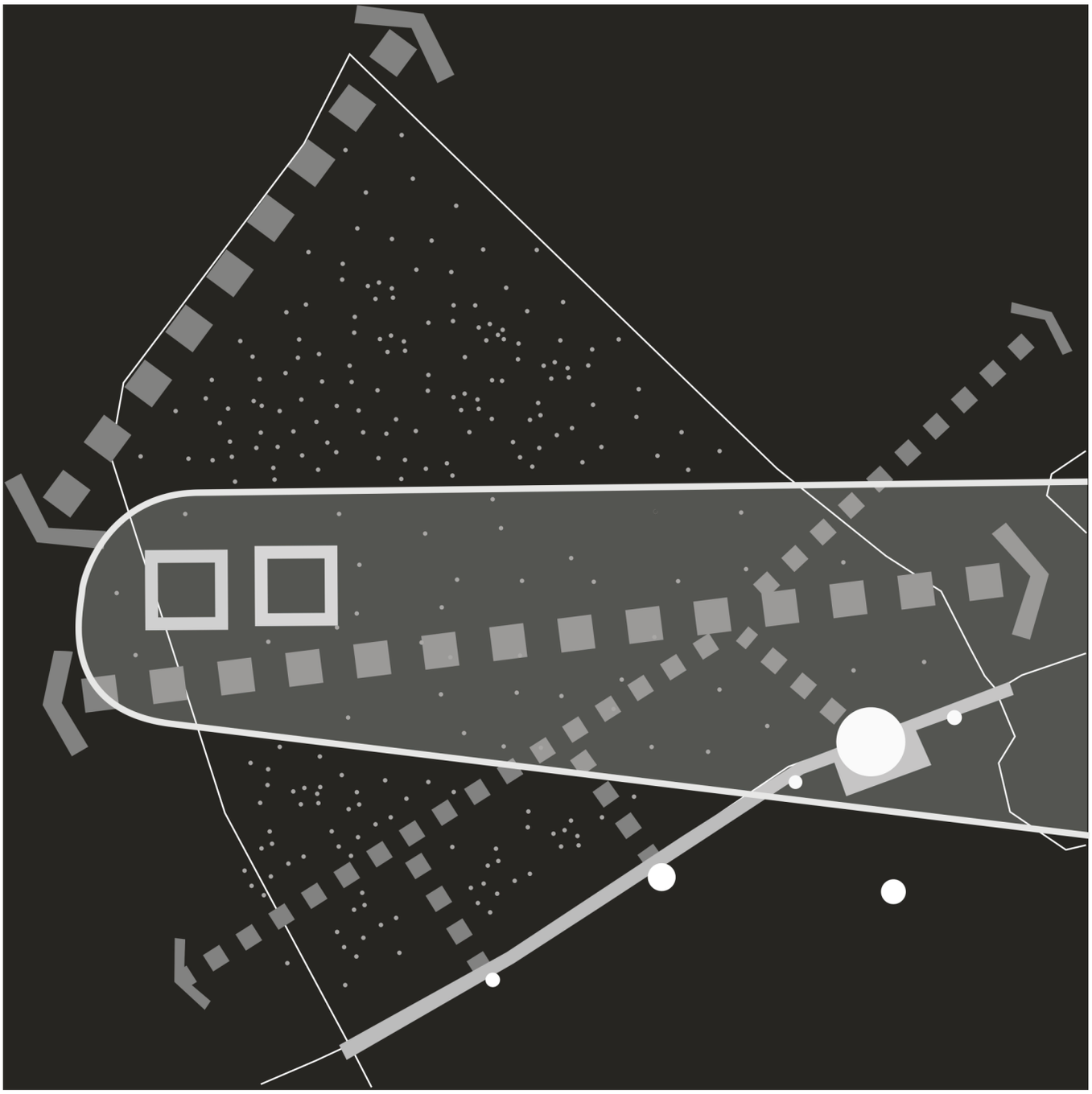
Figure III.1.4.2h. Scenario 5: The Rich Sea - atmospheric image
(Maritime Institute - Gent University)



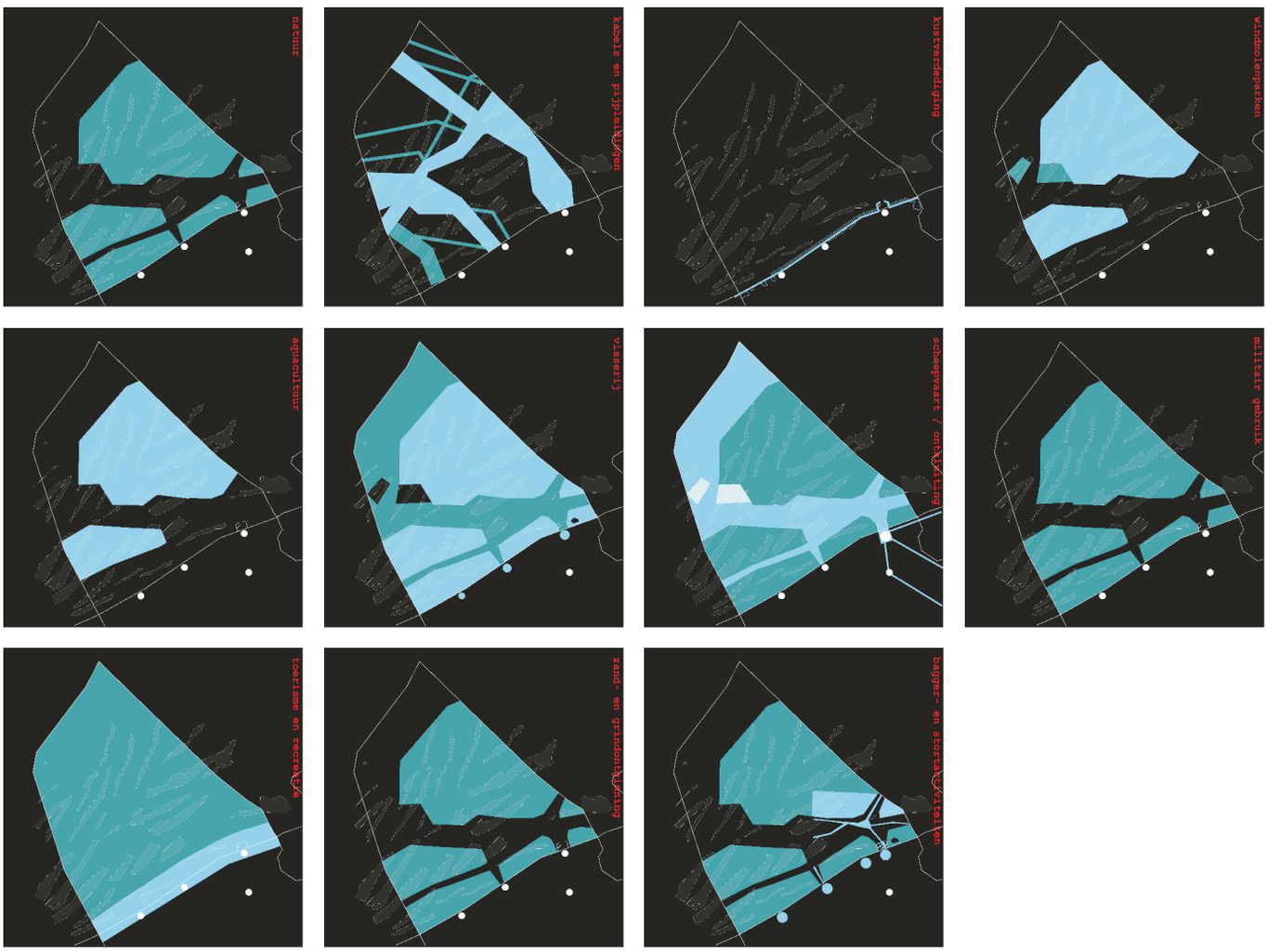
Map III.1.4.2v. Scenario 6: The Sailing Sea - the broader context
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2w. Scenario 6: The Sailing Sea - spatial concepts
(Structure maps: Maritime Institute - Gent University)



Map III.1.4.2x. Scenario 6: The Sailing Sea - spatial structure plan
(Structure map: Maritime Institute - Gent University)



Map III.1.4.2y. Scenario 6: The Sailing Sea - significance for the "uses" of the BPNS
left to right:
top row: nature conservation - cables & pipelines - coastal defense - wind parks
second row: aquaculture - fishing - shipping / transport - military use
last row: tourism & recreation - sand & gravel extraction - dredging & dumping of dredgings
(Structure maps: Maritime Institute - Gent University)

not suitable / not allowed

suitable but with limitations / conditions

suitable

highly suitable / preferential location
specific action

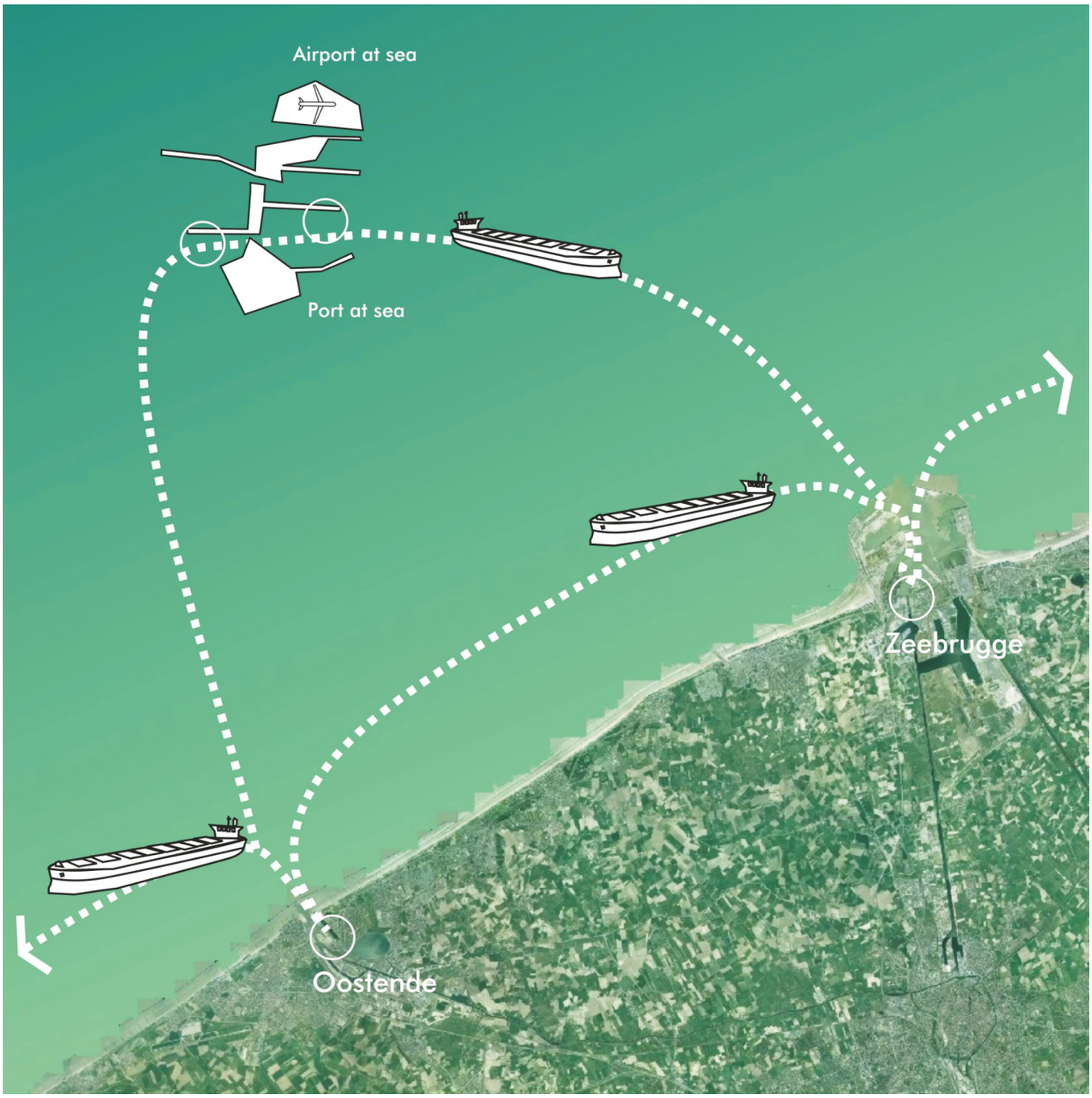
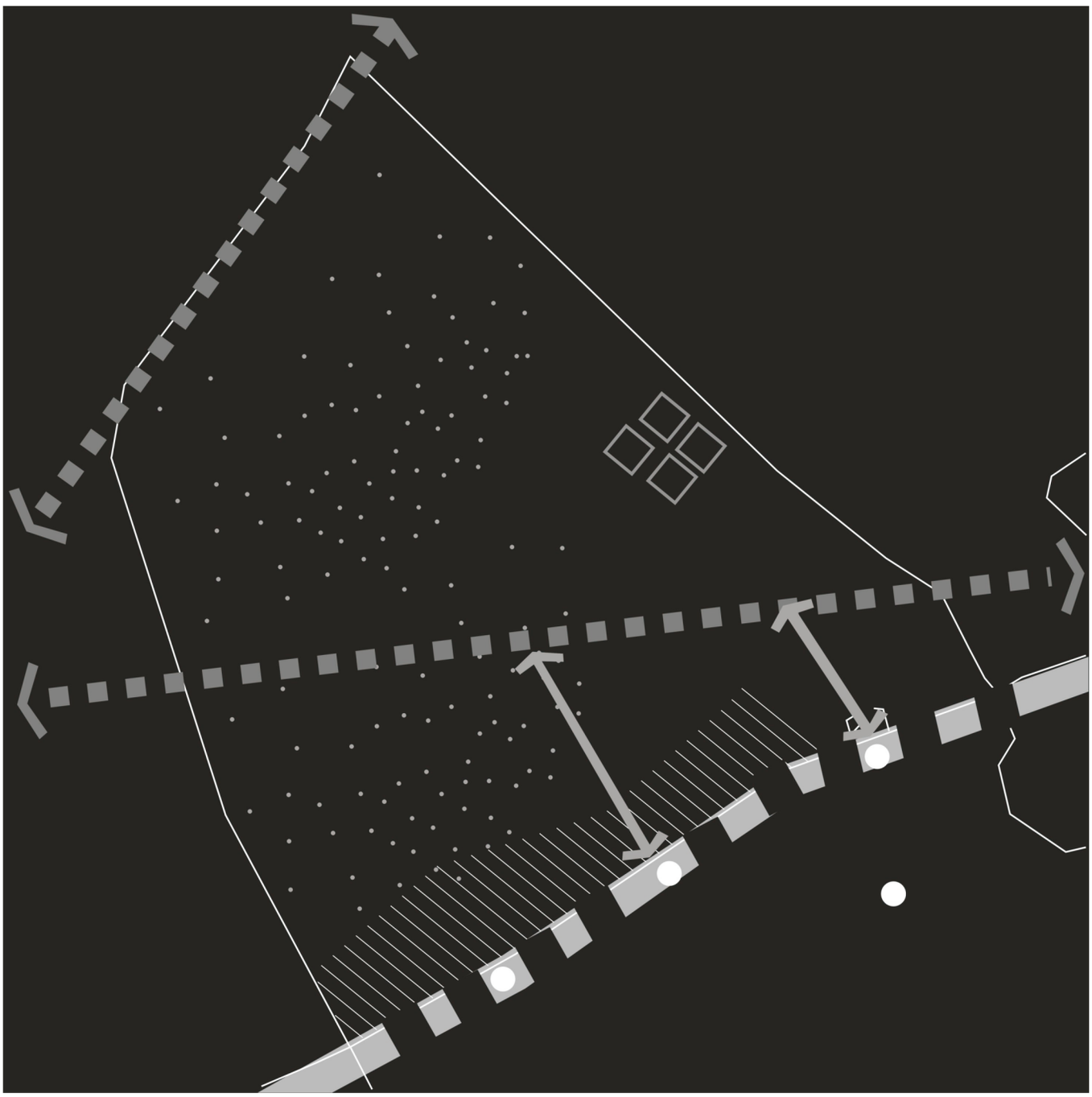


Figure III.1.4.2i. Scenario 6: The Sailing Sea - atmospheric image
orthophoto: http://www.giswest.be/website/luchtfotos/viewer.htm
(Maritime Institute - Gent University)



Map III.3a. Workshop results: group 1 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

wind park(s)

economic activities (fishing, sand and gravel extraction,...) and military use

important shipping lanes

important transport axis

nature conservation/ protection area

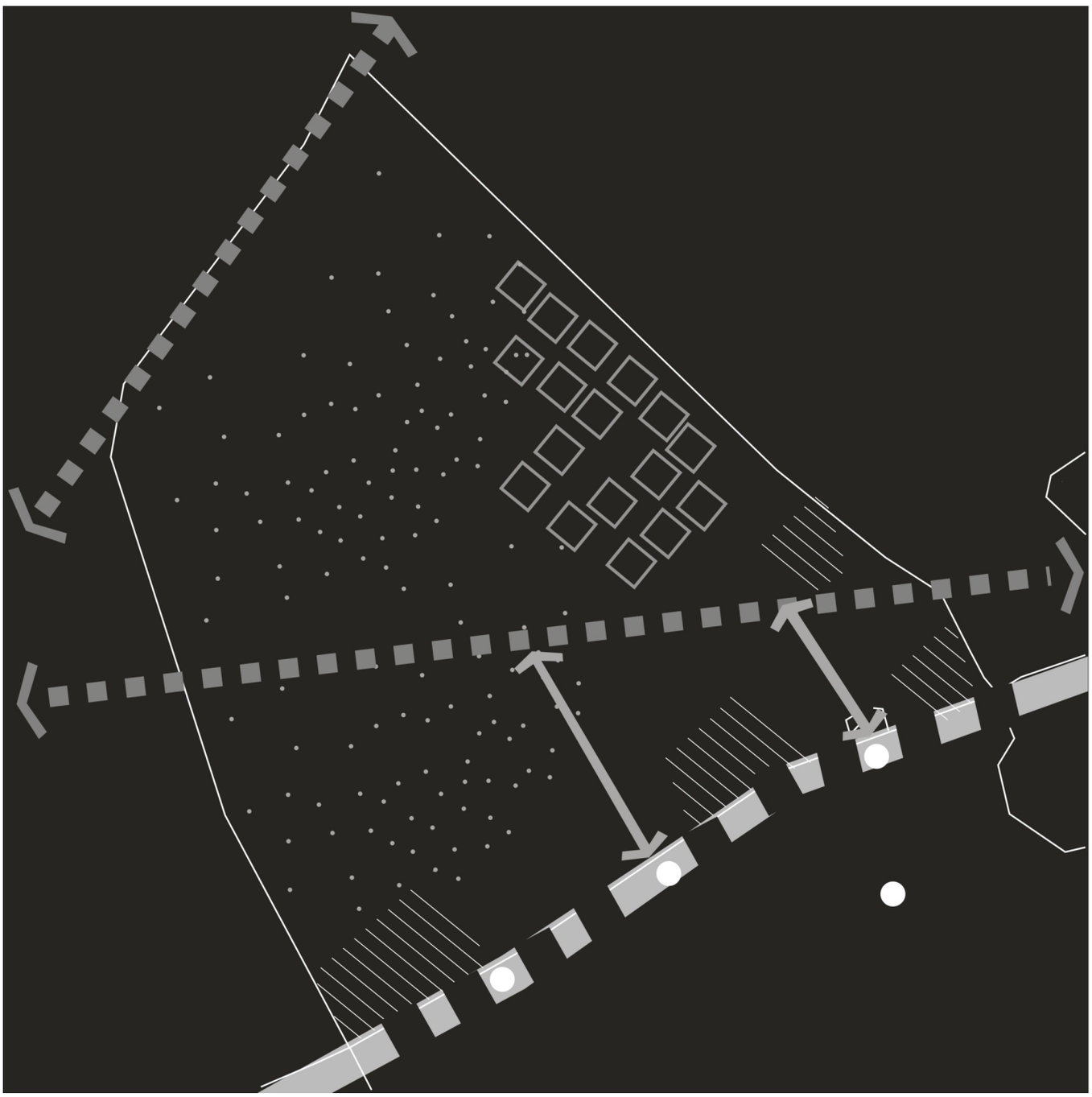
coastal defense: soft coastal defense and preservation of natural coastline (if possible)

intensifying and reinforcing touristic activities

additional anchorage

coastal island

integration and coordination of planning with neighbouring countries



Map III.3b. Workshop results: group 2 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

wind park(s)

economic activities (fishing, sand and gravel extraction,...) and military use

important shipping lanes

important transport axis

nature conservation/ protection area

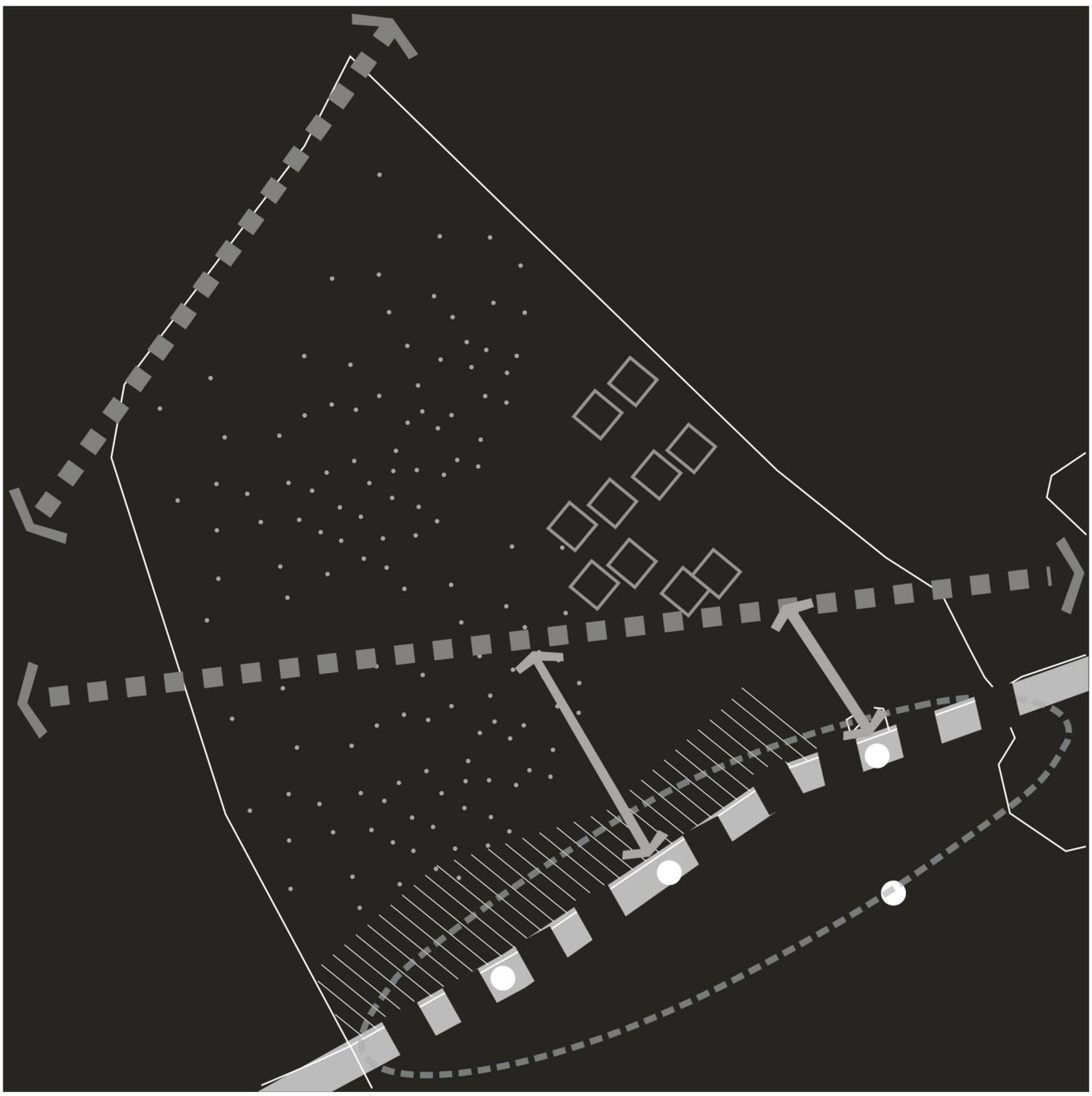
coastal defense: soft coastal defense and preservation of natural coastline (if possible)

intensifying and reinforcing touristic activities

additional anchorage

coastal island

integration and coordination of planning with neighbouring countries



Map III.3c. Workshop results: group 3 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

wind park(s)

economic activities (fishing, sand and gravel extraction,...) and military use

important shipping lanes

important transport axis

nature conservation/ protection area

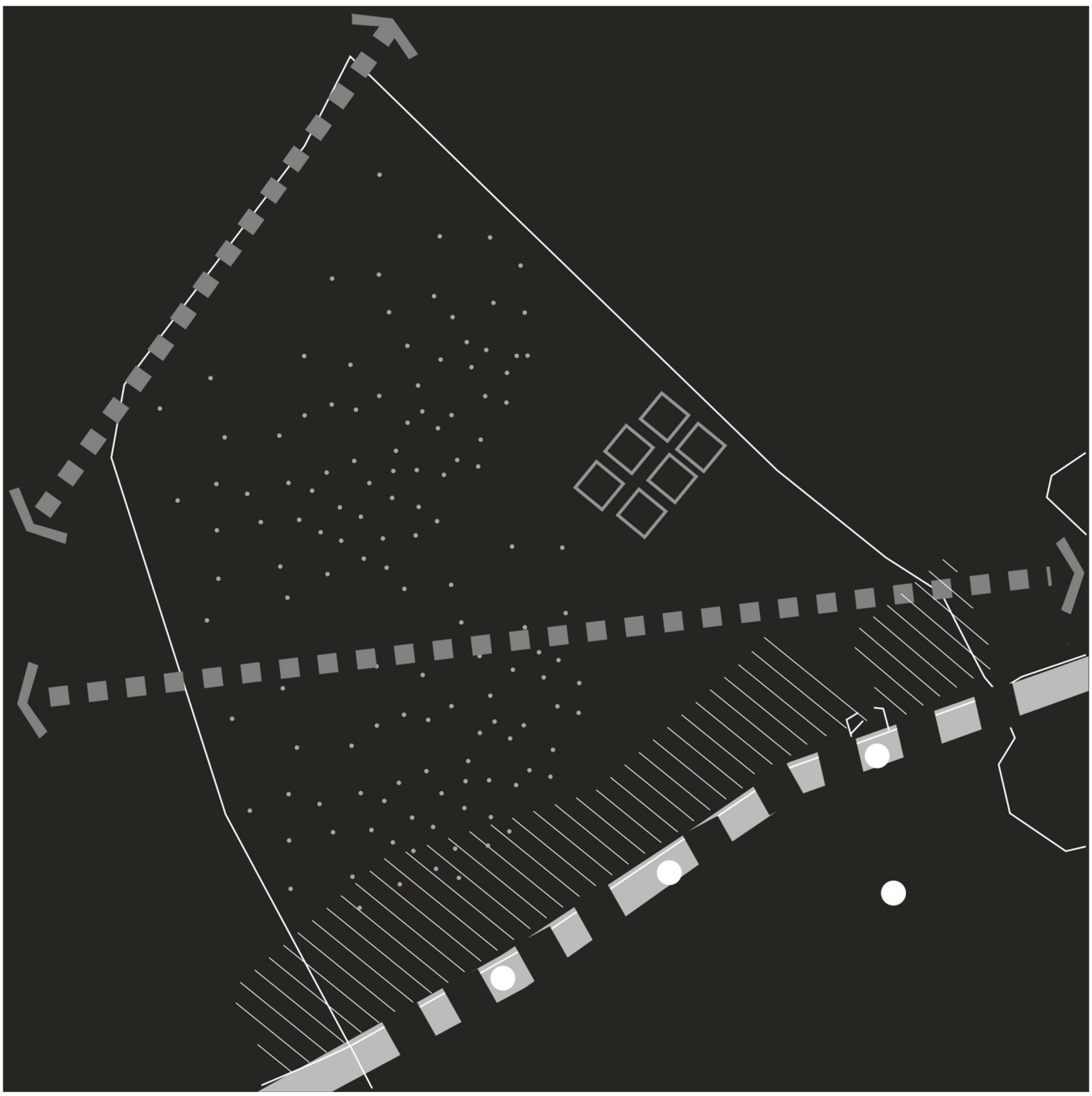
coastal defense: soft coastal defense and preservation of natural coastline (if possible)

intensifying and reinforcing touristic activities

additional anchorage

coastal island

integration and coordination of planning with neighbouring countries



Map III.3d. Workshop results: group 4 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

wind park(s)

economic activities (fishing, sand and gravel extraction,...) and military use

important shipping lanes

important transport axis

nature conservation/ protection area

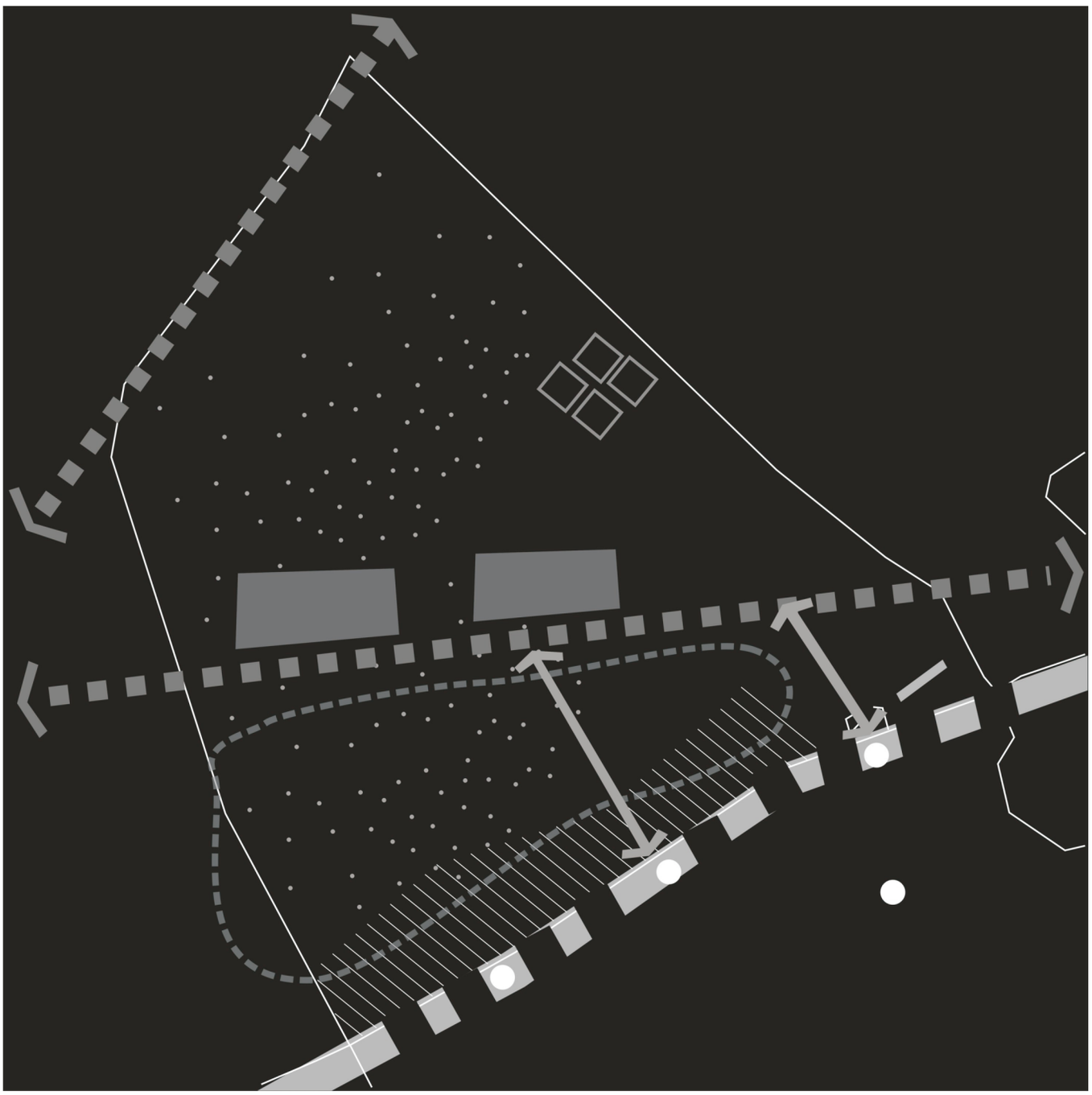
coastal defense: soft coastal defense and preservation of natural coastline (if possible)

intensifying and reinforcing touristic activities

additional anchorage

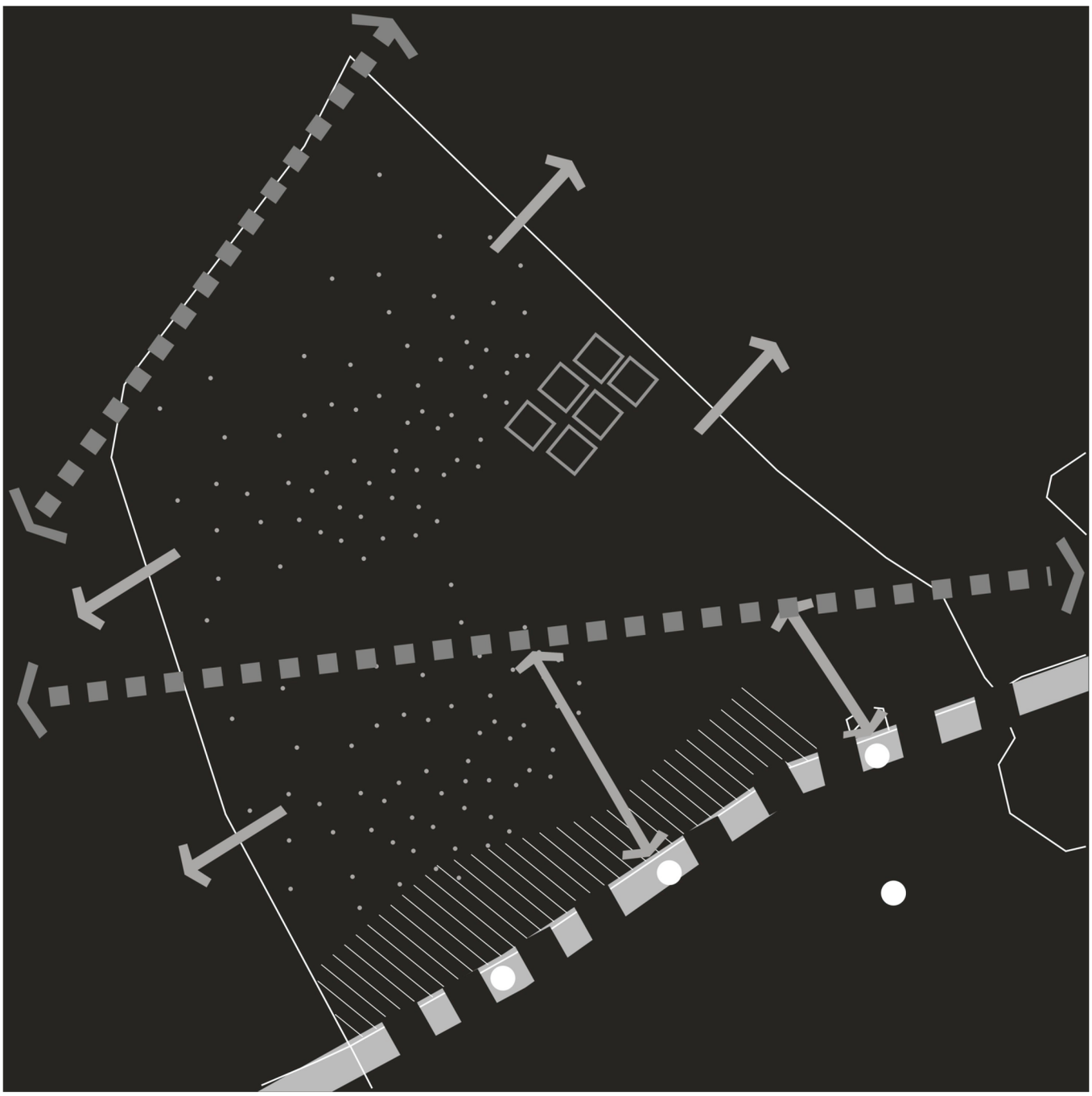
coastal island

integration and coordination of planning with neighbouring countries



Map III.3e. Workshop results: group 5 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

- wind park(s)
- economic activities (fishing, sand and gravel extraction,...) and military use
- important shipping lanes
- important transport axis
- nature conservation/ protection area
- coastal defense: soft coastal defense and preservation of natural coastline (if possible)
- intensifying and reinforcing tourist activities
- additional anchorage
- coastal island
- integration and coordination of planning with neighbouring countries



Map III.3f. Workshop results: group 6 - spatial structure plan
(Structure map: Maritime Institute - Gent University)

- wind park(s)
- economic activities (fishing, sand and gravel extraction,...) and military use
- important shipping lanes
- important transport axis
- nature conservation/ protection area
- coastal defense: soft coastal defense and preservation of natural coastline (if possible)
- intensifying and reinforcing touristic activities
- additional anchorage
- coastal island
- integration and coordination of planning with neighbouring countries