ENVIRONMENTAL OIL SPILL SENSITIVITY ATLAS FOR NORTHEAST GREENLAND (71°-81.5° N)

Scientific Report from DCE – Danish Centre for Environment and Energy

No. 495 2022

AARHUS UNIVERSITY
DCE – DANISH CENTRE FOR ENVIRONMENT AND ENERGY

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Abstract: This Environmental Oil Spill Sensitivity Atlas has been prepared to provide oil spill response planners and responders with tools to identify resources at risk, establish protection priorities and identify appropriate response and clean-up strategies. It covers the shoreline and the offshore areas of Northeast Greenland between 71° N and 81.5° N. The coastal zone is divided into 264 shoreline segments and the offshore zone into 18 areas. A sensitivity index value is calculated for each segment/area, and each segment/area is subsequently ranked according to four degrees of oil spill sensitivity. Besides this general ranking several smaller, so-called "selected areas" are identified. They are of particular significance, they are especially vulnerable to oil spills and they have a size making oil spill response possible. The shoreline sensitivity rankings are shown on 68 maps (in scale 1:250,000), which also show the different elements included and the selected areas. Coast types, logistics and proposed response methods along the coasts are shown on another 68 maps. The oil spill sensitivity of the offshore zone is depicted on four maps, one for each season. Based on all the information, appropriate oil spill response methods have been assessed for each area.

Keywords:	Northeast Greenland, oil spill sensitivity mapping, shoreline oil spill sensitivity, offshore oil spill sensitivity, coastal zone environmental mapping, oceanography, ice conditions, coastal morphology, human use, archaeology, local knowledge, marine mammals, seabirds, fish, logistics, oil spill response.
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Content

Preface

This Environmental Oil Spill Sensitivity Atlas covering Northeast Greenland, and a similar atlas covering Southeast Greenland, was prepared as part of the *Strategic Environmental Study Program for Northeast Greenland*, and forms a continuation of the five atlases covering the entire West Greenland region between 58º N and 77º N (produced in 2000, 2004, 2011, 2012 and 2016).

The aim of the *Strategic Environmental Study Program for Northeast Greenland* was to provide the necessary environmental information for planning and regulating oil exploration activities and oil spill response in the western Greenland Sea. The program included projects on marine ecology, biodiversity as well as toxicology, degradation of oil and contaminants, preparation of oil spill sensitivity atlases, and an updated strategic environmental impact assessment of oil and gas activities in the Greenland Sea (Boertmann et al. 2020a).

In 2013/14, five oil exploration licence blocks were granted in the Greenland Sea off Northeast Greenland, and the licence obligations included support to environmental background studies. Via the Government of Greenland (Ministry for Industry, Energy, Research and Labour (MIERL), and the Environmental Agency for Mineral Resource Activities (EAMRA)), this support funded the projects in the *Strategic Environmental Study Program for Northeast Greenland*, including the preparation of this atlas.

The five licence blocks in the Greenland Sea have since then been given up, and in June 2021 the Government of Greenland announced a stop for new oil and gas exploration licenses. However, the oil spill sensitivity atlas will remain relevant in relation to accidental oil spills from shipping activities, including transport of oil.

The atlas was made using the best available information. However, this information was by no means complete and as new data become available, the atlas should be updated. The atlas was produced in a dynamic GIS (Geographical Information System), where new map sheets can be prepared relatively easily, when new data become available. The atlas, with all its integrated information and suggestions, is intended to be a valuable tool for Greenlandic authorities, ship operators, and oil spill responders.

The study team

DCE – Danish Centre for Environment and Energy (Aarhus University, Department of Ecoscience, Section for Arctic Environment) and Greenland Institute of Natural Resources (GINR) headed and performed the main part of the study.

DCE and GINR prepared the coastal morphology interpretation, provided and processed the biological information in the atlas, and prepared the shoreline and offshore sensitivity maps.

GINR contributed with information regarding living resources, especially fish and marine mammals, as well as additional information on logistics.

SL Ross Environmental Research Ltd. developed the sections on countermeasures and access accompanying the Physical Environment and Logistics maps.

The Greenland National Museum and Archives (GNMA) compiled and reviewed the archaeological information.

The software used for calculating the shoreline and offshore sensitivity scores was originally developed for the first Greenlandic sensitivity atlas (Mosbech et al. 2000) in co-operation with AXYS Environmental Consulting Ltd.

1 Summary

1.1 Environmental Oil Spill Sensitivity Atlas for Northeast Greenland (71°-81.5° N)

The work on this atlas was initiated, when oil exploration was ongoing in the sea off Northeast Greenland, and as a part of the preparations for exploratory drilling. The exploration blocks have in the meantime been handed back and no activities are expected in the future as the Greenland Government announced a stop for oil and gas exploration in June 2021. However, the oil spill sensitivity atlas will remain relevant in relation to accidental oil spills from shipping activities, including transport of oil.

The objective of the atlas is to provide an overview of resources vulnerable to oil spills, for example biological elements (fish, birds, marine mammals etc.) and near-shore archaeological sites, and a tool which can contribute to prioritization during oil spill response. The atlas covers the coastal region between 71° N and 81.5° N in East Greenland, including the offshore waters within the Greenland EEZ bordering Icelandic and Svalbard waters.

The following elements are included in the atlas

- coastal morphology,
- oceanography and sea ice,
- biological elements (fish, birds, marine mammals),
- human use (hunting, fishing, tourism),
- nature conservation areas,
- cultural heritage sites,
- logistics and oil spill response methods.

The coastline is divided into 264 segments of approx. 50 km length, which have all been ranked into one of four classes of oil spill sensitivity – extreme, high, moderate, or low. The ranking is based on the calculation of a sensitivity index value, which for each segment integrates occurrences of the above-mentioned environmental and cultural elements, taking into account their level of occurrence and their vulnerability to oil contamination. The offshore region of the atlas is divided into 18 smaller areas, for which a similar sensitivity index calculation and ranking has been performed. However, unlike the shoreline segments, the results are here presented on a seasonal basis.

The method used for calculating the sensitivity index is developed from a Canadian system, which was used in Lancaster Sound (Dickins et al. 1990). The individual occurrences along a coastline segment or within an offshore area enter the index calculation with a general sensitivity value (for the element type), and a value expressing how abundant/important the particular occurrence is. Species occurrences (biological elements) and human use are given most weight in the index calculation and thus have most influence on the final sensitivity ranks of the shoreline segments/offshore areas.

As a part of the shoreline sensitivity ranking, a classification of the coastline morphology has been conducted based on satellite images and geological maps. Combined with a calculation of shoreline exposure to waves and ice, this was used to establish an index of oil residency on the coast, e.g., oil will reside longer in a protected, fine sediment bay than on a rocky coast directly exposed to heavy wave action. This index was also included in the calculation of shoreline sensitivities. In the offshore sensitivity analysis, the oil residency

index was based on the degree of ice cover in the different areas during the different seasons of the year.

Besides the general classification of oil spill sensitivity, the coastal maps of the atlas also show smaller, so-called ‘selected areas’. They are of particular significance in a nature conservation context, they are particularly vulnerable to oil spills and/or are of a size where an effective oil spill response can be performed. These areas are selected based on expert judgement.

Based on all the available information, appropriate methods to respond to oil spills (i.e., mechanical collection, dispersion and in situ burning) in the different coastal and offshore areas are proposed.

Chapter 4 contains a general introduction to the atlas concept and the applied methodology.

Chapter 5 contains a user guide to the maps in Chapter 7 and 8, which supplements the map legends.

Chapter 6 provides summary information on physical oceanography, sea ice conditions, ecology, human use, and cultural heritage sites in the atlas area.

Chapter 7 contains maps (in scale 1:5.5 mill) of the oil spill sensitivity of the offshore parts of the atlas area, including icons for elements (fish, birds, marine mammals, and human use) that contribute most the sensitivity of the different offshore areas during the different seasons of the year. The maps are accompanied by a detailed description of the species and human use occurrences in the different areas.

Chapter 8 contains detailed coastal information presented in 1:250,000 scale maps. In total, 68 maps show shoreline sensitivities and symbols for the actual elements occurring along the coast (hunting and fishery areas, fish, birds, marine mammals and archaeological sites). The maps also show the so-called selected areas. Each map is accompanied with a description of the biological resources and the human use of the area. Chapter 8 also contains 68 maps showing coastal morphology and logistics elements, and each of these map sheets is accompanied with a description of access and proposed oil spill response methods.

2 Eqikkaaneq

2.1 Tunup avannaani sinerissami sumiiffiit uuliaarluernermut immikkut misikkarissut nunap assiliorneqarnerat (71°-81.5 ° N)

Kitaani sumiiffiit imaani uuliaarluernermut misikkarissut 2000-miilli nunap assiliorneqalersimapput. Nunap assingi taakku imaani uuliaqarneranik misissueqqissaarnermut atatillugu suliaapput taavalu – nunap assingini tallimani – sumiiffiit avannarpasissuseq 58° aamma 77° akornginiittut tamakkerneqarsimallutik. Sinerissat kiisalu avataa aningaasarsiornikkut oqartussaaffik killeqarfik tikillugu assiliorneqartarput. 2013/14-imi Tunup avannaani sumiiffiit tallimat uuliaqarneranik misissueqqissaarfissatut qalluiffissatullu toqqarneqarput, tamatumunngalu atatillugu Tunu tamakkerlugu siuliinut assingusumik assiliorfigineqarnissaa isumaqatigiissutigineqarluni.

Misissuinissamut akuersissummik tunineqassagaani piumasaqaatit ilagaat suliffeqarfiit sumiiffinni pineqartuni avatangiisinut tunngasunik suliaqarnermut aningaasalersueqataassasut, aningaasallu taakku Naalakkersuisunit aqunneqassasut. Aningaasat ilaatigut ukiuni 2016-2019-imi misissuinerit qassiit *Strategic Environmental Study Program for Northeast Greenland* -imik taagukkat aningaasalersorneqarnerinut atorneqarput, tamatumuunakkut ilisimasat sumiiffinni taakkunani uuliamut tunngasunik suliaqartoqartillugu avatangiisinut malittarisassiornermi atugassat pitsanngorsarniarneqassapput.

Nunap assingini taakku atorlugit siunertaq tassaavoq pisuussutit avatangiisillu sukutsitaat assigiinngitsut uuliaarluernermut misikkarissut ataatsimut paasisimasaqarfigilissallugit. Ilaatigut tassaapput uumassusillit (aalisakkat, timmissat, il.il.) kiisalu suut aalisarnikkut piniarnikkullu soqutiginaatillit. Ilisimasanik tamakkuninnga nalunaarsuinikkut ingerlatseqatigiiffiit oqartussallu siumut naliliiffigisinnaanngussavaat sumiiffiit misikkarissut sumiinnersut taamalu uuliaarluertoqarnerani suliassat pilersaarusiorsinnaanngussallugit tulleriiaarsinnaanngussallugillu.

Nunap assingisa ilaartorneqarnerat kingulleq atorlugu Tunu tamakkerneqarportaaq, tassa Nunap Isuaniit Tunup avannaarsuani kimmut uiariarfik taakkulu imartaat ilanngullugit. Nunap assingi ilassutaasut marluinngorlugit avitaapput: Nunap assinga manna Liverpool Landimiit (71° N) Tunup avannaarsuani kimmut uiariarfik (81.5° N) kiisalu Nunap Isuata taavalu Liverpool Landip eqqaanniittut immikkut nunap assiliorneqarlutik. Nunap assingi marluk ataatsikkoorlugit suliarineqarput, taamaammallu paasissutissat katersinerit periaatsillu assigiillutik.

Suliaq makkuninnga imaqarpoq:

- sinerissat qanoq ittuunerinik nassuiaatit
- immap, sikup silallu pissusii
- pisuussutit uumassusillit (timmissat, aalisakkat il.il.)
- aalisarneq piniarnerlu,
- takornariartitsineq,
- sumiiffiit immikkut illersugaasut (soorlu timmiaqarfiit),
- qanganitsat,
- attaveqaatit kiisalu uuliaarluernermik akiueriaatsit.

Sineriak sumiiffinnut 50 km missaannik isorartussusilikkaanut agguataarlugu misikkarissusia sisamanut agguarneqarpoq – assut, annertuumik, akunnattumik kiisalu annikitsumik. Uuttuusiaq atorlugu immikkoortiterisoqarpoq, tassanilu avatangiisinut inuiaqatigiinnullu tunngasut immikkuualuttut uuttuutaapput (timmissat assigiinngitsut miluumasullu imarmiut attarmoortukkuutaat, piniarfiit, aalisarfiit, qanganitsat il.il.). Naatsorsueriaaseq taanna Canadamiut periaasiannik aallaaveqarpoq, ilaatigullu Canadap issittortaata avannamut kangiani Lancaster Soundimi atorneqarluni (Dickins et al. 1990). Naatsorsuinermi immikkoortut ataasiakkaat ilaatigut uuliamik misikkarissutsimut nalilersuuserneqarput ilaatigullu immikkoortut tamarmik qanoq amerlatigisukkuutaarneri / pingaaruteqartigineri nalilersuuserneqarlutik. Immikkoortut uumassusiliusut uuliaarluernermut misikkarissusiat uuttortarneqartarpoq uumasut taakku uuliaarluernermit tikinneqarnissaata qanoq ilimanaateqartiginera naapertorlugu, kiisalu uumasut taakku uuliamut qanoq misikkaritsiginerat naapertorlugu. Uumassusillit taakkulu iluaqutigineqarnerat immikkoortukkuutaat ataatsimut misikkarissusiannik uuttortaanermi annerpaamik oqimaalutaatigineqartarput.

Avataa sumiiffinnut minnerusunut 18-inut agguataarneqarpoq, uuliaarluernermullu misikkarissutsit siulianisut uuttortargaapput, taakkunanili ukiup nikikkiartorneri sisamat tamarmik immikkoortinneqarlutik.

Sinerissap tamarmi misikkarissusianik ataatsimut nalilersuinerup saniatigut nunap assinginissaaq sumiiffiit qassiit immikkut toqqartugaapput. Sumiiffiit taakku toqqarneqartarput uuliaarluernermut misikkarilluinnarnertik pillugu kiisalu uuliaarluernerup pitsaasumik akiorneqarnissaannut naleqquttumik angissuseqarnertik pillugu.

Suliamut ilanngullugu qaammataasamit assilisat, nunallu sananeqaataanik assiliat atorlugit sinerissap pissusia (ilusia sananeqaataalu, soorlu qaarsuusut sioraasulluunniit) nalunaarsugaavoq. Ilisimasat taakku kiisalu malinnit sikumillu qanoq pineqartigisarnerat naapertorlugu uuttuusiortoqarpoq uuliaarluertoqassagaluarpat nammineerluni isumaminnik qanoq salitsigisinnaanerannut uuttuutaasumik. Assersuutigalugu sineriak qaarsuusoq assut mallersartoq pilertornerusumik ”saligaallissaaq” sissamut kangerliumanermit illersugaasumut sanilliulluni.

Paasissutissat katersorneqartut tunngavigalugit sumiiffinni assigiinngitsuni uuliaarluernermik akiuinermi periaatsinik naleqquttunik naliliisoqartarpoq.

Ataatsimut paasissutissanik kiisalu avataata assiliorneqarnerinik nunap assingi imaqarput (kapitali 7), annermik uuttuut 1:2,5 mio atorlugu assiliugaasunik, kiisalu sinerissamut qanittut sukumiisunik paasissutissiorneqarlutik 1: 250.000 atorlugu uuttuusigaasunik. Kapitali 6 nunap assingisa kapitali 7 aamma 8-imi ittut qanoq atornissaannut ataatsimut ilitsersuutitaqarpoq.

Kapitali 7 nunap assitaqarpoq avataata misikkarissusianik takutitsisunik nalilersuinermi suut atugaanerinik ilisarnaasigaasunik (aalisakkat, timmissat kiisalu miluumasut imarmiut). Tamatuma saniatigut pisuussutit uumassusillit kiisalu taakku atugaanerat, soorlu qilalukkat qernertat, eqqarsaatigalugit sumiiffiit pingaarutillit qassiinik nunap assiliortoqarpoq.

Kapitali 8 80-inik nunap assitaqarpoq 1: 250.000-inik uuttuutitalinnik, sinerissap misikkarissusianik nalilersuinermi atugaasunik (aalisarfiit piniarfiit, aalisakkat, timmissat miluumasullu imarmiut kiisalu qanganitsat) ilisarnaasersukkamik. Nunap assingissaaq sumiiffinnik immikkut toqqakkanik imaqarput. Nunap assingi tamarmik sumiiffiup qanoq atugaaneranik uumassusillillu suut tamaaniinnerinik nassuiaasersugaasarput.

Tamatuma saniatigut kapitalik 8 allanik 80-inik nunap assitaqarpoq sinerissat qanoq ittuussusiinik angallannikkullu qanoq atugassaqarfiunerinik nalunaarsimasunik, kiisalu sumiiffinni tamani uuliaarluernerup qanoq akiornissaanut siunnersuusiorfiusimasunik.

Suliaq Namminersorlutik Oqartussanit taamani Suliffissuaqarnermut, Nukissiornermut, Ilisimatusarnermut Suliffeqarnermullu Naalakkersuisoqarfiusumik kiisalu Aatsitassalerinermi Avatangiisinik Aqutsisoqarfimmit aningaasalersugaavoq. Suliamik ingerlatsisuupput Aarhus Universititimi Nukissiutinut Avatangiisinullu Misissuisoqarfik (DCE) kiisalu Pinngortitaleriffik, Nunatta Katersugaasivianit Toqqorsivianillu canadamiullu siunnersoteqarfiannit S.L. Ross Environmental Research Ltd-imit ikiorneqartut.

3 Sammenfatning

3.1 Atlas over oliespildsfølsomme kyst- og havområder i Nordøstgrønland (71°-81.5 ° N)

Der er siden 2000 udarbejdet kort over områder, der er følsomme overfor marine oliespild i Vestgrønland. Disse kort er udviklet i forbindelse med efterforskningen af olie i havområderne, og de dækker – i fem atlas – hele regionen fra 58° N til 77° N. Både kystzonen og offshore-områderne ud til EEZ-grænsen er behandlet.

I 2013/14 tildeltes i alt fem tilladelser til at efterforske og udvinde olie ud for Nordøstgrønland, og i forbindelse hermed aftaltes det at udarbejde tilsvarende kort for hele Østgrønland. Blandt betingelserne for tildeling af tilladelserne var, at firmaerne skulle bidrage økonomisk til miljøarbejde i området, og disse midler forvaltedes af Naalakkersuisut. Midlerne blev blandt andet brugt til at finansiere en række undersøgelser i årene 2016-2019, betegnet som *Strategic Environmental Study Program for Northeast Greenland*, med henblik på at forbedre den viden, der skal indgå i miljøregulering af olieaktiviteter i området. Udarbejdelsen af nærværende atlas indgik i dette arbejde.

Hensigten med atlasset er at få et samlet overblik over de ressourcer og miljøelementer, der er følsomme over for oliespild. Det drejer sig bl.a. om de biologiske forekomster (fisk, fugle m.v.) og om fiskeri- og fangstinteresser. Med en kortlægning af denne viden får såvel selskaber som myndigheder mulighed for på forhånd at vurdere, hvor de særligt følsomme områder findes med henblik på planlægning og prioritering af en indsats i tilfælde af et oliespild. Med Naalakkersuisuts beslutning i juni 2021 om at stoppe for olie- og gasefterforskning i Grønland, bortfalder risikoen for oliespild fra disse aktiviteter, men anden sejlads, herunder transport af olie, vil stadig udgøre en risiko.

Med denne sidste udvidelse kommer atlasserien til også at dække hele østkysten af Grønland, fra Kap Farvel til Nordostrundingen, samt de tilstødende åbne havområder. Den østlige udvidelse er delt op i to atlas: Nærværende atlas dækker fra Liverpool Land (71° N) til Nordostrundingen (81,5° N); det tilstødende område mellem Kap Farvel og Liverpool Land dækkes af et andet atlas (56° – 71° N) (Johansen et al. 2022), der bliver publiceret sideløbende med dette atlas. De to atlas er produceret parallelt, og dataindsamling samt metoder er derfor ens.

I projektet indgår følgende elementer:
- kystmorfologi,
- oceanografi og havis,
- biologiske ressourcer (fugle, fisk, havpattedyr osv.),
- human udnyttelse (bosættelse, fiskeri, jagt, turisme osv.),
- beskyttede områder (f.eks. Ramsar-områder),
- fortidsminder,
- logistiske forhold og metoder til at bekæmpe oliespild.

Kystlinjen er inddelt i 264 segmenter af ca. 50 km's længde, der er blevet klassificeret i fire grader af oliespildsfølsomhed – ekstrem, høj, moderat og lav. Klassifikationen er sket på baggrund af en indeksberegning, der integrerer ovennævnte miljø- og samfundselementer, herunder deres grad af forekomst og sårbarhed over for olieforurening. Offshore-området er delt op i 18 mindre områder, i hvilke følsomheden over oliespild er udregnet og klassificeret på samme måde som kysten, men her vist for de fire årstider, hver for sig.

Metoden til at beregne oliespildsfølsomhedsindeks tager udgangspunkt i et Canadisk system, der bl.a. er brugt i Lancaster Sound i det nordøstlige, arktiske Canada (Dickins et al. 1990). De enkelte elementer indgår i beregningen, dels med en værdi for følsomhed overfor oliespild generelt, dels med en værdi for, hvor talrig/vigtig forekomsten er langs hvert kystsegment eller i hvert offshoreområde. De biologiske elementer og den humane udnyttelse indgår med størst vægt i indeksberegningen.

Som en del af projektet er der ud fra satellitfotografier, samt geologiske kort, foretaget en kortlægning af kysternes morfologi (deres opbygning og materialesammensætning, f.eks. om de består af klippeflader eller sand). Ud fra denne, og beregninger af hvor udsatte kysterne er over for påvirkning fra bølger og is, er der opstillet et mål (indeks) for deres selvrensende evne efter en eventuel olieforurening. For eksempel vil en klippekyst, der er meget udsat for bølgeslag, hurtigere blive ”vasket ren” for olie end en sandstrand i en beskyttet lagune. Dette indeks indgår også i beregningen af kystsegmenternes oliespildsfølsomhed. I offshoreanalysen er koncentrationen af havis blevet brugt til at opstille et tilsvarende mål for områdernes evne til at ”holde” på olien.

Ud over den generelle klassificering af hele kystens og offshoreområdernes oliespildsfølsomhed er der på kystkortene udpeget en række mindre områder (*selected areas*). Disse områder er udvalgt, fordi de er særligt værdifulde, særligt følsomme over for oliespild, samt fordi de har en størrelse, der generelt gør det praktisk muligt at gennemføre en effektiv oliespildsbekæmpelse. Områderne er udvalgt på baggrund af en ekspertvurdering, og i en oliespildssituation bør de så vidt muligt prioriteres højt.

På baggrund af det samlede materiale er der foretaget en vurdering af egnede metoder til bekæmpelse af oliespild i de forskellige områder.

Kapitel 4 indeholder en generel introduktion til atlas-konceptet og den anvendte metode.

Kapitel 5 er en vejledning til brug af atlasset, herunder kort og tilhørende legender.

Kapitel 6 giver en overordnet beskrivelse af atlas-området, herunder dets oceanografi, havisforhold, kystmorfologi, biologi, humane udnyttelse og arkæologi.

Kapitel 7 indeholder kort i målestoksforholdet 1:5.5 mio., der viser offshoreområdernes oliespildsfølsomhed og symboler for de elementer (fisk, fugle, havpattedyr, mennesker), der bidrager mest til følsomheden i de enkelt områder på de forskellige årstider. Kortene er ledsaget af en detaljeret beskrivelse af forekomsterne i de forskellige områder.

Kapitel 8 indeholder 68 kortblade i målestoksforholdet 1:250.000 med angivelse af kysternes oliespildsfølsomhed og symboler for de forekomster, der bidrager mest til følsomheden. Kortene viser også de særligt udvalgte områder (*selected areas*). Til hvert kortblad er der udarbejdet en beskrivelse med oplysninger om områdets humane udnyttelse og biologiske forekomster. Derudover indeholder kapitel 8 andre 68 kortblade med angivelse af kysttyper og logistiske forhold, så som ankerpladser, landingspladser, mulige steder for udlægning af flydespærringer mm. Disse kort er ledsaget af en beskrivelse af adgangsforhold og egnede metoder til bekæmpelse af oliespild inden for hvert kortblad.

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4 Introduction

4.1 Objectives

This Environmental Oil Spill Sensitivity Atlas has been prepared to provide oil spill response planners and responders with tools to identify resources at risk, establish protection priorities and identify appropriate response and clean-up strategies in marine areas of Northeast Greenland.

The atlas is designed for planning and implementing year-round oil spill countermeasures in both coastal and offshore areas in Northeast Greenland between 71° N and 81.5° N latitude. An important component of the atlas is a sensitivity ranking system, which is used to calculate an index value describing the relative oil spill sensitivity of coastal and offshore areas. The sensitivity index value is calculated based on information on human use, biological occurrences, archaeology, and the physical environment. The sensitivity ranking system is based on a Canadian system used in Lancaster Sound (Dickins et al. 1990) and modified to meet the specific requirements of the Greenland study area (see Chapter 4.3).

As a supplement to the Canadian ranking system, several smaller areas of special importance have been selected for priority in case of an oil spill (see Chapter 4.4).

The major part of the atlas region is made up by the National Park of North and East Greenland outside the municipality system, while the southernmost part of the atlas region is included in the municipality Kommuneqarfik Sermersooq. The atlas region is very sparsely populated with no towns or settlements and only with a few military outposts, a weather station, and a research facility. Hunting sporadically takes place only in the southernmost part, where hunters from Ittoqqortoormiit occasionally go to catch polar bears. Some tourism takes place in summer, primarily in the form of cruise ships visiting sites along the coast.

Ecologically, the region is highly important for a number of seabird and marine mammal species. It is therefore essential that all possible measures are taken to minimise the environmental risk of oil pollution. The objective of this atlas is to contribute to that effort.

This atlas is an extension of a series of similar atlases prepared for West Greenland. Together with an atlas covering Southeast Greenland, developed alongside this atlas, the entire coastline of Greenland, except for the northernmost part, is now mapped. The northern coast remains unmapped due lack of oil exploration activities, but with the prospect of continued sea-ice decline and increased marine traffic, oil spill sensitivity mapping may become relevant in the future.

4.2 Contents and organisation

The study area covers the northern part of the east coast of Greenland, between 71° N and 81.5° N, including offshore areas as far east as the borders to the Exclusive Economic Zone (EEZ) of Iceland and Norway (Svalbard).

This atlas is produced as a report (pdf-document), which can be downloaded from the DCE website. On request to DCE, all data are also available in GIS format, which makes it possible to e.g., produce seamless maps at various scales.

The information in the atlas is organized by map scale, moving from offshore sensitivity (Chapter 7) in a scale of approx. 1:5.5 million, to shoreline sensitivity and operational information (Chapter 8) in a scale of 1:250,000.

Chapter 5 contains a user guide to the maps, which supplements the map legends.

Chapter 6 provides summary information on physical oceanography, sea ice conditions, ecology, shoreline morphology, human use, and cultural heritage sites in the atlas area. It also provides an overview of extremely and highly sensitive coastlines and the important areas selected for priority.

Chapter 7 covers the offshore parts of the atlas and contains offshore oil spill sensitivity maps for winter, spring, summer, and autumn.

Chapter 8 contains the coastline operational maps, which include shoreline sensitivity maps with:
- shoreline sensitivity rankings,
- shoreline species,
- human use,
- archaeological sites,
- selected areas,
- special status areas (protected areas),

and physical environment and logistics maps with:
- shoreline geomorphology,
- anchoring sites,
- landing sites for planes/helicopters,
- oil containment (booming) sites
- descriptions of potential countermeasures.

Detailed documentation of the input data and the parameters used in the oil spill sensitivity calculations are given in Appendix C, Chapter 12.

4.3 Sensitivity index system

An environmental sensitivity ranking system is used in the atlas to determine and illustrate the relative sensitivity of shoreline and offshore areas to the effects of an oil spill. This pre-spill ranking allows spill responders and on-scene planners to do a quick evaluation of which areas and environmental components that are most vulnerable to an oil spill, and thus provides the information needed to decide which areas to prioritize with which methods during a spill event. The following gives a short introduction to the sensitivity calculations. For a more details see Appendix C, Chapter 12.

Through a sensitivity calculation, each shoreline and offshore area receives a single numeric value, a sensitivity index, which represents the relative sensitivity of that area to a marine oil spill. This sensitivity index is subsequently ranked as extreme, high, moderate, or low and illustrated on the maps using colour codes.

The sensitivity index calculation is based on a scheme developed for Canadian atlases (e.g., Lancaster Sound, Dickens et al. 1990) with some modifications to account for the different biological and physical features of Northeast Greenland. It incorporates the biophysical and human use elements of the region that are important from an oil spill perspective. These elements are grouped within six categories, which can all contribute to the sensitivity index of shoreline and offshore areas: (1) biological resources (species occurrences), (2) oil residency (persistence by coastal type or sea ice status), (3) human use (hunting, fishery and tourism), (4) communities (permanently inhabited places), (5) archaeology, and (6) special status areas (protected areas).

Each of the six categories are assigned a weighting factor (shared weighting factor for all human categories (3-5)), which is based on our assessment of their relative importance within the region. Further, each shoreline segment or offshore area is assigned a value (a score) for each category, based on the relative abundance/importance of the occurrence of the category. For each shoreline segment/offshore area, these assigned values are then multiplied by the weighting factors to produce a single numeric value, the priority index (PI), for each of the six categories. The sum of the priority indices determines the sensitivity index of a specific shoreline or offshore area.

S = sum of PI

and

*PI = AV * WF*

where:

AV = assigned value of the category or species group (see below)

WF = weighting factor of the category

PI = priority index

S = sensitivity index (relative oil spill sensitivity of a shoreline/offshore area)

This description is somewhat simplified regarding the biological resources' category and the special status areas category. In contrast to the other four categories, which can only contribute to the sensitivity index of a shoreline or offshore area with one assigned value each, the biological resources category and the special status areas category can both contribute with several assigned values. Thus, if a shoreline or offshore area intersects two different protected areas, both areas contribute with an assigned value. Likewise, the biological resources category can contribute with an assigned value for each of the species/species groups listed in Table 1. These species/species groups have been selected based on their sensitivity to oil spills and their ecological importance in the regional ecosystem.

Further, the assigned values of species/species groups within the biological resources category are not merely attributed scores ranging between 0 and 5 as for most of the other categories, but calculated based on the following formula:

AV = (RS x RA x TM x ORI) / C

where:

AV = assigned value of species/species group

RS = relative oil spill sensitivity of the species/species group

RA = relative abundance of the species/species group

TM = temporal modifier (fraction of year present)

ORI = oil residency index

C = biological resource constant

Table 1. The relative sensitivity (RS) and characteristics of the included species or species groups in relation to oil spills. Note that there is not a complete correspondence between the species groups used in the shoreline and the offshore sensitivity calculation. For a detailed description of the species groups see Appendix C, 12.4.

SHORELINE					
Species/species group	**Vulnerability**	**Mortality potential**	**Sublethal potential**	**Recovery period**	**Relative sensitivity**
Fish and shellfish					
Arctic char	Moderate	Low/Short	Moderate	Moderate	14
Seabirds					
Alcids breeding	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	25
Alcids nonbreeding	High/Long	High/Long	Very high/ No recovery	Very high/ No recovery	21
Gulls breeding	Moderate	High/Long	Very high/ No recovery	Low/Short	17
Ivory gull breeding	High/Long	High/Long	Very high/ No recovery	Very high/ No recovery	22
Little auk breeding	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	25
Seaducks breeding	Very high/ No recovery	High/Long	Very high/ No recovery	High/Long	23
Seaducks moulting	Very high/ No recovery	High/Long	Very high/ No recovery	High/Long	23
Seaducks nonbreeding	Very high/ No recovery	High/Long	Very high/ No recovery	High/Long	23
Tubenoses breeding	Moderate	High/Long	High/Long	High/Long	18
Marine mammals					
Walrus	Moderate	Moderate	Low/Short	Very high/ No recovery	16
Polar bear	Moderate	High/Long	High/Long	Very high/ No recovery	19

OFFSHORE					
Species/species group	**Vulnerability**	**Mortality potential**	**Sublethal potential**	**Recovery period**	**Relative sensitivity**
Fish and shellfish					
Bottom fish	Low/Short	Low/Short	Moderate	Moderate	12
Pelagic fish	Low/Short	Low/Short	Moderate	Moderate	12
Seabirds					
Alcids	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	Very high/ No recovery	25
Ivory gull	High/Long	High/Long	Very high/ No recovery	Very high/ No recovery	22
Non-alcid pursuit divers	High/Long	High/Long	High/Long	High/Long	20
Seaducks	Very high/ No recovery	High/Long	Very high/ No recovery	High/Long	23
Surface feeding seabirds	High/Long	High/Long	High/Long	High/Long	20
Marine mammals					
Baleen whales	Low/Short	Very low/ Very short	Very low/ Very short	Moderate	9
Narwhal	Low/Short	Low/Short	Low/Short	Very high/ No recovery	13
Other toothed whales	Low/Short	Low/Short	Low/Short	High/Long	12
Polar bear	Moderate	High/Long	High/Long	Very high/ No recovery	19
Seals	Low/Short	Low/Short	High/Long	Moderate	13
Seals, whelping/ moulting	Very high/ No recovery	Very high/ No recovery	High/Long	Moderate	22
Walrus	Moderate	Moderate	Low/Short	Very high/ No recovery	16
Other groups					
Ice fauna	High/Long	High/Long	High/Long	High/Long	20

The relative oil spill sensitivity (RS) of the species/species group is based on available information regarding their vulnerability, recovery potential and the potential for lethal and sublethal effects, which are summarised in Table 1. For the included species/species groups, RS ranges from 9 to 25. The relative abundance (RA, scale 0 - 5) and timing of occurrence (TM, scale 0 - 1) are extracted from available knowledge and encoded for each shoreline and offshore area (see Appendix C, 12.4 for details).

The biological resource constant (C) is merely a value, which is used to scale down the result of the formula and bring the assigned values of the species/species groups in line with the assigned values from the other categories so that the importance of the categories are reasonably balanced. The size of C is determined by post-analysis of the different categories' contributions to the sensitivity index values of shoreline and offshore areas. In the current atlas C=35, which results in biological resources contributing with c. 22.5 % to the shoreline sensitivities (see Appendix C, 12.3).

The oil residency index (ORI) enters the formula for calculation of assigned values of biological resources, but it also contributes to the sensitivity index of shoreline and offshore areas as an independent category. The ORI provides a relative estimate of the potential residence time of oil stranded within the shore zone under normal conditions. The index is only an approximation, because many aspects of a spill are unknown until the time of the incident (e.g. volume, oil type, degree of weathering). The oil residency is ranked from 1 to 5, where 1 reflects a short residency, and 5 a longer residency. This is mainly based on the shoreline exposure and substrate. Table 2 shows the basic relation. A few minor modifications to the classification of the ORI value are made to account for slope (where steep shores are less vulnerable) and for a few geomorphological coast types considered to have longer residency times (archipelagos, pocket beaches, barrier beaches and deltas). Offshore ORI is determined by duration and degree of ice cover (see Appendix C, 12.3 for details).

Table 2. Basic oil residency index (ORI) ranking based on a combination of shoreline substrate and exposure class.

Substrate/ Exposure class	Protected	Semi-protected	Semi-exposed	Exposed
Coarse sediment	4	3	1	1
Fine sediment	4	3	1	1
Ice	1	1	1	1
Not classified	4	3	2	1
Rock	4	3	1	1
Rock and coarse sediment	5	4	2	1
Rock and fine sediment	5	4	2	1

Shoreline and offshore areas were assigned human use values (scale 0 – 5) based on their relative importance for hunting, fishery and tourism. HU=0 corresponds to no human use, and HU=5 to extensive human use. Within the communities category, the assigned values (scale 0-10) were based on the proximity of the shorelines to permanently inhabited places - towns, settlements and stations. This category was not included in the sensitivity index calculation for offshore areas. Shorelines were assigned weights for the archaeology category (scale 0 – 5) based on the occurrence of prehistoric and historic sites at risk of being impacted by oil, or oil recovery operations, in case of a spill. Again, this category was not included in the sensitivity index calculation for offshore areas. Finally, both shoreline and offshore areas were assigned values for the special status areas category, if they overlapped protected areas like Ramsar sites, bird protection areas or national parks. See Appendix C for a detailed description of how the assigned values of the different categories were determined for the shoreline and offshore areas, including a description of the data on which they are based.

Following the calculation of a sensitivity index value for each shoreline and offshore area, these values were ranked into the final sensitivity classes extreme, high, moderate, or low. The ranking of an individual shoreline or offshore area was based on the size of its sensitivity value relative to the sensitivity values of other shoreline or offshore areas within a radius of c. 250 km. Thus, the ranking highlights local, rather than global, differences in sensitivity. See Appendix C, 12.6, for a detailed description of the ranking procedure.

4.4 Selected areas

A total of 15 areas along the coast and within fjords have been selected for high priority in an oil spill situation. These areas are identified by a hatched polygon labelled with a number with the prefix 'S_E' (E indicate that it is part of the East Greenland atlas series). The basis for their selection is that they are, relative to the shoreline in general: i) of high value either environmentally or for human use; ii) particularly sensitive to oil spills; and iii) of a size and form that may allow effective protection in an oil spill situation with a manageable amount of manpower and equipment. The selection of these areas is based on the principles from a Norwegian system (Anker-Nilssen 1994), which gives priority to oil spill sensitive areas for oil spill contingency planning, based on expert judgment. Selected areas were not included in the sensitivity index calculation, but after the sensitivity calculation and ranking, all shoreline segments, which intersect a selected area, were by default attributed the sensitivity class "extreme". See additional details in Appendix C, 12.7.

4.5 Countermeasure overview

Oil spill countermeasure considerations are described for each of the 68 operational shoreline maps in Chapter 8. The following is an overview of their basis and content.

The low level of industrial and marine activity in the waters of East Greenland has until now meant a limited risk of marine oil spills. The main sources of potential oil spills are related to fuel supply to the communities and to fuel carried by fishing vessels and other ships. Global warming, and the resulting decline in sea ice concentration, facilitates the possibilities for more intensive marine traffic in the area, increasing the risk for oil spill accidents.

If a significant spill occurs, there will be severe limits to the response possible, particularly during the critical initial stages of the incident. The remoteness of the region, the presence of sea ice most of the year, the distance to existing response bases, and, most importantly, the low level of marine activity practically eliminates the possibility of an effective initial marine-based response unless dedicated response plans and equipment are available as is the case during offshore exploration drilling. The main countermeasure activities that could be carried out are described in general terms below, with specific local notes where applicable on each of the operational maps. These countermeasures could include surveillance and tracking, *in situ* burning of spills in ice, dispersant-use in offshore areas, and the protection and clean-up of important coastal entities, such as the "selected areas", site-specific resources (such as seabird breeding colonies) and extremely sensitive shorelines (see Chapter 4.4). An Environment and Oil Spill Response-analysis (EOS) should be carried out to support the choice of countermeasures (Link).

Surveillance and tracking activities will be critical in determining the location and extent of spilled oil. This will be particularly important in establishing clean-up priorities and adjusting strategies when a long-term and geographically widespread response is required. Aircraft-based remote sensing and surveillance overflights could be mounted from the airports/strips at Kulusuk (outside the atlas area), Constable Pynt (just south of the atlas area), Mestersvig or Station Nord (just northwest of the atlas area). A program/model to track oiled ice would be required for spills that occur among pack ice or for open water spills that reach the pack ice edge or persist through freeze-up in protected inshore waters.

Conventional containment and recovery techniques will be severely limited by the lack of vessels with which to deploy and operate equipment unless vessels and equipment are available on standby in the area as part of a response plan for specific activities such as offshore drilling. Spills that are not contained within the first few days will likely be too thin and widespread to allow effective recovery.

In situ burning may be applicable as an initial response measure for spills in ice conditions. Pack ice concentration of 6 tenths or greater will limit the spread of an oil spill and may allow the opportunity for burning until some time after an incident. For inshore areas and fjords that freeze over winter, oil that persists through the freezing season may be available for burning the following melt season, when released into leads and melt pools. This would require a tracking and monitoring program through the winter to delineate oiled areas and to prepare for the likely release period.

Dispersing an oil spill by applying dispersants is another effective way of removing oil from the surface in the early phases of an oil spill. This method, and the chemicals used, should only be applied after an Environment and Oil Spill Response-analysis (EOS) (Link) and require approval from the Greenland authorities. The method is not allowed in shallow areas (see below), but should be considered in offshore areas to prevent or reduce surface oil from contaminating more sensitive inshore areas. Dispersants should receive particular consideration in situations where containment and recovery countermeasures may not be fully effective due to the size of the spill, the logistical support for a large-scale clean-up is limited, the prevailing weather and sea conditions are adverse, or a combination of the three. There are some rules of thumb: #1 If the depth is > 50 m and distance to land is > 10 km, dispersants can be used. #2 If depth > 50 m and distance to land < 10 km, dispersant application can be considered, and even if these criteria are not met, specific conditions may still justify the use of dispersants (occurrence of seabirds, wind/currents direction). #3 If none of the above criteria are met, use of dispersant should not be considered.

Shoreline protection countermeasures will also be limited by a lack of logistical support. In case of an oil spill threat, countermeasure priority should be given to the selected areas, the site-specific resources and the extremely sensitive shorelines, considering the time of the year (e.g. no birds are present at breeding colonies in the winter). Particular priority should be given to the selected areas, which are vulnerable to oiling. These can generally be protected with a relatively modest effort and could, in some cases, be difficult to clean if heavily oiled.

Containment booms are used to control the spread of oil and reduce the possibility of polluting shorelines and other nearby resources (i.e. keeping an oil-leaking ship contained in a smaller fiord or inlet). In many cases, deflection booming, used to prevent an oil spill from reaching a vulnerable area, will be preferable to containment booming, because the tidal currents exceed 1 knot. While deflection booming may not offer complete protection of the "selected area", it will be valuable in limiting the extent and degree of contamination and lead to faster and more complete post-spill recovery. Booming strategies will require monitoring and perhaps repositioning periodically to account for changes in current strength and direction.

A more significant limitation for shoreline protection countermeasures will be that dictated by the water currents and topography. Little water current information is available for the area; the few data available indicate that tidal currents are strong in most areas – as high as 4 knots. This coupled with steep, rocky shorelines and bottom contours may preclude effective booming. As noted above, for areas that can be boomed, the most effective strategy may be to use deflection booming to limit the extent of shoreline oiling, which will potentially speed up recovery.

It should be noted that there are many areas, including some of the selected areas, for which effective containment operations are not likely to be possible. In such areas, use of dispersants and/or in situ burning should be considered and countermeasures offshore may present the most realistic option for effective protection.

Much of the coastline in the region covered by this atlas consists of a high-relief rocky shoreline that is moderately or highly exposed to prevailing weather and sea conditions as well as ice action. In many areas, fjords, bays and other inshore waters may also be somewhat protected from extensive contamination by the flushing action of tidal currents and by the natural outflow from streams and rivers. As a result, much of the shoreline may not require a widespread active cleaning effort unless it is heavily contaminated. Where active shoreline clean-up is required, priorities for restoration can be established based on both the environmental sensitivity and oil persistence factors. Preference should be given to *in situ* cleaning techniques such as in-place washing of rocky shores, use of shoreline cleaning agents, *in situ* burning and bio-remediation. Use of these techniques will minimise the amount of oily material collected and subsequent hauling requirements. Disposal site selection was beyond the scope of this atlas project and will require extensive study involving technical, logistical, environmental, and political factors. An alternative to land disposal within the region would be the trans-shipment of collected oily materials from temporary stockpiles to disposal sites and/or incineration elsewhere. Note that many archaeological remains are found very close to the coast and that they can be sensitive to cleaning techniques and other land-based activities.

Marine access for shoreline clean-up may be limited in some areas by shoaling and off lying rocks and islets. In many areas, locally forming ice and the encroachment of seasonal pack ice may also limit access. The steep shorelines in many areas will rule out the use of remote staging areas and may necessitate ship- or barge-based clean-up operations.

Safe havens are sites where unloading and/or stabilisation operations could be carried out on a stricken vessel leaking oil with limited risk of fouling extensive and sensitive shorelines. No safe havens has been proposed for the atlas area. There are a number of sites that could potentially be considered for use as safe havens, but the available information is insufficient (usually limited or no soundings) to fully recommend them, and often sensitive shorelines are located nearby. In these instances, reconnaissance at the time of the spill would be required to determine their acceptability as safe havens. These locations are identified in the text accompanying the map sheets as *potential safe havens* but not shown on the map sheets.

5 Users guide

The region covered by this atlas is the northern part of East Greenland from 71° to 81.5° N. Only the southernmost small part of the atlas area is included in the municipal system of Greenland (Kommuneqarfik Sermersooq), while the remaining and by far major part is made up by the National Park of North and East Greenland. The offshore waters inside the EEZ (to the Icelandic and Norwegian (Svalbard) border) are also included. The entire region is generally referred to as 'the study region/area', 'the region covered by this atlas', or 'the sensitivity mapping region'.

Offshore sensitivity information is given in Chapter 7. This information, covering the entire study area, is presented on one-page maps with an approximate scale of 1:5.5 million.

Detailed shoreline information is given in Chapter 8 on maps with a smaller scale. The entire study area is covered by a total of 68 separate maps with a scale of 1:250,000 (A4 size). The name of each map reflects the northern latitude (degrees N) of the area covered, and the position of the area from west to east. For example, the western-most map (map number 1) that covers the area at 75° N, is named Map 7501E, and the next to the east is named Map 7502E. Note that there are two rows for each latitudinal degree. Thus, the map to the north of Map 7501E is at 75.5° N and is named Map 7551E.

In Chapter 8 there are two series of shoreline maps: Sensitivity Maps and Physical Environment and Logistics Maps. The sensitivity maps are on the left-hand side, and physical environment and logistics maps are on the right. Descriptive text appears on the pages between these maps.

Appendix C offers a detailed insight into the parameters used in the sensitivity calculations and the data on which the analyses are based.

5.1 Shoreline and Offshore Sensitivity Maps

5.1.1 Sensitivity index and icons (animal and other symbols)

The shoreline zone in the study area has been divided into 264 shoreline segments, each approximately of 50 km (+/- 10 km) length, including islands and archipelagos. The 50 km length threshold of segments has been chosen since this value is used in the West Greenland atlas series, and thus gives comparable methodology between the atlases. However, in some instances the lengths of segments can be shorter or longer to preserve a cohesive uniformity of a segment. This typically occurs in places where the combined shoreline length of an island, or a cohesive archipelago group, is between 40 and 60 km.

The 264 shoreline segments are covered on 68 map pages and are numbered consecutively from south to north. The numbers are given on the maps with the nearest latitudinal degree south of it as prefix, along with an E indicating the segment is part of the East Greenland atlas series, e.g. 75E_507 for shoreline segment no. 507. Note that the segment numbering is continued from the numbering of the segments in the atlas covering Southeast Greenland.

The offshore part of the study area has been divided into 18 offshore areas. The boundaries of these areas are based on bathymetry, sea ice cover and biodiversity, so the areas are relatively homogenous in relation to these three features.

An oil spill sensitivity index value has been calculated for each of the 264 shoreline and 18 offshore areas based on:
i) abundance and sensitivity of selected species (or species groups),
ii) human use (mainly military presence, research, tourism and fishing/hunting),
iii) potential oil residency (Oil Residency Index); on the shoreline based mainly on wave exposure, substrate, yearly ice cover and slope of coast; in offshore areas based on sea ice cover,
iv) presence of inhabited sites (towns/settlements and stations),
v) presence of archaeological sites (for shorelines only),
vi) presence of special status areas (protected areas).

The sensitivity index value for each of the 264 shoreline segments and 18 offshore areas is given on the opposite page to the corresponding map. All areas are ranked as extreme, high, moderate, or low sensitivity areas, and a corresponding colour code has been used. Detailed index value calculations for each shoreline and offshore area are given in Appendix A and Appendix B, respectively.

The importance of human use and the abundance of several species/species groups in each of the shoreline and offshore areas have been rated on a scale from 0 (no importance/abundance) to 5 (high importance/abundance) (see map legend or Chapter 4.3 for a list of species/species groups included). If human use or abundance of a particular species along a shoreline is rated ≥ 2, it is indicated on the shoreline sensitivity map with a black icon (and a letter code) next to the shoreline area number. On the offshore maps, icons are only shown for species occurrences and human uses rated ≥ 3 to avoid cluttering of the maps. Please note that similar icons in the offshore and the shoreline sensitivity maps may cover different species/species groups (see Chapter 4.3, Appendix C and the map legends in Chapters 7 and 8).

Blue icons (animal symbols) indicate site-specific species occurrences, for example seabird breeding colonies or terrestrial haul-out sites for walrus.

In the description associated with a shoreline sensitivity map, all site-specific species occurrences shown on the map are mentioned, as are non-site-specific occurrences and human uses rated ≥ 2. For a full list of what contributes to the sensitivity of an individual shoreline segment, refer to Appendix A. In the description associated with an offshore sensitivity map, all species occurrences and human uses are mentioned, regardless of rating. For full details on what contributes to the sensitivity of an individual offshore area during a particular season, refer to Appendix B.

5.1.2 Selected areas

To supplement the rather general mapping of shoreline sensitivity using the 50 km long shoreline segments, a number of small sensitive areas have been selected (see also Chapter 4.4).

A total of 15 areas along the coast and within the fjords have been selected as priority areas in the case of an oil spill situation. These areas are identified by a hatched signature and a number with the prefix 'S_E' (for selected area East Greenland). The basis for their selection is that, compared to the coastline in general, they are:
i) of high value either environmentally or for human use,
ii) sensitive to oil spills, and

iii) of a size and form that may allow effective protection in an oil spill situation with a manageable amount of manpower and equipment.

See Appendix C, 12.7 for a short description of the 15 selected areas.

5.1.3 Season information

The offshore oil spill sensitivity is presented on seasonal maps, reflecting the changes in sensitivity during winter (January–March), spring (April–May), summer (June–August) and autumn (September–December). Seasonal occurrence of species and human resource use rated ≥ 2 are presented via a temporal occurrence graph accompanying each shoreline sensitivity map.

5.2 Physical environment and logistics maps

5.2.1 Coast type descriptions

The shores in the study area are divided into eleven different shore types on the physical environment and logistics maps in Chapter 8. Shore type definitions are given in Table 3 and example photos of shore types in Figures 1-14. See Appendix C, 12.6 for details on the shoreline classification.

5.2.2 Access

For each operational map, access information is provided to cover the following topics:

Marine access: Navigational information, prevailing currents, tides, local ice conditions, shoal hazards, identified anchorages and beach landing sites.

Marine access information is taken from the nautical charts for the area, from the East Greenland Pilot (https://eng.gst.dk/media/2919625/greenland-pilot-sailing_directions-for-east-greenland_1st-edition_updated-to-skr-32-2019.pdf), the Greenland Harbour Pilot (https://www.gronlandskehavnelods.dk/?&lang=ENG), and from the corresponding descriptions in the Arctic Pilot, Volume III, published by the British Admiralty.

See Appendix E for detailed information on the anchoring sites indicated with icons on the physical environment and logistics maps. DCE and GINR take no responsibility for the anchoring sites, neither in terms of their exact location, nor in terms of their suitability. We urge users of the atlas only to view the anchoring sites on the maps an indication, and to consult the detailed information in original sources (listed in Appendix E) if planning to use a site.

Air access: Size, surface and seasonality of airports/strips and heliports/pads within the atlas area. Details can be found at https://aim.naviair.dk/en/ and by consulting Air Greenland.

See Appendix F for detailed information on the landing sites indicated with icons on the physical environment and logistics maps. DCE and GINR take no responsibility for the landing sites, neither in terms of their exact location, nor in terms of their suitability. We urge users of the atlas only to view the landings sites as an indication, and to consult appropriate authorities (e.g. Air Greenland) and survey the area if planning to use a site.

Inhabited places: There are no civilian towns or settlements in the atlas area and therefore very few logistical support points. However, two military outposts (Daneborg and Mestersvig) and a weather station (Danmarkshavn) are manned throughout the year, and the research station at Zackenberg is open during summer. All of these sites are indicated on the maps.

Table 3. Shore types in East Greenland between 60° N and 81.5° N.

	Shore type	Characteristics
Shores consisting of solid rock	Rocky coast	– Coast consisting of bedrock of varying morphology, elevation and gradient. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur. – The occurrence of abraded inter–tidal platforms is indicated by the gradient.
	Archipelago	– Several smaller islands, normally developed in solid rock. – Rocky coasts and pocket beaches might occur, but have only been classified individually if the perimeter of the island exceeds 6 kilometers.
Shores consisting of sediments of glacial, alluvial or colluvial origin	Moraine	– Shore consisting of unconsolidated glacial sediments. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur. – The occurrence of abraded intertidal platforms are indicated by the gradient.
	Alluvial fan	– Shore consisting of alluvial fan. – Narrow beach with sediment consisting of boulders, cobbles, pebbles, gravel and sand might occur. – The occurrence of intertidal platforms is indicated by the gradient.
	Talus	– Shore consisting of talus (colluvial fan) of varying gradient. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur.
Shores consisting of marine sediments	Beach	– Long, linear depositional beaches of well–sorted sand, gravel, pebbles, cobbles or boulders. – Beach ridge plains often occur landwards the beach.
	Barrier beach	– Coastal environment consisting of coastal barriers and lagoons with beaches, dunes, salt marsh and tidal flats. – Spits often occur near tidal inlets. – Wash–over fans might occur on barriers. – Beaches consisting of well–sorted sand, gravel, pebbles or cobbles.
Shores consisting of deltaic sediments	Delta	– Low gradient intertidal platform consisting of fluvial sediments in front of a river valley. – Braided river channels often occur within the inter–tidal zone. – Sediment normally fine–grained ranging from clay to fine sand.
Others	Glacier coast	– Occurrence of a glacier in the intertidal zone.
	Not classified	– The shore has not been classified due to lack of information (cloud cover, shadow, etc.).

Examples of shorelines in Northeast Greenland


Figure 1. Steep rocky coast with seabird breeding colony. Hvalros Ø. Photo: D. Boertmann.


Figure 2. Talus slopes at Kap Broer Ruys. Photo: D. Boertmann.


Figure 3. Glacier coast, Antarctic Glacier. Photo: D. Boertmann.


Figure 4. Low sediment beach with walrus haul out. Dove Bugt. Photo: D. Boertmann.


Figure 5. Low sediment beach in areas with much ice in summer. Henrik Krøyer Holme. Photo: D. Boertmann.


Figure 6. Spit and low coasts. Hochstetter Forland. Photo: D. Boertmann.

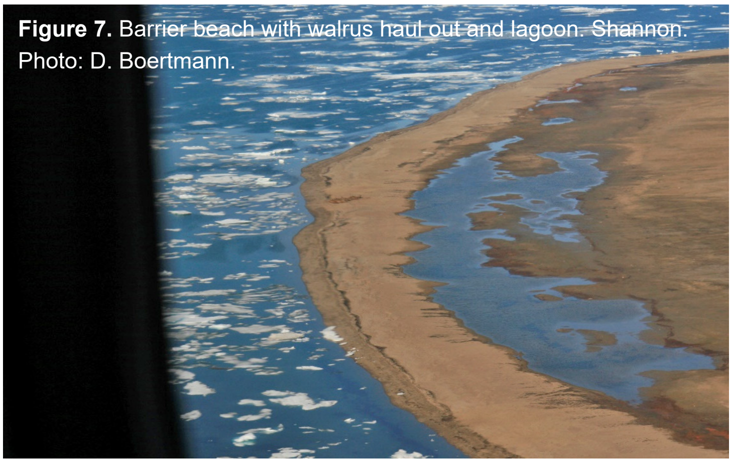


Figure 7. Barrier beach with walrus haul out and lagoon. Shannon. Photo: D. Boertmann.


Figure 8. Low rocky coast alternating with sediment beaches. Danmarkshavn. Photo: D. Boertmann.

Figure 9. Low coast with lagoons and barriers. Kilen. Photo: D. Boertmann.

Figure 10. Low island with pocket beaches off Germania Land. Photo: D. Boertmann.

Figure 11**.** Inshore waters covered with semi-permanent fast ice and large tabular icebergs. Jøkel Bugt. Photo: D. Boertmann.

Figure 12. Sheltered bay with long lasting fast ice, mid-august 2009. Dove Bugt. Photo: D. Boertmann.

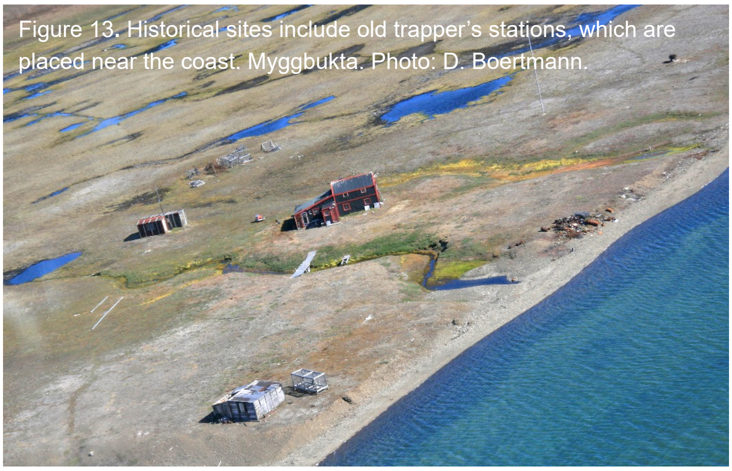


Figure 13. Historical sites include old trapper's stations, which are placed near the coast. Myggbukta. Photo: D. Boertmann.

Figure 14. House ruins and other archaeological remains from former settlements are common along the coasts of the region covered by the atlas. Kap Wardlaw. Photo: D. Boertmann.

5.2.3 Potential safe havens

A *safe haven* is a site where unloading and/or stabilisation operations can be carried out on a vessel leaking oil with limited impact on the environment. Small bays and inlets which can be exclusion boomed and which are situated in areas with low sensitive coasts qualify for such areas. No safe havens are indicated on the map sheets, due to lack of navigation information. However, in the text accompanying the physical environment and logistics maps, we have mentioned a number of sites which may possibly be used as safe havens after reconnaissance or consulting locals. It will be more feasible, at the time of an incident, to investigate the use of such a nearby *potential safe haven*, rather than searching for safe havens within the entire region. If only those areas that unreservedly can be recommended for use as a safe haven were to be identified, the list would be short.

5.2.4 Countermeasures

Countermeasure information is given for each map. Potential sites for booming and inshore containment lengths are indicated on the maps.

5.2.5 Topographic maps and nautical charts

The southern part of the study region (71°–75° N) is covered by 14 topographic maps at a scale of 1:250.000. The maps are named, from south to north: 71 Ø.1, 71 Ø.2, 71 Ø.3, 72 Ø.1, 72 Ø.2, 72 Ø.3, 73 Ø.1, 73 Ø.2, 73 Ø.3, 73 Ø.4, 74 Ø.1, 74 Ø.2, 74 Ø.3, 74 Ø.4, 75 Ø.1, 75 Ø.2 and 75 Ø.3. These maps can be downloaded for free at Kortforsyningen (Link). The website is currently only available in Danish.

The region north to 77° 30′ N is covered by a number of nautical charts: 2600 (1. 400,000), 2701, 2702, 2801 (all 1: 250,000), and 2730 and 2750 both with detailed maps of anchor sites. These charts are available from Rosendahls-Schultz Distribution (http://www.kobsokort.dk/).

6 Summary information

6.1 The offshore area

The offshore area covered by this atlas is the western part of the Greenland Sea within the Greenland EEZ. The East Greenland Current (EGC) is the most prominent circulation feature in the Greenland Sea. The EGC flows southward along the east coast of Greenland from the Fram Strait (79° N) to Kap Farvel (60° N) and conveys cold water from the Polar Basin. The EGC is strongest and most energetic along the continental shelf break. Warmer Atlantic water from the West Spitsbergen Current flows westward into the atlas area and forms the outer part of the EGC. Another important feature of the circulation in the Greenland Sea is the Greenland Sea Eddy, centered in the western Greenland Sea at 75° N (Figure 15).

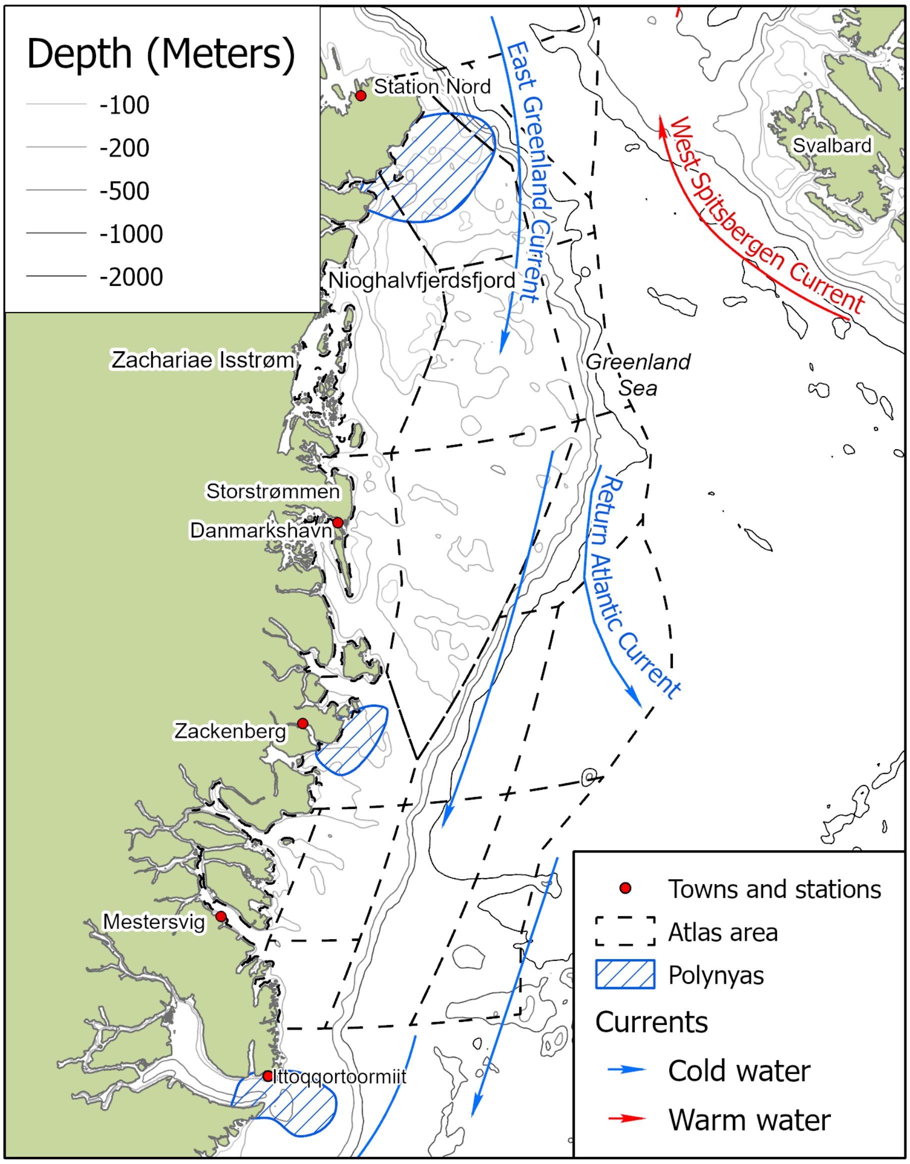


Figure 15. Schematic representation of the warm to cold water currents in the Greenland Sea (from Håvik et al. 2017). EGC = East Greenland Current, WSC West Spitsbergen Current, RAC = Return Atlantic Current.

6.2 Sea ice

In the atlas area, several types of ice occur: Two types of sea ice – the fast ice anchored at the coast and immobile, and the dynamic drift ice consisting of floes of varying size and density. In addition, icebergs originating from calving glaciers are frequent along the coast in some areas.

Drift ice occurs throughout the region, with a maximum extension in March and a minimum in September (Figure 17). In March, most of the region within the continental shelf break is usually covered by sea ice, while in September the ice is restricted to the northern part. The drift ice consists of several types of ice of varying age (first year (or annual), second year, multiyear). It is transported south by the East Greenland Current along the coast and is usually

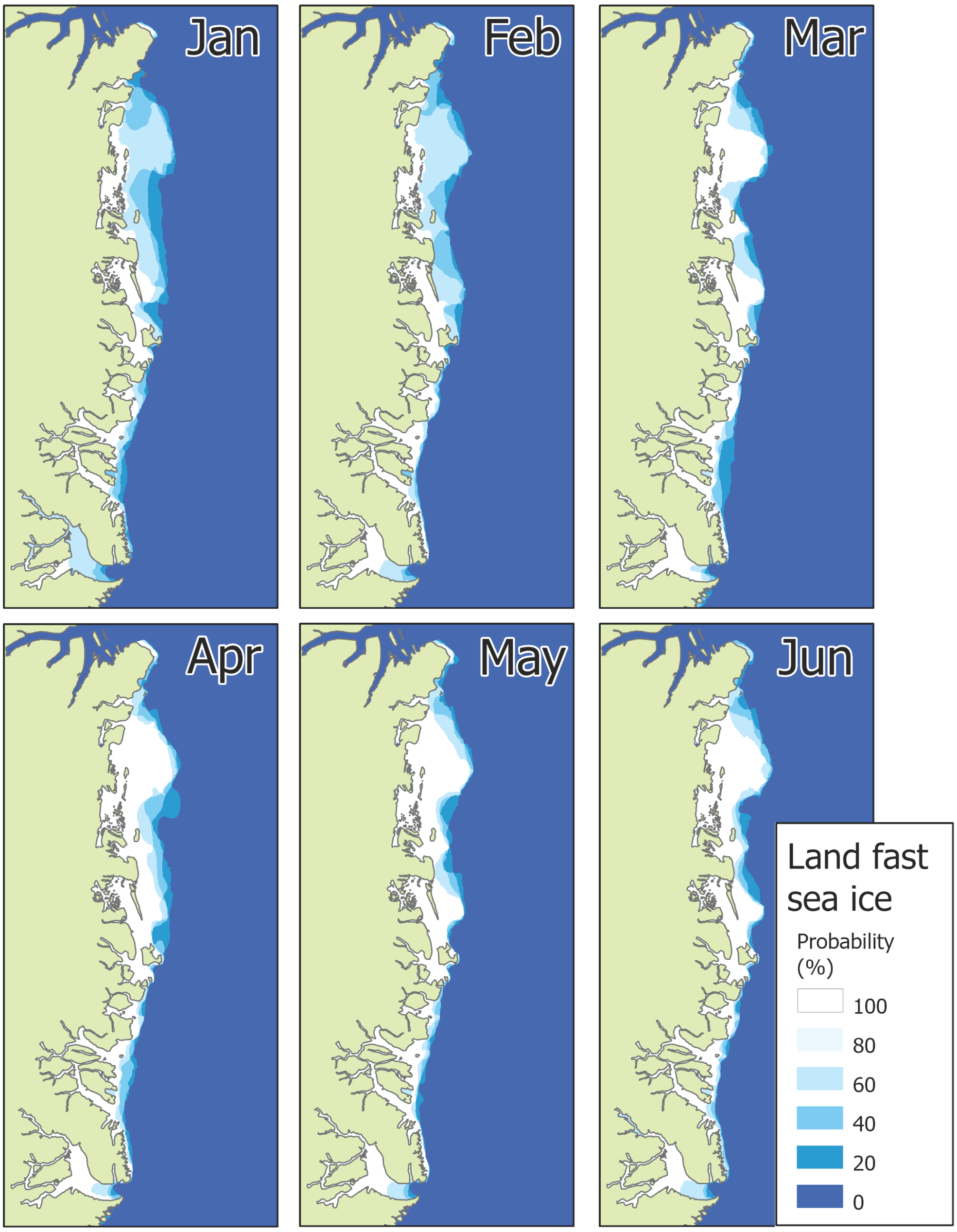


Figure 16a. Probability of land fast sea ice cover from January to June based on mid-month sea ice charts 2015–2019 from the Danish Meteorological Institute (Greenland_WA dataset). In each pixel, the probability of fast ice cover is calculated as the number of years out of five that the pixel was covered by a fast ice polygon on the mid-month ice chart. The resolution is however very coarse and does not capture the detailed ice conditions in smaller fjords.

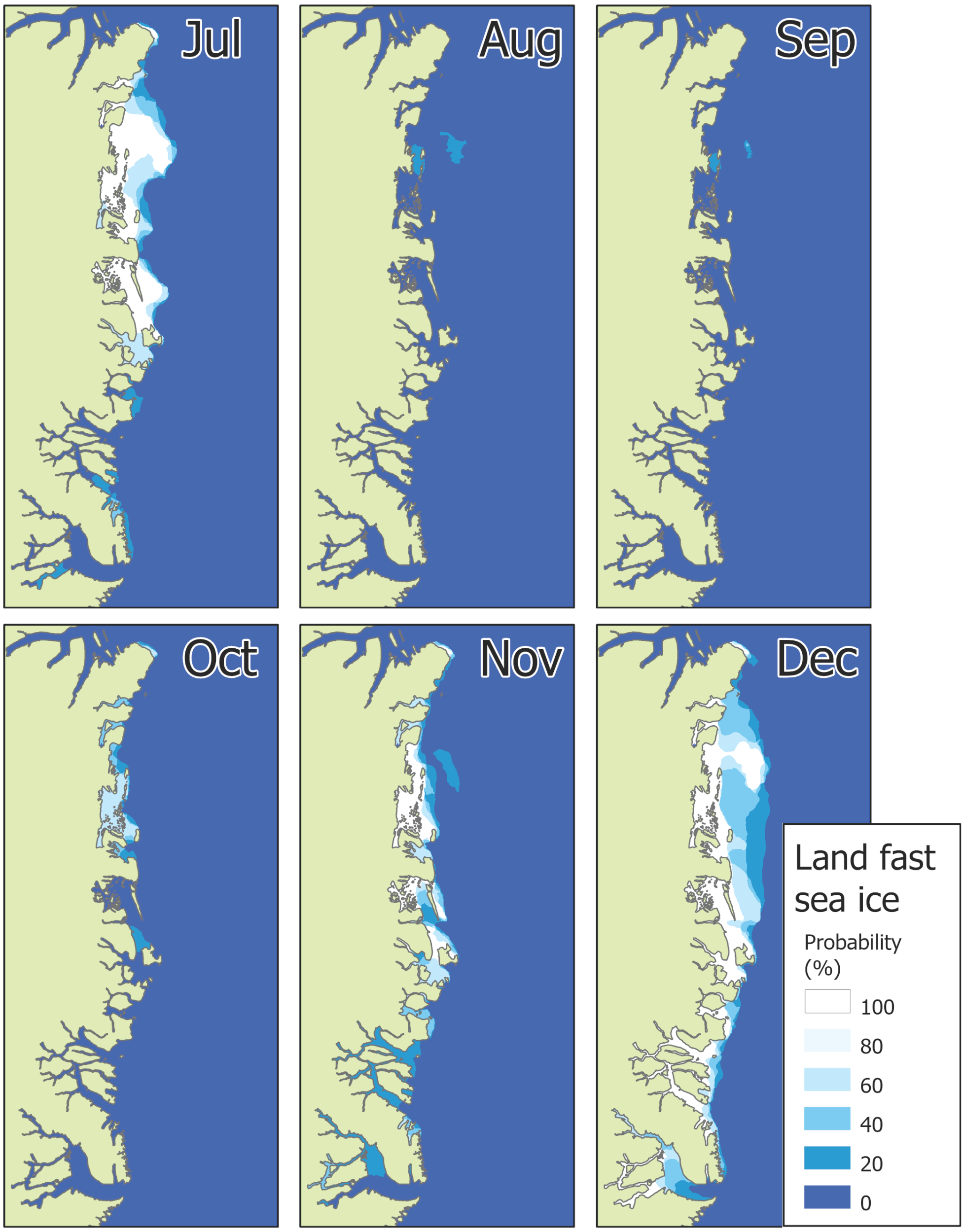


Figure 16b. Probability of land fast sea ice cover from July to December based on mid-month sea ice charts 2015–2019 from the Danish Meteorological Institute (Greenland_WA dataset). In each pixel, the probability of fast ice cover is calculated as the number of years out of five that the pixel was covered by a fast ice polygon on the mid-month ice chart. The resolution is however very coarse and does not capture the detailed ice conditions in smaller fjords.

very dense and difficult to navigate, except during the summer months August and September.

In recent decades, the sea ice cover of the northern hemisphere has been reduced in extent, duration and thickness, and its composition has also changed. For example, the fraction of multiyear ice has decreased (Perovich et al. 2019). This is also reflected in the sea ice of the region covered by this atlas; during the past decade, some summers have had very light ice conditions.

For most of the year, fast ice covers the fjords and forms a shelf along the outer coast (Figure 16a, b). The fjord ice usually disappears during July and August, and the ice shelves along the outer coasts also melt annually. The fast ice cover

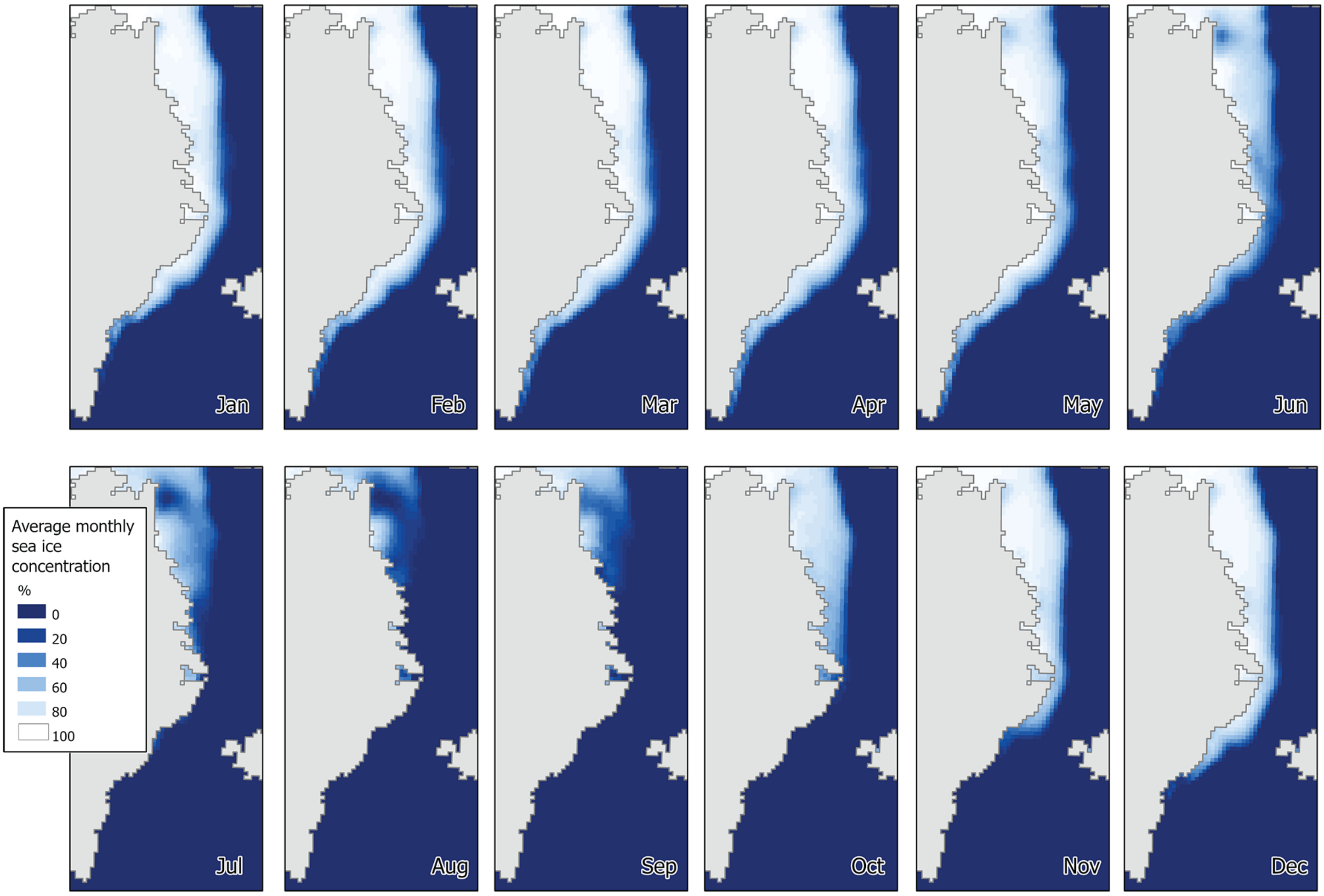


Figure 17. Average monthly sea ice concentration 1979-2019 based on the dataset "Sea Ice Trends and Climatologies from SMMR and SSM/I-SSMIS, Version 3" from National Snow & Ice Data Center (Stroeve & Meier 2018).

is at its minimum in September. However, in some areas a stationary or semi-permanent shelf made up from fast ice and consolidated drift ice is present throughout the summer. The most prominent fast ice area is found between Germania Land and Hovgaard Ø (i.e. to south of the Northeast Water) and is called the Norske Øer Barrier (Schneider & Budeus 1997). This ice area usually persists throughout the summer but has in recent decades proved less stable (Sneed & Hamilton 2016).

Icebergs differ from sea ice since they originate from glaciers on land. They are deep-drafted and with appreciable heights above sea level. They pose a considerable hazard to navigation and offshore activities. In Northeast Greenland, the most prolific iceberg producers are the glaciers named Nioghalvfjerdsbræ, Zachariae Isstrøm and Storstrømmen (see Figure 15). The two former glaciers (located between 78° 00′ N and 79° 30′ N) mainly produce large tabular icebergs, which are often trapped in the shore-fast sea ice and only released during certain break-out years, when many icebergs can start drifting (Dowdeswell et al. without year). The general movement of icebergs from the Northeast Greenland glaciers is southwards along the coast, where they are transported by the East Greenland Current.

6.3 Coastal zone geomorphology

The coasts of the atlas region are very diverse. Rocky shores made up from bedrock, basalts or sedimentary rocks are frequent – in some parts tall and steep – but talus slopes are also frequent (Table 4). In some areas, extensive sedimentary coasts are found, for example at Hochstetter Forland, Shannon and Germania Land (Figures 7, 8, 9 and 10); also, Kilen in the utmost north has a low sedimentary coast (Figure 12). Large deltas with low banks of gravel, sand and mud are numerous, while barrier islands and lagoons are few (Figures 10 and 12). At Nordostrundingen and in Antarctic Bugt there are long coastlines covered by marine terminating glaciers producing no or very few icebergs (Figure 6). Much more active glaciers producing icebergs are found at many other coasts, especially in Jøkel Bugt (Figure 14).

The total length of the coastline on the 1:250.000 scale base map is c. 12594 km of which c. 1222 km is archipelagos and c. 11372 km is mainland coast and larger islands. The distribution of segments on shore type and exposure categories, respectively, are given in Table 4. In terms of shoreline length, 'Rocky coast' is the dominant shore type (53%), and 'Protected' is the dominant exposure class (31%). By length, the 'Rocky coast' and 'Archipelago' shore types constitute 63.5% of the total investigated shoreline. Ca. 58% of the coast is classified as 'Protected' or 'Semi-protected', and around 65% as 'inclined'. See Appendix C, 12.3 for further details.

Table 4. Distribution of shore types by length on the 1:250.000 scale base map.

Shore type	Km	%
Rocky coast	6673	53
Archipelago	1222	9.7
Glacier coast	899	7.15
Moraine	456	3.6
Alluvial fan	538	4.3
Talus	2122	16.9
Beach	15	0.1
Barrier beach	163	1.3
Delta	502	4
Total	**12595**	**100**

6.4 Ecology of the area

Important marine ecological elements in the atlas area include polynyas along the coast (Figure 15) and the shelf break in combination with the marginal ice zone (MIZ). The most significant polynya is the Northeast Water to the north. This is an important habitat for walrus, narwhal, bowhead whale and seabirds. There is another polynya between Shannon Island and Clavering Island (sometimes referred to as the Sirius Water), which is also important for walrus and seabirds. Along the shelf break, the primary production is relatively high and here bowhead whales and seabirds congregate—the latter especially in late summer and autumn. In the southernmost part of the atlas area, there are large seabird breeding colonies associated with the polynya in the mouth of Scoresby Sound (just to the south of the atlas region). Large concentrations of harp seals and hooded seals whelp offshore on the drift ice in the southern part of the atlas area in March and April (Figure 18).

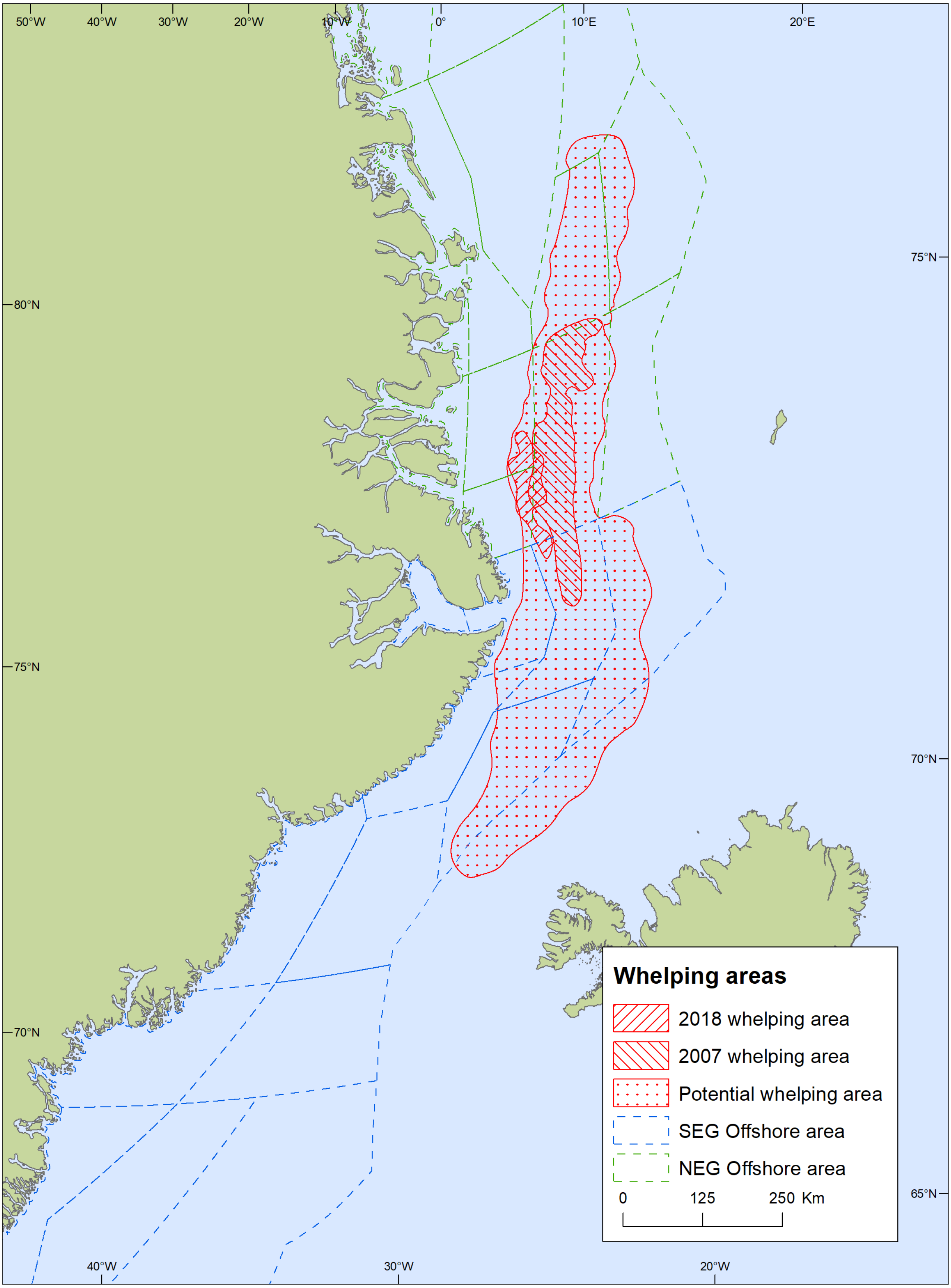


Figure 18. The potential and the actual whelping area in 2007 and 2008 for harp and hooded seals in the Greenland Sea. The potential area is where the whelping has been recorded in recent decades (Øigård et al. 2008, ICES 2019). The blue and green polygons reflect the areas used in the offshore oil spill sensitivity analysis in the present atlas and the Southeast Greenland atlas, respectively.

Table 5. Information on selected marine mammals occurring in the atlas region.

Species	Occurrence	Main habitat	Distribution	National red list status
Polar bear	whole year	coasts, sea ice	widespread	vulnerable (VU)
Walrus	whole year	coasts, ice edges and offshore	common in central and northern part	near threatened (NT)
Hooded seal	spring and summer	offshore and drift ice	widespread, whelping localised	vulnerable (VU)
Bearded seal	whole year	coast and sea ice	widespread	least concern (LC)
Harp seal	mainly spring and summer	coasts, offshore and sea ice	widespread, whelping localised	least concern (LC)
Ringed seal	whole year	coasts and sea ice	widespread	least concern (LC)
Bowhead whale	whole year	offshore and drift ice	widepread	vulnerable (VU)
Minke whale	summer	offshore	not common, east of the shelf break	least concern (LC)
Blue whale	summer	offshore	not common, east of the shelf break	vulnerable (VU)
Fin whale	summer	offshore, mainly east of the shelf break	widespread east of the shelf break	least concern (LC)
Humpback whale	summer	offshore	widespread east of the shelf break	least concern (LC)
Killer whale	summer	offshore	rare and mainly east of the shelf break	data deficient (DD)
Narwhal	whole year	fjords and bays in summer, offshore in winter	widespread	endangered (EN)
Sperm whale	summer	offshore	not common, east off shelf	vulnerable (VU)
Northern bottlenose whale	whole year?	offshore	not common, east off shelf	data deficient (DD)

6.4.1 Marine mammals

Table 5 gives an overview of the most important marine mammals occurring in the atlas area.

The true seals are represented by four species: Bearded seals can be found in all parts of the atlas area. They occur throughout the year and are usually associated to sea ice. Ringed seals are numerous throughout the region and especially frequent in ice covered waters, both in fjords with fast ice and in the drift ice. They occur year-round and whelp in liars on the ice. Harp seals are numerous visitors in the open water season and along the sea ice margin to the east. Hooded seals occur also in the open water season, but generally in lower numbers than the harp seals. The latter two species assemble in March–April on the drift ice in the southern part of the region to give birth to their pups, and later in June–July to moult (Figure 18). For details, see Boertmann et al. (2020a).

The walrus is one of the iconic species of the atlas region. Walruses assemble on a few terrestrial haul-out sites in the central and northern part of the region during summer, and the Northeast Water is a very important winter habitat for the species. For more details see Boertmann et al. (2020a).

The polar bear is another iconic species of the region. Polar bears occur throughout the region, on the coasts and in sea ice covered offshore areas. In summer, when sea ice distribution is reduced, they concentrate in fjords and other areas with glacier ice, where they can hunt seals on the ice. Females dig out maternity dens in deep snowdrifts in late autumn. Here, they give birth to their cubs in mid-winter, and they leave the den in March–April. For more details see Boertmann et al. (2020a).

The baleen whales in the area comprise the bowhead whale, present throughout the year, and the summer visitors: minke whale, humpback whale, fin whale and blue whale. These "summer whales" occur mainly along the shelf break. The bowhead whale is associated to sea ice and occurs on the shelf and along the shelf break throughout the region covered by the atlas. Concentrations have been recorded in summer in the Northeast Water and in spring over the shelf break between 76° and 78° N. For more details see Boertmann et al. (2020a).

Among the toothed whales, the narwhal is treated separately in the atlas, because it is resident within the region year-round, while the other toothed whales are only summer visitors. These comprise sperm whale and northern bottlenose whale, both occurring in the deep waters off the shelf. Killer whales may occur everywhere in the offshore ice free areas, but are rarely recorded. In summer, the narwhals occur mainly in the fjords, especially where there are calving glaciers, and for example Dove Bugt is an important summer habitat. In winter, the narwhals are assumed to stay in ice covered offshore waters over the shelf break and in polynyas. In spring, they move towards the coast and will assemble along ice edges, for example in fjord mouths. For more detailed information on the toothed whales, see Boertmann et al. (2020a).

6.4.2 Seabirds

Table 6 gives information on selected seabird species from the atlas region. Most of the seabirds are colonial breeders, and Figure 19a and 19b show the distribution of the colonies of most of the species breeding in the region.

Table 6. Overview of the most important seabirds in the atlas area. b = breeding, s = summering (breeding elsewhere), w = wintering, m = migrant visitor (spring and autumn), c = coastal, o = offshore.

Species	Occurrence	Colonial	Distribution	Comment	National red list status
Red-throated diver	s		c	widespread	least concern (LC)
Northern fulmar	b/s/w	x	c & o	widespread, breeding very locally	least concern (LC)
Common eider	b/s/w	x	c	widespread in coastal waters, spring concentrations here and there	least concern (LC)
King eider	s		c	widespread, spring concentrations here and there	least concern (LC)
Long-tailed duck	s		c	widespread	least concern (LC)
Red-breasted merganser	s		c	only in south	least concern (LC)
Sabines gull	b	x	c	breeding in localised sites	near threatened (NT)
Glaucous gull	b/w	x	c	widespread	least concern (LC)
Black-legged kittiwake	b/w	x	c & o	few breeding sites	vulnerable (VU)
Ivory gull	b/w	x	c & o	breeding very locally	vulnerable (VU)
Arctic tern	b	x	c	widespread	near threatened (NT)
Thick-billed murre	m	x	o	mainly east of shelf break	vulnerable (VU)
Black guillemot	b/w	x	c	widespread	least concern (LC)
Little auk	b/m/w	x	c & o	breeding only in south, moulting concentrations on shelf	least concern (LC)
Atlantic puffin	b/m/w	x	o	perhaps breeding very locally	vulnerable (VU)

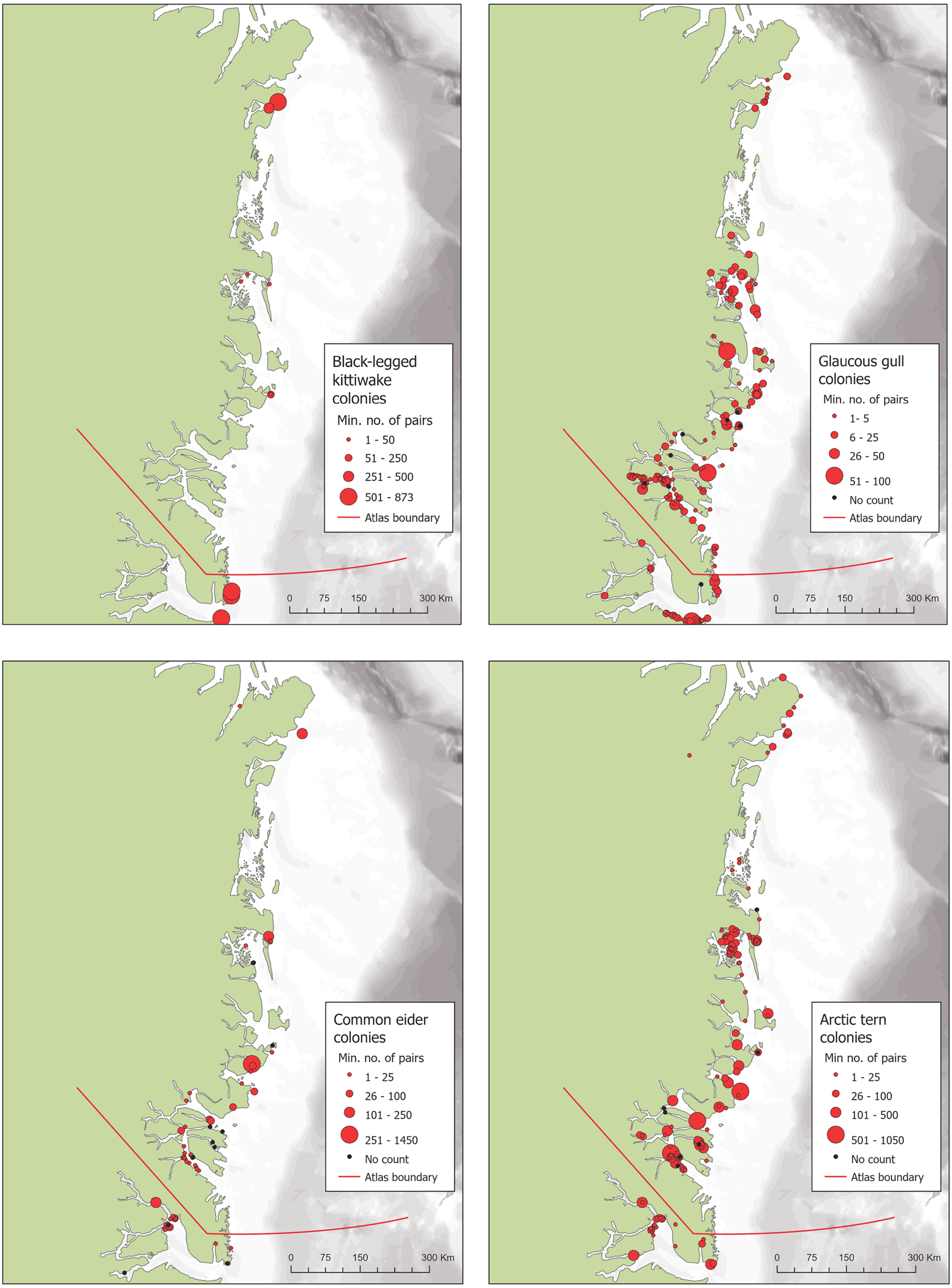


Figure 19a. Location of seabird breeding colonies in the atlas region (Boertmann et al. 2014, 2020a, 2020b, Gilg et al. 2010).

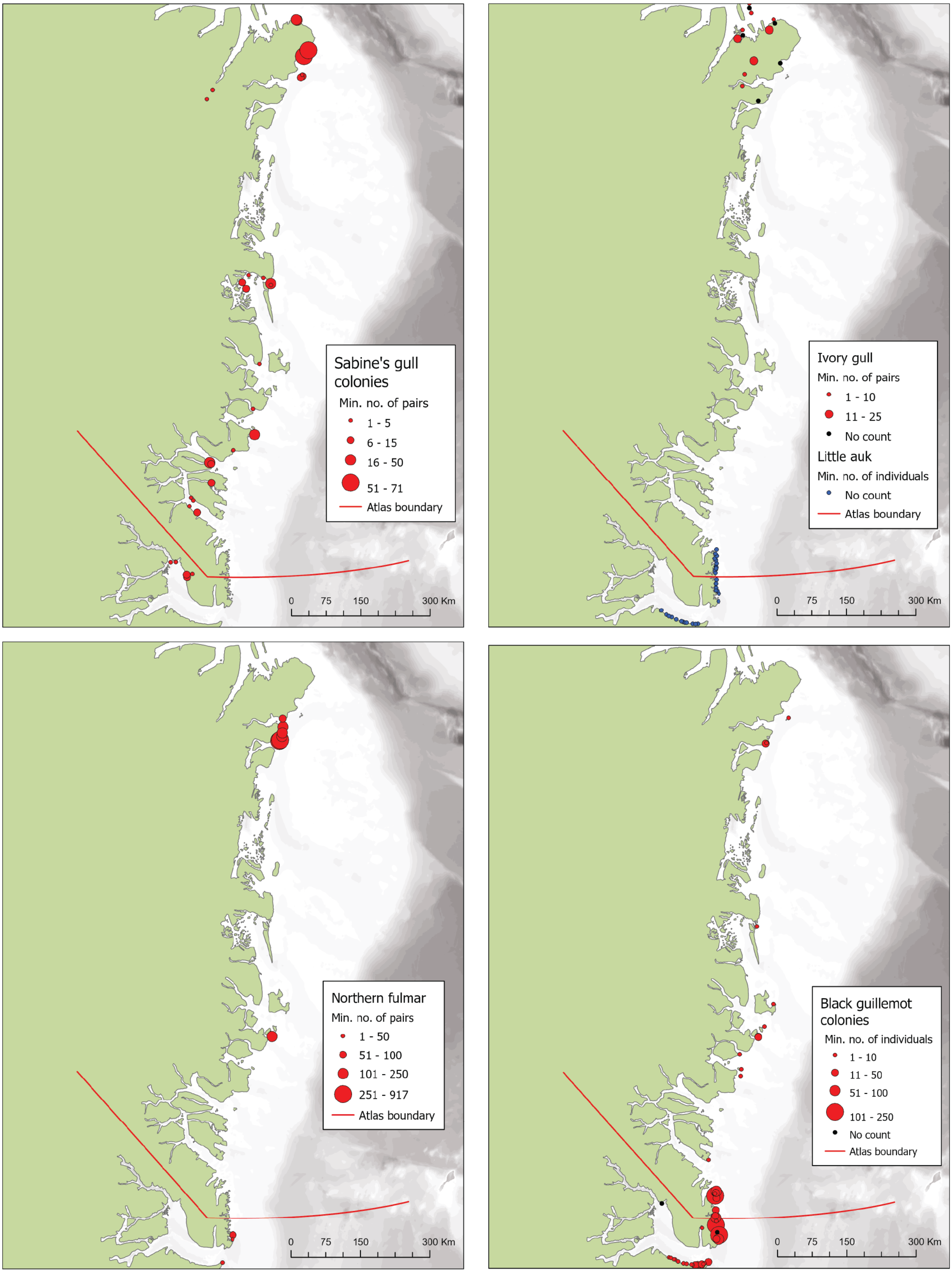


Figure 19b. Location of seabird breeding colonies in the atlas region (Boertmann et al. 2014, 2020a, 2020b, Gilg et al. 2010).

Among the alcids only a few species breed in the atlas area: black guillemots, which are found in the southern part and in few sites further north, and little auk breeding only in the southernmost part (Liverpool Land coast), where huge colonies are found in talus slopes. Thick billed murre does not breed within the region, but occurs as migrant in spring and autumn, when birds from the large population in Svalbard move along the shelf break to and from winter quarters off southwest Greenland and Newfoundland. A few pairs of Atlantic puffin may breed on an island in the Sirius Water polynya. In the shoreline sensitivity calculations, the little auk colonies are treated separately from the other alcid species, due to their exceptional colony sizes. For more details see Boertmann et al. (2020a).

The non-alcid pursuit diving seabirds in this region include only the red-throated diver (loon), which breeds at small lakes, but forages in shallow coastal waters, and the red-breasted merganser, which occurs in the southernmost part of the region. Before the breeding season, these species also assemble in open marine waters off the breeding lakes as the coasts become free of ice.

The seaducks include common eider, king eider and long-tailed duck. Common eider nests in colonies widespread on small islands and on the coast. In spring, large flock are found in the polynyas before open water occurs at the breeding sites. King eiders nest inland, but assemble in the polynyas in spring before the ice melts on the inland ponds. Long-tailed duck also breed inland, and large flocks of moulting birds are found in sheltered bays and fjords in late summer. For more details see Boertmann et al. (2020a).

Among the surface feeding seabirds, which find their food on or just below the surface either by swimming or by shallow dives, black-legged kittiwake and northern fulmar breed in a few places, mainly close to the polynyas. Arctic tern colonies are numerous in the atlas area, especially in the southern part. Glaucous gull colonies are also widespread, and their distribution mirrors that of the terns with most colonies south of Jøkel Bugt and a few colonies related to the Northeast Water. The region is important for the ivory gull, which is an exclusively High Arctic bird. It breeds only in the northern part of the region, but the birds disperse widely to find food (up to 500 km from the nest). During migration large numbers of ivory gulls move through the region. The region also supports an important breeding population of Sabine's gulls, with the largest colonies clustered around the Northeast Water. For more details see Boertmann et al. (2020a).

Almost all the seabirds leave the atlas area for the winter. However, Norwegian tracking studies indicate that some seabirds may winter in ice free offshore waters in the southern part of the region (Link).

6.4.3 Fish

The knowledge on fish in the atlas area is limited and the few studies conducted are referred to in Boertmann et al. (2020a). Most of the fish are demersal. However, Polar cod, which is associated to the sea ice, is an important pelagic fish in the area, as it serves as a keystone species in the marine food web. Commercial fishery for herring and mackerel takes place in the southeasternmost part of the atlas region during summer, but not every year.

6.4.4 Benthic organisms

The seabed has a highly diverse fauna, and during the Strategic Environmental Study Program for Northeast Greenland, areas covered with soft corals were located on the shelf break (Boertmann et al. 2020a). However, the knowledge on the general distribution and abundance of such organisms in the region is too fragmentary to include.

6.5 Archaeological and historic sites

There are many archaeological sites in the region; from two different Palaeo-Inuit cultures and from the later Thule culture. The people of the Thule culture disappeared during the late 1800s. There are also several historic sites, mainly comprised of trapper stations and huts, expedition houses and a few remains from World War II. In total, 490 archaeological and historic sites listed in the Nunniffiit database (Greenland Archive of Antiquities) at Greenland National Museum & Archives are included in the maps and sensitivity calculations of the atlas. See Appendix C, 12.8 for details.

6.6 Human use

There is no permanent civilian human population living in the region covered by this atlas, and therefore very little human use. Two military outposts (Daneborg and Mestersvig) and a weather station (Danmarkshavn) are the only sites, which are manned throughout the year. In addition, there is a research station at Zackenberg, typically open from May to September. Inhabitants from the town of Ittoqqortoormiit south of the atlas area occasionally perform hunting trips along the Liverpool Land coast, but they rarely venture north of Carlsberg Fjord (Flora et al. 2019; 2020). A little tourism takes place, mainly by means of cruise ships visiting selected sites along the coasts during summer. See Appendix C, 12.5 for more information on human use.

6.7 Areas of extreme and high sensitivity

Figure 20 gives an overview of the shoreline segments and their sensitivity to marine oil spills. In total, there are 86 segments of extreme sensitivity and 54 of high sensitivity. In addition, 15 so-called “selected areas” have been identified as priority areas in case of an oil spill, due to a high environmental value and sensitivity, and a manageable size and form, which may allow effective protection in an oil spill situation. The areas with the highest concentration of extreme and high sensitivity segments are adjacent to the Northeast Water and Sirius Water polynyas, Dove Bugt, the inner parts of Kong Oscars Fjord and the coast of Liverpool Land.

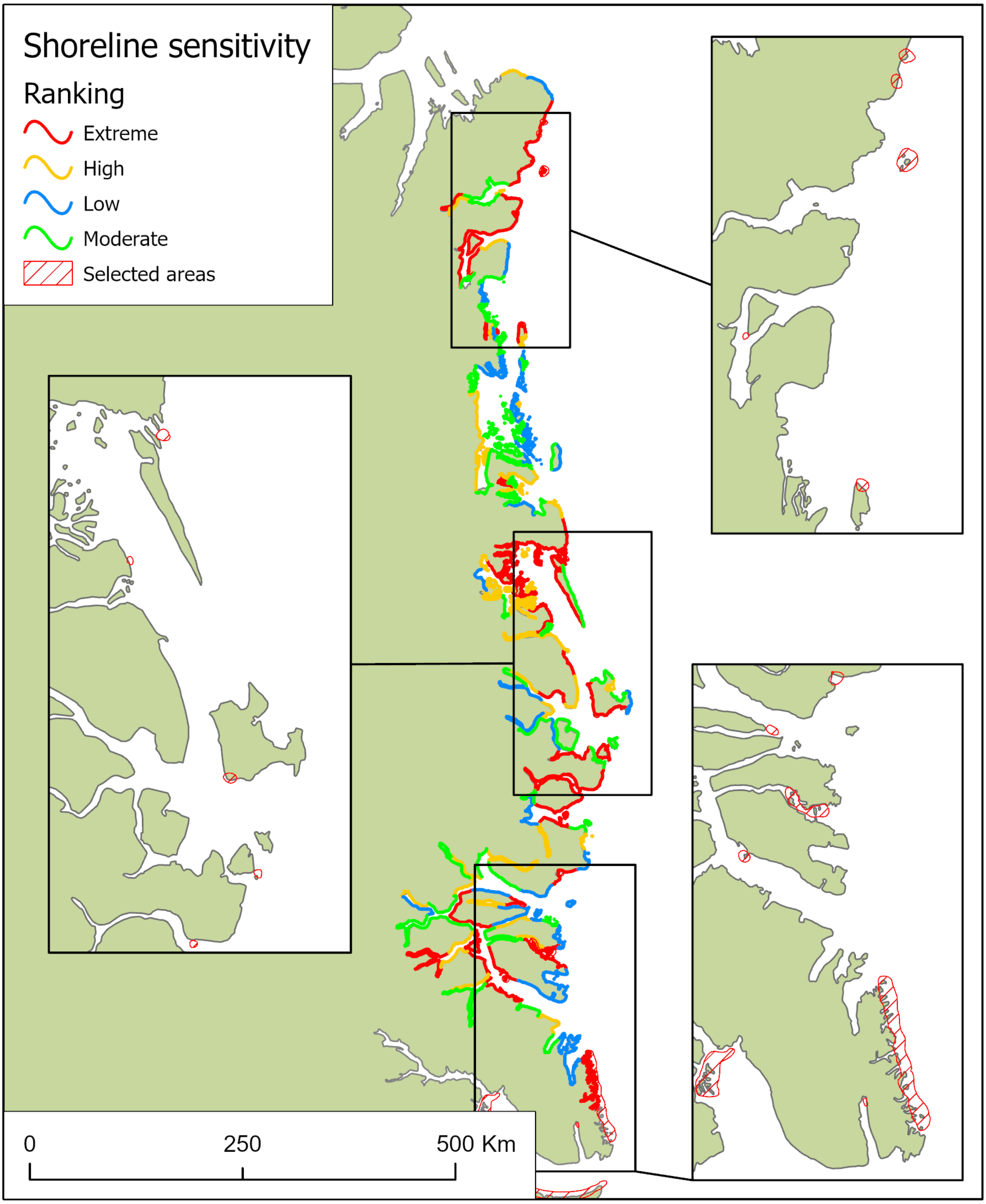


Figure 20. The sensitivity of the entire coastline of the study region and the so-called “selected areas”.

7 Offshore sensitivity

In this chapter, operational oil spill sensitivity maps for the offshore region covered by the atlas are presented on a scale of 1:5.500.000 (Figures 23-26). The offshore parts of the atlas have been split into smaller areas based on bathymetry, sea ice cover and biodiversity. For each season (winter, spring, summer, autumn) and area (OS_18-35), an oil spill sensitivity ranking is provided by color (low, moderate, high, extreme), and the resources contributing most to the sensitivity are indicated with icons (resources with relative abundance values ≥ 3). Along with the seasonal maps, short environmental descriptions are provided for each offshore area, including relative abundance

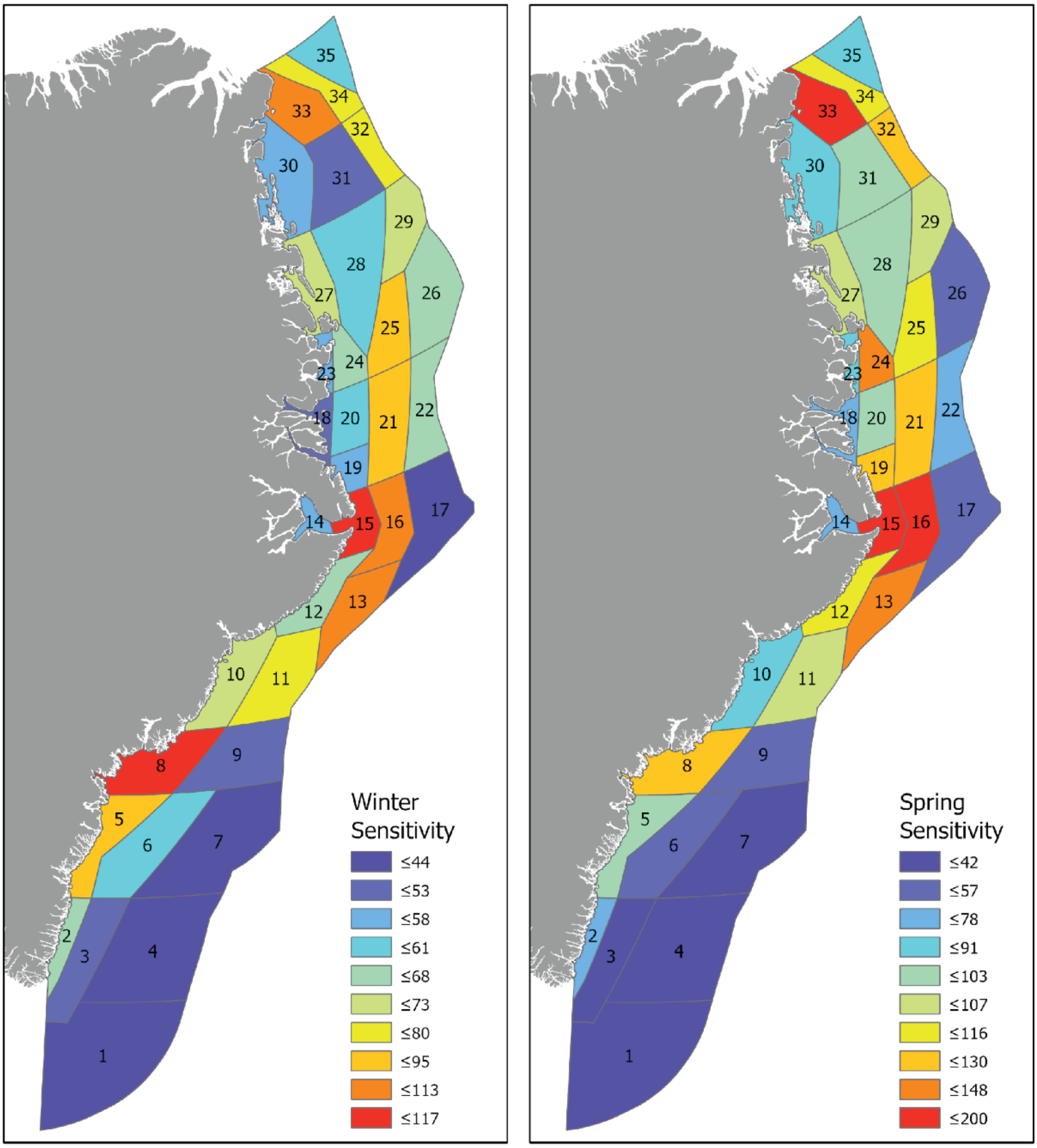


Figure 21a. Oil spill sensitivity scores (S) of offshore areas in all of East Greenland during winter and spring. Each offshore area is shown with its id number.

values for species occurrences and human use (scale 1-5). The seasonal sensitivity values of the areas, and their ranking, are also given in tables (Tables 7-10). For a more detailed listing of all parameter values used in the sensitivity calculation, see Appendix B.

When interpreting the operational offshore maps, it is important to keep in mind that the sensitivity ranking of areas into the categories extreme, high, moderate, and low is scale dependent. Thus, each area is ranked only in comparison with areas that intersect a buffer with a radius of 250 km around the area being ranked (see Appendix C, 12.6 for details). This was done to ensure that the sensitivity ranking captures local differences in sensitivity and is not dominated by large-scale patterns, e.g. latitudinal biodiversity gradients. As

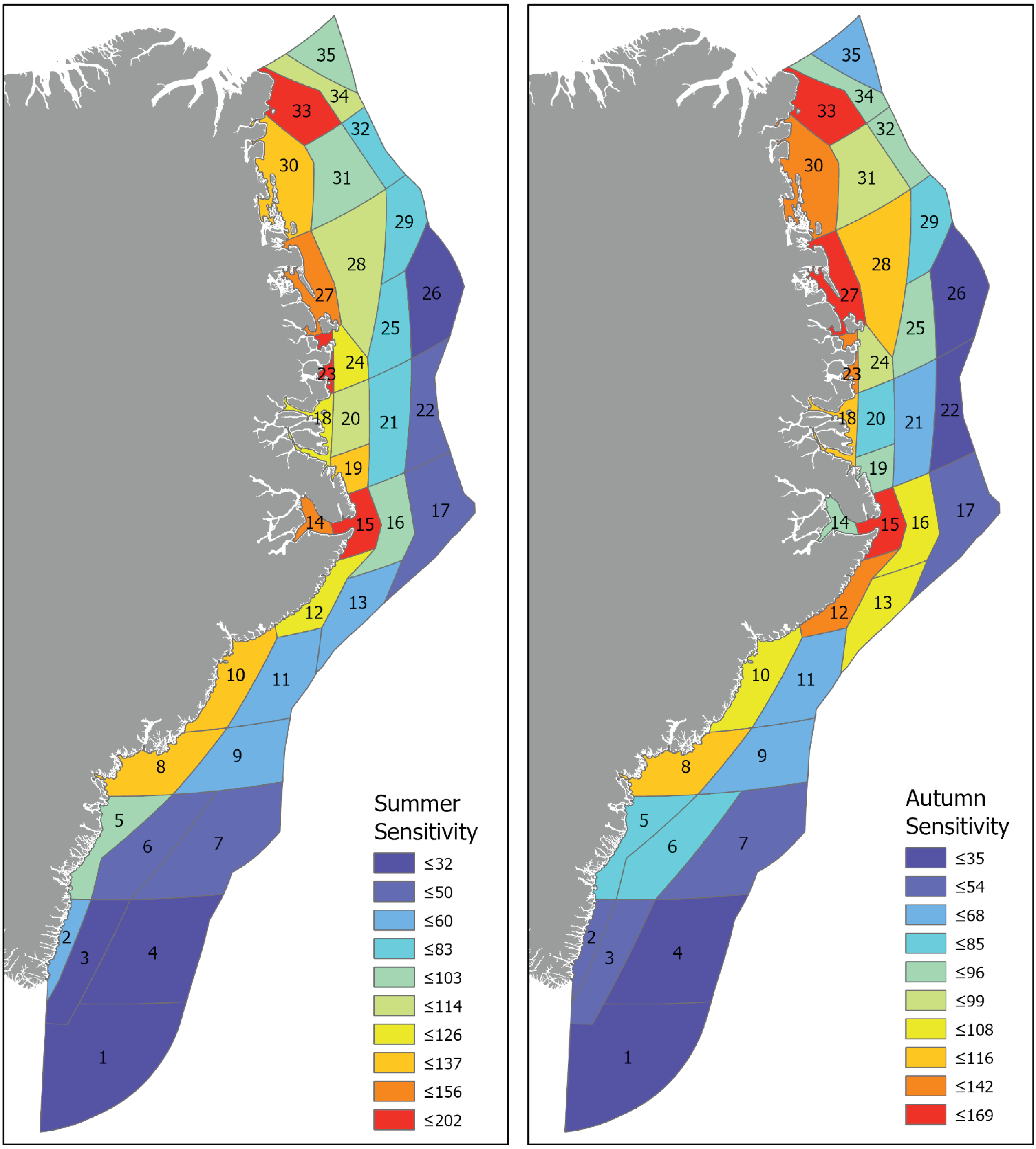


Figure 21b. Oil spill sensitivity index scores (S) of offshore areas in all of East Greenland during summer and autumn. Each offshore area is shown with its id number.

such, the operational offshore maps reflect oil spill sensitivity on a spatial scale of 500-1000 km. However, should an oil spill affect an area, which is larger than this (e.g. as a consequence of oil drift along the East Greenland Current), we also provide seasonal overview maps of the un-ranked sensitivity values of offshore areas in all of East Greenland in Figures 21a and 21b. The color-coding used in these maps can be seen as a relative sensitivity ranking on an East Greenland scale.

7.1 Offshore sensitivity summary

Seen across all offshore areas covered by the current atlas (OS_18-35), the analysis indicates that spring and summer are the most sensitive seasons of the year (Tables 5 and 6). This is no surprise, as these are the seasons with highest biological activity.

Table 5. Average sensitivity of offshore areas per season.

Season	Average sensitivity of offshore areas
Winter	68
Spring	106
Summer	106
Autumn	95

Within the 18 individual offshore areas, the sensitivity also varies seasonally. Table 6 lists the most sensitive season per area.

Table 6. The most sensitive season in the different offshore areas.

Area	Most sensitive season	Sensitivity value in most sensitive season	Average sensitivity across seasons
OS_18	Summer	125	88
OS_19	Summer	136	104
OS_20	Summer	108	86
OS_21	Spring	125	85
OS_22	Spring	68	51
OS_23	Summer	158	111
OS_24	Spring	148	110
OS_25	Spring	114	87
OS_26	Winter	68	44
OS_27	Summer	156	119
OS_28	Summer/Autumn	108	93
OS_29	Spring	105	84
OS_30	Summer	137	99
OS_31	Summer	103	87
OS_32	Spring	130	94
OS_33	Summer	202	168
OS_34	Spring	116	101
OS_35	Summer	95	77

7.2 Legend to offshore sensitivity maps

Offshore sensitivity maps

Offshore species*

Al - Alcids

Ig - Ivory gull

Pd - Non-alcid pursuit divers

Sd - Seaducks

Sf - Surface feeding seabirds

Bf - Bottom fish

If - Ice fauna

Pf - Pelagic fish

Bw - Baleen whales

Nw - Narwhal

Ow - Other toothed whales

Pb - Polar bear

Se - Seals

Wa - Walrus

Ws - Seals, whelping/moulting

Offshore resource use*

Hu - Human use

Sea depth (200 m)

Offshore areas sensitivity ranking

Extreme

High

Moderate

Low

*Icons are are only visible for occurences with relative abundance/importance >=3

7.3 Offshore sensitivity, winter (January-March)

Environmental description (Figure 22)
Offshore area 18 (OS_18): *Human use* (2): close proximity to Mestersvig (permanently manned military outpost). *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal and ringed seal.

Offshore area 19 (OS_19): *Human use* (2): area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Sep for hunting, fishing and recreational activities. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (2): whelping hooded seals in March in the eastern part of the area. **Pb** (1): polar bear.

Offshore area 20 (OS_20): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (2): whelping hooded seals in March in the eastern part of the area. **Pb** (1): polar bear.

Offshore area 21 (OS_21): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (3): whelping hooded seals in March. **Nw** (2): narwhal. **Al** (1): black guillemot, little auk. **Bw** (1): wintering bowhead whale. **Ow** (1): northern bottlenose whale and sperm whale. **Pb** (1): polar bear. **Sf** (1): northern fulmar. **Wa** (1): walrus.

Offshore area 22 (OS_22): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Ws** (3): whelping hooded seals in March, especially in the western part of the area. **Al** (2): wintering little auk, thick-billed murre and black guillemot. **If** (2): sea ice associated fauna, e.g. polar cod. **Nw** (1): narwhal. **Ow** (1): northern bottlenose whale and sperm whale. **Pb** (1): polar bear. **Se** (1): harp seal and hooded seal. **Sf** (1): northern fulmar.

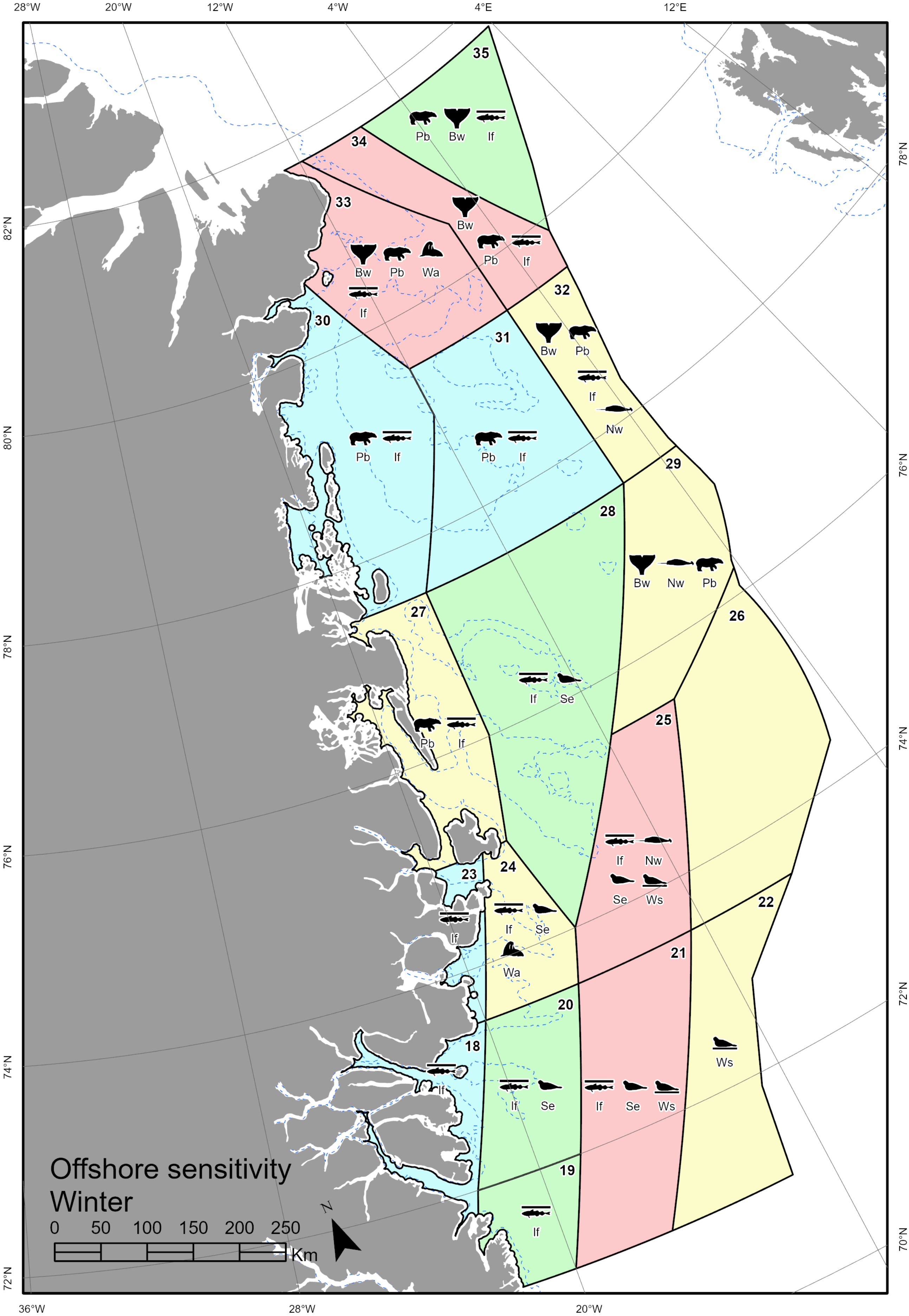


Figure 22. Oil spill sensitivity ranking of offshore areas during winter (January-March).

Offshore area 23 (OS_23): *Human use* (2): close proximity to Daneborg (Sirius Patrol HQ) and Zackenberg (research station). *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (2): polar bear. **Se** (1): bearded seal, harp seal and ringed seal.

Offshore area 24 (OS_24): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Wa** (3): walrus. **Ws** (2): whelping hooded seals in March in the eastern part of the area. **Pb** (1): polar bear.

Offshore area 25 (OS_25): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (3): narwhal. **Se** (3): bearded seal, harp, hooded seal and ringed seal. **Ws** (3): whelping hooded seals in March. **Pb** (2): polar bear. **Wa** (2): walrus. **Al** (1): wintering little auk and black guillemot. **Bw** (1): bowhead whale. **Ow** (1): northern bottlenose whale and sperm whale.

Offshore area 26 (OS_26): *Human use* (0): no significant human use recorded in this area. Species occurrence: **If** (2): sea ice associated fauna, e.g. polar cod. **Nw** (2): narwhal. **Pb** (2): polar bear. **Se** (2): harp seal and hooded seal. **Ws** (2): whelping hooded seals in March in southwestern part of area. **Al** (1): wintering little auk and black guillemot. **Bw** (1): bowhead whale. **Ow** (1): northern bottlenose whale and sperm whale. **Sf** (1): northern fulmar.

Offshore area 27 (OS_27): *Human use* (2): close proximity to Danmarkshavn (permanently manned weather station). *Species occurrence*: **Pb** (5): polar bear. **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (1): bearded seal and ringed seal.

Offshore area 28 (OS_28): *Human* use (0): no significant human use recorded in this area. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Pb** (2): polar bear. **Al** (1): wintering black guillemot. **Ws** (1): whelping hooded seals in March in the southern part of the area.

Offshore area 29 (OS_29): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (4): bowhead whale. **Nw** (3): narwhal. **Pb** (3): polar bear. **If** (2): sea ice associated fauna, e.g. polar cod. **Wa** (2): walrus. **Al** (1): wintering little auk. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal.

Offshore area 30 (OS_30): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Pb** (5): polar bear. **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (1): bearded seal and ringed seal.

Offshore area 31 (OS_31): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Pb** (5): polar bear. **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (1): narwhal. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal.

Offshore area 32 (OS_32): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (5): bowhead whale. **Pb** (5): polar bear. **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (3): narwhal. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Wa** (1): walrus.

Offshore area 33 (OS_33): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (5): bowhead whale (important winter habitat). **Pb** (5): polar bear. **Wa** (5): walrus (important winter habitat). **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (2): narwhal. **Se** (2): bearded seal and ringed seal.

Offshore area 34 (OS_34): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (5): bowhead whale. **Pb** (5): polar bear. **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (2): narwhal. **Se** (1): bearded seal and ringed seal. **Wa** (1): walrus.

Offshore area 35 (OS_35): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Pb** (5): polar bear. **Bw** (3): important winter habitat for bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Nw** (1): narwhal. **Se** (1): harp seal and ringed seal.

Table 7. Offshore sensitivity during winter.

Area	Sensitivity value	Ranking
OS_18	50	Low
OS_19	56	Moderate
OS_20	59	Moderate
OS_21	81	Extreme
OS_22	66	High
OS_23	54	Low
OS_24	68	High
OS_25	88	Extreme
OS_26	68	High
OS_27	69	High
OS_28	61	Moderate
OS_29	68	High
OS_30	57	Low
OS_31	53	Low
OS_32	75	High
OS_33	113	Extreme
OS_34	79	Extreme
OS_35	60	Moderate

7.4 Offshore sensitivity, spring (April-May)

Environmental description (Figure 23)
Offshore area 18 (OS_18): *Human use* (2): close proximity to Mestersvig (permanently manned military outpost). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (1): polar bear. **Sd** (1): spring migrating common eiders. **Se** (1): bearded seal and ringed seal.

Offshore area 19 (OS_19): *Human use* (2): area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Sep for hunting, fishing and recreational activities. *Species occurrence*: **Al** (5): spring migrating black guillemot, little auk and thick-billed murre. **If** (5): sea ice associated fauna, e.g. polar cod. **Ws** (3): whelping harp and hooded seals in eastern part of area. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gulls. **Nw** (1): narwhal. **Pb** (1): polar bear. **Sd** (1): spring migrating common eiders. **Sf** (1): spring migrating glaucous gulls. **Wa** (1): walrus.

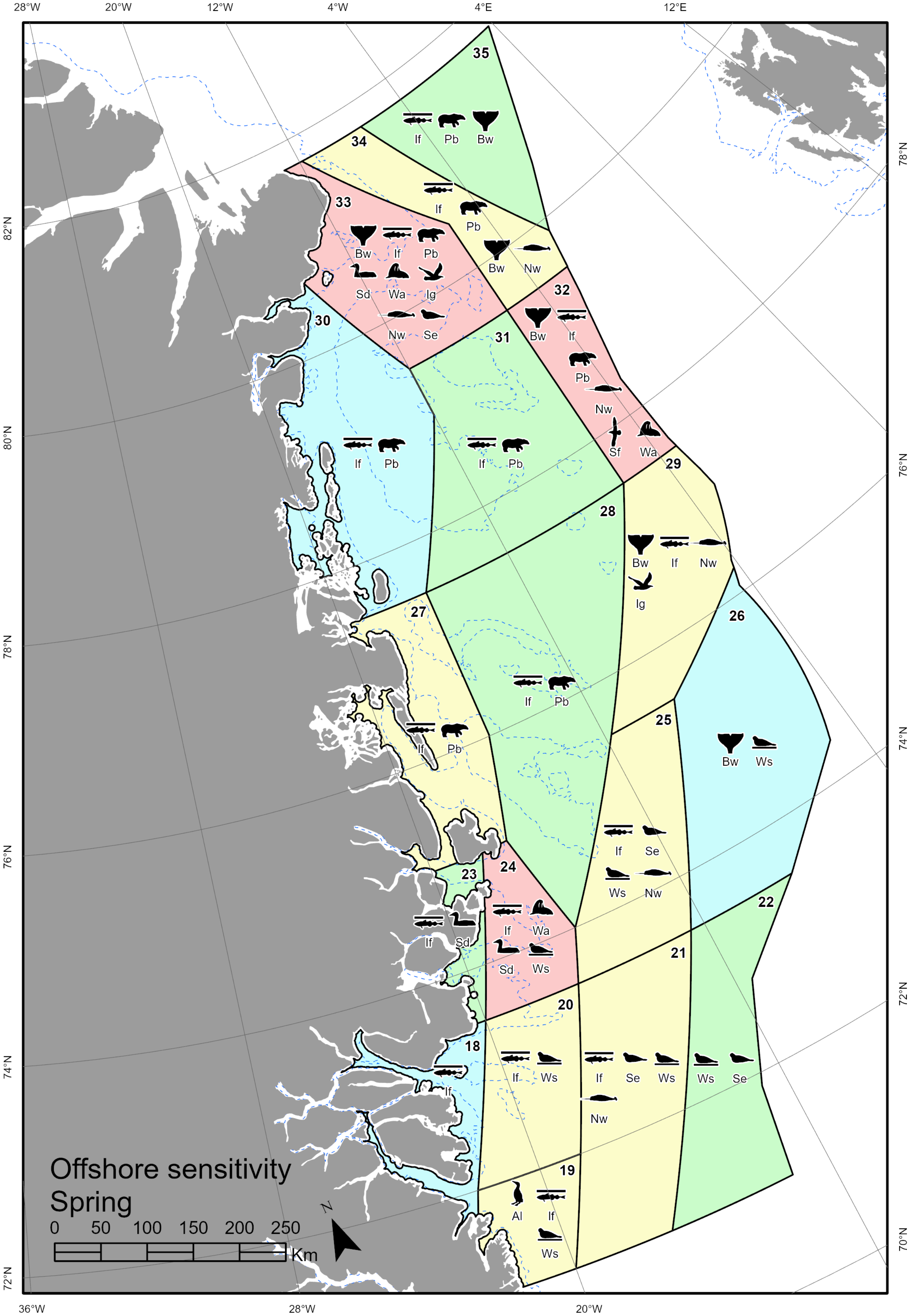


Figure 23. Oil spill sensitivity ranking of offshore areas during spring (April-May).

Offshore area 20 (OS_20): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Ws** (4): whelping harp and hooded seals in eastern part of area. **Nw** (2): narwhal. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Al** (1): spring migrating little auks. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gull. **Pb** (1): polar bear. **Sf** (1): spring migrating glaucous gulls. **Wa** (1): walrus.

Offshore area 21 (OS_21): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Se** (5): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (5): whelping harp and hooded seals. **Nw** (3): narwhal. **Al** (2): spring migrating little auk and thick-billed murres. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Ig** (1): spring migrating ivory gulls. **Ow** (1): northern bottlenose whale and sperm whale and white-beaked dolphin. **Pb** (1): polar bear. **Sf** (1): spring migrating glaucous gull and northern fulmar. **Wa** (1): walrus.

Offshore area 22 (OS_22): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Ws** (5): whelping harp and hooded seals. **Se** (3): harp seal and hooded seal. **Al** (2): spring migrating little auk and thick-billed murre. **If** (2): sea ice associated fauna, e.g. polar cod. **Bw** (1): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Nw** (1): narwhal. **Ow** (1): northern bottlenose whale and sperm whale and white-beaked dolphin. **Pb** (1): polar bear. **Sf** (1): spring migrating northern fulmars.

Offshore area 23 (OS_23): *Human use* (2): close proximity to Daneborg (Sirius Patrol HQ) and Zackenberg (research station). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Sd** (4): spring migrating common eider and king eider. **Bw** (1): bowhead whale. **Pb** (1): polar bear. **Se** (1): bearded seal and ringed seal. **Wa** (1): walrus.

Offshore area 24 (OS_24): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Wa** (5): walrus. **Sd** (4): spring migrating common eider and king eider. **Ws** (4): whelping harp and hooded seals. **Al** (2): spring migrating black guillemot and little auk. **Nw** (2): narwhal. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gulls. **Pb** (1): polar bear. **Sf** (1): spring migrating glaucous gulls.

Offshore area 25 (OS_25): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Se** (4): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (4): whelping harp and hooded seals. **Nw** (3): narwhal. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Pb** (2): polar bear. **Wa** (2): walrus. **Al** (1): spring migrating little auks. **Ig** (1): spring migrating ivory gulls. **Ow** (1): northern bottlenose whale and sperm whale.

Offshore area 26 (OS_26): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (5): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Ws** (3): whelping harp and hooded seals in southwestern part of area. **Al** (2): spring migrating little auks. **Se** (2): harp seal and hooded seal. **If** (1): sea ice associated fauna, e.g. polar cod. **Ig** (1): spring migrating ivory gulls. **Nw** (1): narwhal. **Ow** (1): northern bottlenose whale and sperm whale. **Pb** (1): polar bear. **Sf** (1): spring migrating northern fulmars.

Offshore area 27 (OS_27): *Human use* (2): close proximity to Danmarkshavn (permanently manned weather station). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Wa** (2): walrus. **Al** (1): spring migrating black guillemots. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gulls. **Sd** (1): spring migrating common eider and king eider. **Se** (1): bearded seal, hooded seal and ringed seal.

Offshore area 28 (OS_28): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (3): polar bear. **Nw** (2): narwhal. **Ws** (2): Whelping harp and hooded seals in southern part of area. **Al** (1): black guillemot. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gulls. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): glaucous gull.

Offshore area 29 (OS_29): *Human use* (1): Occasional tourist cruises during spring to spot bowhead whales in May-Jun. *Species occurrence*: **Bw** (5): spring concentration of bowhead whales. **If** (4): sea ice associated fauna, e.g. polar cod. **Nw** (4): narwhal. **Ig** (3): ivory gull. **Pb** (2): polar bear. **Wa** (2): walrus. **Al** (1): spring migrating little auks. **Ow** (1): sperm whale. **Se** (1): bearded seal, hooded seal and ringed seal. **Sf** (1): spring migrating northern fulmars.

Offshore area 30 (OS_30): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Se** (2): bearded seal, hooded seal and ringed seal. **Al** (1): spring migrating black guillemots. **Bw** (1): bowhead whale. **Ig** (1): spring migrating ivory gulls.

Offshore area 31 (OS_31): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Bw** (2): bowhead whale. **Ig** (2): spring migrating ivory gulls. **Nw** (2): narwhal. **Al** (1): spring migrating black guillemots. **Se** (1): bearded seal, hooded seal and ringed seal. **Sf** (1): spring migrating northern fulmars.

Offshore area 32 (OS_32): *Human use* (1): Occasional tourist cruises during spring to spot bowhead whales in May-Jun. *Species occurrence*: **Bw** (5): blue whale, bowhead whale (spring concentration), fin whale, humpback whale and minke whale. **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Nw** (4): narwhal. **Sf** (3): spring migrating northern fulmars. **Wa** (3): walrus. **Ig** (2): spring migrating ivory gulls. **Al** (1): spring migrating little auks. **Se** (1): bearded seal, hooded seal and ringed seal.

Offshore area 33 (OS_33): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (5): bowhead whale (concentration area). **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Sd** (5): spring migrating common eiders and king eiders. **Wa** (5): walrus (concentration area). **Ig** (4): ivory gull. **Nw** (3): narwhal. **Se** (3): bearded seal, hooded seal and ringed seal. **Al** (1): black guillemot. **Sf** (1): glaucous gull and northern fulmar.

Offshore area 34 (OS_34): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Bw** (4): bowhead whale. **Nw** (3): narwhal. **Ig** (2): spring migrating ivory gulls. **Wa** (2): walrus. **Al** (1): spring migrating black guillemots. **Se** (1): bearded seal, hooded seal and ringed seal. **Sf** (1): spring migrating glaucous gull and northern fulmar.

Offshore area 35 (OS_35): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Pb** (5): polar bear. **Bw** (4): bowhead whale. **Ig** (2): spring migrating ivory gulls. **Nw** (2): narwhal. **Se** (1): ringed seal. **Sf** (1): northern fulmar.

Table 8. Offshore sensitivity during spring.

Area	Sensitivity value	Ranking
OS_18	65	Low
OS_19	129	High
OS_20	103	High
OS_21	125	High
OS_22	68	Moderate
OS_23	89	Moderate
OS_24	148	Extreme
OS_25	114	High
OS_26	48	Low
OS_27	106	High
OS_28	94	Moderate
OS_29	105	High
OS_30	84	Low
OS_31	93	Moderate
OS_32	130	Extreme
OS_33	192	Extreme
OS_34	116	High
OS_35	91	Moderate

7.5 Offshore sensitivity, summer (June-August)

Environmental description (Figure 24)

Offshore area 18 (OS_18): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas. Close proximity to Mestersvig (permanently manned military outpost). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Nw** (3): narwhal. **Sd** (3): breeding and moulting common eiders. **Al** (2): breeding black guillemot and foraging little auks. **Pd** (2): breeding red-throated divers. **Sf** (2): breeding Arctic tern, glaucous gull, lesser black-backed gull, northern fulmar, and Sabine's gull. **Bw** (1): bowhead whale. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal and ringed seal. **Wa** (1): walrus.

Offshore area 19 (OS_19): *Human use* (2): area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Sep for hunting, fishing and recreational activities. *Species occurrence*: **Al** (5): breeding black guillemots and little auks. **If** (5): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (3): moulting hooded seals in Jun-Jul in the eastern part of the area. **Pd** (2): breeding red-throated diver. **Sf** (2): breeding black-legged kittiwake, glaucous gull and northern fulmar. **Bw** (1): bowhead whale. **Nw** (1): narwhal. **Pb** (1): polar bear. **Wa** (1): walrus.

Offshore area 20 (OS_20): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Ws** (3): moulting hooded seals in Jun-Jul in the eastern part of the area. **Al** (2): foraging little auks and thick-billed murres. **Bw** (2): bowhead whale. **Nw** (2): narwhal. **Wa**

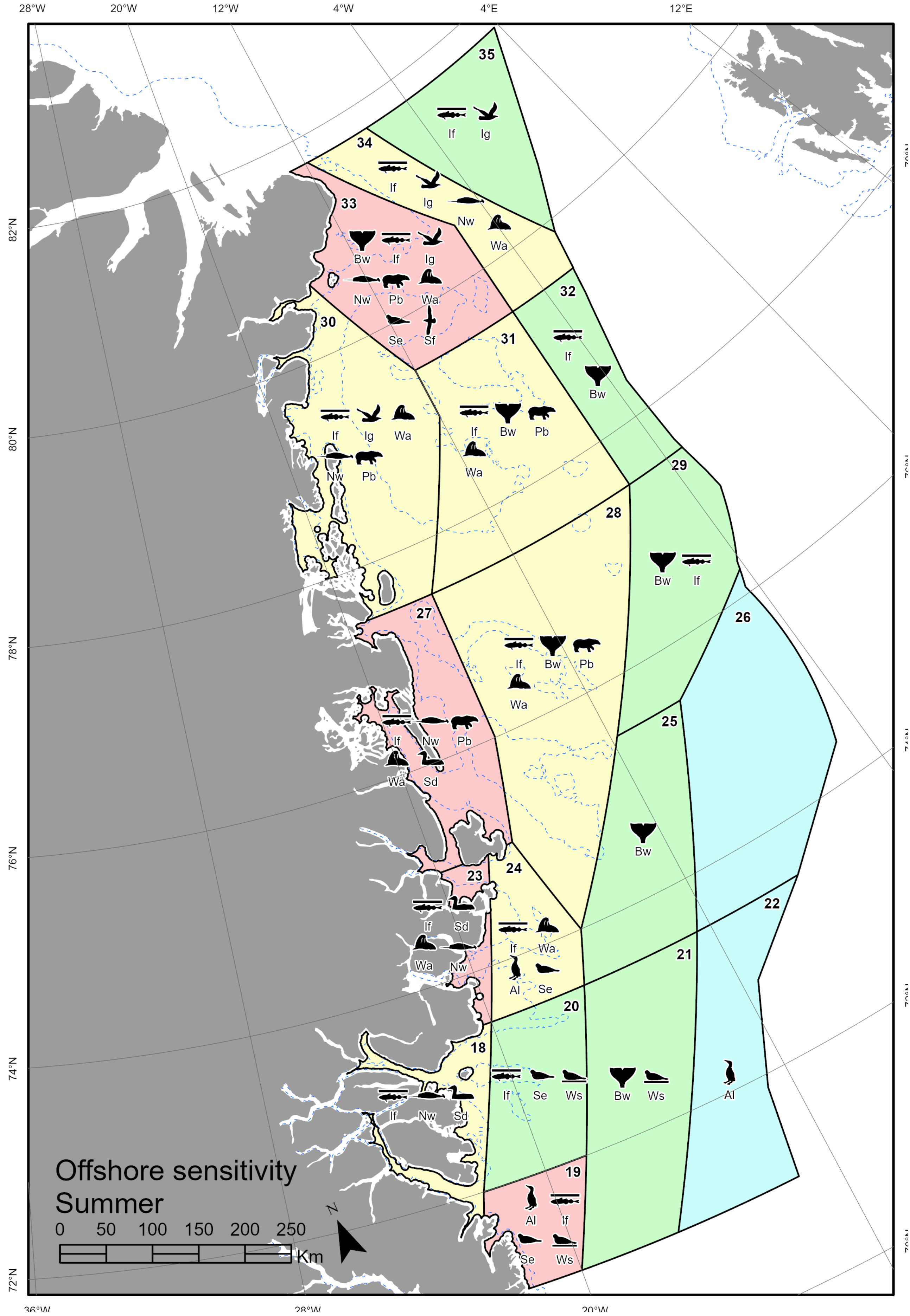


Figure 24. Oil spill sensitivity ranking of offshore areas during summer (June-August).

(2): walrus. **Pb** (1): polar bear. **Sf** (1): breeding and summering Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar and Sabine's gull.

Offshore area 21 (OS_21): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (4): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Ws** (3): moulting hooded seals in Jun-Jul. **Al** (2): summering little auk and thick-billed murre. **If** (2): sea ice associated fauna, e.g. polar cod. **Ow** (2): killer whale, northern bottlenose whale, sperm whale, and white-beaked dolphin. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Nw** (1): narwhal. **Pb** (1): polar bear. **Sf** (1): summering black-legged kittiwake and northern fulmar. **Wa** (1): walrus.

Offshore area 22 (OS_22): *Human use* (1): commercial fishery for herring and mackerel in Jun-Sep. *Species occurrence*: **Al** (3): summering and moulting little auk and thick-billed murre. **Pf** (2): Fishery data suggest presence of mackerel and herring (some years). **Bw** (1): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Nw** (1): narwhal. **Ow** (1): killer whale, northern bottlenose whale, sperm whale and white-beaked dolphin. **Se** (1): harp seal and hooded seal. **Sf** (1): summering northern fulmar. **Ws** (1): moulting hooded seals in Jun-Jul.

Offshore area 23 (OS_23): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas. Close proximity to Daneborg (Sirius Patrol HQ) and Zackenberg (research station). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Sd** (5): breeding and moulting common eider and king eider. **Wa** (5): important summer habitat for walrus. **Nw** (3): narwhal. **Al** (2): black guillemot. **Pb** (2): polar bear. **Pd** (2): breeding red-throated divers. **Sf** (2): breeding and summering Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar and Sabine's gull. **Bw** (1): bowhead whale. **Se** (1): bearded seal, harp seal and ringed seal.

Offshore area 24 (OS_24): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Wa** (4): walrus. **Al** (3): breeding black guillemots. **Se** (3): bearded seal, harp seal, hooded seal and ringed seal. **Pb** (2): polar bear. **Sf** (2): breeding and summering Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar and Sabine's gull. **Ws** (2): moulting hooded seals in Jun-Jul in the eastern part of the area. **Bw** (1): bowhead whale. **Nw** (1): narwhal. **Sd** (1): breeding and moulting common eider and king eider.

Offshore area 25 (OS_25): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (5): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Al** (2): summering and moulting little auks. **If** (2): sea ice associated fauna, e.g. polar cod. **Ws** (2): moulting hooded seals in Jun-Jul. **Nw** (1): narwhal. **Ow** (1): killer whale, northern bottlenose whale and sperm whale. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): summering black-legged kittiwake and northern fulmar. **Wa** (1): walrus.

Offshore area 26 (OS_26): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Al** (2): summering and moulting little auks. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Nw** (1): narwhal. **Ow** (1): killer whale, northern bottlenose whale and sperm whale. **Se** (1): harp seal and hooded seal. **Sf** (1): summering northern fulmars. **Ws** (1): moulting hooded seals in Jun-Jul in the southwestern part of the area.

Offshore area 27 (OS_27): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises (especially in Dove Bugt), expeditions and scientific activities in coastal areas. Close proximity to Danmarkshavn (permanently manned weather station). *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Nw** (5): important summer habitat for narwhal. **Pb** (5): polar bear. **Wa** (5): important summer habitat for walrus. **Sd** (4): breeding and moulting common eiders. **Sf** (2): breeding and summering Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar and Sabine's gull. **Al** (1): breeding black guillemot. **Bw** (1): bowhead whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal.

Offshore area 28 (OS_28): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Bw** (3): bowhead whale. **Pb** (3): polar bear. **Wa** (3): walrus. **Nw** (2): narwhal. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Al** (1): summering and moulting little auks. **Ig** (1): foraging ivory gulls. **Sf** (1): summering black-legged kittiwake and northern fulmar. **Ws** (1): moulting hooded seals in Jun-Jul in the southernmost part of the area.

Offshore area 29 (OS_29): *Human use* (1): occasional tourist cruises during May-Jun to spot bowhead whales. *Species occurrence*: **Bw** (5): blue whale, bowhead whale (important concentration area), fin whale, humpback whale and minke whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Al** (2): summering and moulting little auks. **Ig** (1): foraging ivory gulls. **Nw** (1): narwhal. **Ow** (1): killer whale and sperm whale. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): summering northern fulmar. **Wa** (1): walrus.

Offshore area 30 (OS_30): *Human use* (1): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Ig** (5): breeding ivory gulls. **Wa** (5): important summer area for walrus to the north. **Nw** (4): important summer area for narwhal to the north. **Pb** (3): polar bear. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Al** (1): breeding black guillemots. **Bw** (1): bowhead whale. **Sf** (1): breeding Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar and Sabine's gull.

Offshore area 31 (OS_31): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Bw** (4): important summer habitat for bowhead whale. **Pb** (3): polar bear. **Wa** (3): walrus. **Nw** (2): narwhal. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (2): foraging northern fulmars. **Al** (1): summering little auk. **Ig** (1): foraging ivory gulls.

Offshore area 32 (OS_32): *Human use* (1): occasional tourist cruises during May-Jun to bowhead whale concentration area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Bw** (4): blue whale, bowhead whale (important concentration area), fin whale, humpback whale and minke whale. **Wa** (2): walrus. **Al** (1): summering and moulting little auks. **Ig** (1): foraging ivory gulls. **Nw** (1): narwhal. **Ow** (1): killer whale and sperm whale. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): summering northern fulmar.

Offshore area 33 (OS_33): *Human use* (1): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas. *Species occurrence*: **Bw** (5): important summer area for bowhead whale. **If** (5): sea ice associated fauna, e.g. polar cod. **Ig** (5): breeding ivory gulls. **Nw** (5): important summer area for narwhal. **Pb** (5): polar bear. **Wa** (5): important summer area for walrus. **Se** (4): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (3): breeding Arctic tern, black-legged kittiwake, glaucous gull, northern fulmar, Ross's gull and Sabine's gull. **Sd** (2): breeding and moulting common eiders. **Al** (1): breeding black guillemot.

Offshore area 34 (OS_34): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Ig** (4): foraging ivory gulls. **Nw** (3): narwhal. **Wa** (3): walrus. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale. **Pb** (2): polar bear. **Sf** (2): foraging northern fulmars and black-legged kittiwake. **Ow** (1): killer whale and sperm whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal.

Offshore area 35 (OS_35): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **If** (5): sea ice associated fauna, e.g. polar cod. **Ig** (4): foraging ivory gulls. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale. **Nw** (2): narwhal. **Pb** (2): polar bear. **Sf** (2): foraging northern fulmars. **Ow** (1): killer whale and sperm whale. **Se** (1): harp seal and ringed seal. **Wa** (1): walrus.

Table 9. Offshore sensitivity during summer.

Area	Sensitivity value	Ranking
OS_18	125	High
OS_19	136	Extreme
OS_20	108	Moderate
OS_21	68	Moderate
OS_22	35	Low
OS_23	158	Extreme
OS_24	126	High
OS_25	60	Moderate
OS_26	27	Low
OS_27	156	Extreme
OS_28	108	High
OS_29	77	Moderate
OS_30	137	High
OS_31	103	High
OS_32	83	Moderate
OS_33	202	Extreme
OS_34	114	High
OS_35	95	Moderate

7.6 Offshore sensitivity, autumn (September-December)

Environmental description (Figure 25)

Offshore area 18 (OS_18): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Sep. Close proximity to Mestersvig (permanently manned military outpost). *Species occurrence*: **Bw** (3): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Sf** (3): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar. **Sd** (2): autumn migration of common eider. **Se** (2): bearded seal, harp seal and ringed seal. **Al** (1): autumn migration of black guillemot. **Ig** (1): autumn migration of ivory gulls. **Nw** (1): narwhal. **Pb** (1): polar bear. **Pd** (1): autumn migration of red-throated diver. **Wa** (1): walrus.

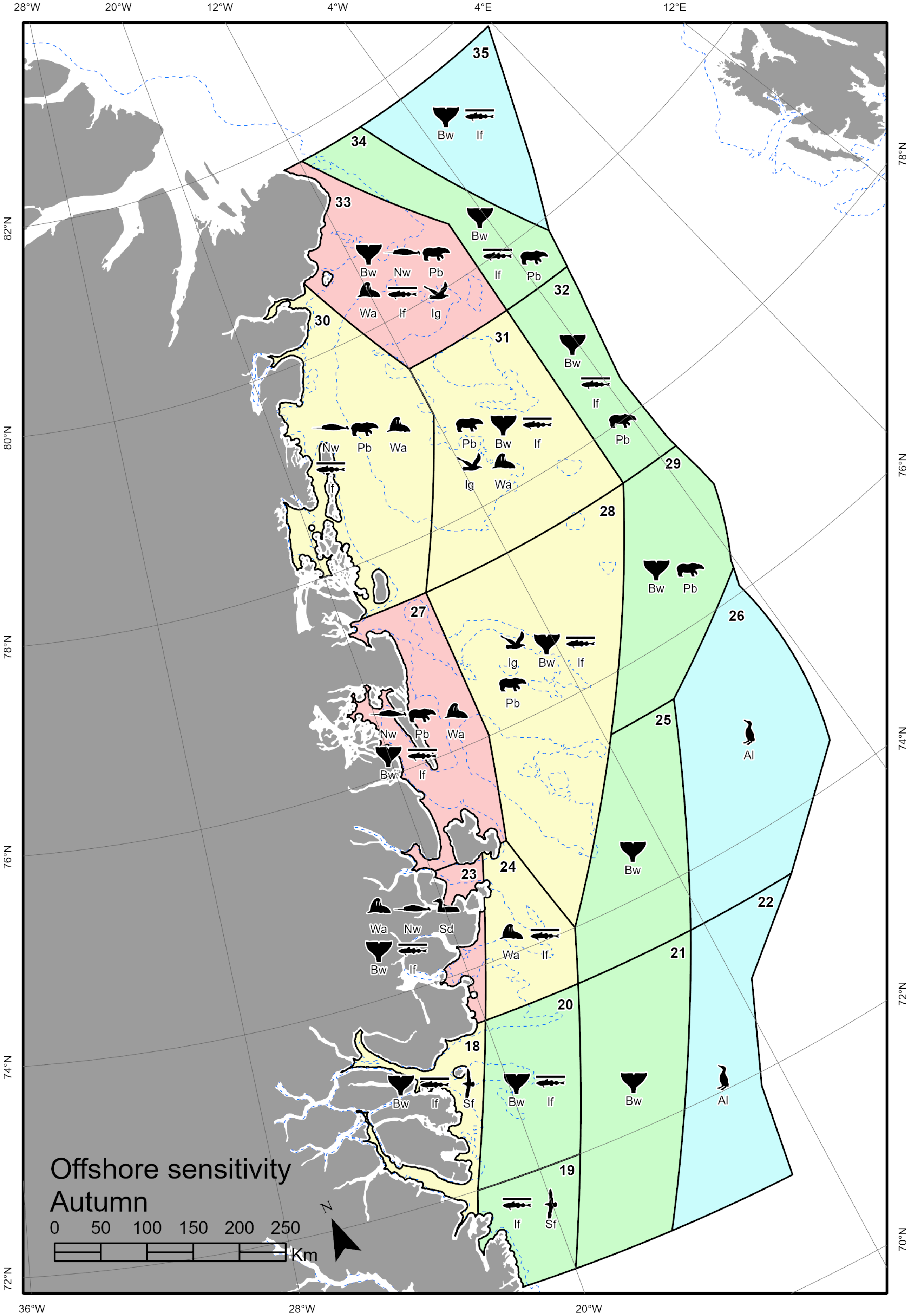


Figure 25. Oil spill sensitivity ranking of offshore areas during autumn (September-December).

Offshore area 19 (OS_19): *Human use* (2): area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Sep for hunting, fishing and recreational activities. *Species occurrence*: **If** (3): sea ice associated fauna, e.g. polar cod. **Sf** (3): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar. **Al** (2): autumn migration of black guillemot and little auk. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Ig** (1): autumn migration of ivory gulls. **Nw** (1): narwhal. **Pb** (1): polar bear. **Pd** (1): red-throated diver. **Wa** (1): walrus.

Offshore area 20 (OS_20): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (3): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (2): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar. **Al** (1): autumn migration and moulting of black guillemot and little auk. **Ig** (1): autumn migration of ivory gull. **Nw** (1): narwhal. **Pb** (1): polar bear. **Wa** (1): walrus.

Offshore area 21 (OS_21): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (5): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **If** (2): sea ice associated fauna, e.g. polar cod. **Ow** (2): killer whale, northern bottlenose whale, sperm whale and white-beaked dolphin. **Al** (1): autumn migration of black guillemot, little auk and thick-billed murre. **Ig** (1): autumn migration of ivory gull. **Nw** (1): narwhal. **Pb** (1): polar bear. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar. **Wa** (1): walrus.

Offshore area 22 (OS_22): *Human use* (1): commercial fishery for herring and mackerel in Jun-Sep. *Species occurrence*: **Al** (3): autumn migration of little auk and thick-billed murre. **Pf** (2): Fishery data suggest presence of herring and mackerel (some years). **Bw** (1): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Ig** (1): autumn migration of ivory gulls. **Nw** (1): narwhal. **Ow** (1): killer whale, northern bottlenose whale, sperm whale and white-beaked dolphin. **Se** (1): harp seal and hooded seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar.

Offshore area 23 (OS_23): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Sep. Close proximity to Daneborg (Sirius Patrol HQ) and Zackenberg (research station). *Species occurrence*: **Wa** (5): important habitat early in season for walrus. **Nw** (4): narwhal. **Sd** (4): autumn migration of common eider. **Bw** (3): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (2): polar bear. **Se** (2): bearded seal, harp seal and ringed seal. **Sf** (2): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar. **Al** (1): autumn migration of black guillemot. **Ig** (1): autumn migration of ivory gull.

Offshore area 24 (OS_24): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Wa** (5): important habitat early in season for walrus. **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (2): polar bear. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (2): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar. **Al** (1): autumn migration and moulting of black guillemot and little auk. **Bw** (1): bowhead whale. **Ig** (1): autumn migration of ivory gulls. **Nw** (1): narwhal. **Sd** (1): autumn migration of common eider.

Offshore area 25 (OS_25): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (5): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Al** (2): autumn migration and moulting of little auk and thick-billed murre. **If** (2): sea ice associated fauna, e.g. polar cod. **Ig** (2): autumn migration of ivory gulls. **Nw** (2): narwhal. **Pb** (2): polar bear. **Wa** (2): walrus. **Ow** (1): killer whale, northern bottlenose whale and sperm whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar.

Offshore area 26 (OS_26): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Al** (3): autumn migration of little auk and thick-billed murre. **Bw** (2): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Ig** (1): autumn migration of ivory gull. **Nw** (1): narwhal. **Ow** (1): killer whale, northern bottlenose whale and sperm whale. **Se** (1): harp seal and hooded seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar. **Wa** (1): walrus.

Offshore area 27 (OS_27): *Human use* (2): area bordering the National Park in North and East Greenland with occasional tourist cruises (especially in Dove Bugt), expeditions and scientific activities in coastal areas in Sep. Close proximity to Danmarkshavn (permanently manned weather station). *Species occurrence*: **Nw** (5): important early autumn habitat for narwhal. **Pb** (5): polar bear. **Wa** (5): important early autumn habitat for walrus. **Bw** (3): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Sd** (2): autumn migration of common eider. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Al** (1): autumn migration of black guillemot. **Ig** (1): autumn migration of ivory gull. **Sf** (1): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar.

Offshore area 28 (OS_28): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Ig** (4): autumn migration of ivory gull. **Bw** (3): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (3): polar bear. **Al** (2): autumn migration of black guillemot, thick-billed murre and little auk. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Wa** (2): walrus. **Nw** (1): narwhal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar.

Offshore area 29 (OS_29): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (4): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **Pb** (3): polar bear. **Al** (2): autumn migration of little auk and thick-billed murre. **If** (2): sea ice associated fauna, e.g. polar cod. **Nw** (2): narwhal. **Wa** (2): walrus. **Ig** (1): autumn migration of ivory gull. **Ow** (1): killer whale and sperm whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar.

Offshore area 30 (OS_30): *Human use* (1): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Sep. *Species occurrence*: **Nw** (5): important early autumn habitat to the north for narwhal. **Pb** (5): polar bear. **Wa** (5): important early autumn habitat to the north for walrus. **If** (3): sea ice associated fauna, e.g. polar cod. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Bw** (1): bowhead whale. **Ig** (1): autumn migration of ivory gulls. **Sd** (1): autumn migration of common eiders. **Sf** (1): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar.

Offshore area 31 (OS_31): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Pb** (5): polar bear. **Bw** (4): bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Ig** (3): autumn migration of ivory gull. **Wa** (3): walrus. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Nw** (1): narwhal. **Sf** (1): autumn migration of black-legged kittiwake, glaucous gull and northern fulmar.

Offshore area 32 (OS_32): *Human use* (0): no significant human use recorded in this season. *Species occurrence*: **Bw** (4): blue whale, bowhead whale, fin whale, humpback whale and minke whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (3): polar bear. **Ig** (2): autumn migration of ivory gull. **Nw** (2): narwhal. **Wa** (2): walrus. **Al** (1): autumn migration of little auk and thick-billed murre. **Ow** (1): killer whale and sperm whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): autumn migration of black-legged kittiwake and northern fulmar.

Offshore area 33 (OS_33): *Human use* (1): area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Sep. *Species occurrence*: **Bw** (5): blue whale, bowhead whale (important habitat), fin whale, humpback whale. **Nw** (5): narwhal. **Pb** (5): polar bear. **Wa** (5): walrus. **If** (3): sea ice associated fauna, e.g. polar cod. **Ig** (3): autumn migration of ivory gull. **Sd** (2): autumn migration of common eider. **Se** (2): bearded seal, harp seal, hooded seal and ringed seal. **Al** (1): autumn migration of black guillemot. **Sf** (1): autumn migration of glaucous gull and northern fulmar.

Offshore area 34 (OS_34): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (4): important autumn habitat for bowhead whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Pb** (3): polar bear. **Ig** (2): autumn migration of ivory gull. **Nw** (2): narwhal. **Wa** (2): walrus. **Al** (1): autumn migration of black guillemot and little auk. **Ow** (1): killer whale and sperm whale. **Se** (1): bearded seal, harp seal, hooded seal and ringed seal. **Sf** (1): autumn migration of glaucous gull and northern fulmar.

Offshore area 35 (OS_35): *Human use* (0): no significant human use recorded in this area. *Species occurrence*: **Bw** (4): blue whale, bowhead whale (important late autumn habitat), fin whale, humpback whale. **If** (3): sea ice associated fauna, e.g. polar cod. **Ig** (2): autumn migration of ivory gull. **Nw** (1): narwhal. **Ow** (1): killer whale and sperm whale. **Se** (1): harp seal and ringed seal. **Sf** (1): northern fulmar. **Wa** (1): walrus.

Table 10. Offshore sensitivity during autumn.

Area	Sensitivity value	Ranking
OS_18	110	High
OS_19	95	Moderate
OS_20	77	Moderate
OS_21	67	Moderate
OS_22	35	Low
OS_23	142	Extreme
OS_24	99	High
OS_25	88	Moderate
OS_26	33	Low
OS_27	143	Extreme
OS_28	108	High
OS_29	85	Moderate
OS_30	117	High
OS_31	99	High
OS_32	89	Moderate
OS_33	164	Extreme
OS_34	96	Moderate
OS_35	61	Low

8 Operational shoreline information

This chapter contains two series of 68 detailed maps covering the coastal zone of the atlas area: shoreline sensitivity maps and physical environment and logistics maps. The shoreline sensitivity maps are on left-hand side, and physical environment and logistics maps are on the right-hand side. Descriptive texts (environmental description, shoreline sensitivity summary, access, countermeasures, and *safe havens*) and species/human use occurrence graphs appear on the pages in between. There is a common legend to the maps, which is found after the keymaps (Figure 26a, b). A black bar is used to indicate the ends of the shoreline segments on the sensitivity maps. In the PDF-version of the atlas, the keymap can be used for navigating to and from the individual maps by clicking on the keymap. Please refer to the official topographical maps and nautical charts for any toponyms missing on the maps, and to the East Greenland Pilot (2020), the Greenland Harbour Pilot (Link) and the nautical charts for detailed information on anchorages and sailing routes. DCE is not responsible for the accuracy of the logistical features shown on the maps, neither in terms of their exact location, nor in terms of their suitability (see also Appendix E and F).

Map legend

Basemap

Land below 200m
Land above 200m
Nunatak
Braided river / Sand
Lake
Inland ice
River
Contour, Land (100m)
Contour, Ice (100m)

Physical environment and logistics maps

Military station
Research station
Weather station
Anchor locations
Inshore containment with length
200m

Landing site

Civil airport
Military airport
Gravel strip
Skiway
Heliport
Helipad
Tele site helipad
Spot landing

Shoretype

Rocky coast
Archipelago
Glacier coast
Moraine
Alluvial fan
Talus
Barrier beach
Salt marsh and/or tidal flat
Delta

Shoreline sensitivity maps

Shoreline species*

Ab - Alcids breeding
An - Alcids nonbreeding
Gb - Gulls breeding
Iv - Ivory gull breeding
Lb - Little auk breeding
Sb - Seaducks breeding
Sm - Seaducks moulting
Sn - Seaducks nonbreeding
Tb - Tubenoses breeding
Ac - Arctic char
Pb- Polar bear
Wa - Walrus

Site specific shoreline species

Ab - Alcids breeding
Gb - Gulls breeding
Iv - Ivory gull breeding
Lb - Little auk breeding
Sb - Seaducks breeding
Tb - Tubenoses breeding
Wa - Walrus haulout

Human use*
Archaeological site
Selected area
Ramsar area
Bird Protection Area

Shoreline areas sensitivity ranking

Extreme
High
Moderate
Low

*Icons are are only visible for occurences with relative abundance/importance >=2

Map scale: 1:250,000
Projection: UTM zone 27N
Topographic base: G250 Vector, Copyright SDFE

Maps produced by DCE -
Danish Centre for Environment and Energy
Aarhus University, 2021

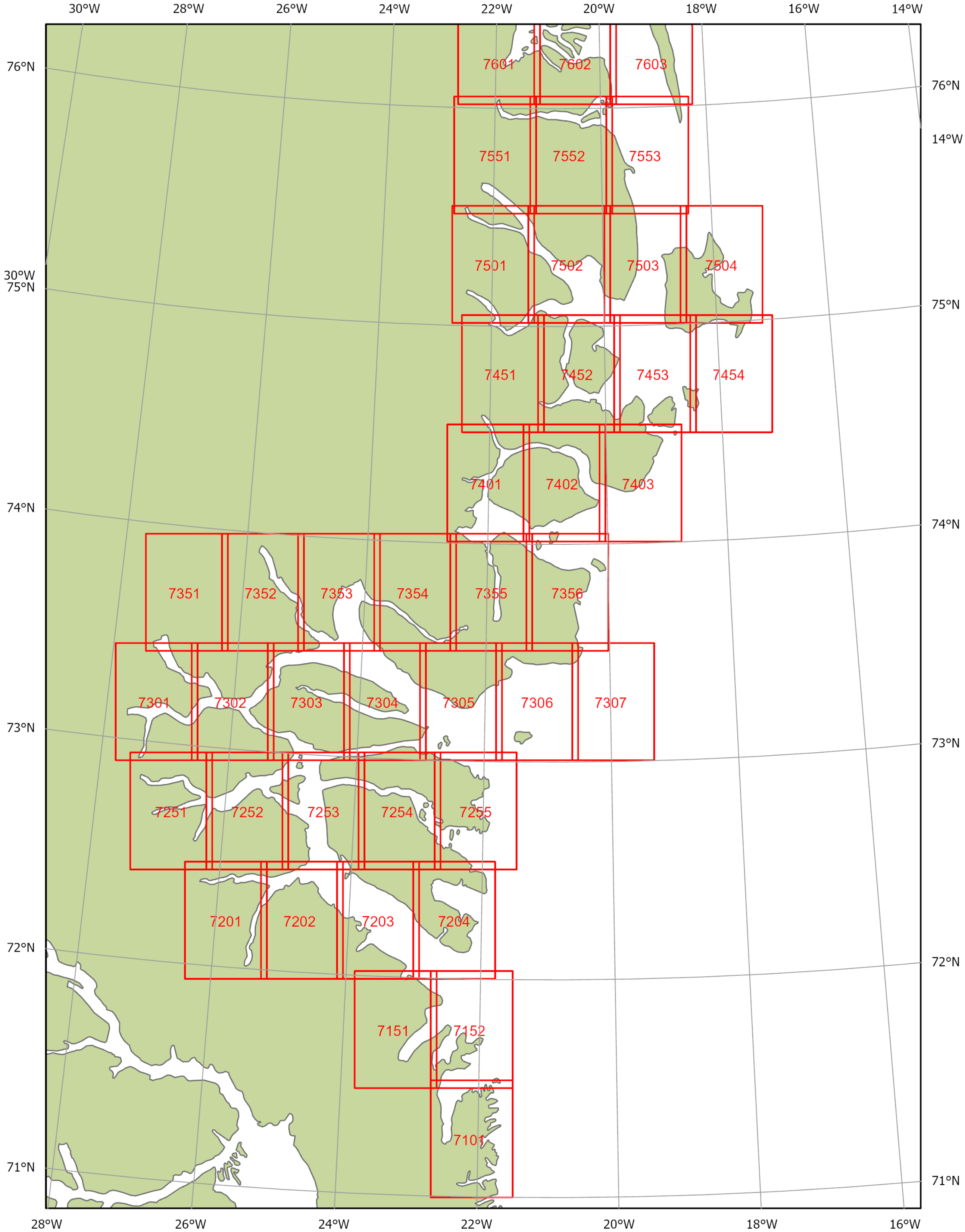


Figure 26a. Key map with overview of the separate map sheets and their ID numbers in the southern part of the atlas area. Click on the map ID number to jump to the map.

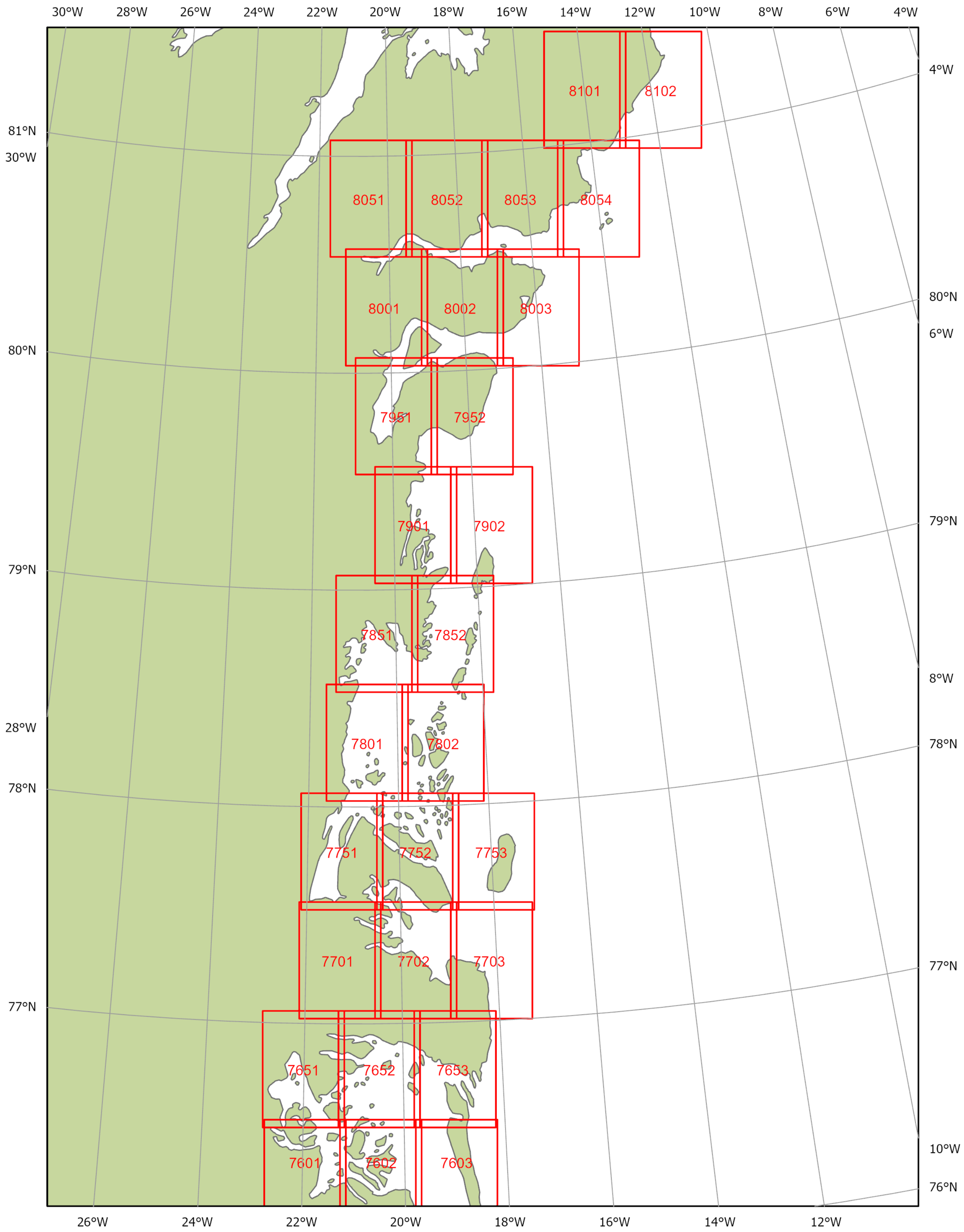
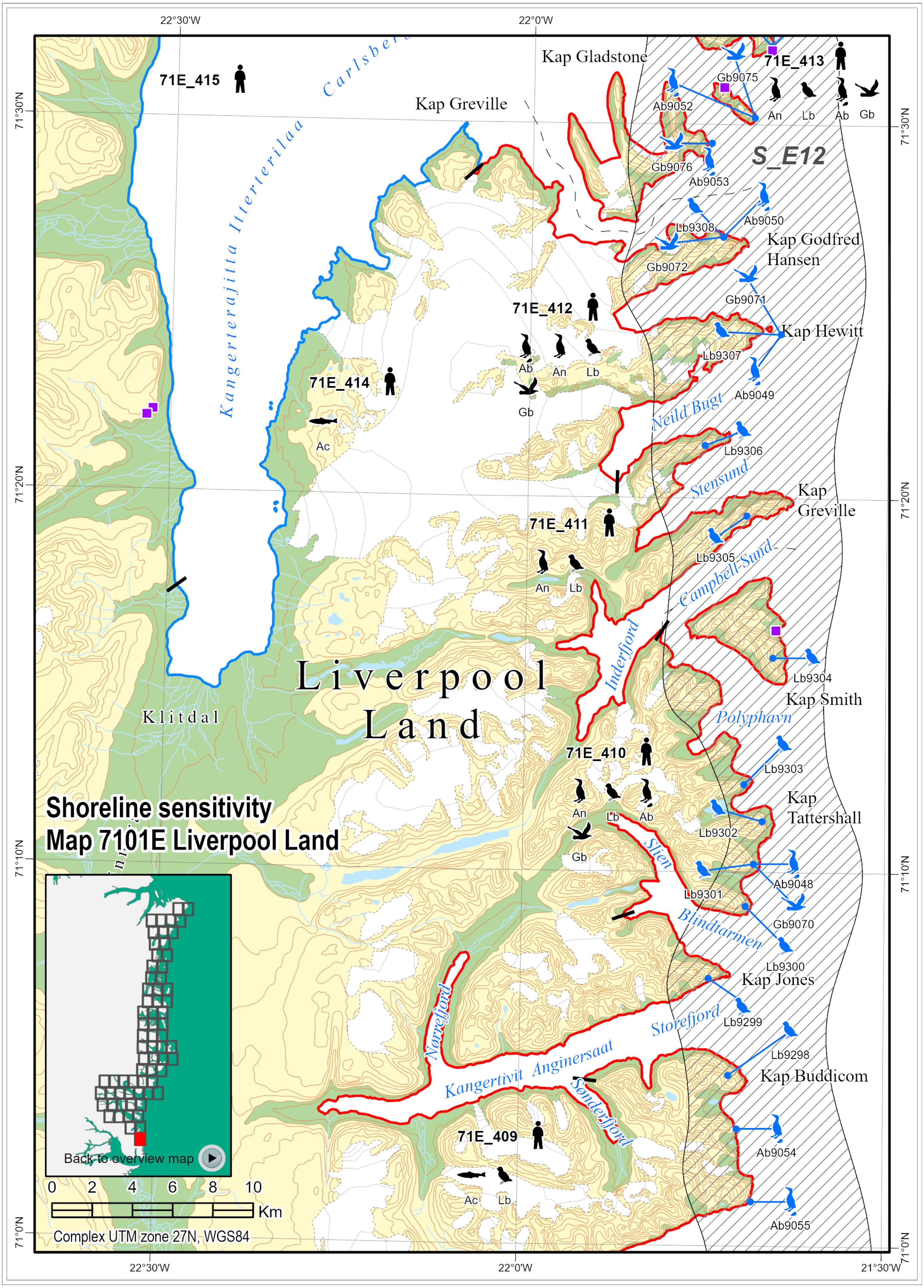


Figure 26b. Key map with overview of the separate map sheets and their ID numbers in the northern part of the atlas area. Click on the map ID number to jump to the map.


Shoreline sensitivity
Map 7101E Liverpool Land
Liverpool Land
Klitdal
Kangerterajitta Itterterilaa
Carlsbe
Kap Gladstone
Kap Greville
Kap Godfred Hansen
Kap Hewitt
Neild Bugt
Stensund
Kap Greville
Campbell-Sund
Inderfjord
Polyphavn
Kap Smith
Kap Tattershall
Slien
Blindtarmen
Kap Jones
Storefjord
Nørrefjord
Kangertivit Anginersaat
Sønderfjord
Kap Buddicom
S_E12
71E_409
71E_410
71E_411
71E_412
71E_413
71E_414
71E_415
An
Lb
Ab
Gb
Ac
Gb9075
Ab9052
Gb9076
Ab9053
Ab9050
Lb9308
Gb9072
Gb9071
Lb9307
Ab9049
Lb9306
Lb9305
Lb9304
Lb9303
Lb9302
Lb9301
Ab9048
Gb9070
Lb9300
Lb9299
Lb9298
Ab9054
Ab9055
22°30'W
22°0'W
21°30'W
71°30'N
71°20'N
71°10'N
71°0'N
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.1 Map 7101E - Liverpool Land

Shoreline sensitivity map

Human use

70E_408 - 71E_415	Area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Oct for hunting, fishing and recreational activities, including tourism

Species occurrence

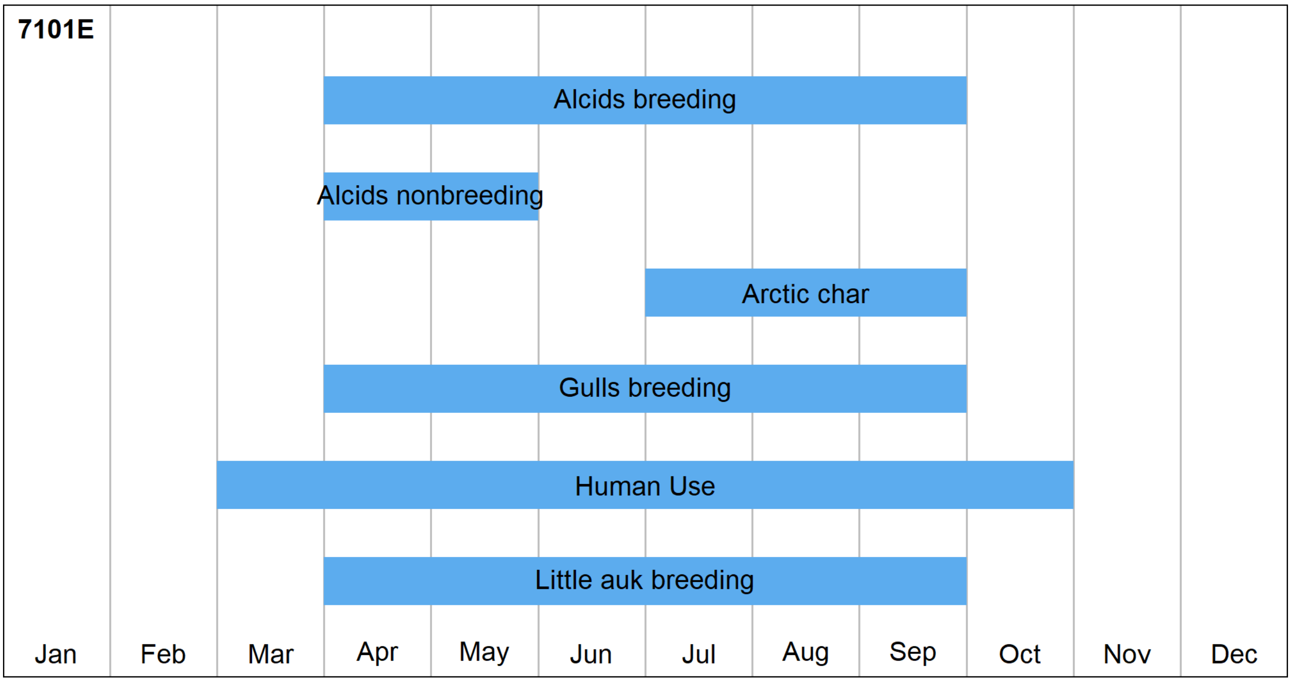
Gb71E_410	1 colony of glaucous gulls
Gb71E_412	2 colonies of glaucous gulls
Ab70E_408	4 colonies of black guillemots
Ab71E_412	2 colonies of black guillemots
Ab71E_410	1 colony of black guillemots
Ab71E_413	3 colonies of black guillemots
An70E_408	Concentrations of little auks and thick-billed murres
An71E_410 - An71E_413	Concentrations of little auks and thick-billed murres
Ac71E_414, Ac71E_409	Important Arctic char river
Gb70E_408	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb71E_413	3 colonies of glaucous gulls
Lb70E_408	4 colonies of little auks
Lb71E_413	1 colony of little auks
Lb71E_412	2 colonies of little auks
Lb71E_410	5 colonies of little auks
Lb71E_409	1 colony of little auks
Lb71E_411	2 colonies of little auks

Site specific occurrence: blue icons

Ab9048 - Ab9055	Breeding black guillemots (S_E12)
Gb9069	Breeding Arctic terns (S_E12)
Gb9070 - Gb9073	Breeding glaucous gulls (S_E12)
Gb9075, Gb9076	Breeding glaucous gulls (S_E12)
Lb9298 - Lb9309	Breeding little auks (S_E12)

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
70E_408	21	Extreme
71E_409	20	Extreme
71E_410	16	Extreme
71E_411	12	Extreme
71E_412	20	Extreme
71E_413	27	Extreme
71E_414	13	Low
71E_415	7	Low



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Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2600). Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from January to July and shorefast ice cover some of the fjords until August. Additional dangers to navigation are present here due to icebergs.

The Scoresby Sund fjord region (right S of this map area) is considered to be the most easily-accessible portion of the E coast because the pack ice here usually lies farther offshore than it does to the S. It has long been believed that the pack is usually more scattered between the parallels of 73°N and 75°N than elsewhere along the coast, so that a landfall by vessels approaching from the E could be made more easily in these latitudes than farther S. Recently, with ever-changing ice conditions, there have been a number of years when ice conditions have permitted vessels from Europe to proceed direct to Scoresby Sund instead of having to take the longer N route.

Storefjord is entered between Kap Buddicom and Kap Jones, 3 km NNE. It extends 20 km WSW between high mountain ranges. Depths in the fairway of this fjord are reported to be great and there are no known dangers. A bank, which is foul and should be avoided, is reported to extend 6 km E from Kap Jones.

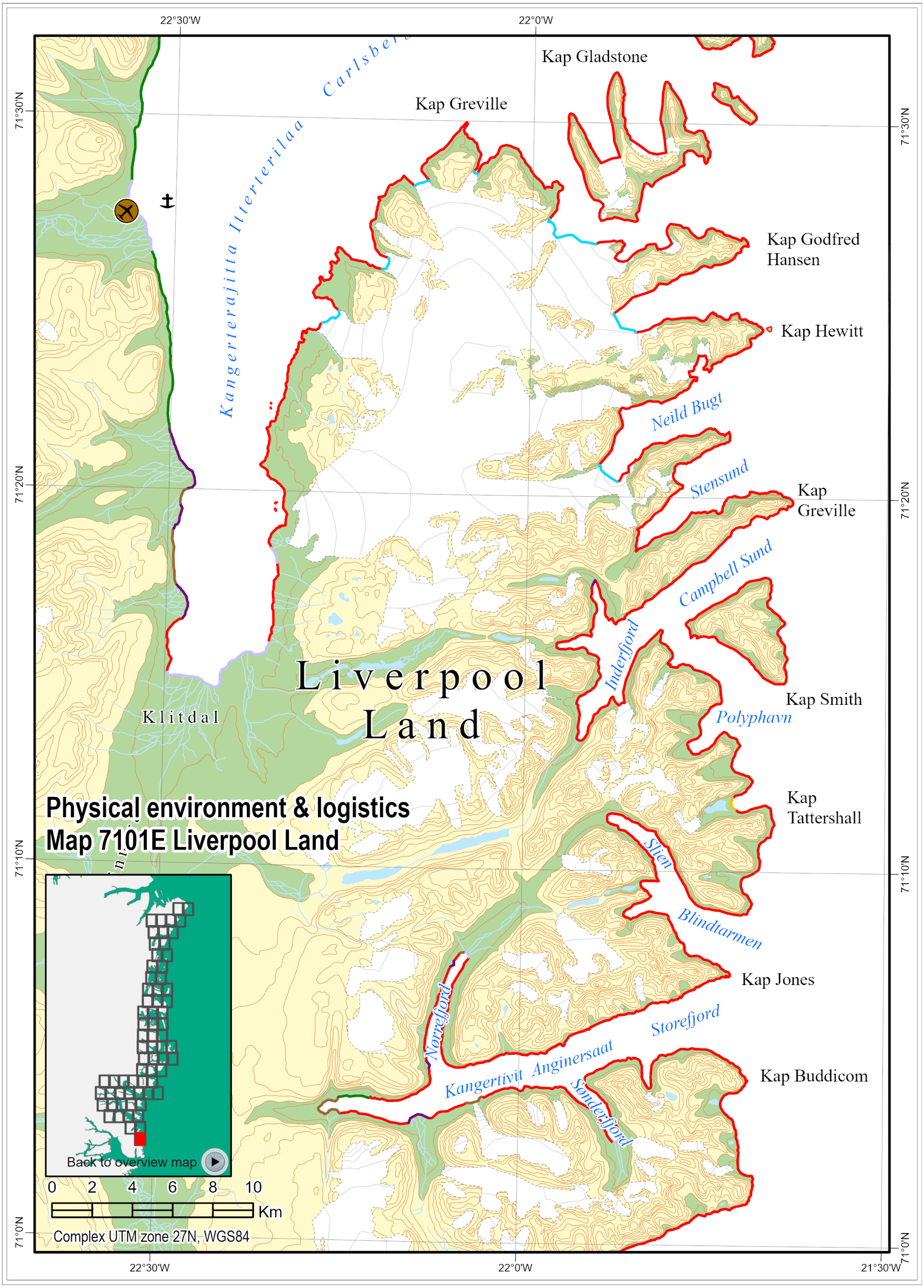
At the north end of this map lies Carlsberg Fjord. A small bank, which has a least known depth of 5l m, lies in the entrance to Carlsberg Fjord. This bank should be avoided, as the depths on it are very irregular and it may contain dangerous pinnacle rocks. Depths in the fairway of the fjord are deep; the least known depth of 46 m lies about 6 km from its head. A rock, with a depth of 2 m or less, is reported to lie about 4 km from the head.

During early September, a vessel anchored, in a depth of 55 m, soft mud, off the delta of a river located on the W shore of the fjord. At this time, the fjord was clear of ice, except for a few small growlers.

A STOL-airstrip is identified at (ca 71°26'N, 22°35'E), see Chapter 15.

Shorelines within this area are almost exclusively rock, with some talus and alluvial fan, and glacier at the head of several fjords, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.


Physical environment & logistics
Map 7101E Liverpool Land
Liverpool Land
Klitdal
Kap Gladstone
Kap Greville
Carlsberg
Kangerterajitta Itterterilaa
Kap Godfred Hansen
Kap Hewitt
Neild Bugt
Stensund
Kap Greville
Campbell Sund
Inderfjord
Kap Smith
Polyphavn
Kap Tattershall
Slien
Blindtarmen
Kap Jones
Nørrefjord
Storefjord
Kangertivit Anginersaat
Sønderfjord
Kap Buddicom
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
71°30'N
71°20'N
71°10'N
71°0'N

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

There are no opportunities for nearshore booming among the island shorelines described on this map. Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map. Several candidates offering natural shelter from prevailing seas include Slien (at approx. 71°10′N, 21°50′W) and Inderfjord.

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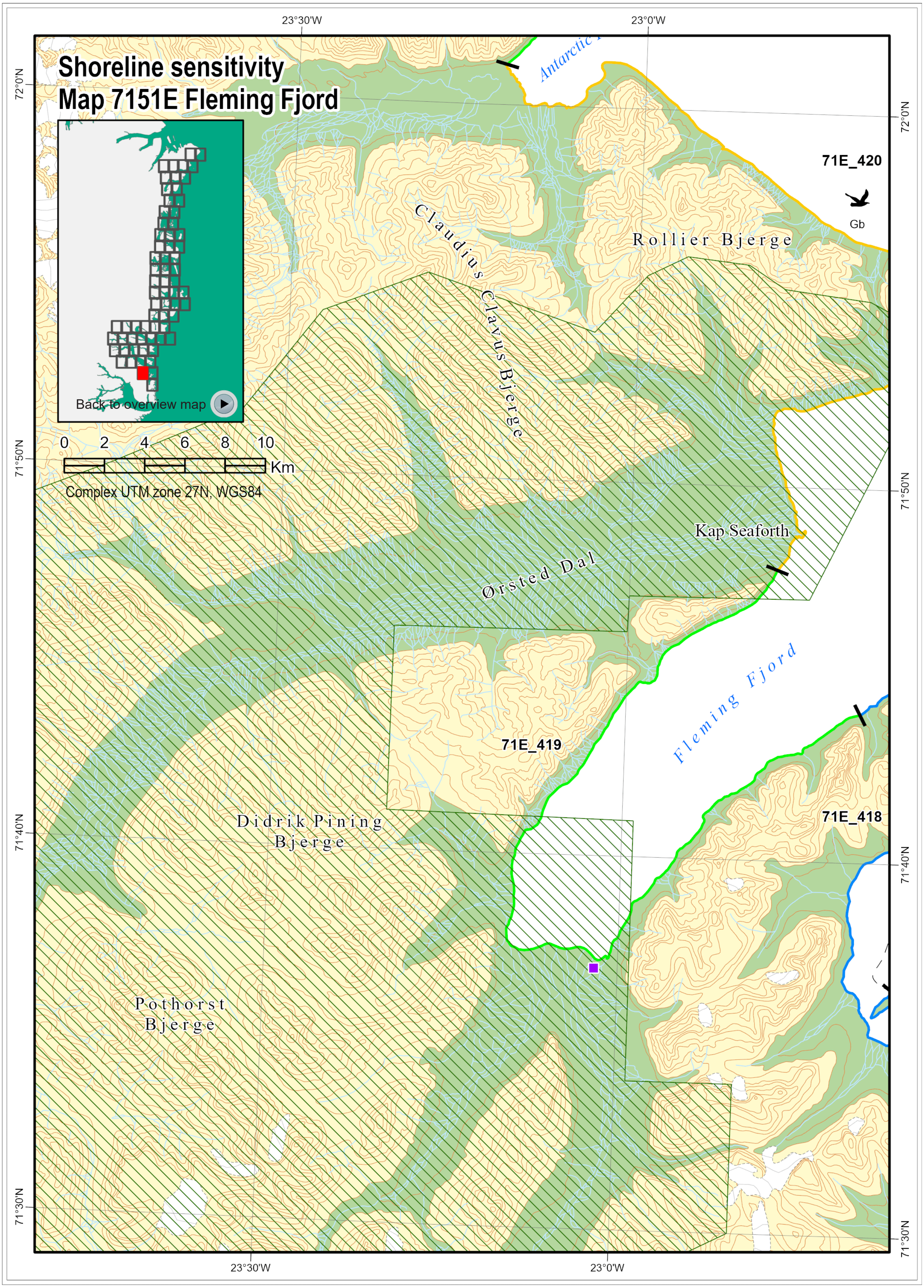


Shoreline sensitivity
Map 7151E Fleming Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
23°30'W
23°0'W
72°0'N
71°50'N
71°40'N
71°30'N
71E_420
Gb
Rollier Bjerge
Claudius Clavus Bjerge
Kap Seaforth
Ørsted Dal
Fleming Fjord
71E_419
71E_418
Didrik Pining Bjerge
Pothorst Bjerge

8.2 Map 7151E - Fleming Fjord

Shoreline sensitivity map

Human use

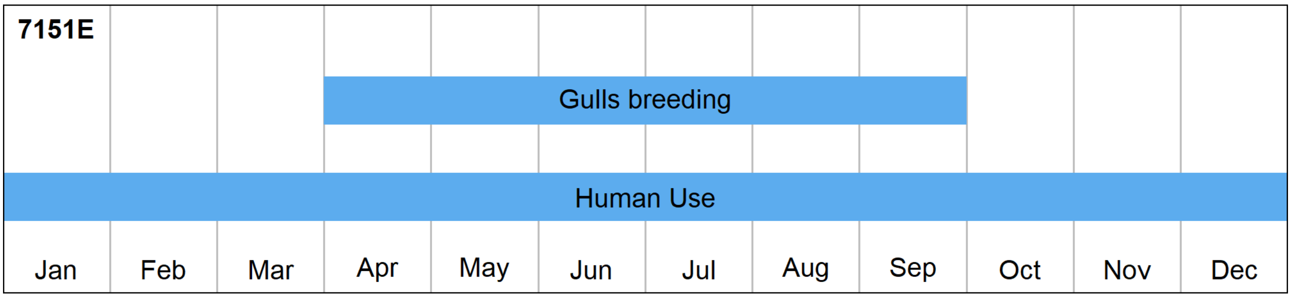
72E_421	Area bordering the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost).

Species occurrence

Gb71E_420 - Gb72E_421	1 colony of glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
71E_418	6	Low
71E_419	16	Moderate
71E_420	23	High
72E_421	16	Moderate



Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from January to July and the fjords are usually bound by shorefast ice until August. Additional dangers to navigation are present here due to icebergs.

Antarctic Havn to the north on this map is an anchor site, and a ship has anchored off Kap Seaforth (Chapter 14).

Two STOL-airstrips are identified in Ørsted Dal NW of the head of Fleming Fjord (Chapter 15).

Shorelines within this area are predominantly rock, talus, and alluvial fans in river mouths allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

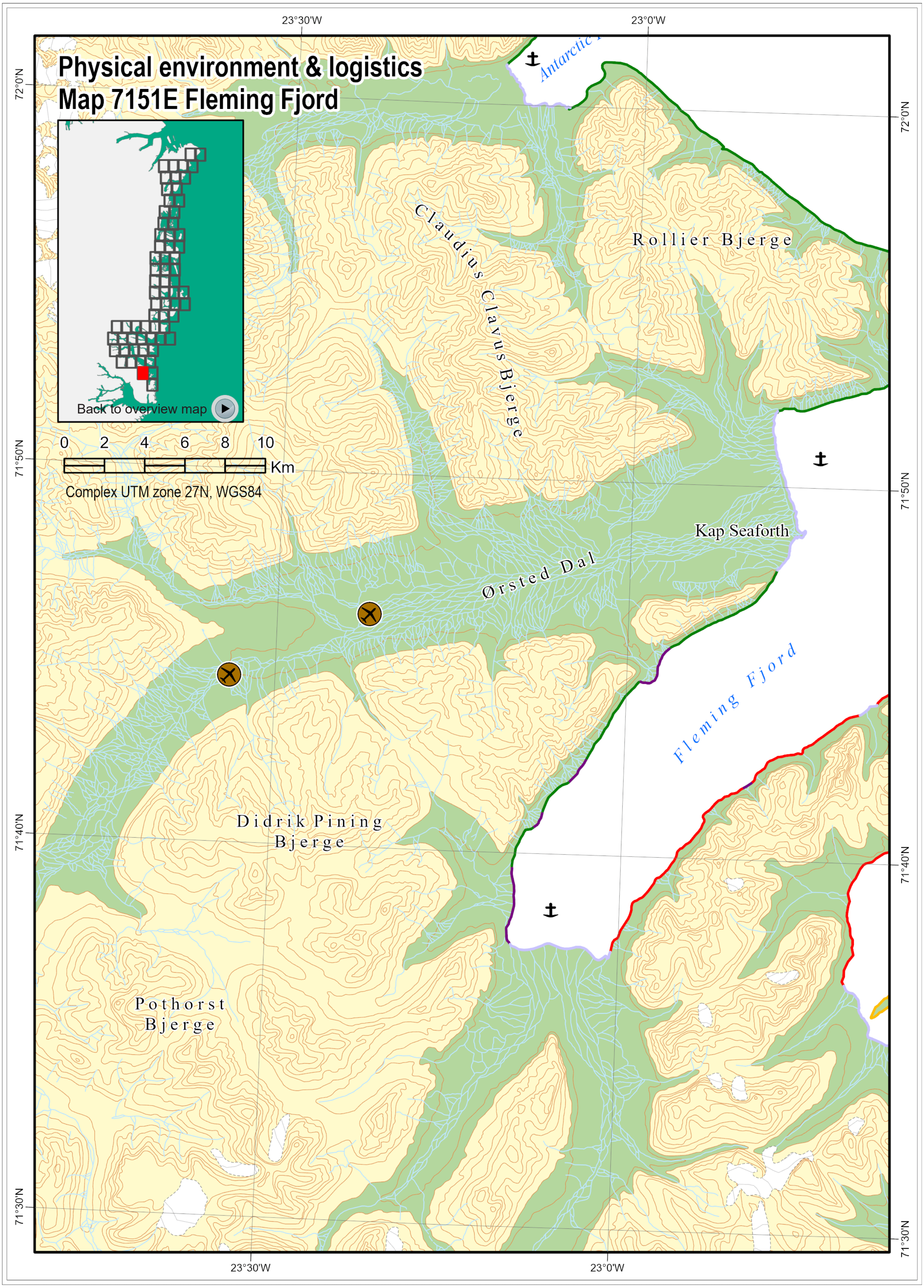
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

There are no opportunities for nearshore booming among the shorelines described on this map. Oil approaching the Fleming Fjord should be diverted to the relatively lower sensitive shoreline on it.

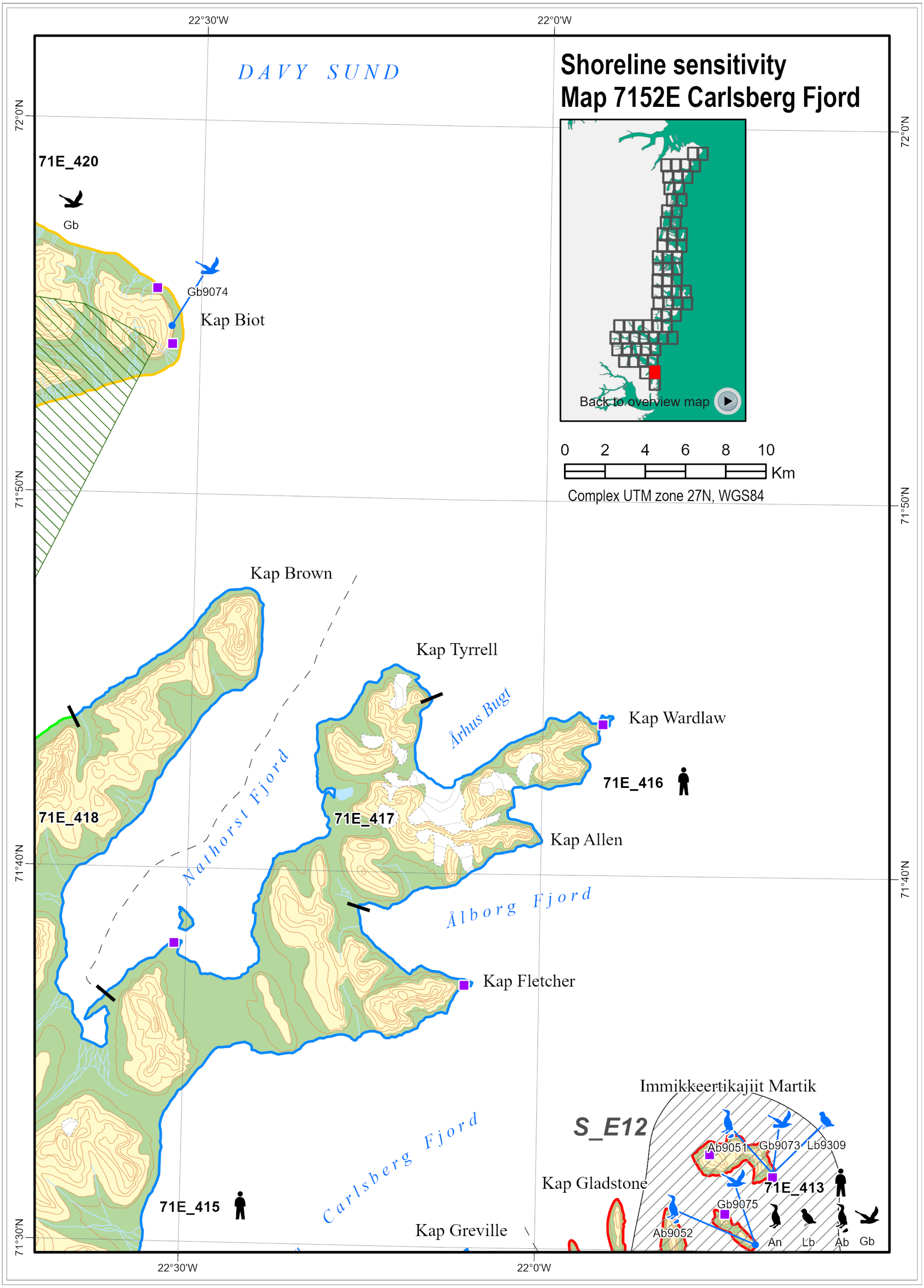
Shorelines shown on this map are predominantly rock with some talus and alluvial fans with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
Antarctic Havn could be considered as a safe haven, having a defined anchorage and good protection although it is rated as high sensitivity. Fleming Fjord could be considered as a potential safe haven due to its relatively low sensitivity and offering good natural protection; however, booming would be complicated by the excessive lengths of boom that would be required and the water depths (unknown, but presumably great).



Physical environment & logistics
Map 7151E Fleming Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
23°30'W
23°0'W
72°0'N
71°50'N
71°40'N
71°30'N
Claudius Clavus Bjerge
Rollier Bjerge
Kap Seaforth
Ørsted Dal
Fleming Fjord
Didrik Pining Bjerge
Pothorst Bjerge


Shoreline sensitivity
Map 7152E Carlsberg Fjord
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
72°0'N
71°50'N
71°40'N
71°30'N
DAVY SUND
71E_420
Gb
Gb9074
Kap Biot
Kap Brown
Kap Tyrrell
Århus Bugt
Kap Wardlaw
71E_416
Nathorst Fjord
71E_418
71E_417
Kap Allen
Ålborg Fjord
Kap Fletcher
Immikkeertikajiit Martik
S_E12
Ab9051
Gb9073
Lb9309
71E_413
Kap Gladstone
Gb9075
Ab9052
An
Lb
Ab
Gb
Carlsberg Fjord
71E_415
Kap Greville

8.3 Map 7152E - Carlsberg Fjord

Shoreline sensitivity map

Human use

71E_413,	Area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Oct for hunting, fishing and recreational activities, including tourism
71E_415, 71E_416	Area occasionally used by inhabitants from Ittoqqortoormiit during Mar-Oct for hunting, fishing and recreational activities, including tourism

Species occurrence

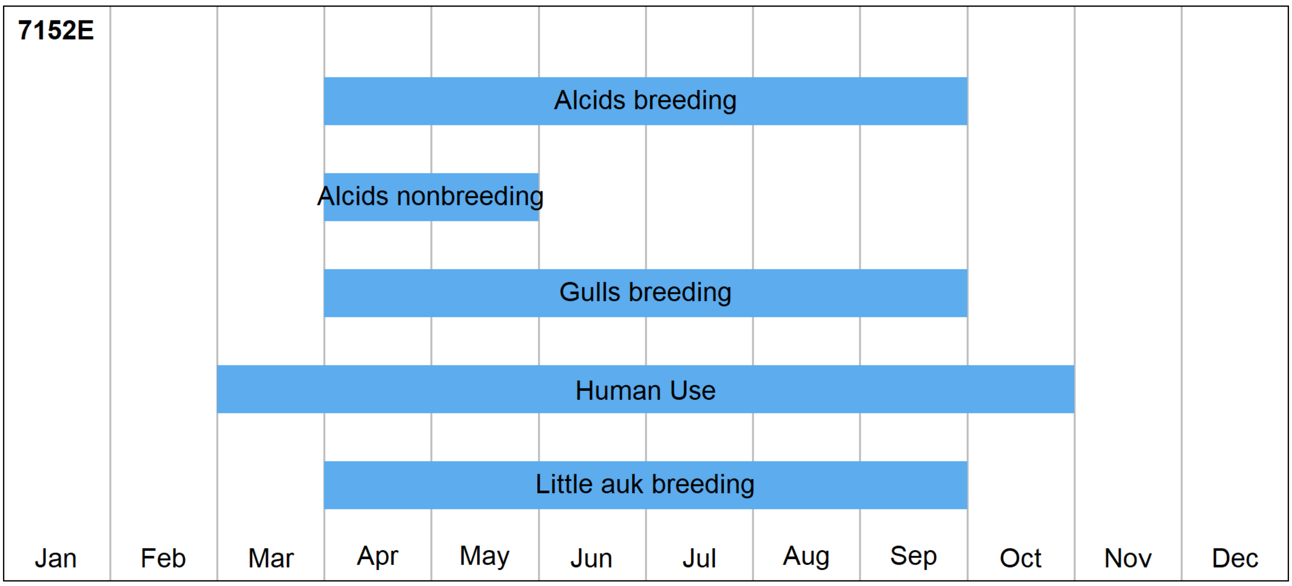
Ab71E_413	3 colonies of black guillemots
An71E_413	Spring concentrations of little auks and thick-billed murres
Gb71E_420	1 colony of glaucous gulls
Gb71E_413	3 colonies of glaucous gulls
Lb71E_413	1 colony of little auks

Site specific occurrence: blue icons

Ab9051, Ab9052	Breeding black guillemots **(S_E12)**
Gb9073 - Gb9075	Breeding glaucous gulls **(S_E12)**
Lb9309	Breeding little auks **(S_E12)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
71E_413	27	Extreme
71E_415	7	Low
71E_416	8	Low
71E_417	14	Low
71E_418	6	Low
71E_419	16	Moderate
71E_420	23	High



Physical environment and logistics, 7152E - Carlsberg Fjord

Access

The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2600). Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from January to July. The fjords are covered by shorefast ice in some cases through August. Additional dangers to navigation are present here due to icebergs.

At the south end of this map lies Carlsberg Fjord. A small bank, which has a least known depth of 5l m, lies in the entrance to Carlsberg Fjord. This bank should be avoided, as the depths on it are very irregular and it may contain dangerous pinnacle rocks. Depths in the fairway of the fjord are deep; the least known depth of 46 m lies about 6 km from its head. A rock, with a depth of 2 m or less, is reported to lie about 4 km from the head. During early September, a vessel anchored, in a depth of 55 m, soft mud, off the delta of a river located on the W shore of the fjord. At this time, the fjord was clear of ice, except for a few small growlers.

The entrance to Nathorst Fjord (71°41'N, 22°30'W) is encumbered by foul ground. Fleming Fjord is entered between Kap Brown and Kap Biot, 11 km NNW. Its entrance is easily recognized by these two bold headlands. The fjord extends 27 km SW and generally has deep depths in the fairway until near its head. A rock, with a depth of 7 m, is reported to lie about 1.6 km SE of Kap Biot. During the month of August, anchorage was obtained by a vessel, in a depth of 58 m, in a bay located 8 km SW of Kap Biot. A vessel also anchored, in a depth of 75 m, off the SE shore of the fiord, 14 km within the entrance. At this time, the fiord was ice-free; however, during most years, it is reported to be filled with ice.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus allowing little opportunity for marine access.

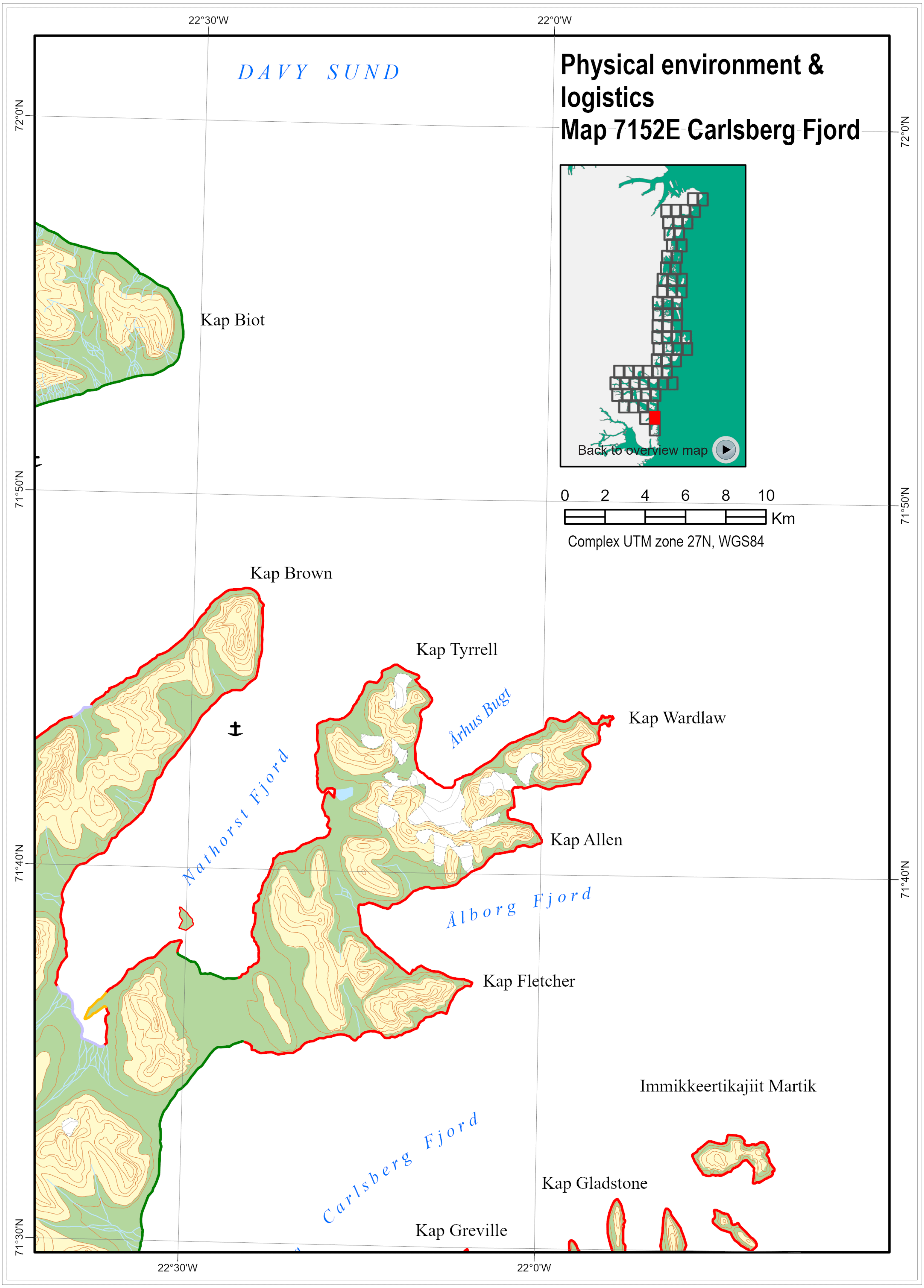
Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Physical environment & logistics
Map 7152E Carlsberg Fjord



Shorelines shown on this map are predominantly rock with some talus with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map. Nathorst Fjord could be considered as such given the natural protection that it offers, but for the complications of booming due to the excessive width and unknown, but presumably great, depths.

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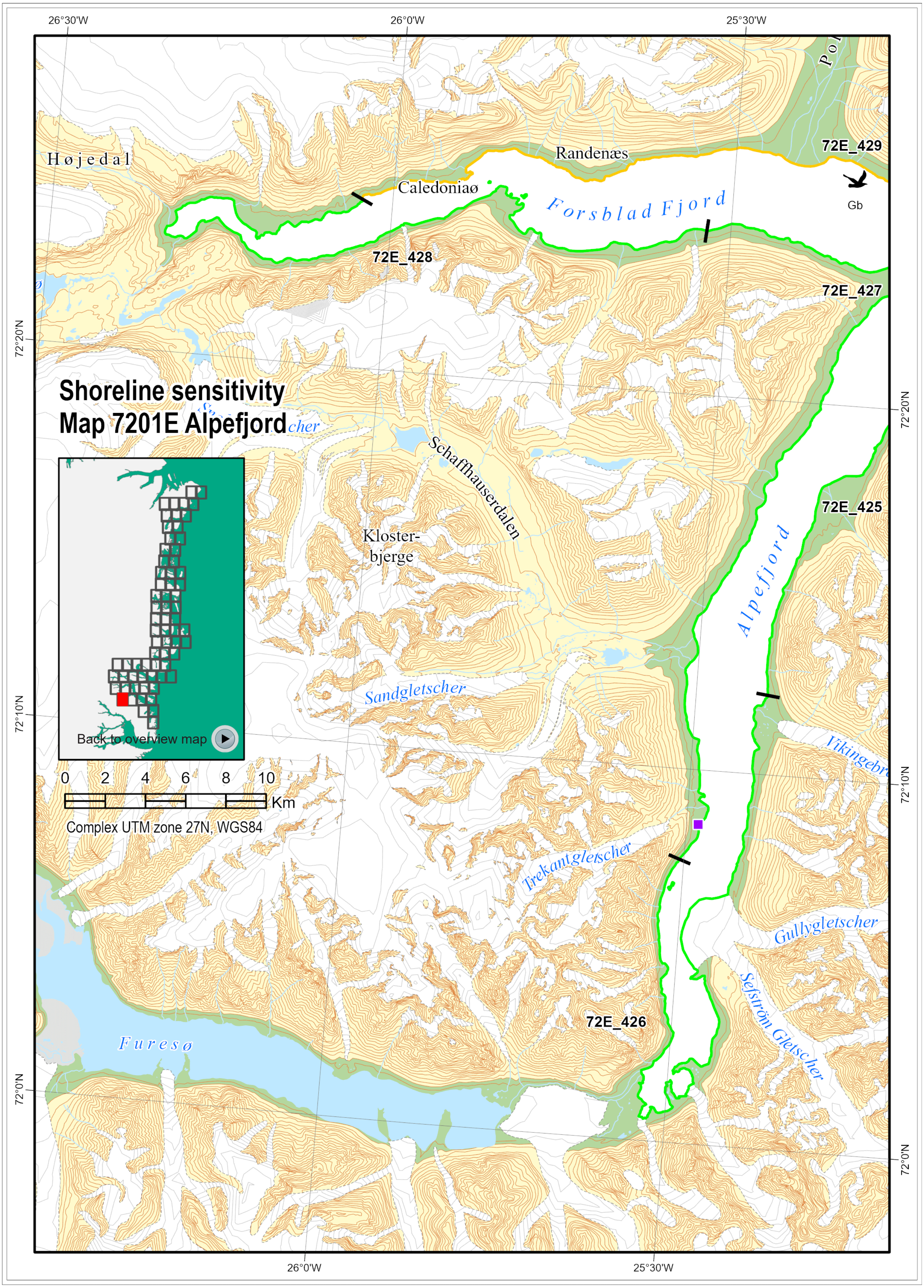

Shoreline sensitivity
Map 7201E Alpefjord
26°30'W
26°0'W
25°30'W
72°20'N
72°10'N
72°0'N
Højedal
Caledoniaø
Randenæs
Forsblad Fjord
72E_429
Gb
72E_428
72E_427
72E_425
72E_426
Schaffhauserdalen
Kloster-
bjerge
Alpefjord
Sandgletscher
Vikingebr
Trekantgletscher
Gullygletscher
Sefström Gletscher
Fureso
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.4 Map 7201E – Alpefjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb72E_429	2 colonies of glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_425	16	Moderate
72E_426	16	Moderate
72E_427	17	Moderate
72E_428	16	Moderate
72E_429	19	High

7201E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters offshore and nearshore appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

These fjords are covered by shorefast ice from January through June. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There is an STOL-airstrip on the west shore of Furesø (Chapter 15).

Shorelines within this area are predominantly rock, talus, alluvial fan, and glacier allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

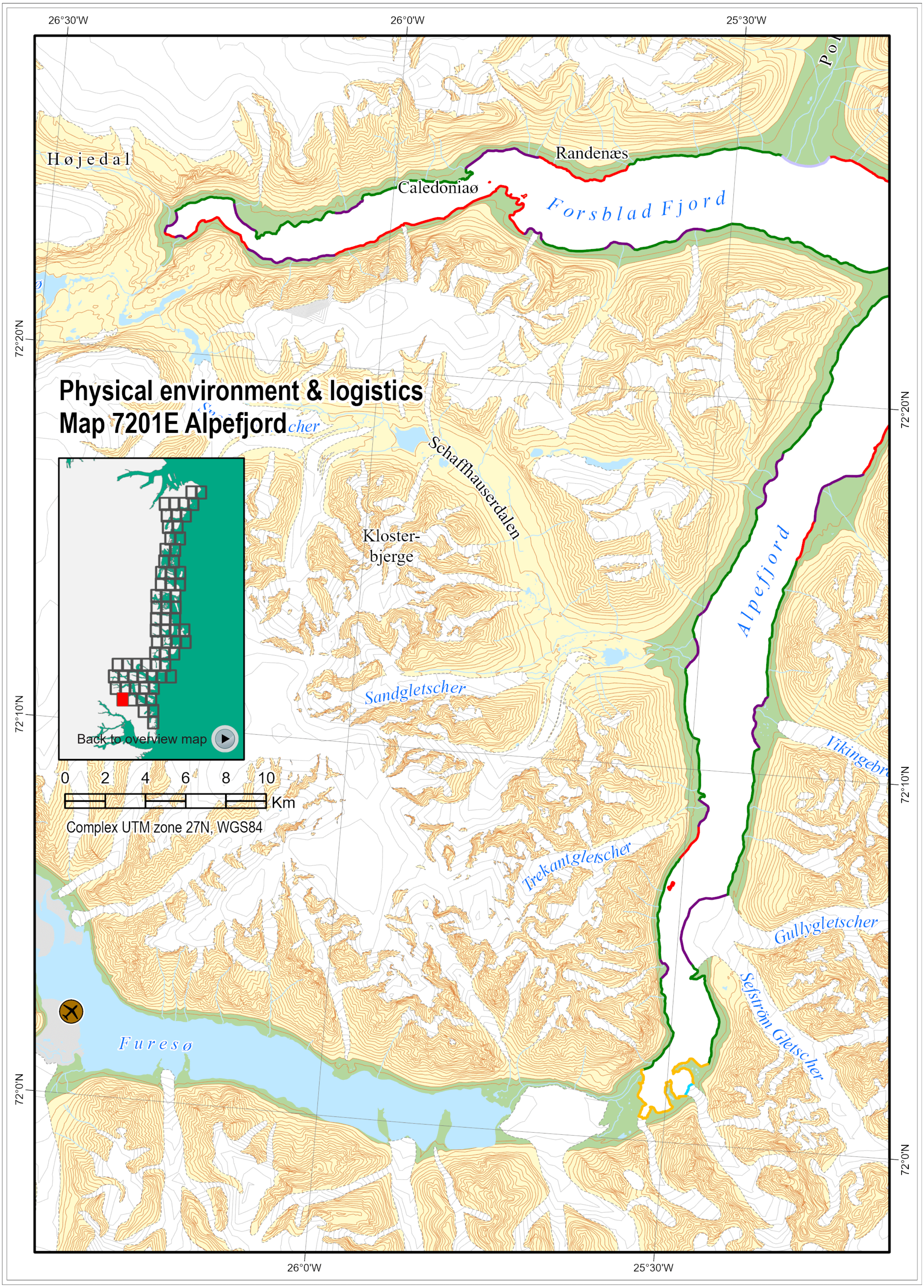
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

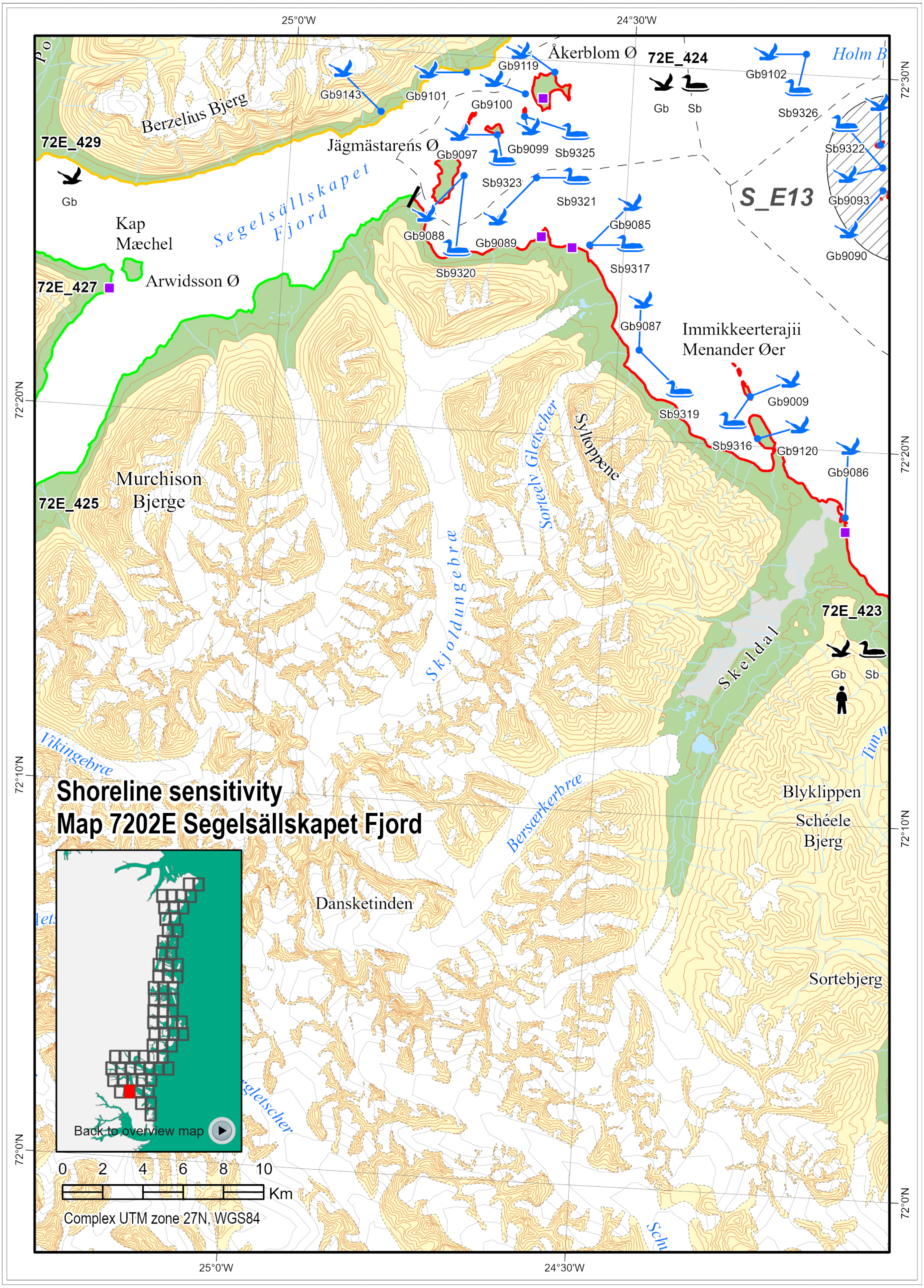
Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are a mix of rock, talus, alluvial fan, and glacier with relatively low exposure. All efforts should be made to avoid oiling such shorelines using diversionary booming tactics.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7201E Alpefjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
26°30'W
26°0'W
25°30'W
72°20'N
72°10'N
72°0'N
Højedal
Caledoniaø
Randenæs
Forsblad Fjord
Schaffhauserdalen
Kloster-
bjerge
Alpefjord
Sandgletscher
Trekantgletscher
Vikingebr
Gullygletscher
Sefström Gletscher
Fureso


Shoreline sensitivity
Map 7202E Segelsällskapet Fjord
25°0'W
24°30'W
72°30'N
72°20'N
72°10'N
72°0'N
Åkerblom Ø
72E_424
Holm B
Berzelius Bjerg
72E_429
Jägmästarens Ø
Segelsällskapet Fjord
Kap Mæchel
Arwidsson Ø
72E_427
S_E13
Immikkeerterajii
Menander Øer
Murchison Bjerge
72E_425
Sorteelv Gletscher
Sylloppene
Skjoldungebræ
72E_423
Skeldal
Vikingebræ
Bersærkerbræ
Blyklippen
Schéele Bjerg
Dansketinden
Sortebjerg
Gb
Sb
Gb9143
Gb9101
Gb9119
Gb9100
Gb9097
Gb9099
Sb9325
Sb9323
Sb9321
Gb9088
Gb9089
Sb9320
Gb9085
Sb9317
Gb9087
Sb9319
Gb9009
Sb9316
Gb9120
Gb9086
Gb9102
Sb9326
Sb9322
Gb9093
Gb9090
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84

8.5 Map 7202E - Segelsällskapet Fjord

Shoreline sensitivity map

Human use

72E_423, 72E_443	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost).

Species occurrence

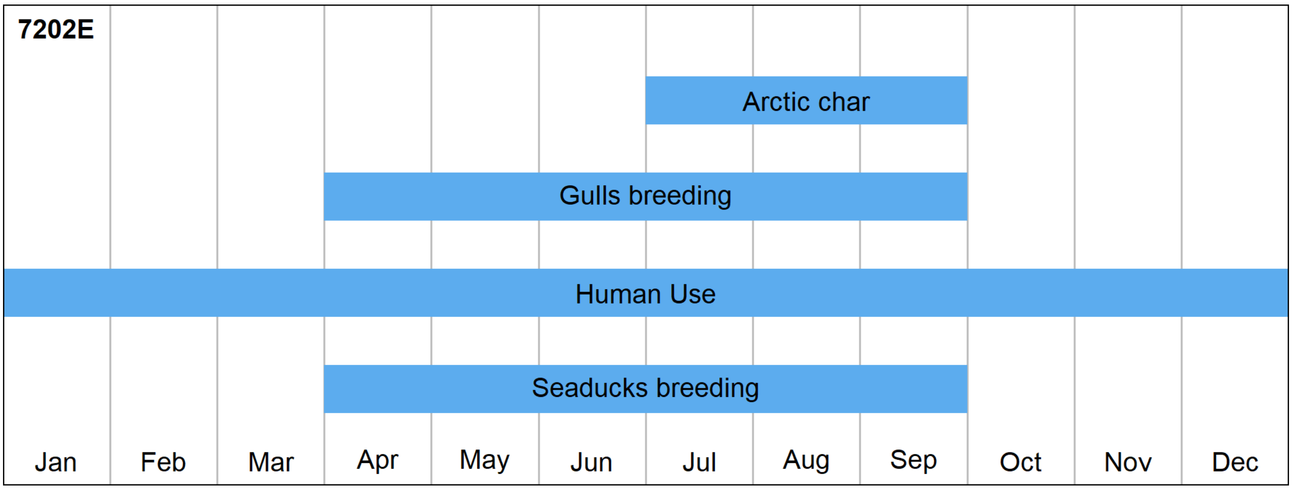
Gb72E_429	2 colonies of glaucous gulls
Sb72E_423	4 colonies of common eiders
Sb72E_424	3 colonies of common eiders
Ac72E_443	Important Arctic char river
Gb72E_423	3 colonies of glaucous gulls, 1 colony of Sabine's gulls and 4 colonies of Arctic terns
Gb72E_424	1 colony of glaucous gulls and 4 colonies of Arctic terns
Gb72E_443	4 colonies of glaucous gulls, 1 colony of Sabine's gulls and 5 colonies of Arctic terns
Gb72E_444	3 colonies of glaucous gulls, 1 colony of Sabine's gulls and 2 colonies of Arctic terns
Sb72E_443, Sb72E_444	2 colonies of common eiders

Site specific occurrence: blue icons

Gb9009	Breeding glaucous gulls, Arctic terns and Sabine's gulls
Gb9016	Breeding Sabine's gulls and Arctic terns
Gb9085, Gb9086	Breeding Arctic terns
Gb9088 - Gb9089	Breeding Arctic terns
Gb9090, Gb9093	Breeding Arctic terns **(S_E13)**
Gb9096	Breeding Arctic terns **(S_E13)**
Gb9095, Gb9102	Breeding Arctic terns
Gb9099, Gb9100	Breeding Arctic terns
Gb9119	Breeding Arctic terns
Gb9087, Gb9097	Breeding glaucous gulls
Gb9101, Gb9120	Breeding glaucous gulls
Gb9143	Breeding glaucous gulls
Sb9310, Sb9311	Breeding common eiders
Sb9316, Sb9317	Breeding common eiders
Sb9319 - Sb9323	Breeding common eiders
Sb9322	Breeding common eiders **(S_E13)**
Sb9325, Sb9326	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_423	28	Extreme
72E_424	29	Extreme
72E_425	16	Moderate
72E_427	17	Moderate
72E_429	19	High
72E_443	32	Extreme
72E_444	34	Extreme



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Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

These waters are covered by shorefast ice from October to July. Additional dangers to navigation are present here due to the icebergs.

Within Segelsällskapets Fjord, which is encumbered at its head by a chain of islands and rocks, exists a reported anchorage in the channel between Arwidssons Ø and Kap Mæchel and there are two anchor sites at Åkerblom Ø and one west of Menander Øer, the latter charted in nautical chart 2739 (Chapter 14).

There are two STOL-airstrips ("skiways") on the glacier near Dansketinden (Chapter 15).

Shorelines within this area are predominantly rock and talus allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

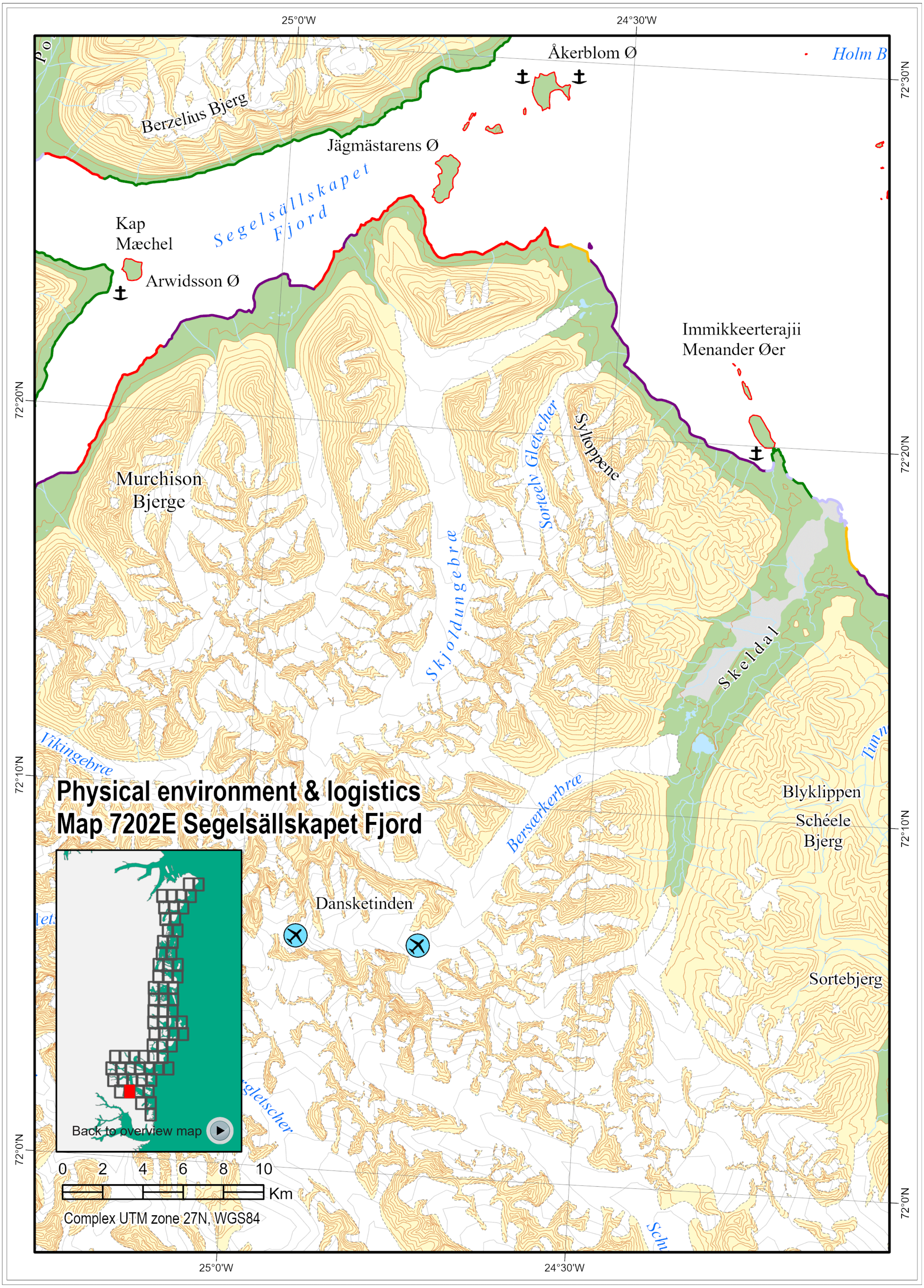
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters. In particular, oil within Segelsällskapets Fjord should be diverted to the relatively lower sensitive shorelines on the north and south.

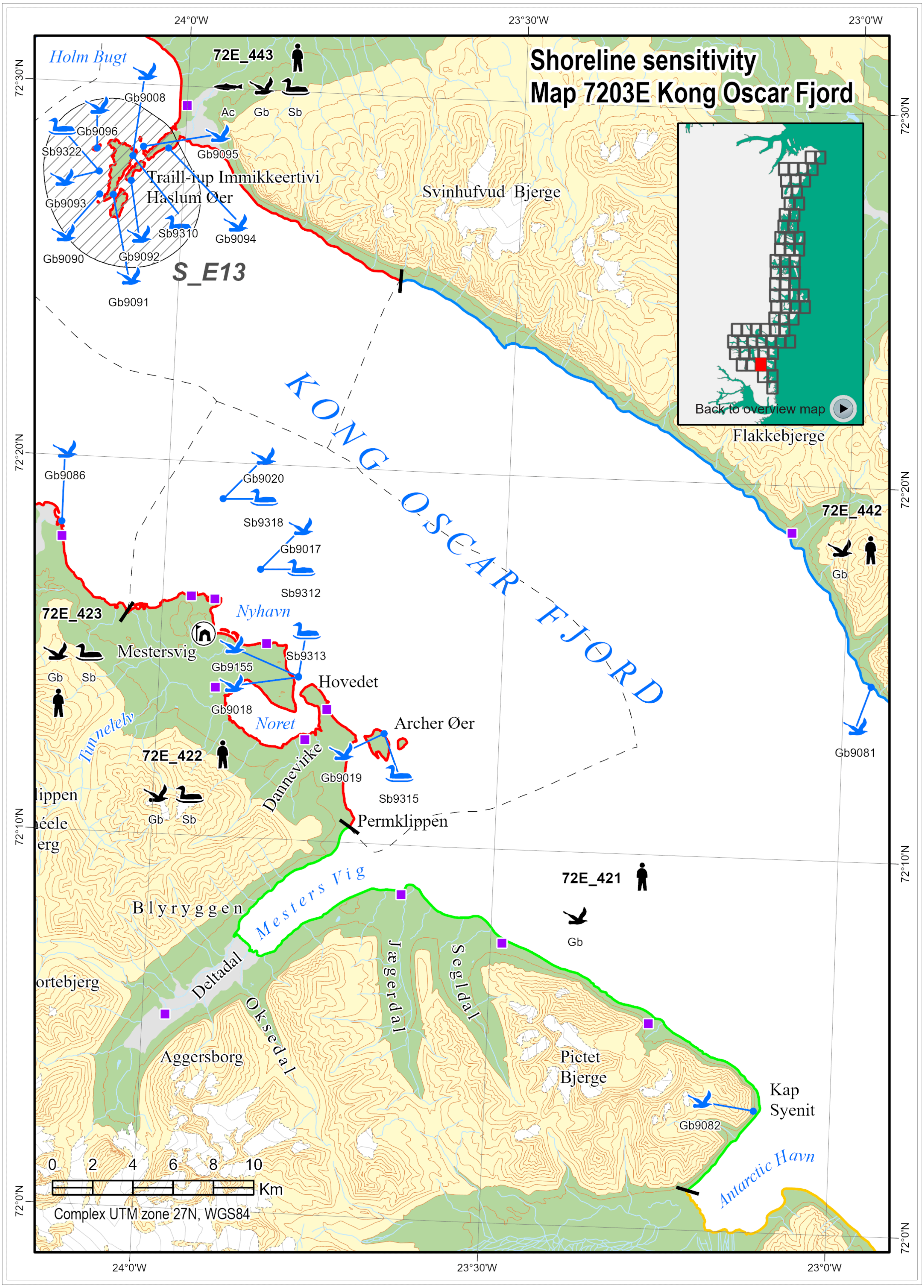
Shorelines shown on this map are predominantly rock with some talus with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7202E Segelsällskapet Fjord
25°0'W
24°30'W
72°30'N
72°20'N
72°10'N
72°0'N
Åkerblom Ø
Holm B
Berzelius Bjerg
Jägmästarens Ø
Segelsällskapet Fjord
Kap Mæchel
Arwidsson Ø
Immikkeerterajii Menander Øer
Murchison Bjerge
Sorteelv Gletscher
Sylloppene
Skjoldungebræ
Skeldal
Vikingebræ
Bersærkerbræ
Blyklippen
Schéele Bjerg
Dansketinden
Sortebjerg
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 7203E Kong Oscar Fjord
Back to overview map
Holm Bugt
72E_443
Ac
Gb
Sb
Gb9008
Gb9096
Sb9322
Gb9095
Traill-iup Immikkeertivi
Haslum Øer
Gb9093
Sb9310
Gb9094
Gb9090
Gb9092
S_E13
Gb9091
Svinhufvud Bjerge
KONG OSCAR FJORD
Flakkebjerge
Gb9086
Gb9020
Sb9318
Gb9017
Sb9312
72E_442
Gb
72E_423
Nyhavn
Mestersvig
Gb
Sb
Gb9155
Sb9313
Hovedet
Gb9018
Noret
Archer Øer
Tunnelelv
72E_422
Danneviike
Gb9019
Sb9315
Gb9081
Gb
Sb
Permklippen
Blyryggen
Mesters Vig
72E_421
Gb
Jægerdal
Segldal
Deltadal
Oksedal
Aggersborg
Pictet Bjerge
Kap Syenit
Gb9082
Antarctic Havn
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
24°0'W
23°30'W
23°0'W
72°30'N
72°20'N
72°10'N
72°0'N

8.6 Map 7203E - Kong Oscar Fjord

Shoreline sensitivity map

Human use

72E_421 - 72E_423	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost).
72E_442 - 72E_443	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost).

Species occurrence

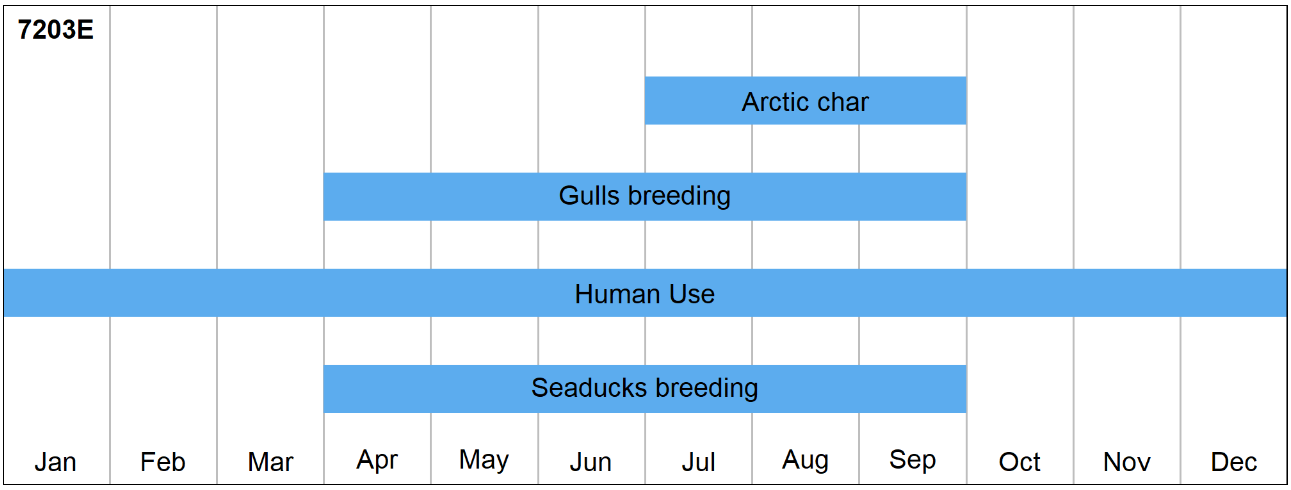
Gb72E_442	1 colony of glaucous gulls
Sb72E_423	4 colonies of common eiders
Ac72E_443	Important Arctic char river
Gb71E_420, Gb72E_421	1 colony of glaucous gulls
Gb72E_422	3 colonies of glaucous gulls, 1 colony of Sabine's gulls and 5 colonies of Arctic terns
Gb72E_423	3 colonies of glaucous gulls, 1 colony of Sabine's gulls and 4 colonies of Arctic terns
Gb72E_443	4 colonies of glaucous gulls, 1 colony of Sabine's gulls and 5 colonies of Arctic terns
Sb72E_422	4 colonies of common eiders
Sb72E_443	2 colonies of common eiders

Site specific occurrence: blue icons

Gb9008	Breeding glaucous gulls, Arctic terns and Sabine's gull **(S_E13)**
Gb9017	Breeding glaucous gulls and Arctic terns
Gb9018	Breeding Sabine's gulls and Arctic terns
Gb9019, Gb9020	Breeding glaucous gulls and Arctic terns
Gb9081	Breeding glaucous gulls
Gb9082	Breeding glaucous gulls **(S_E13)**
Gb9091, Gb9094,	Breeding glaucous gulls **(S_E13)**
Gb9120	Breeding glaucous gulls
Gb9086, Gb9090	Breeding Arctic terns **(S_E13)**
Gb9093, Gb9096	Breeding Arctic terns **(S_E13)**
Gb9095	Breeding Arctic terns **(S_E13)**
Gb9092	Breeding Arctic terns
Gb9155	Breeding Arctic terns
Sb9310, Sb9322	Breeding common eiders **(S_E13)**
Sb9313, Sb9315	Breeding common eiders
Sb9318, Sb9312	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
71E_420	23	High
72E_421	16	Moderate
72E_422	38	Extreme
72E_423	28	Extreme
72E_442	15	Low
72E_443	32	Extreme



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Access

The nearshore waters in this map area are largely uncharted and caution should be exercised. In general, the waters offshore and nearshore appear deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The fjord is covered by shorefast ice from October/November to July. Additional dangers to navigation are present here due to the icebergs.

The fjord region is considered to be the most easily-accessible portion of the E coast because the pack ice here usually lies farther offshore than it does to the S. It has long been believed that the pack is usually more scattered between the parallels of 73°N and 75°N than elsewhere along the coast, so that a landfall by vessels approaching from the E could be made more easily in these latitudes than farther S. Recently, with ever-changing ice conditions, there have been a number of years when ice conditions have permitted vessels from Europe to proceed direct to Scoresby Sund instead of having to take the longer N route.

Antarctic Havn, a bay on the S side of Kong Oscar Fjord, is entered 19 km NW of Kap Biot. No dangers are known to exist in this bay, but a shoal extends about 140 m NW from its SE entrance point. The bay extends 5 km SW to drying flats at its head. Vessels can anchor, in a depth of 55 m, good holding ground, near the head of the bay, with the NW entrance point bearing 005°.

Mesters Vig is a small cove located 21 km NW of Antarctic Havn. It is unexamined but apparently shoals. Archers Øer, two small and low islands, are located close offshore, 3 km N of the entrance to the cove. A channel, with a depth of 4 m, lies between the W island and the mainland. A vessel is reported to have obtained anchorage, in a depth of 47 m, off the entrance to Mesters Vig, close S of Archers Øer.

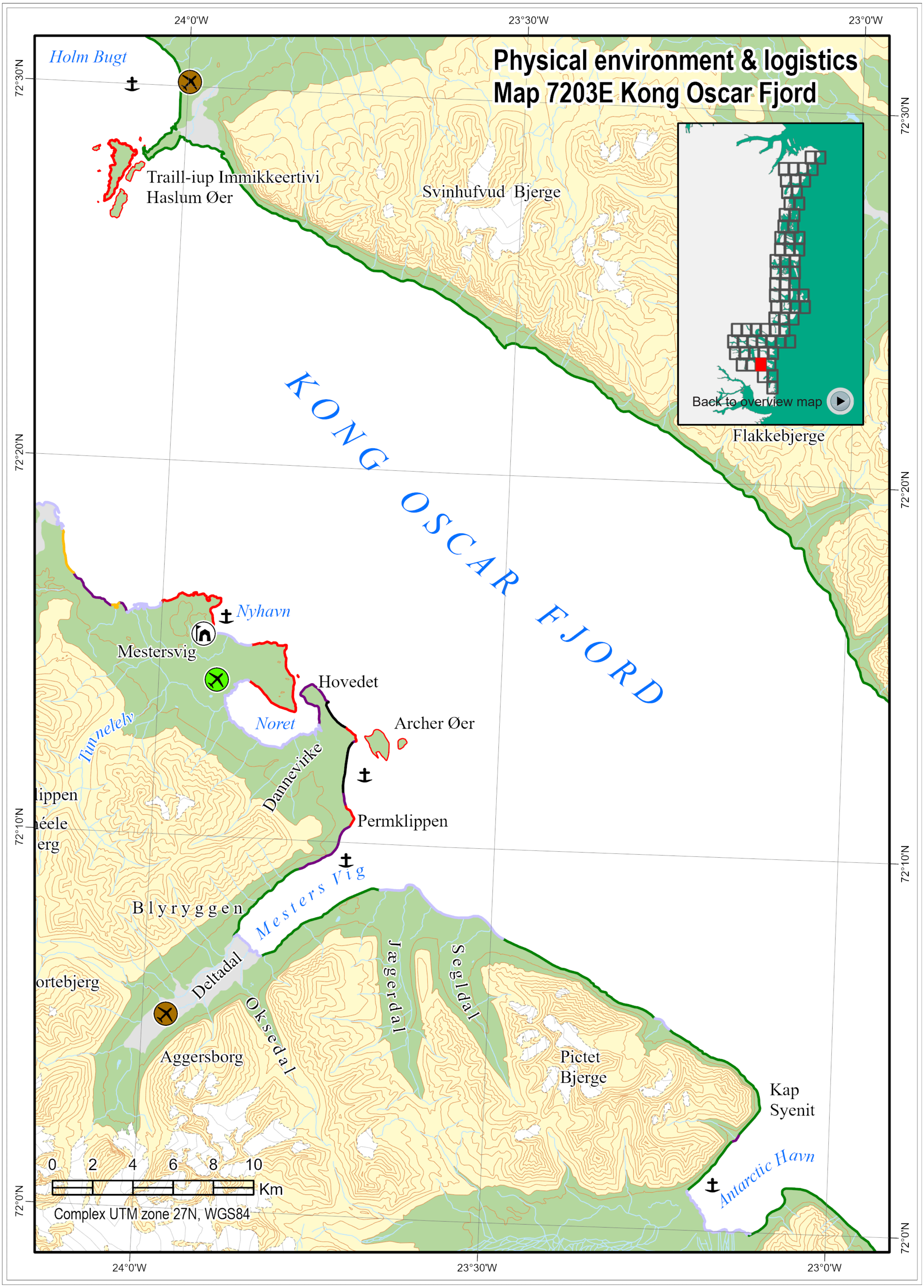
Nyhavn (72°16’N, 23°53’W), a bay 3 km wide at its entrance, is located 8 km NW of Archers Øer. A beacon stands on the SE entrance point and four pairs of anchorage beacons stand on the W shore of the bay, see nautical chart 2730 and the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/80.

A military airfield (Mestersvig) is situated 1.6 km S of the bay and there is a STOL-airstrip at Holm Bugt (Chapter 15).

Nyhavn was a former shipping port for a lead mine situated 13 km inland.

Holm Bugt, a small bay, is entered between Haslum Øer and Palisaderne. Hawleys Rock, a submerged rock lying on a shoal, is located 5 km NW of Haslums Øer. A rock, awash, and a small islet lie 1.6 km SSW and 1.2 km N, respectively, of Hawleys Rock. Caution is necessary in this area due to the possibility of pinnacles. Beacons stand at the head of Holms Bugt and in line, bearing about 083° between Hawleys Rock and the rock, awash, SSW of it. Vessels can anchor, in a depth of 46 m, about 1.2 km offshore (Chapter 14).

Shorelines within this area are predominantly rock, talus, and glacier allowing little opportunity for marine access.


Physical environment & logistics
Map 7203E Kong Oscar Fjord
Back to overview map
Holm Bugt
Traill-iup Immikkeertivi
Haslum Øer
Svinhufvud Bjerge
Flakkebjerge
KONG OSCAR FJORD
Nyhavn
Mestersvig
Hovedet
Noret
Archer Øer
Tunnelelv
Danneviike
Permklippen
Mesters Vig
Blyryggen
Deltadal
Oksedal
Jægerdal
Segldal
Aggersborg
Pictet Bjerge
Kap Syenit
Antarctic Havn
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
24°0'W
23°30'W
23°0'W
72°30'N
72°20'N
72°10'N
72°0'N

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
A potential safe haven is identified at Mesters Vig where the sensitivity rated at moderate, and it affords good protection although the anchorage possibilities within it are unknown. Antarctic Havn could also be considered, having a defined anchorage and good protection although it is rated as high sensitivity.

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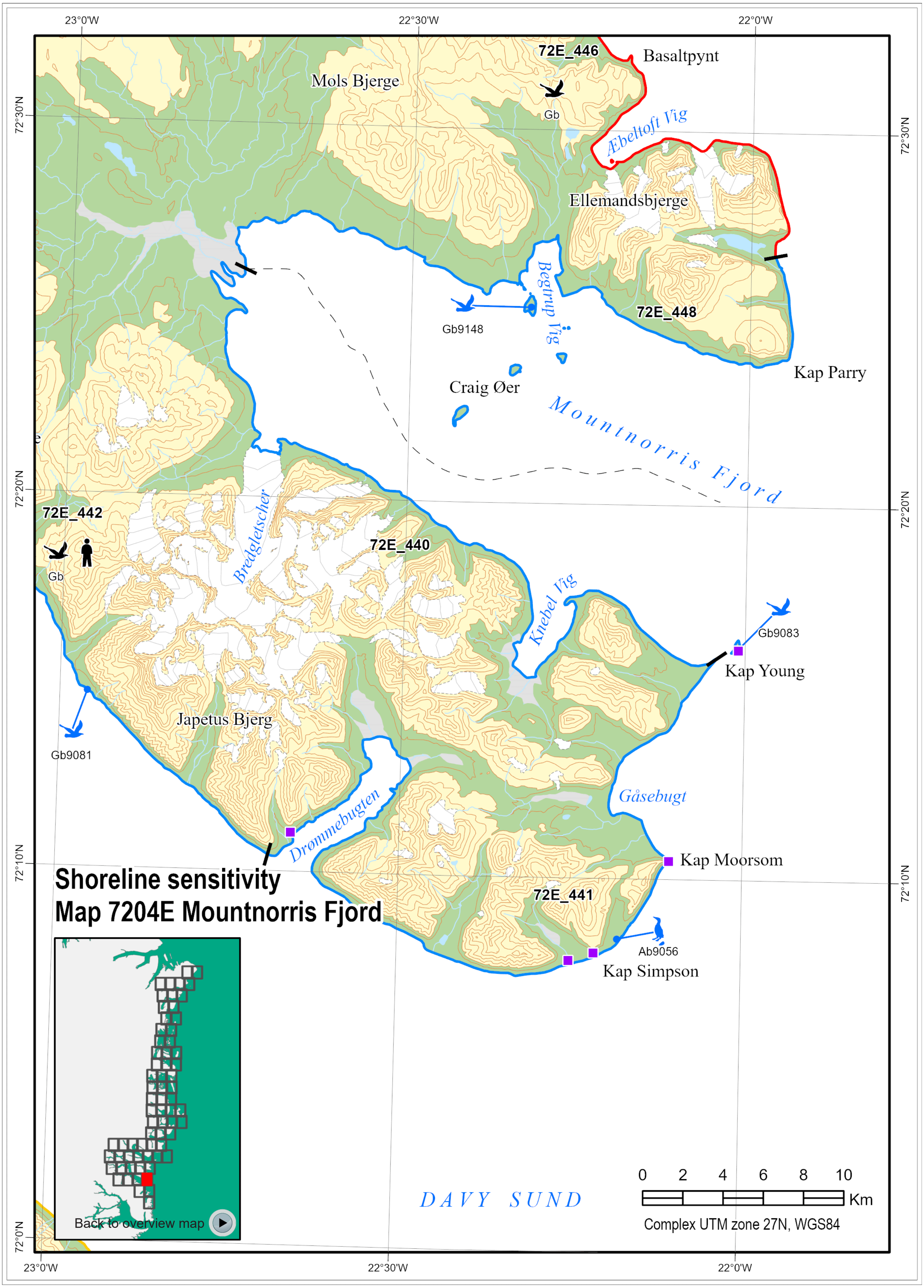

Shoreline sensitivity
Map 7204E Mountnorris Fjord
23°0'W
22°30'W
22°0'W
72°30'N
72°20'N
72°10'N
72°0'N
72E_446
Basaltpynt
Mols Bjerge
Gb
Æbeltoft Vig
Ellemandsbjerge
Begtrup Vig
Gb9148
72E_448
Kap Parry
Craig Øer
Mountnorris Fjord
72E_442
Gb
Bredgletscher
72E_440
Knebel Vig
Gb9083
Kap Young
Japetus Bjerg
Gb9081
Gåsebugt
Drømmebugten
Kap Moorsom
72E_441
Ab9056
Kap Simpson
DAVY SUND
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map

8.7 Map 7204E - Mountnorris Fjord

Shoreline sensitivity map

Human use

72E_442	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost)

Species occurrence

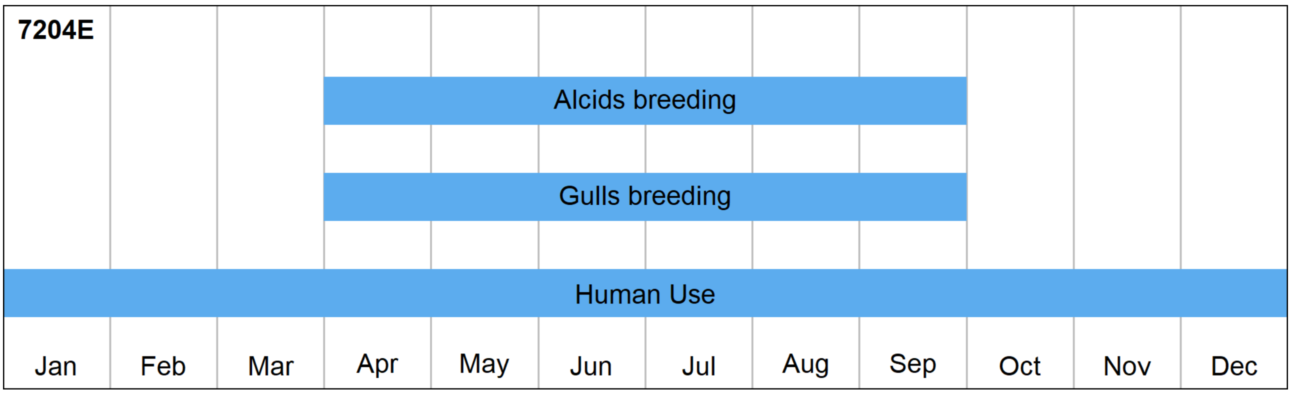
Gb72E_442, Gb71E_420	1 colony of glaucous gulls
Gb72E_446	2 colony of glaucous gulls

Site specific occurrence: blue icons

Ab9056	Breeding black guillemots
Gb9081, Gb9083	Breeding glaucous gulls
Gb9148	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
71E_420	23	High
72E_440	11	Low
72E_441	14	Low
72E_442	15	Low
72E_446	13	Extreme
72E_448	12	Low



Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters offshore and nearshore appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from January to July. Additional dangers to navigation are present here due to the icebergs that are discharged from the fjords.

Drømmebugten in Davy Sund is an anchor site.

Rock Ø, an island 80 m high, lies close E of Kap Young and should be given a wide berth because of shoal water around it.

There are no airstrips identified on this map area.

Shorelines within this area are almost exclusively rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

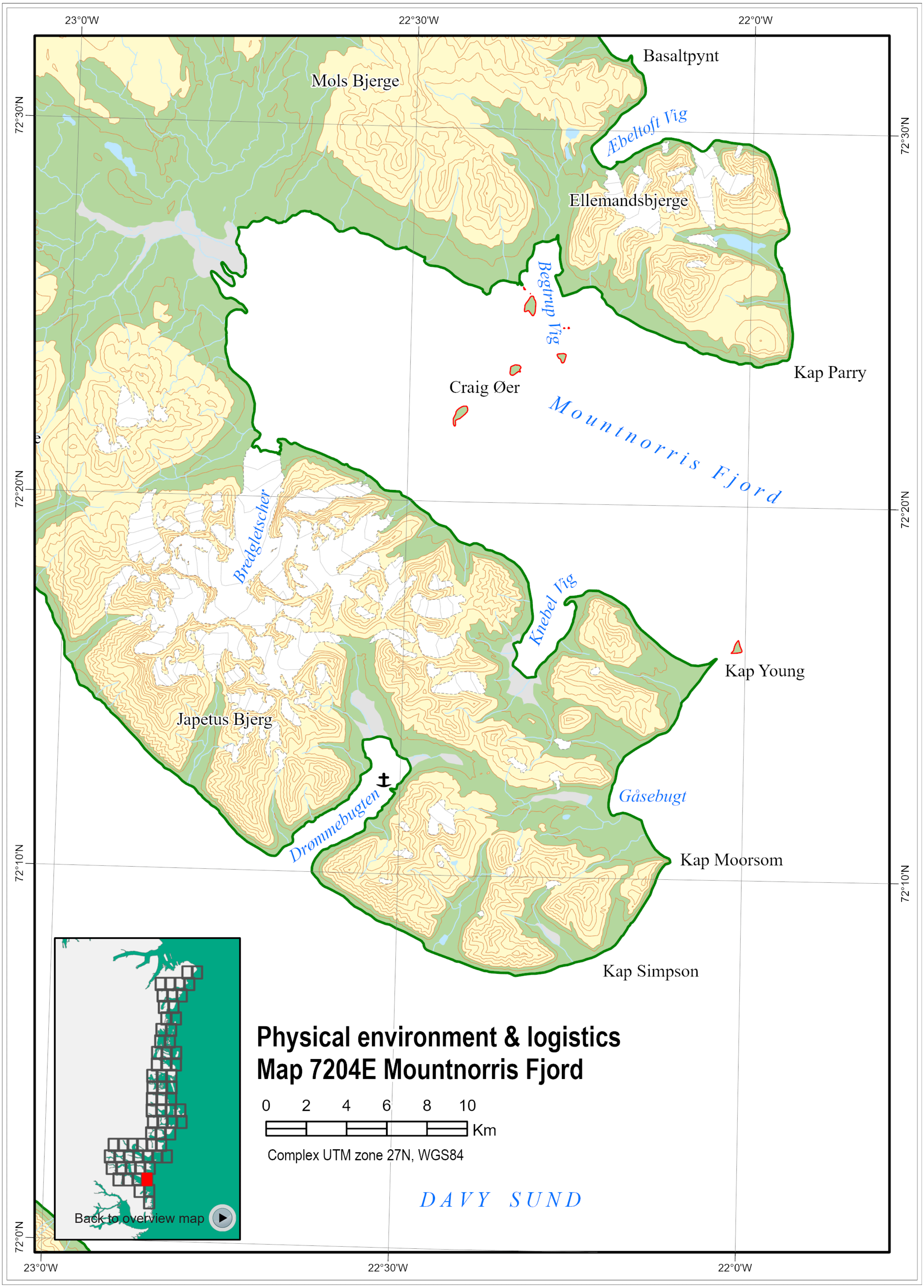
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

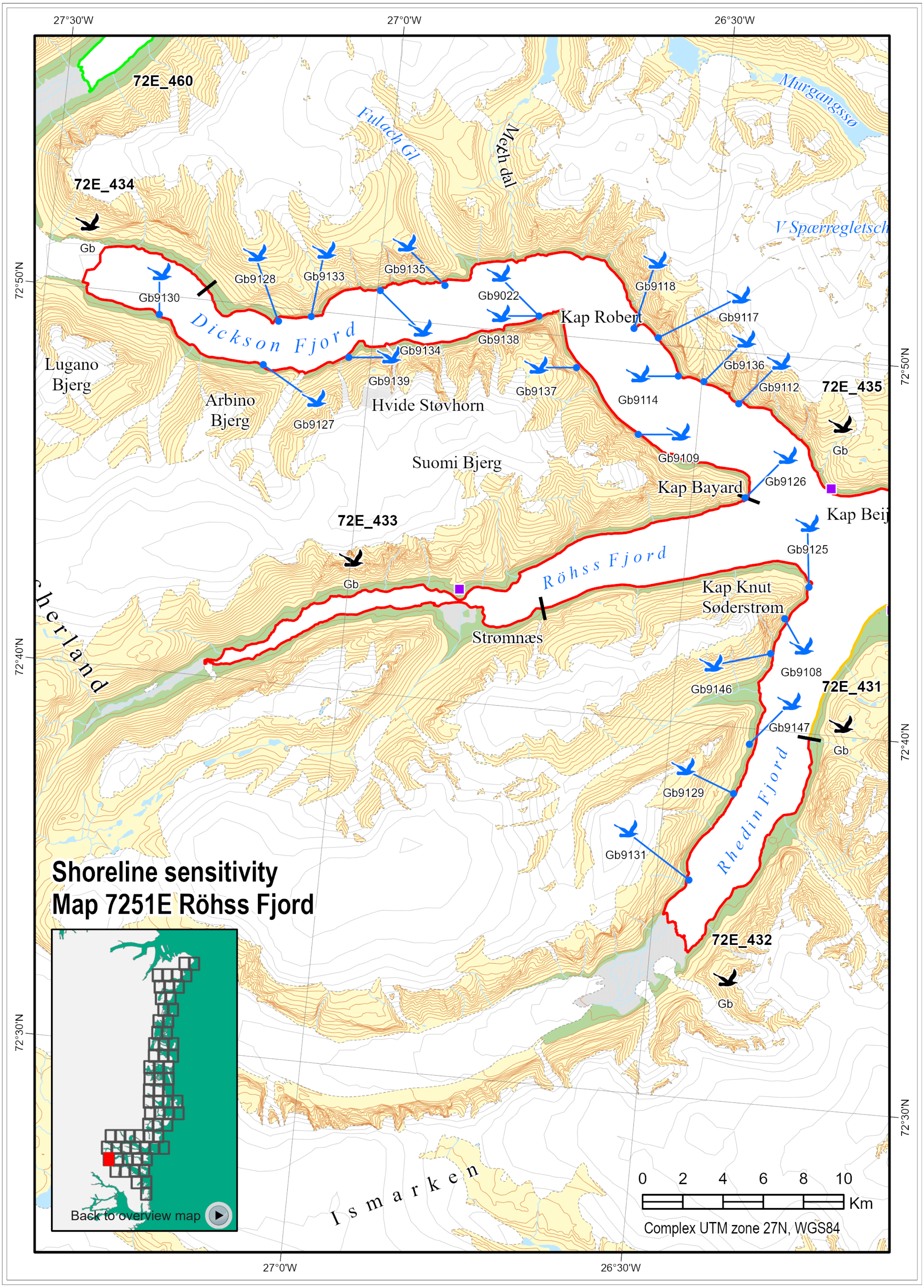
Shorelines within this area are almost exclusively talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
Three potential safe havens are identified at Drømmebugten, Knebel Vig, and Begtrup Vig. In each case, the sensitivity is rated at low, and it affords good protection although the anchorage possibilities within it are unknown.



Physical environment & logistics
Map 7204E Mountnorris Fjord
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Basaltpynt
Mols Bjerge
Æbeltoft Vig
Ellemandsbjerge
Begtrup Vig
Kap Parry
Craig Øer
Mountnorris Fjord
Bredgletscher
Knebel Vig
Kap Young
Japetus Bjerg
Gåsebugt
Drømmebugten
Kap Moorsom
Kap Simpson
DAVY SUND
Back to overview map
23°0'W
22°30'W
22°0'W
72°30'N
72°20'N
72°10'N
72°0'N



Shoreline sensitivity
Map 7251E Röhss Fjord
27°30'W
27°0'W
26°30'W
72°50'N
72°40'N
72°30'N
72E_460
72E_434
72E_435
72E_433
72E_431
72E_432
Fulach Gl
Mesth dal
Murgangssø
V Spærregletsch
Dickson Fjord
Röhss Fjord
Rhedin Fjord
Lugano Bjerg
Arbino Bjerg
Hvide Støvhorn
Suomi Bjerg
Kap Robert
Kap Bayard
Kap Beij
Kap Knut Søderstrøm
Strømnæs
Ismarken
Gb
Gb9130
Gb9128
Gb9133
Gb9135
Gb9022
Gb9118
Gb9117
Gb9138
Gb9134
Gb9139
Gb9127
Gb9137
Gb9114
Gb9136
Gb9112
Gb9109
Gb9126
Gb9125
Gb9108
Gb9146
Gb9147
Gb9129
Gb9131
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map

8.8 Map 7251E - Röhss Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb72E_432	6 colonies of glaucous gulls
Gb72E_433	1 colony of glaucous gulls
Gb72E_434	7 colonies of glaucous gulls and 1 colony of Arctic terns
Gb72E_435	8 colonies of glaucous gulls and 2 colonies of Arctic terns
Gb72E_431	2 colonies of glaucous gulls

Site specific occurrence: blue icons

Gb9022	Breeding glaucous gulls and Arctic terns
Gb9108, Gb9109	Breeding glaucous gulls
Gb9112, Gb9117	Breeding glaucous gulls
Gb9141	Breeding glaucous gulls
Gb9125 - Gb9131	Breeding glaucous gulls
Gb9133 – GB139	Breeding glaucous gulls
Gb9146, Gb9147	Breeding glaucous gulls
Gb9114, Gb9118	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_431	23	High
72E_432	26	Extreme
72E_433	23	Extreme
72E_434	26	Extreme
72E_435	30	Extreme
72E_460	15	Moderate

<table>
<tr><td>7251E</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="6">Gulls breeding</td><td></td><td></td><td></td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
</table>

Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The fjords are covered by shorefast ice from November to June. Additional dangers to navigation are present here due scattered icebergs.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are almost exclusively rock, with some talus and low coasts off glaciers, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

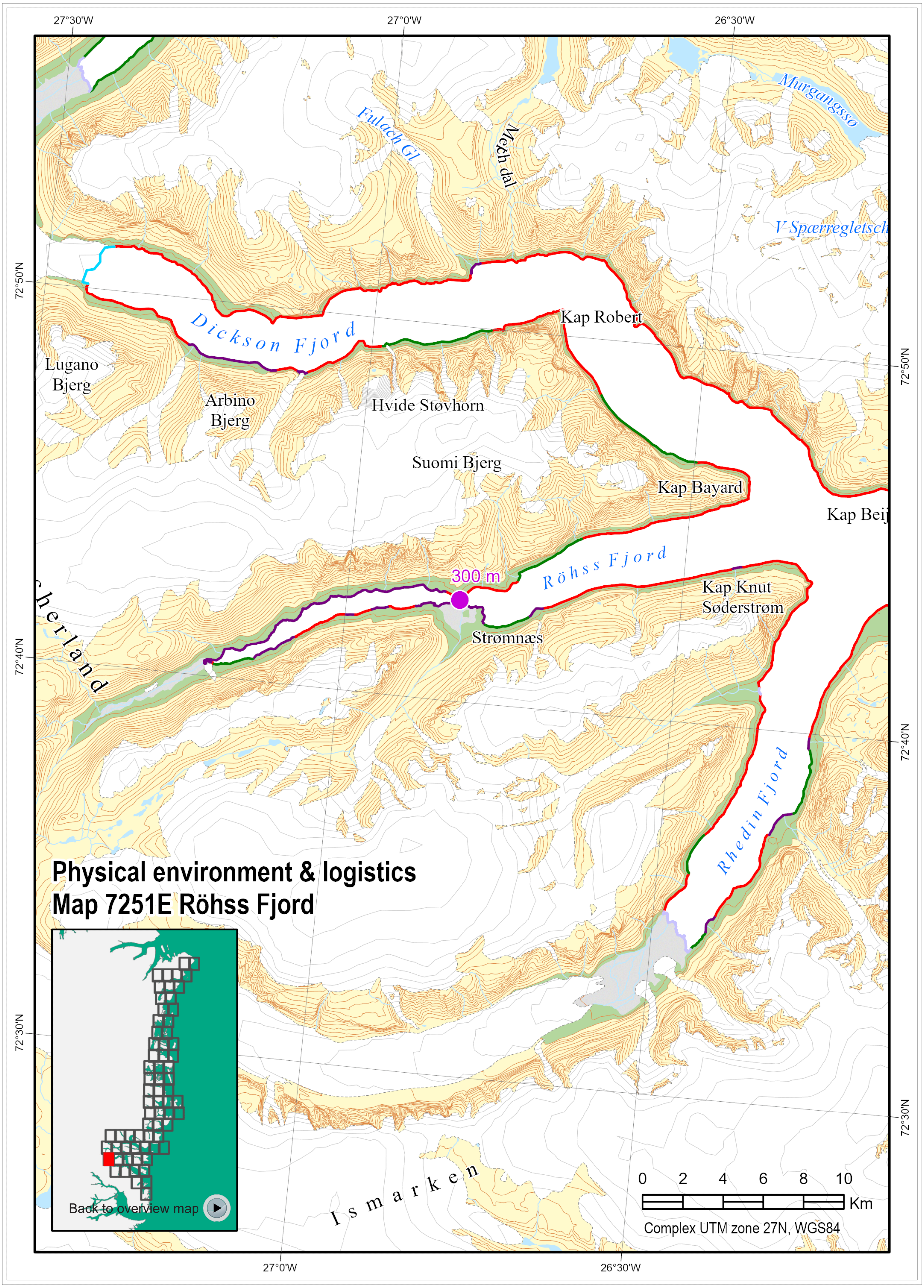
There may be an opportunity for nearshore booming near Strømnes, where a modest length of exclusion boom could be used at the entrance (est. unclear, but less than 500 m) to protect a large and highly sensitive inshore area.

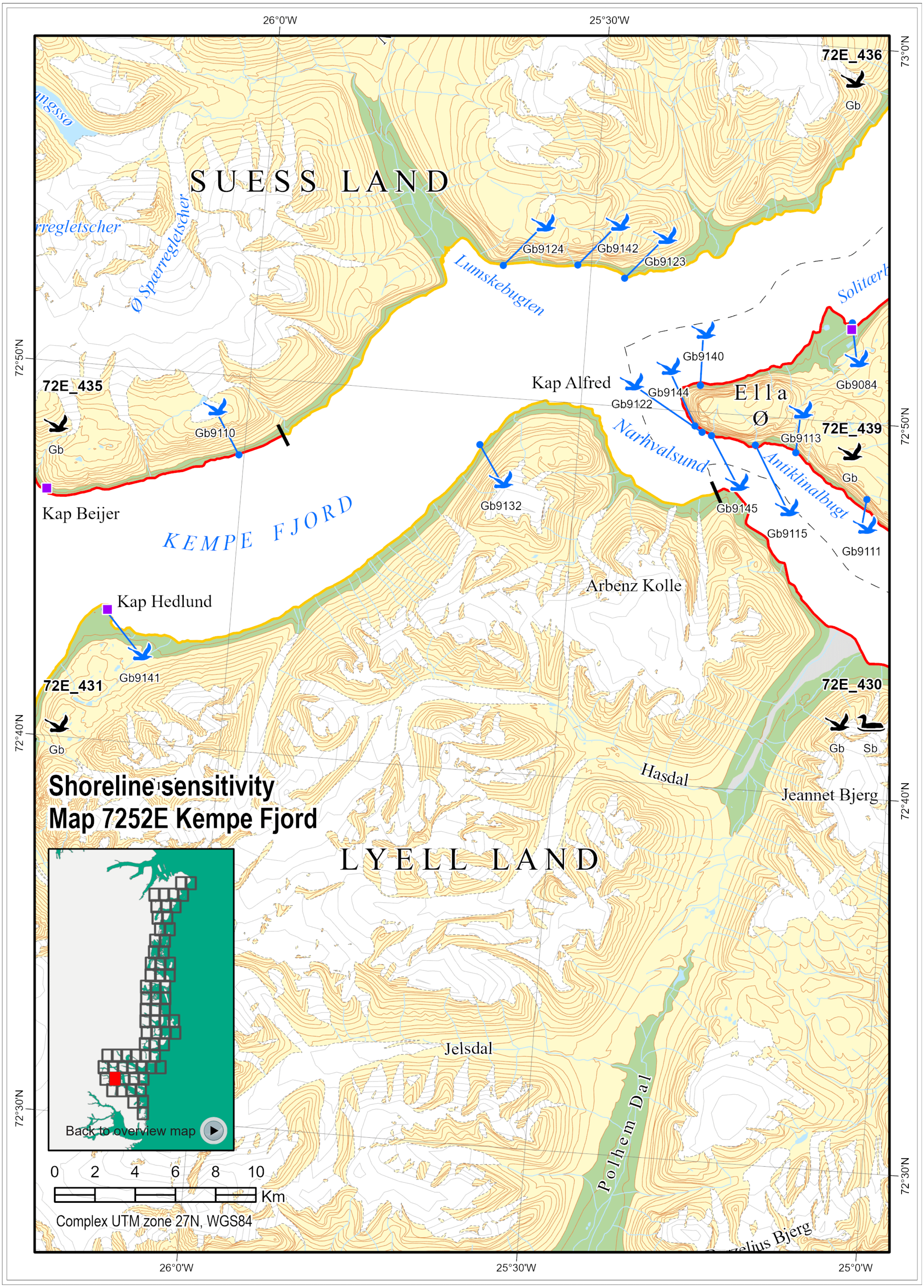
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock, with some talus with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map. Each of the fjords could be considered but for the relatively high sensitivity rating.


27°30'W
27°0'W
26°30'W
72°50'N
72°40'N
72°30'N
Fulach Gl
Mech dal
Murgangssø
V Spærregletsch
Dickson Fjord
Kap Robert
Lugano Bjerg
Arbino Bjerg
Hvide Støvhorn
Suomi Bjerg
Kap Bayard
Kap Beij
300 m
Röhss Fjord
Kap Knut Søderstrøm
Strømnæs
herland
Rhedin Fjord
Physical environment & logistics
Map 7251E Röhss Fjord
Back to overview map
Ismarken
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7252E Kempe Fjord
SUESS LAND
LYELL LAND
KEMPE FJORD
Lumskebugten
Narhvalsund
Antiklinalbugt
Ella Ø
Kap Alfred
Kap Beijer
Kap Hedlund
Arbenz Kolle
Hasdal
Jeannet Bjerg
Jelsdal
Polhem Dal
Ø Spærregletscher
72E_436
72E_435
72E_439
72E_431
72E_430
Gb
Sb
Gb9124
Gb9142
Gb9123
Gb9140
Gb9144
Gb9122
Gb9084
Gb9113
Gb9110
Gb9132
Gb9145
Gb9115
Gb9111
Gb9141
26°0'W
25°30'W
25°0'W
73°0'N
72°50'N
72°40'N
72°30'N
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map

8.9 Map 7252E - Kempe Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

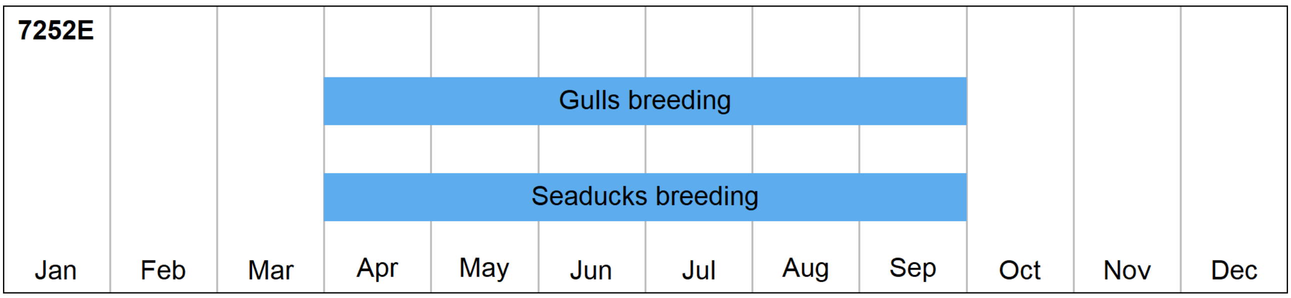
Sb72E_430	2 colonies of common eiders
Gb72E_431	2 colonies of glaucous gulls
Gb72E_435	8 colonies of glaucous gulls and 2 colonies of Arctic terns
Gb72E_436	3 colonies of glaucous gulls
Gb72E_439	9 colonies of glaucous gulls and 1 colony of Arctic terns
Gb72E_430	3 colonies of glaucous gulls and 2 colonies of Arctic terns

Site specific occurrence: blue icons

Gb9084	Breeding Arctic terns
Gb9110, Gb9111	Breeding glaucous gulls
Gb9113, Gb9115	Breeding glaucous gulls
Gb9122 - Gb9124	Breeding glaucous gulls
Gb9132	Breeding glaucous gulls
Gb9140 - Gb9145	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_430	28	Extreme
72E_431	23	High
72E_435	30	Extreme
72E_436	23	High
72E_439	27	Extreme



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June. Additional dangers to navigation are present here due to icebergs.

Anchorage is available at Solitærbugt, a bay on the NW side of Ella Ø, which is sheltered from all except N winds (nautical chart 2750). The W entrance point of the cove is foul for 90 m offshore, but elsewhere in the bay the depths are deep. Range beacons, in line bearing 178°, lead to an anchorage; the berth lies in a depth of 55 m, 185 m offshore. Vessels may also anchor slightly E of the range line, in a depth of 44 m. Small craft can anchor, in depths of 5.5 to 7 m, within the cove (see nautical chart 2750 and the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/79?&lang=ENG).

A STOL-airstrip is identified at Solitærbugt (Chapter 15).

Shorelines within this area are predominantly rock, talus, and alluvial fan allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

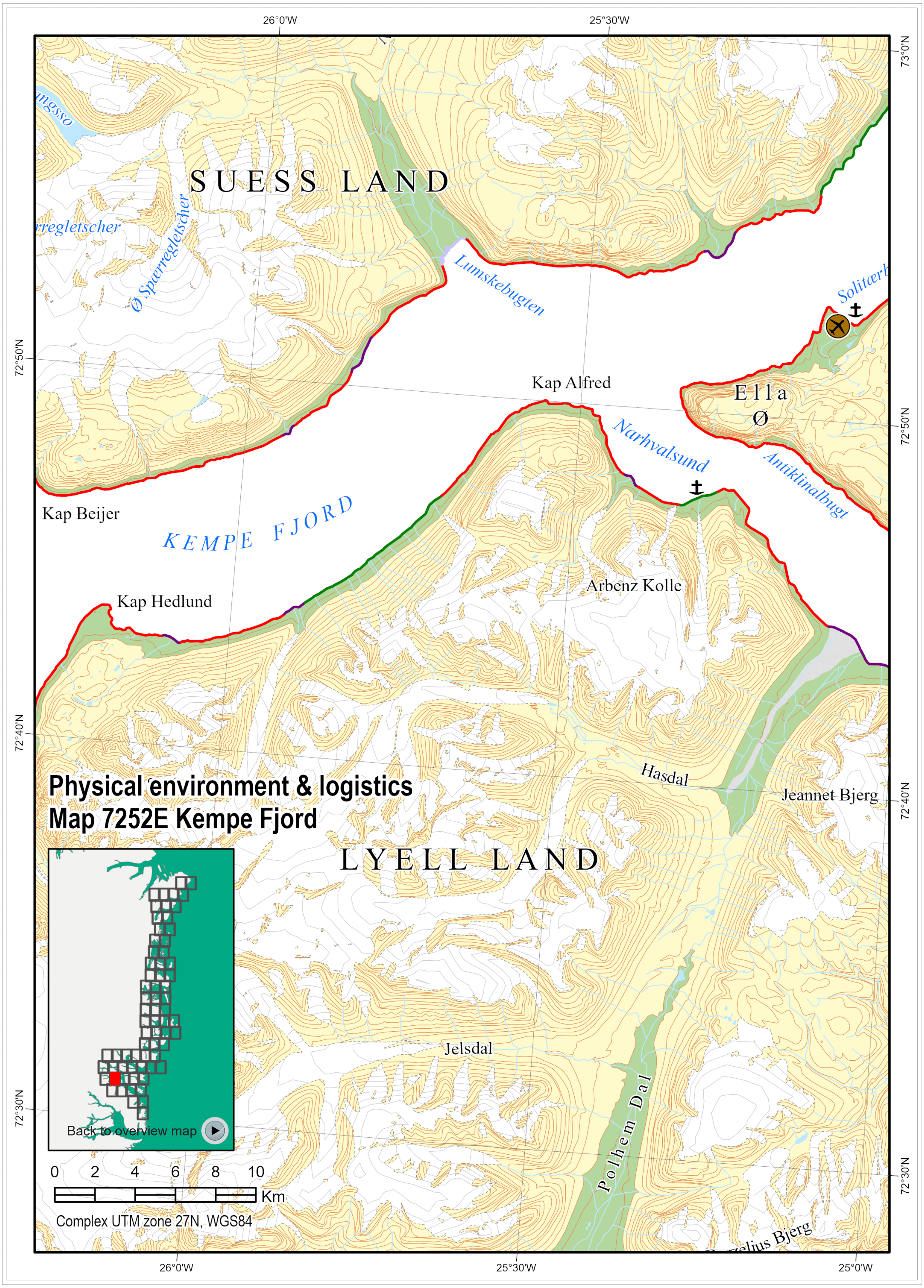
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

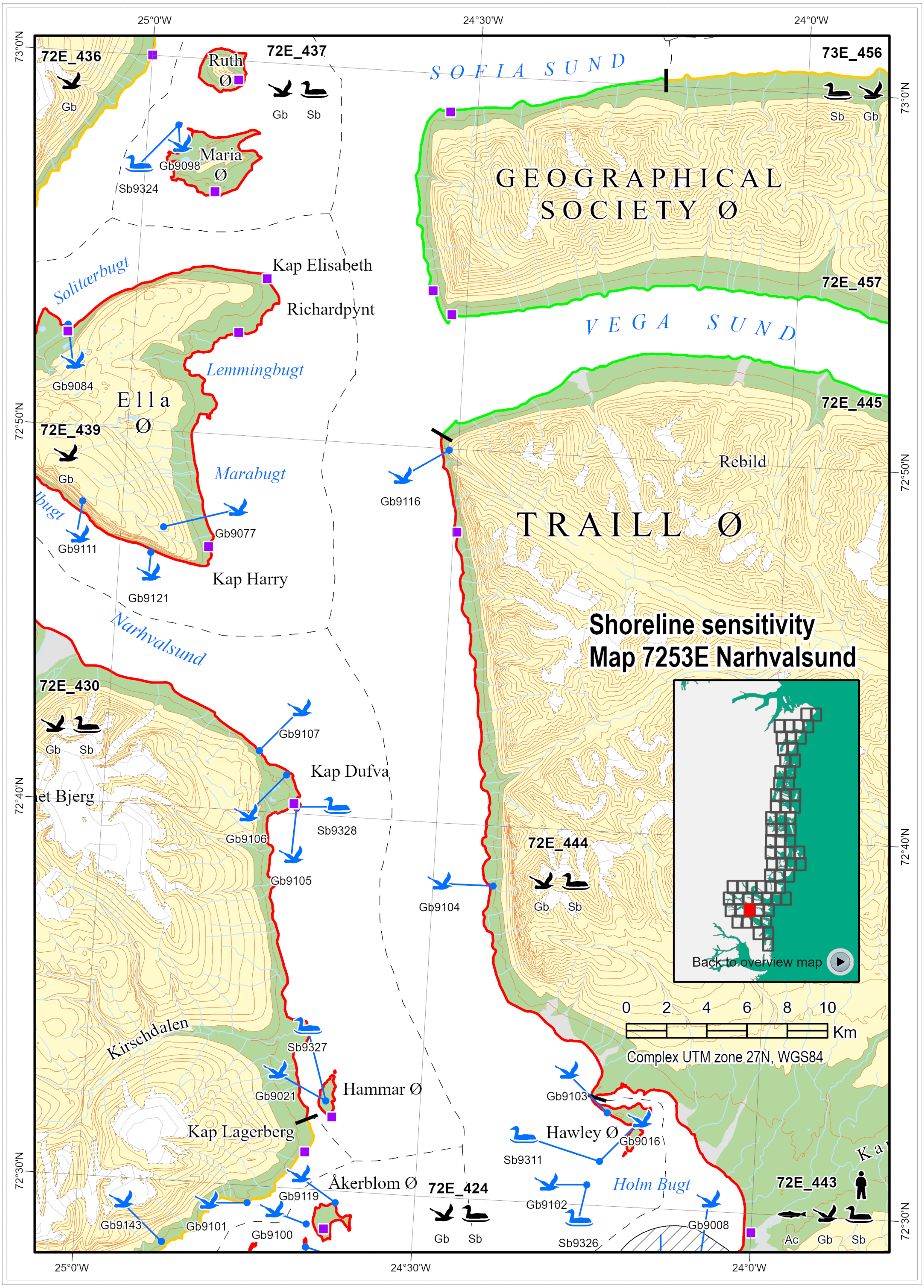
Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, talus, and alluvial fan with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


26°0'W
25°30'W
25°0'W
73°0'N
72°50'N
72°40'N
72°30'N
SUESS LAND
Ø Spærregletscher
Lumskebugten
Solitærb
Kap Alfred
Ella Ø
Narhvalsund
Antiklinalbugt
Kap Beijer
KEMPE FJORD
Kap Hedlund
Arbenz Kolle
Hasdal
Jeannet Bjerg
LYELL LAND
Jelsdal
Polhem Dal
Physical environment & logistics
Map 7252E Kempe Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 7253E Narhvalsund
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
25°0'W
24°30'W
24°0'W
73°0'N
72°50'N
72°40'N
72°30'N
72E_436
72E_437
73E_456
72E_457
72E_445
72E_439
72E_430
72E_444
72E_424
72E_443
SOFIA SUND
VEGA SUND
GEOGRAPHICAL SOCIETY Ø
TRAILL Ø
Ruth Ø
Maria Ø
Kap Elisabeth
Richardpynt
Solitærbugt
Lemmingbugt
Ella Ø
Marabugt
Kap Harry
Narhvalsund
Rebild
Kap Dufva
Kirschdalen
Hammar Ø
Kap Lagerberg
Åkerblom Ø
Hawley Ø
Holm Bugt
Gb
Sb
Ac
Gb9098
Sb9324
Gb9084
Gb9116
Gb9077
Gb9111
Gb9121
Gb9107
Gb9106
Sb9328
Gb9105
Gb9104
Sb9327
Gb9021
Gb9103
Gb9016
Sb9311
Gb9119
Gb9143
Gb9101
Gb9100
Gb9102
Sb9326
Gb9008

8.10 Map 7253E – Narhvalsund

Shoreline sensitivity map

Human use

72E_443	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep. Close proximity to Mestersvig (permanently manned military outpost).

Species occurrence

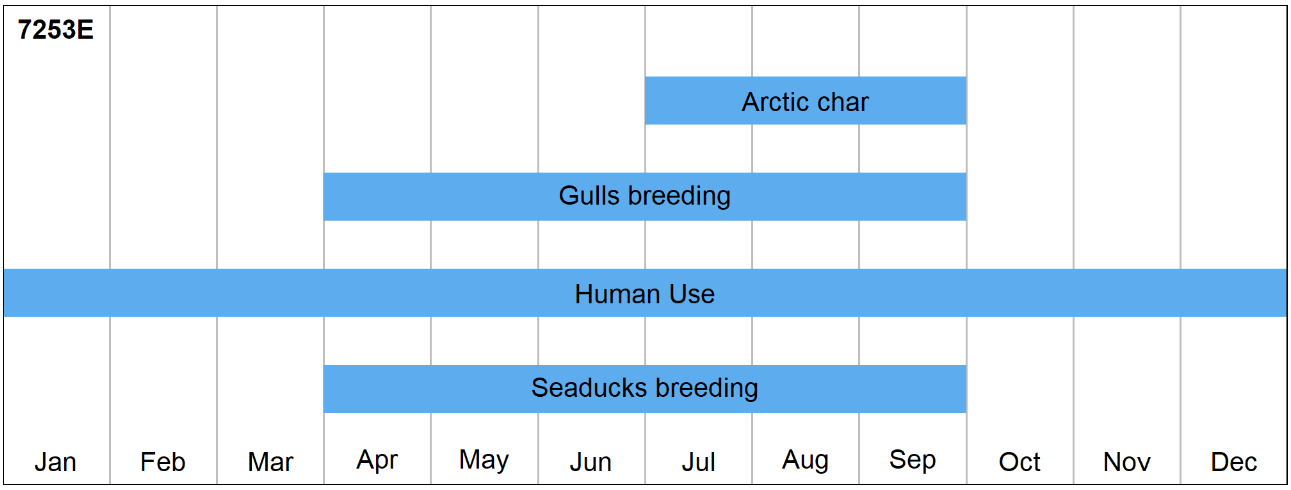
Gb72E_429	2 colonies of glaucous gulls
Sb72E_424	3 colonies of common eiders
Sb72E_430	2 colonies of common eiders
Ac72E_443	Important Arctic char river
Gb72E_424	1 colony of glaucous gulls and 4 colonies of Arctic terns
Gb72E_430	3 colonies of glaucous gulls and 2 colonies of Arctic terns
Gb72E_436	3 colonies of glaucous gulls
Gb72E_437	1 colony of Arctic terns
Gb72E_439	9 colonies of glaucous gulls and 1 colony of Arctic terns
Gb72E_443	4 colonies of glaucous gulls, 1 colony of Sabine's gulls and 5 colonies of Arctic terns
Gb72E_444	3 colonies of glaucous gulls, 1 colony of Sabine's gulls and 2 colonies of Arctic terns
Gb73E_456	1 colony of glaucous gulls
Sb72E_444, Sb72E_443	2 colonies of common eiders
Sb72E_437, Sb73E_456	1 colony of common eiders

Site specific occurrence: blue icons

Gb9016	Breeding Sabine's gulls and Arctic terns
Gb9021	Breeding glaucous gulls and Arctic terns
Gb9077	Breeding glaucous gulls
Gb9084	Breeding Arctic terns
Gb9098 - Gb9100	Breeding Arctic terns
Gb9101	Breeding glaucous gulls
Gb9102, Gb9105	Breeding Arctic terns
Gb9103, Gb9104	Breeding glaucous gulls
Gb9106, Gb9107	Breeding glaucous gulls
Gb9111, Gb9116	Breeding glaucous gulls
Gb9119	Breeding Arctic terns
Gb9121	Breeding glaucous gulls
Gb9143	Breeding glaucous gulls
Sb9311	Breeding common eiders
Sb9324 - Sb9328	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_424	29	Extreme
72E_429	19	High
72E_430	28	Extreme
72E_436	23	High
72E_437	33	Extreme
72E_439	27	Extreme
72E_443	32	Extreme
72E_444	34	Extreme
72E_445	16	Moderate
73E_456	22	High
72E_457	18	Moderate



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Access

The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to icebergs.

Holm Bugt, a small bay, is entered between Haslum Øer and Palisademe. Hawleys Rock, a submerged rock lying on a shoal, is located 5 km NW of Haslum Øer. A rock, awash, and a small islet lie 1.6 km SSW and 1.2 km N, respectively, of Hawleys Rock. Caution is necessary in this area due to the possibility of pinnacles. Beacons stand at the head of Holm Bugt and in line, bearing about 083° between Hawleys Rock and the rock, awash, SSW of it. Vessels can anchor, in a depth of 46 m, about 1.2 km offshore.

Anchorage is available at Solitærbugt, a bay on the NW side of Ella Ø, which is sheltered from all except N winds. The W entrance point of the cove is foul for 90 m offshore, but elsewhere in the bay the depths are deep. Range beacons, in line bearing 178°, lead to an anchorage; the berth lies in a depth of 55 m, 185 m offshore. Vessels may also anchor slightly E of the range line, in a depth of 44 m. Small craft can anchor, in depths of 5.5 to 7 m, within the cove (see nautical chart 2750 and the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/79?&lang=ENG).

Maria Ø (72°57’N, 24°54’W), an island, 269 m high, is located 3 km N of Ella Ø. Submerged rocks have been reported to lie within 1 km of this island. Shoal depths of 6 and 12 m lie, in the fairway of the main fiord, 1 km E and 1.6 km NE, respectively, of the E extremity of Maria Ø. There are moreover two anchor sites at Åkerblom Ø (Chapter 14).

Three STOL-airstrips are identified at Ella Ø, Hammar Ø and Holm Bugt (Chapter 15).

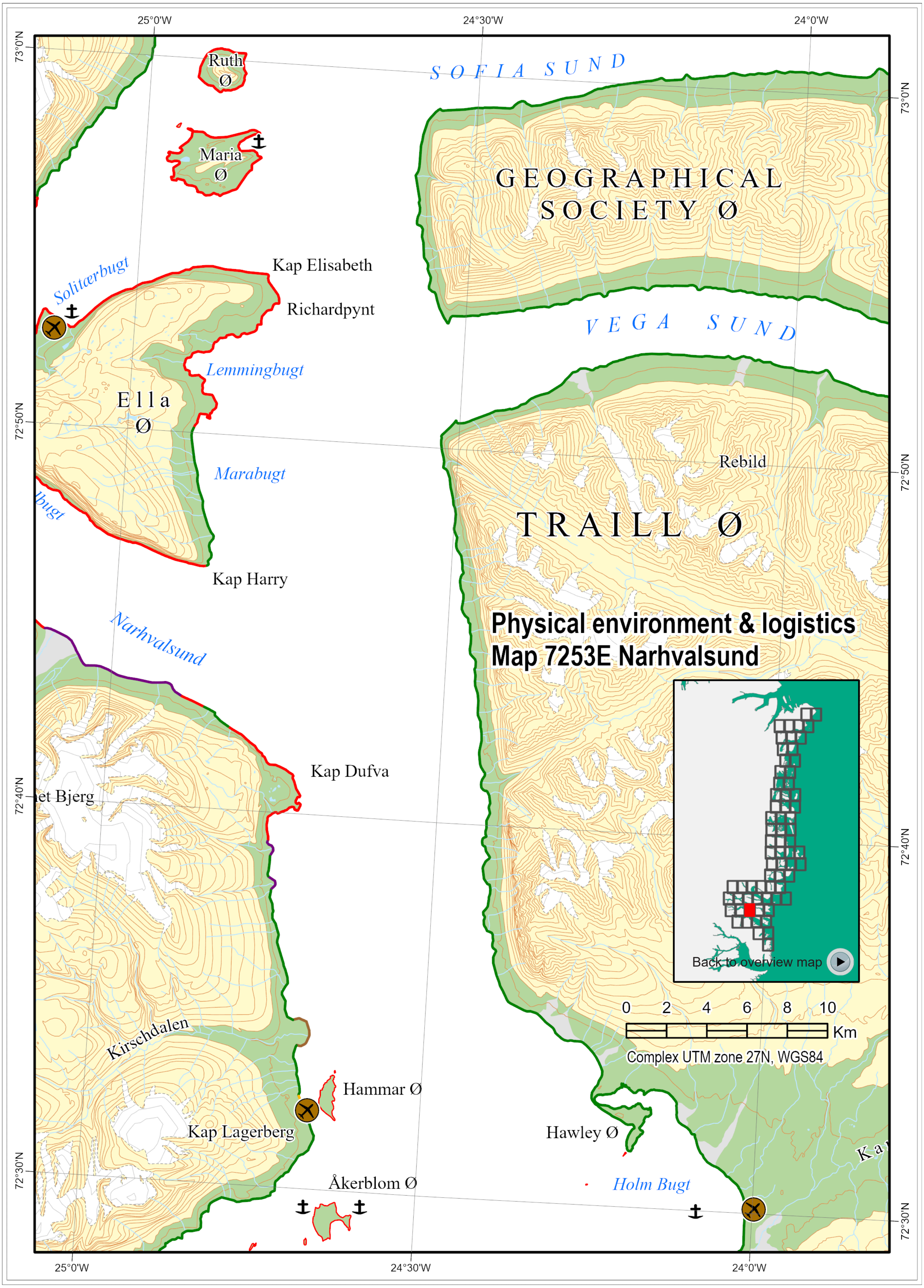
Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be compli-


25°0'W
24°30'W
24°0'W
73°0'N
72°50'N
72°40'N
72°30'N
SOFIA SUND
Ruth Ø
Maria Ø
GEOGRAPHICAL SOCIETY Ø
Kap Elisabeth
Richardpynt
Solitærbugt
VEGA SUND
Lemmingbugt
Ella Ø
Marabugt
Rebild
TRAILL Ø
Kap Harry
Narhvalsund
Physical environment & logistics
Map 7253E Narhvalsund
Kap Dufva
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Kirschdalen
Hammar Ø
Kap Lagerberg
Hawley Ø
Åkerblom Ø
Holm Bugt

cated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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Shoreline sensitivity
Map 7254E Vega Sund
23°30'W
23°0'W
73°0'N
72°50'N
72°40'N
72°30'N
73E_456
73E_455
72E_457
72E_445
72E_458
72E_449
72E_451
72E_447
S_E14
GEOGRAPHICAL SOCIETY Ø
VEGA SUND
Østernæs
Gåseøen
Scott Keltie Ø
Kista Ø
Snævringen
Thora Ø
Anita Ø
Rubjerg Knude
Månedal
Grønnebjerge
TRAILL Ø
Karupelv
Sb
Gb
Gb9024
Gb9080
Sb9314
Gb9153
Gb9152
Gb9151
Gb9150
Sb9329
Gb9023
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.11 Map 7254E - Vega Sund

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

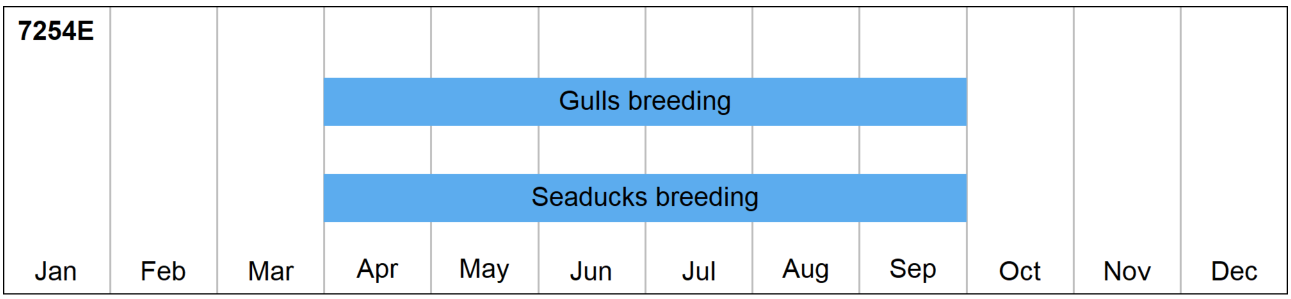
Gb72E_451	1 colony of glaucous gulls and 2 colonies of Arctic terns
Gb72E_458	1 colony of Arctic terns
Gb72E_449	3 colonies of Arctic terns and 1 colony of Sabine's gulls
Gb73E_455	2 colonies of glaucous gulls
Gb73E_456	1 colony of glaucous gulls
Sb72E_449, Sb72E_451	1 colony of common eiders
Sb73E_456	2 colony of common eiders

Site specific occurrence: blue icons

Gb9023	Breeding glaucous gulls and Arctic terns **(S_E14)**
Gb9024	Breeding Sabine's gulls and Arctic terns **(S_E14)**
Gb9080	Breeding Arctic terns **(S_E14)**
Gb9150 - Gb9153	Breeding Arctic terns **(S_E14)**
Gb9157, Gb9158	Breeding glaucous gulls **(S_E14)**
Sb9314, Sb9329	Breeding common eiders **(S_E14)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_445	16	Moderate
72E_447	18	Extreme
72E_449	40	Extreme
72E_451	22	Extreme
73E_455	15	Low
73E_456	22	High
72E_457	18	Moderate
72E_458	25	High



Access
The nearshore waters in and around the islands in this map area are uncharted and caution should be exercised. In general, the waters in some parts appear to be deep while the eastern part of Vega Sund appear to be shallow (see nautical chart 2730), and uncharted dangers may exist everywhere (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June. Additional dangers to navigation are present here due icebergs.

There has been reported an anchorage in central Vega Sund (Chapter 14).

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

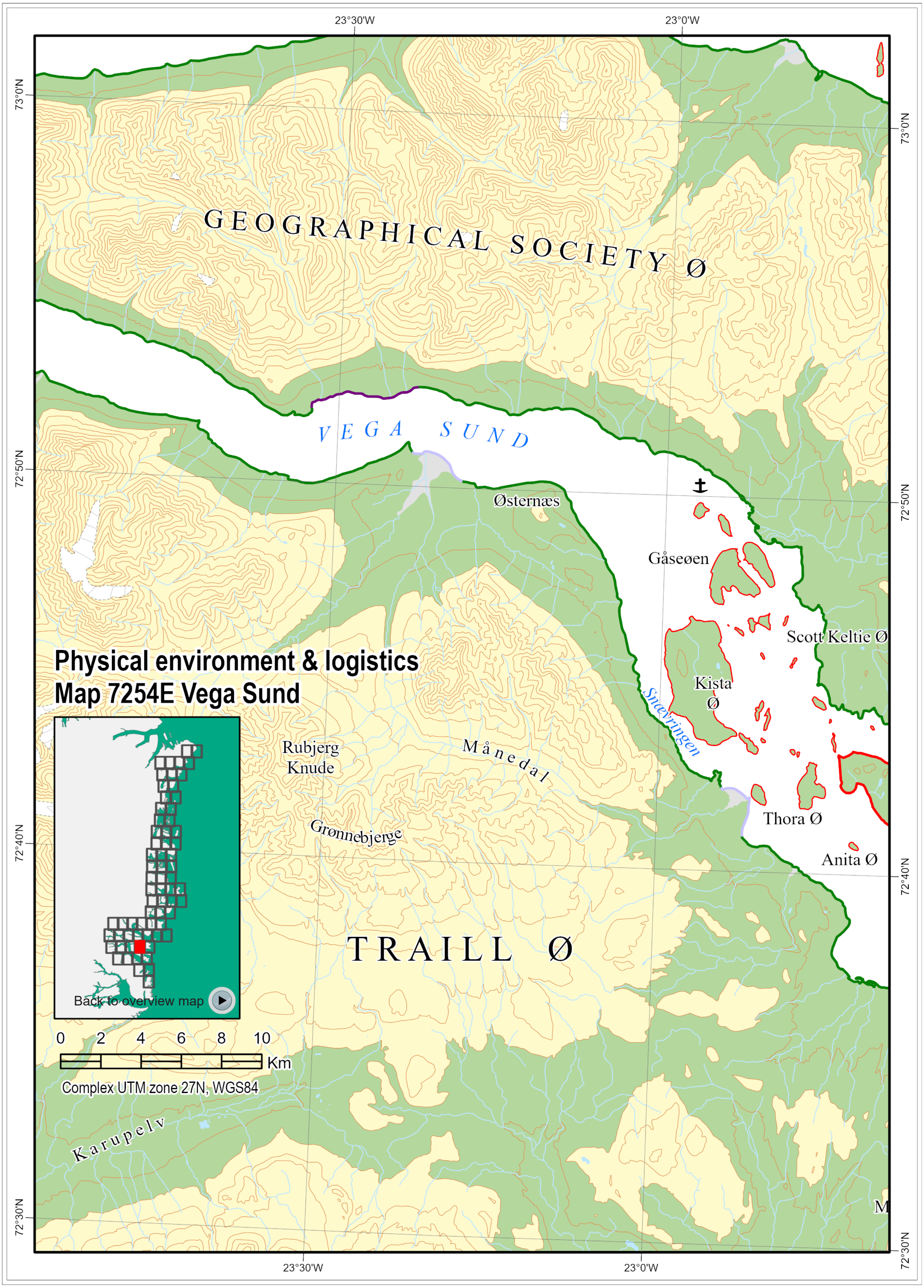
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

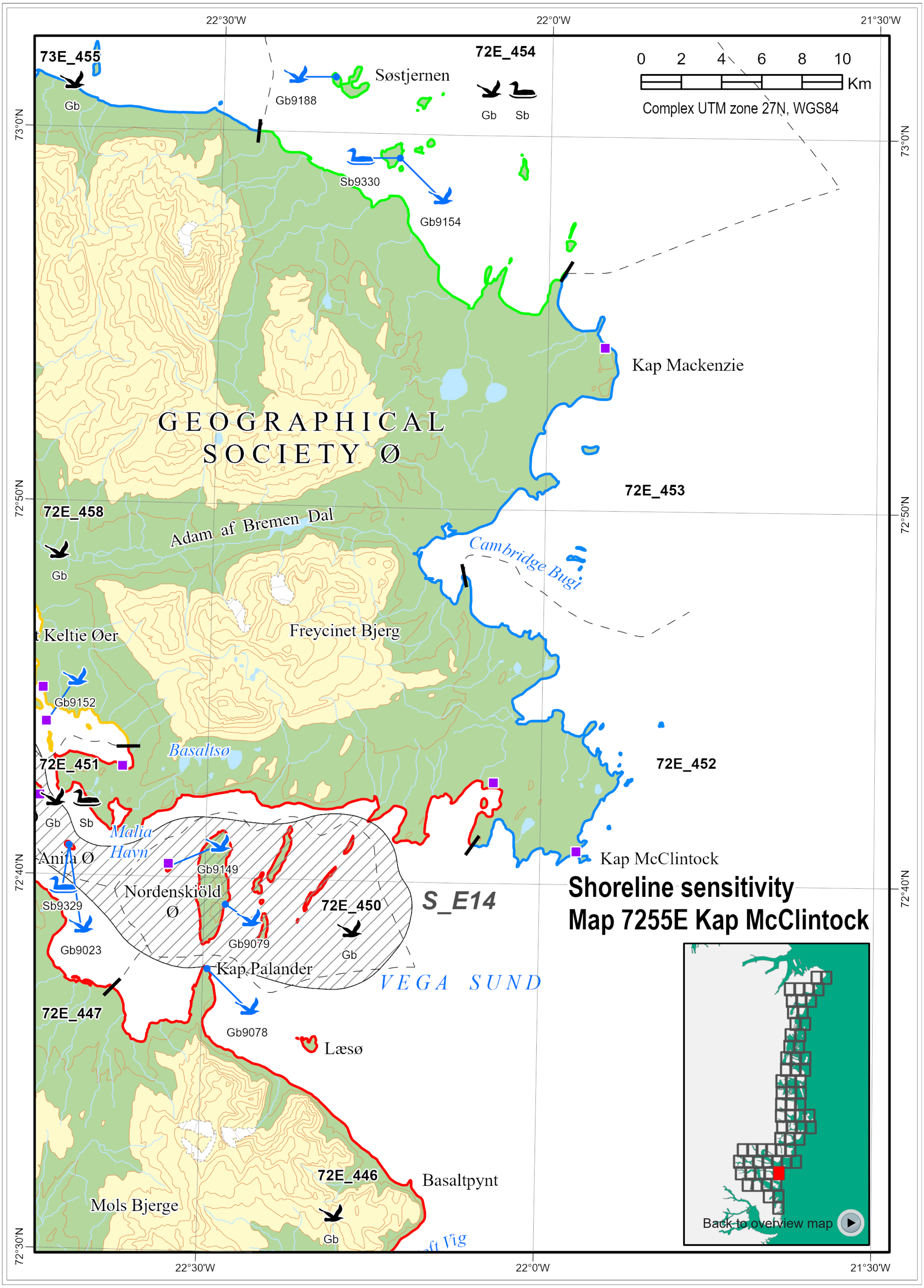
Shorelines within this area are predominantly rock and talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map. The western portion of Vega Sund could be considered as a potential safe haven given the natural protection it offers; however, the depths are unknown and booming would be complicated by the excessive lengths of boom required.



23°30'W
23°0'W
73°0'N
72°50'N
72°40'N
72°30'N
GEOGRAPHICAL SOCIETY Ø
VEGA SUND
Østernæs
Gåseøen
Scott Keltie Ø
Kista Ø
Snævringen
Thora Ø
Anita Ø
Rubjerg Knude
Månedal
Grønnebjerge
TRAILL Ø
Karupelv
Physical environment & logistics
Map 7254E Vega Sund
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 7255E Kap McClintock

8.12 Map 7255E - Kap McClintock

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

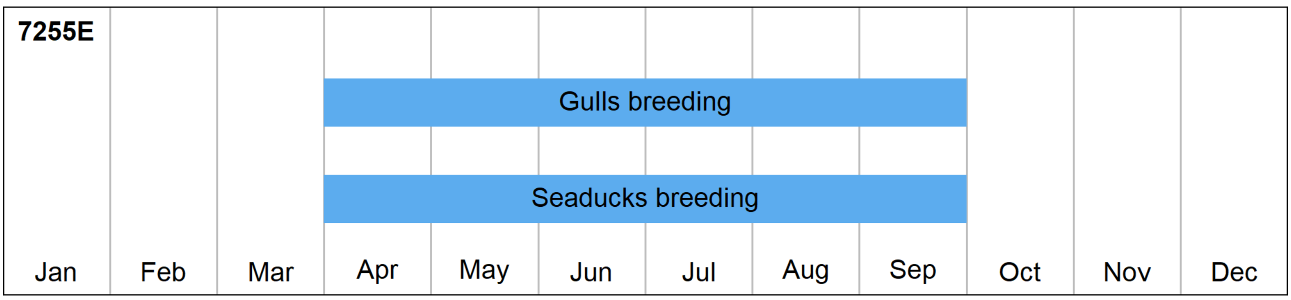
Gb72E_450	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb72E_451	1 colony of glaucous gulls and 2 colonies of Arctic terns
Gb72E_454	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb72E_458	1 colony of Arctic terns
Gb72E_446	1 colony of glaucous gulls
Gb73E_455	2 colonies of glaucous gulls
Sb72E_451, Sb72E_454	1 colony of common eiders

Site specific occurrence: blue icons

Gb9023	Breeding glaucous gulls and Arctic terns **(S_E14)**
Gb9078, Gb9079	Breeding glaucous gulls **(S_E14)**
Gb9149, Gb9152	Breeding Arctic terns **(S_E14)**
Gb9154	Breeding glaucous gulls
Gb9157	Breeding glaucous gulls
Gb9188	Breeding Arctic terns
Sb9329	Breeding common eiders **(S_E14)**
Sb9330	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_446	13	Extreme
72E_447	18	Extreme
72E_450	18	Extreme
72E_451	22	Extreme
72E_452	11	Low
72E_453	11	Low
72E_454	17	Moderate
73E_455	15	Low
72E_458	25	High



Access
The nearshore waters in and around the islands in this map area are largely uncharted and caution should be exercised. In general, the waters offshore appear to be deep, while nearshore and within the islands they appear shallow, and, uncharted dangers may exist everywhere (nautical charts 2701 and 2730). Local knowledge is essential for navigation.

The fjords and bays are covered with shorefast ice from November to July, while heavy drift ice occur in the eastern parts year round. Additional dangers to navigation are present here due icebergs.

Malia Havn, approximately 72°42’N, 22°36’W affords sheltered anchorage for small craft (nautical chart 2730) and there are two anchorages at the islands N of Geographical Society Ø, both exposed to drifting ice (Chapter 14).

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

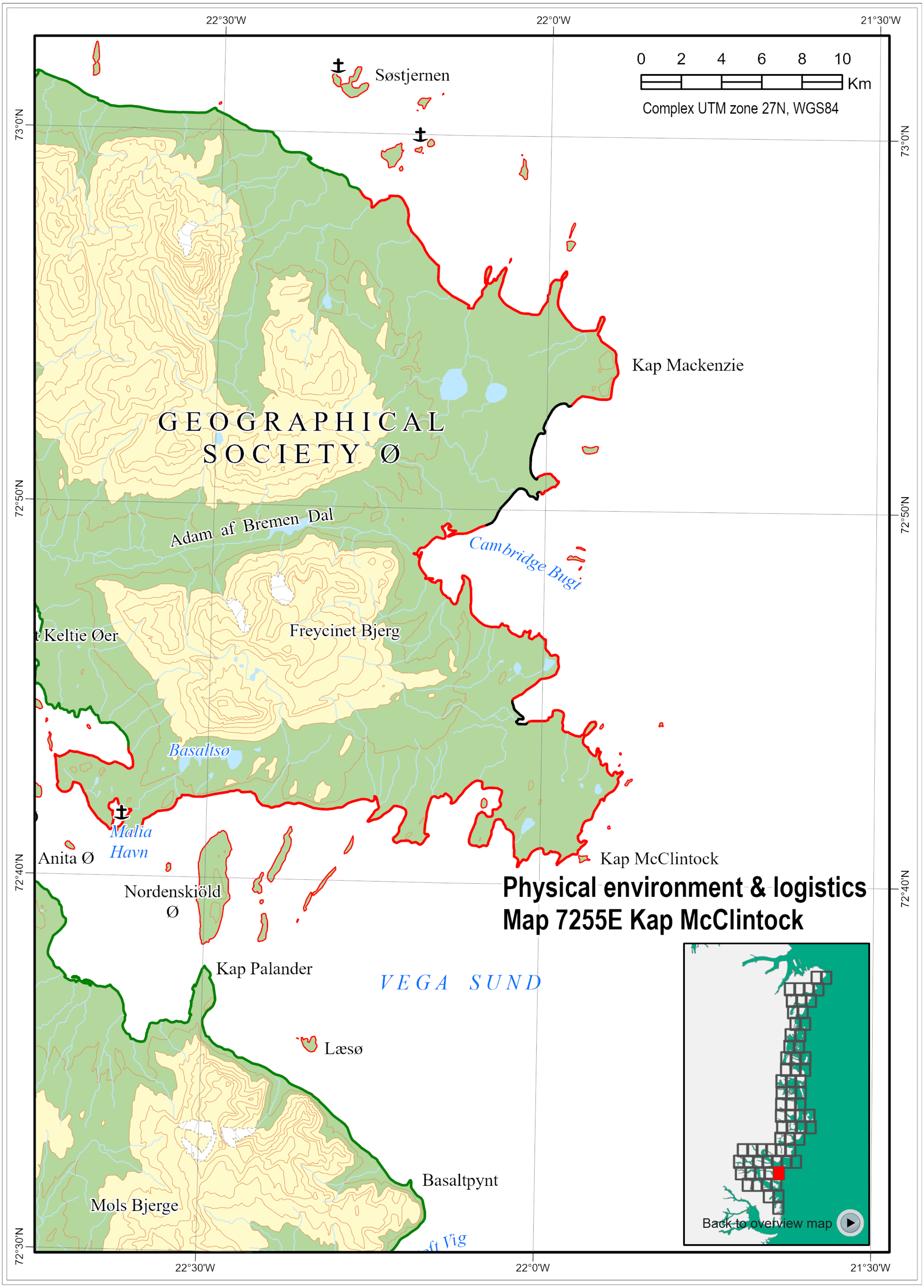
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

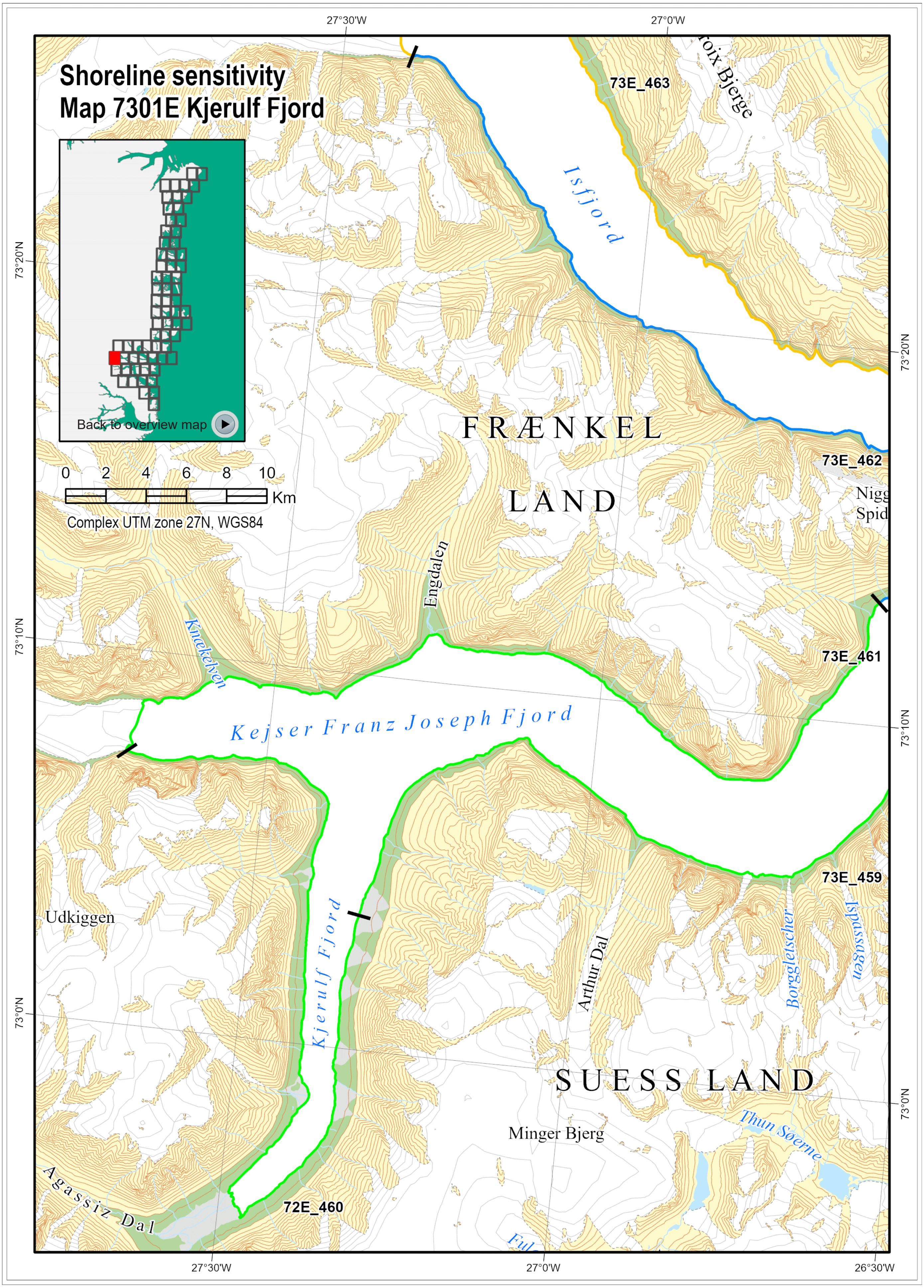
Shorelines within this area are predominantly rock and talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7255E Kap McClintock


Shoreline sensitivity
Map 7301E Kjerulf Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
27°30'W
27°0'W
26°30'W
73°20'N
73°10'N
73°0'N
73E_463
73E_462
73E_461
73E_459
72E_460
Isfjord
FRÆNKEL
LAND
SUESS LAND
Kejser Franz Joseph Fjord
Kjerulf Fjord
Engdalen
Knækelven
Arthur Dal
Borggletscher
Ispassagen
Udkiggen
Minger Bjerg
Thun Søerne
Agassiz Dal

8.13 Map 7301E - Kjerulf Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_459	16	Moderate
72E_460	15	Moderate
73E_461	16	Moderate
73E_462	15	Low
73E_463	19	High

Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June. Additional dangers to navigation are present here due to icebergs that are discharged from glaciers.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

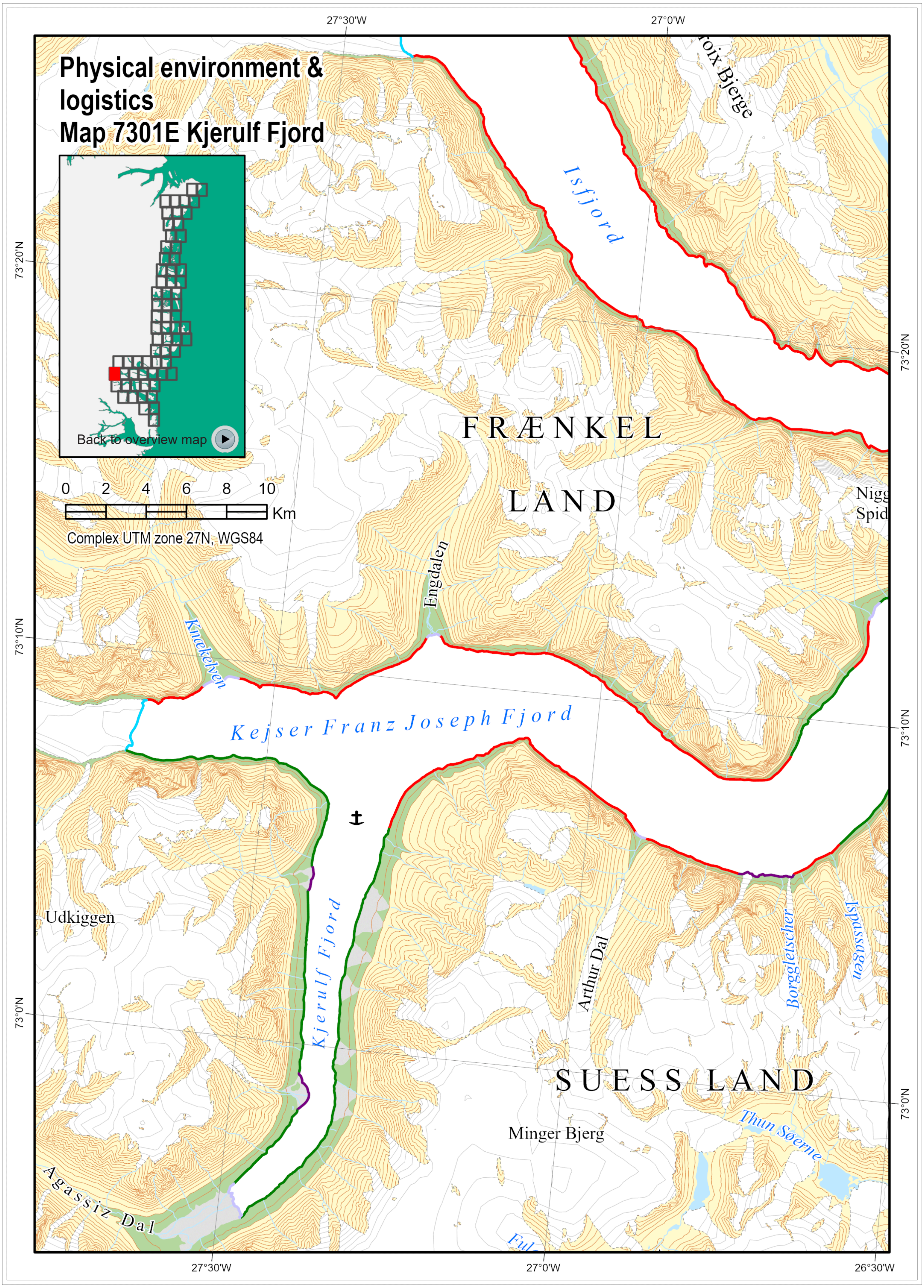
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

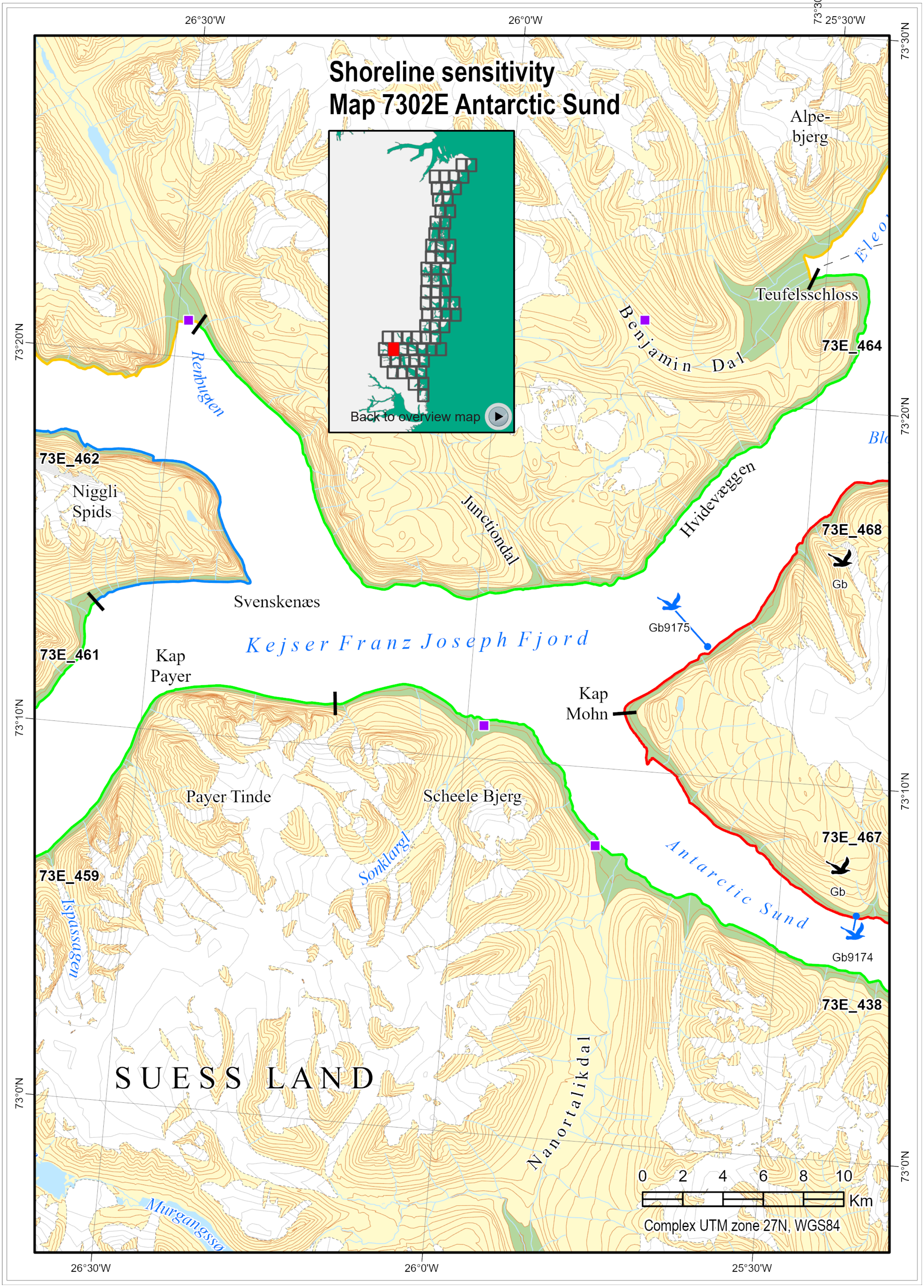
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment &
logistics
Map 7301E Kjerulf Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
27°30'W
27°0'W
26°30'W
73°20'N
73°10'N
73°0'N
Isfjord
FRÆNKEL
LAND
Engdalen
Knækelven
Kejser Franz Joseph Fjord
Kjerulf Fjord
Udkiggen
Arthur Dal
Borggletscher
Ispassagen
SUESS LAND
Minger Bjerg
Thun Søerne
Agassiz Dal
Nigg
Spid



Shoreline sensitivity
Map 7302E Antarctic Sund
Back to overview map
26°30'W
26°0'W
25°30'W
73°30'N
73°20'N
73°10'N
73°0'N
Alpe-
bjerg
Teufelsschloss
73E_464
Benjamin Dal
Reinbugten
73E_462
Niggli
Spids
Junctiondal
Hvidevæggen
73E_468
Gb
Svenskenæs
Gb9175
Kejser Franz Joseph Fjord
73E_461
Kap
Payer
Kap
Mohn
Payer Tinde
Scheele Bjerg
Sonklargl
73E_467
Gb
Antarctic Sund
73E_459
Ispassagen
Gb9174
73E_438
SUESS LAND
Nanortalikdal
Murgangsso
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.14 Map 7302E - Antarctic Sund

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb73E_468	1 colony of glaucous gulls and 2 colonies of Arctic terns
Gb73E_467, Gb73E_465	2 colonies of glaucous gulls and 1 colony of Arctic terns

Site specific occurrence: blue icons

Gb9174, Gb9175	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_438	18	Moderate
73E_459	16	Moderate
73E_461	16	Moderate
73E_462	15	Low
73E_463	19	High
73E_464	16	Moderate
73E_465	24	High
73E_467	28	Extreme
73E_468	25	Extreme

7302E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June. Additional dangers to navigation are present here due to the icebergs that are discharged from the glaciers in the head of some of the fjords.

There is an anchorage in Renbugten (Chapter 14).

A STOL-airstrip ("skiway") is identified at Polarheimen N of Scheele Bjerg in Suess Land (Chapter 15).

Shorelines within this area are almost exclusively rock, with some talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

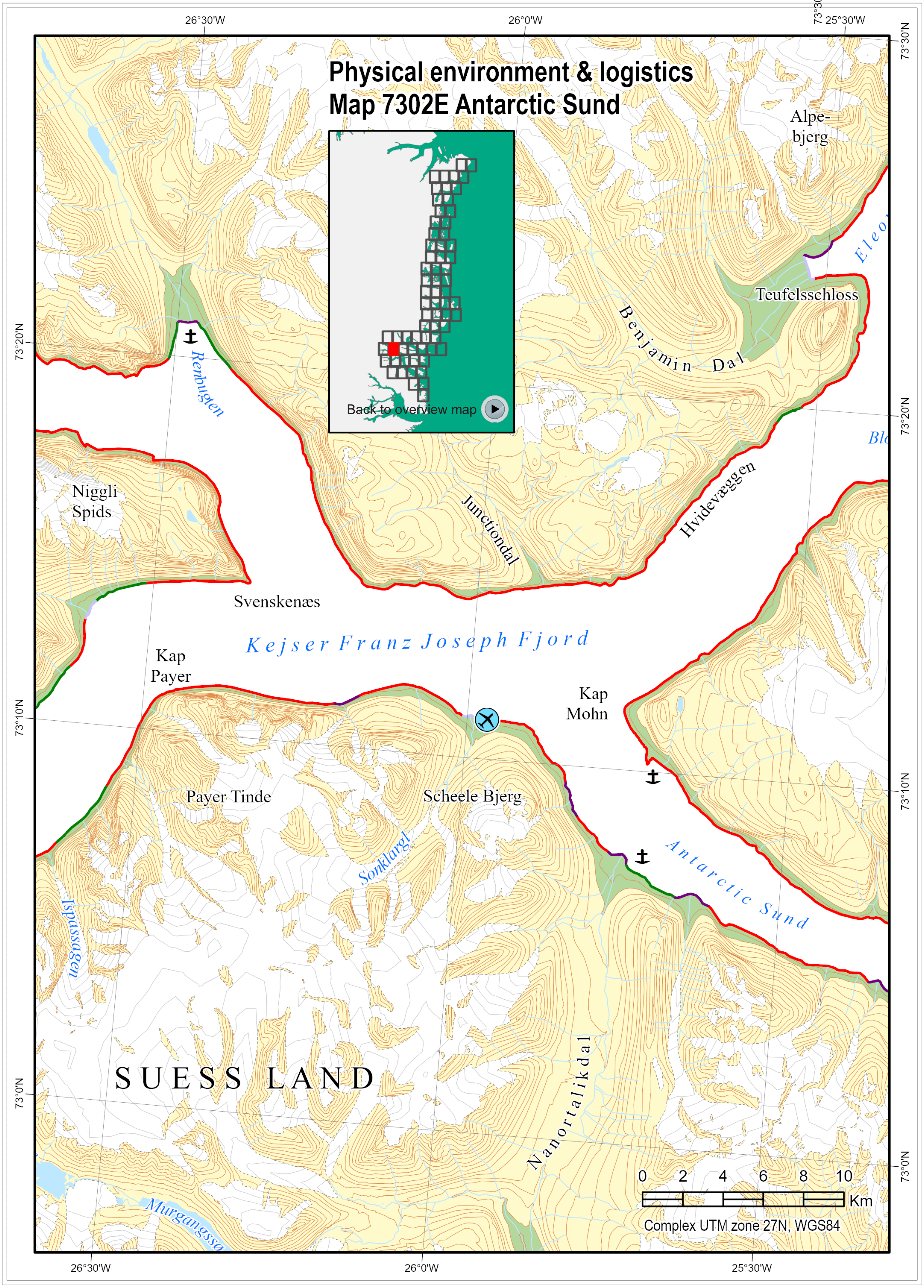
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

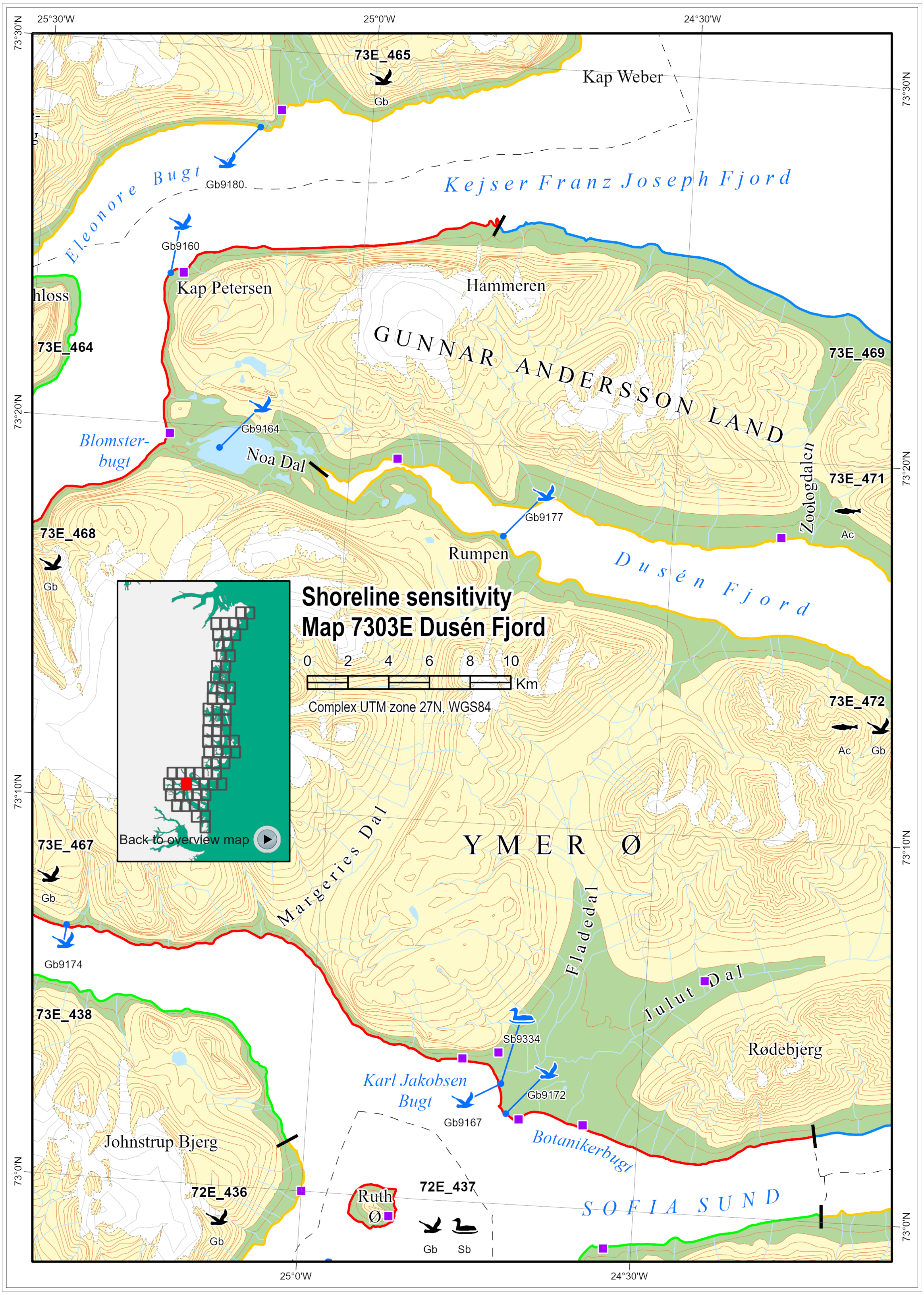
Shorelines within this area are almost exclusively rock, with some talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7302E Antarctic Sund
Back to overview map
26°30'W
26°0'W
25°30'W
73°30'N
73°20'N
73°10'N
73°0'N
Alpe-
bjerg
Teufelsschloss
Benjamin Dal
Renbugten
Niggli
Spids
Junctiondal
Hvidevæggen
Svenskenæs
Kejser Franz Joseph Fjord
Kap
Payer
Kap
Mohn
Payer Tinde
Scheele Bjerg
Sonklargl
Antarctic Sund
Ispassagen
SUESS LAND
Nanortalikdal
Murgangssø
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 7303E Dusén Fjord
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map
25°30'W
25°0'W
24°30'W
73°30'N
73°20'N
73°10'N
73°0'N
73E_465
Gb
Kap Weber
Gb9180
Eleonore Bugt
Kejser Franz Joseph Fjord
Gb9160
Kap Petersen
Hammeren
GUNNAR ANDERSSON LAND
73E_464
73E_469
Gb9164
Blomster-
bugt
Noa Dal
Zoologdalen
73E_471
Ac
Gb9177
73E_468
Gb
Rumpen
Dusén Fjord
73E_472
Ac
Gb
YMER Ø
Margeries Dal
73E_467
Gb
Gb9174
Fladedal
Julut Dal
73E_438
Sb9334
Rødebjerg
Karl Jakobsen
Bugt
Gb9172
Gb9167
Botanikerbugt
Johnstrup Bjerg
72E_436
Gb
Ruth
Ø
72E_437
Gb
Sb
SOFIA SUND

8.15 Map 7303E - Dusén Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

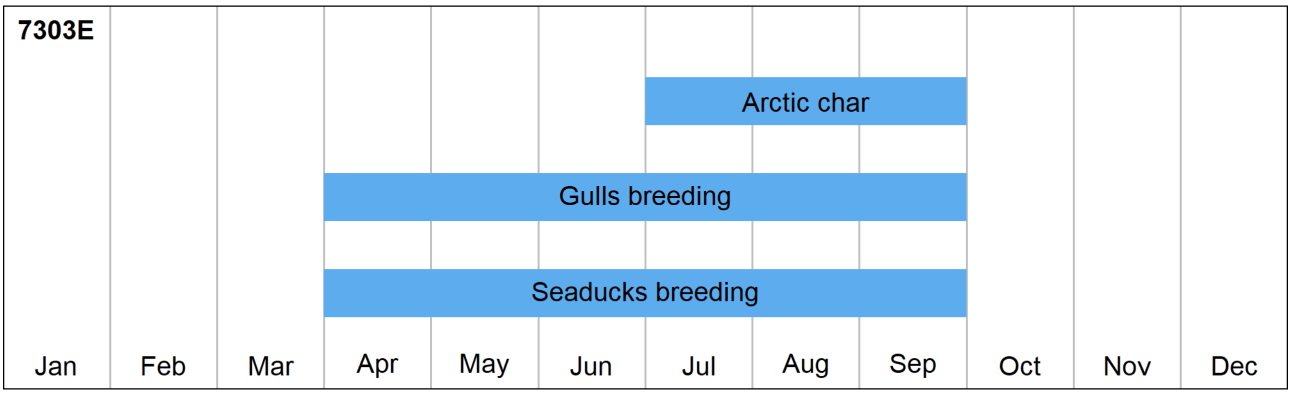
Ac73E_472, Ac73E_471	Important Arctic char river
Gb72E_436	3 colonies of glaucous gulls
Gb72E_437	1 colony of Arctic terns
Gb73E_456	1 colony of glaucous gulls
Gb73E_465, Gb73E_467	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb73E_468	1 colony of glaucous gulls and 2 colonies of Arctic terns
Gb73E_472	1 colony of glaucous gulls
Sb72E_437, Sb73E_456	1 colony of common eiders

Site specific occurrence: blue icons

Gb9160, Gb9164	Breeding Arctic terns
Gb9167	Breeding Arctic terns
Gb9172, Gb9174	Breeding glaucous gulls
Gb9177, Gb9180	Breeding glaucous gulls
Sb9334	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_436	23	High
72E_437	33	Extreme
73E_438	18	Moderate
73E_456	22	High
72E_457	18	Moderate
73E_464	16	Moderate
73E_465	24	High
73E_466	13	Low
73E_467	28	Extreme
73E_468	25	Extreme
73E_469	11	Low
73E_471	19	High
73E_472	20	High



Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation (nautical chart 2701).

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to icebergs that are discharged from the head of some of the fjords.

Blomsterbugten, a wide bay, is located close south of Kap Petersen on the W coast of Ymer Ø. Vessels may anchor, in a depth of 60 m, large broken stones, about 300 m offshore, close S of the hunting hut. Vessels should approach the anchorage slowly on an E course, steering for a rectangle mark painted on the shore, as the depths decrease rapidly to 9 m at about 45 m from the shore (nautical chart 2750).

Eleonore Bugt indents the NW side of Kejser Franz Joseph Fjord between 13 and 24 km SW of the entrance to Geologfjord. It is reported that vessels can anchor close S of the mouth of a river that flows through a valley at the head of this bay.

It is possible to anchor in 45 m of water close to the innermost part of Dusén Fjord, 0.5 M before the fjord narrows to a river-like channel and at a distance of 500 m and 400 m respectively to the N and S coasts of the fjord (Chapter 14).

There are two STOL-airstrips in Flade Dal on Ymer Ø (Chapter 15).

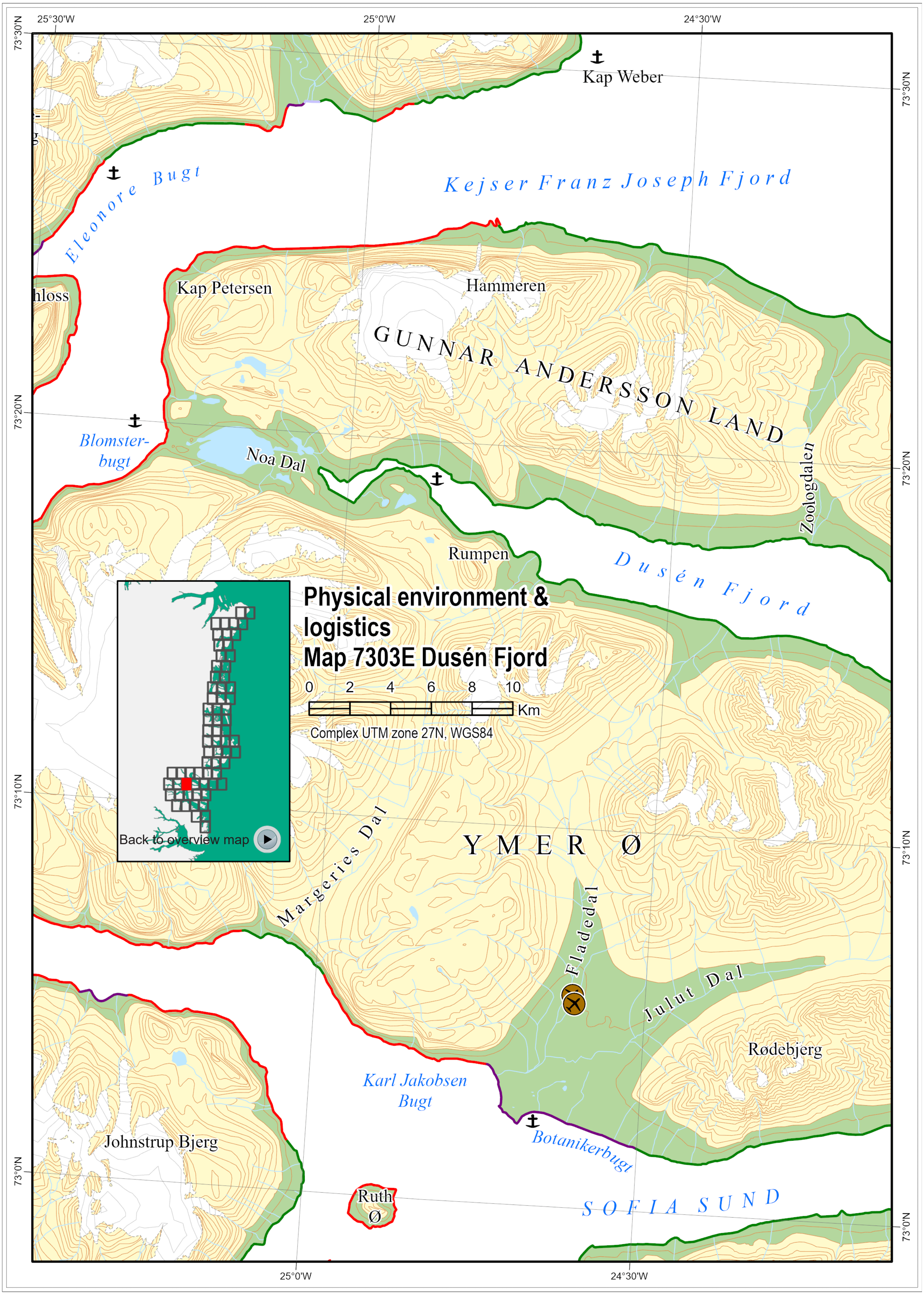
Shorelines within this area are almost exclusively rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock and talus with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.



Physical environment &
logistics
Map 7303E Dusén Fjord
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
25°30'W
25°0'W
24°30'W
73°30'N
73°20'N
73°10'N
73°0'N
Kap Weber
Eleonore Bugt
Kejser Franz Joseph Fjord
Kap Petersen
Hammeren
GUNNAR ANDERSSON LAND
Blomster-
bugt
Noa Dal
Zoologdalen
Rumpen
Dusén Fjord
YMER Ø
Margeries Dal
Fladedal
Julut Dal
Rødebjerg
Karl Jakobsen
Bugt
Botanikerbugt
Johnstrup Bjerg
Ruth
Ø
SOFIA SUND

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

A potential safe haven is identified at Eleonore Bugt, with moderate natural protection and the ability to at least partially contain oil that is released from a vessel under repair.

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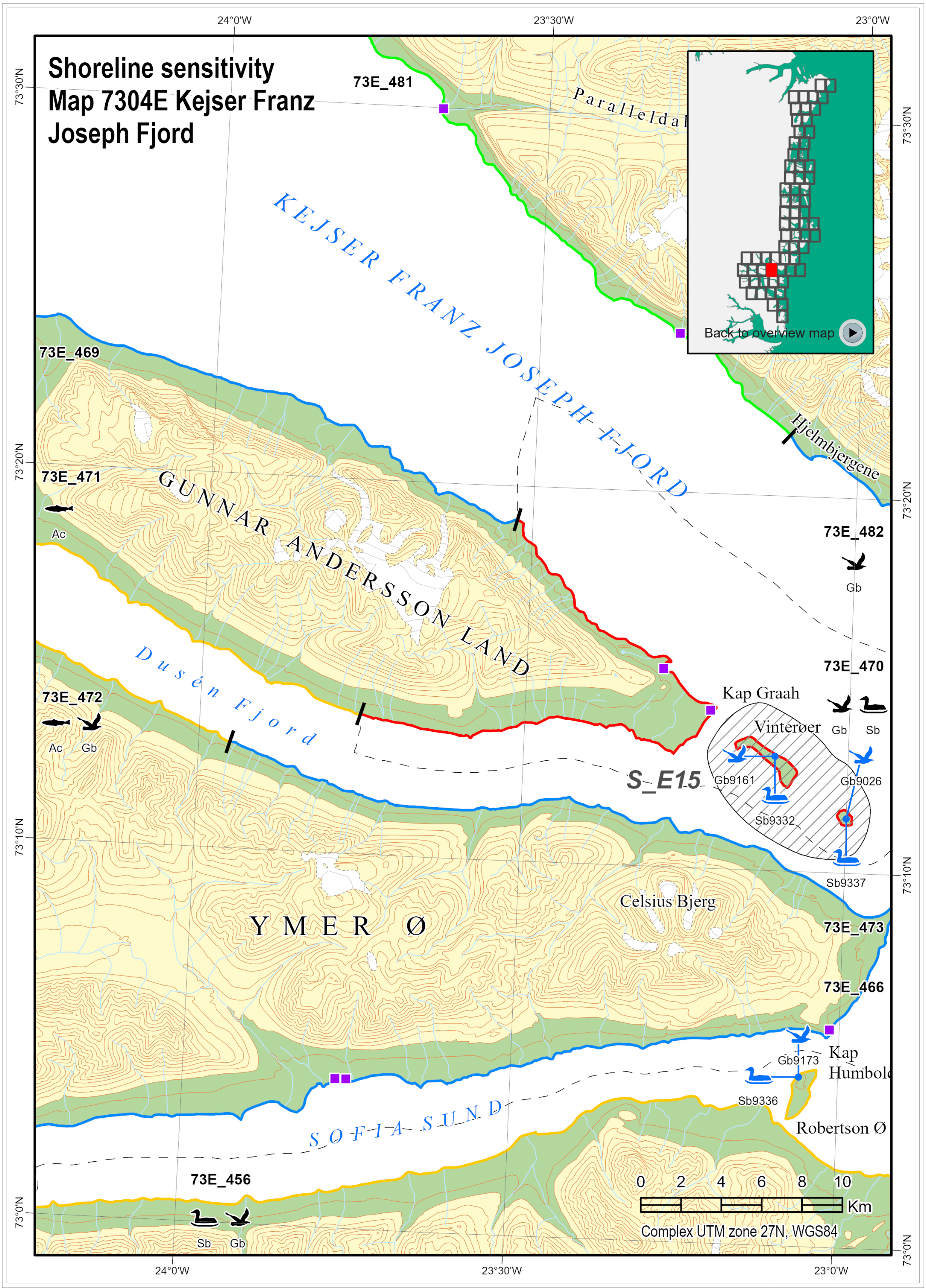


Shoreline sensitivity
Map 7304E Kejser Franz Joseph Fjord
24°0'W
23°30'W
23°0'W
73°30'N
73°20'N
73°10'N
73°0'N
73E_481
Paralleldal
KEJSER FRANZ JOSEPH FJORD
Hjelmbjergene
Back to overview map
73E_469
73E_471
Ac
GUNNAR ANDERSSON LAND
73E_482
Gb
73E_470
Kap Graah
Vinterøer
Gb
Sb
Dusén Fjord
73E_472
Ac
Gb
S_E15
Gb9161
Gb9026
Sb9332
Sb9337
Celsius Bjerg
YMER Ø
73E_473
73E_466
Kap Humbold
Gb9173
Sb9336
SOFIA SUND
Robertson Ø
73E_456
Sb
Gb
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.16 Map 7304E - Kejser Franz Joseph Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

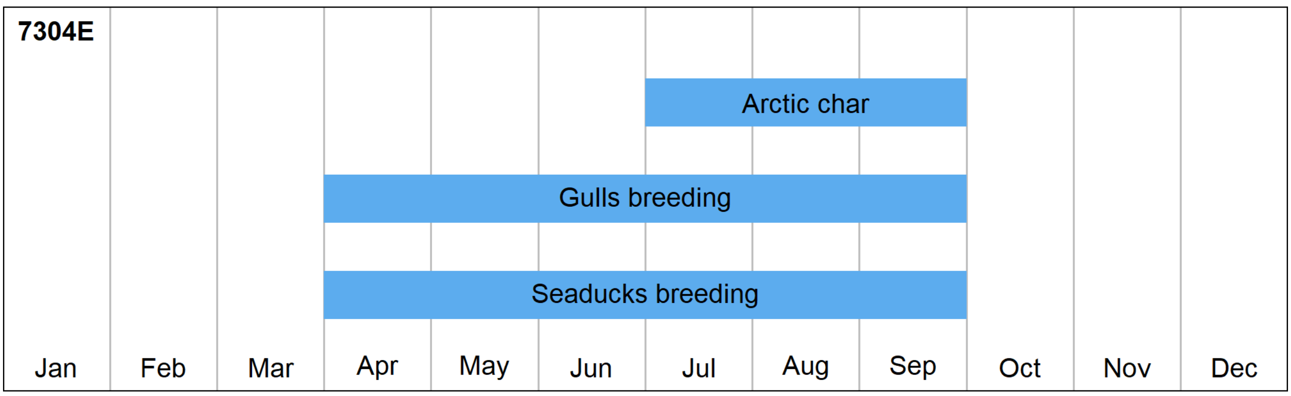
Gb73E_482	1 colony of glaucous gulls
Ac73E_472, Ac73E_471	Important Arctic char river
Gb73E_456	1 colony of glaucous gulls
Gb73E_470	1 colony of Arctic terns and 2 colonies of Sabine's gulls
Gb73E_472	1 colony of glaucous gulls
Sb73E_470	2 colonies of common eiders
Sb73E_456	1 colony of common eiders

Site specific occurrence: blue icons

Gb9026	Breeding Sabine's gulls and Arctic terns **(S_E15)**
Gb9161	Breeding Sabine's gulls **(S_E15)**
Gb9173	Breeding glaucous gulls
Sb9332	Breeding common eiders **(S_E15)**
Sb9336, Sb9337	Breeding common eiders **(S_E15)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_456	22	High
73E_466	13	Low
73E_469	11	Low
73E_470	20	Extreme
73E_471	19	High
73E_472	20	High
73E_473	15	Low
73E_481	18	Moderate
73E_482	16	Low



Access
The nearshore waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to icebergs that are discharged from the head of some of the fjords and drift ice may enter from the E.

Sofia Sund is entered from the E between Kap Humboldt, located 8 km SW of Kap Wijkander, and the N end of Robertson Ø. The entrance channel is narrow and deep with tidal currents that attain rates of up to 3 knots. The depths in its fairway are reported to be deep, with no known dangers. Vessels may obtain anchorage close NE of Kap Humboldt, in a depth of 58 m, with a former hunting station standing 1 km N of the cape bearing 313°, distant about 0.5 km. When approaching the berth, vessels should keep in depths of more than 27 m as a crescent-shaped reef fringes the shore abreast the hunting station. It was reported (1941) that a vessel anchored during September, in a depth of 55 m, sand, 2.5 km W of Robertson Ø, 1 km off the S shore of the sound. At this time, several icebergs, both grounded and floating, were observed near Robert- sons Ø.

Within the islands of the Vinterøer group, the holding ground is good and the shelter is reported to make excellent winter quarters, as the depths are sufficiently shoal to prevent icebergs from drifting in (Chapter 14).

There are no airstrips identified on this map area.

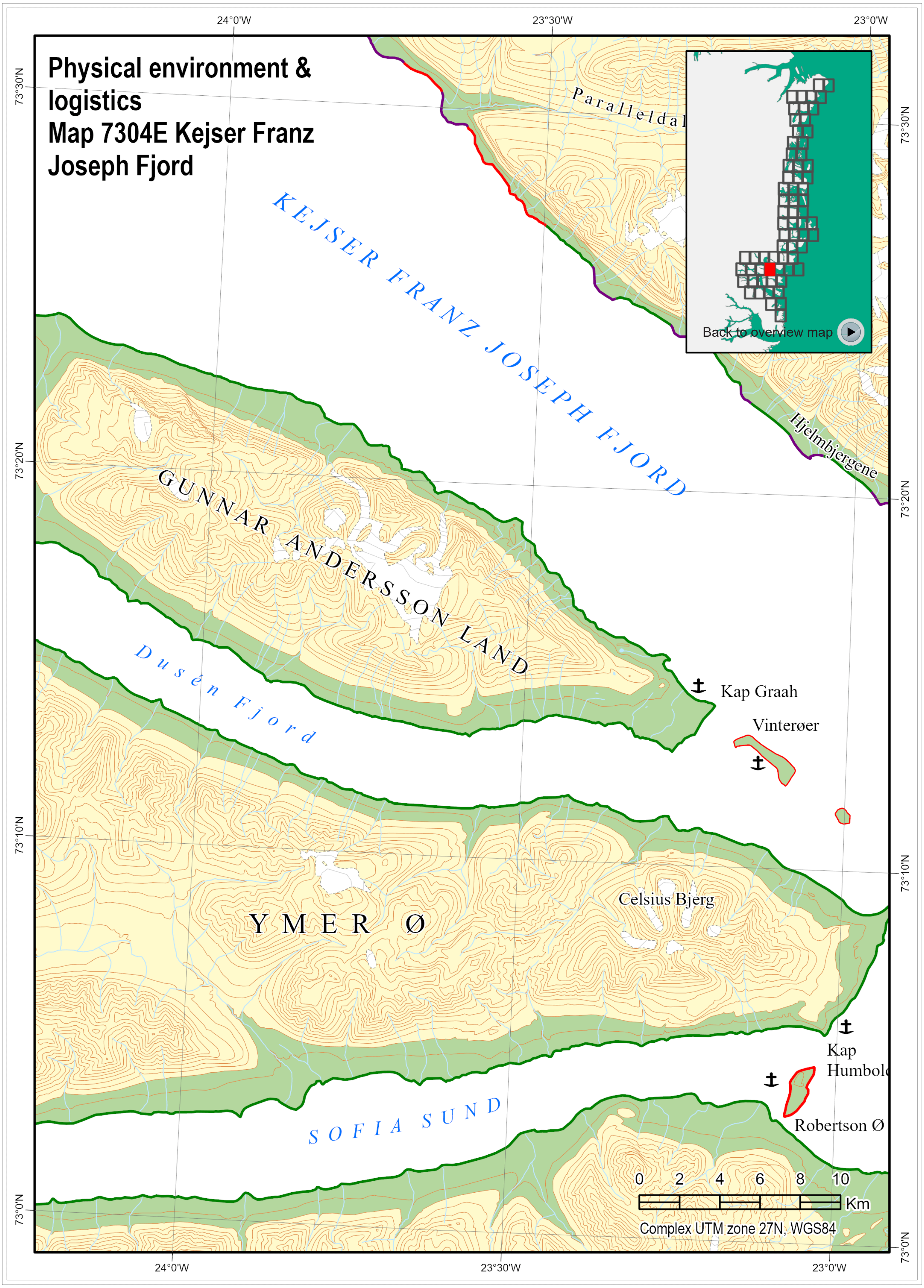
Shorelines within this area are almost exclusively talus with some rock, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively talus with some rock, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.


Physical environment & logistics
Map 7304E Kejser Franz Joseph Fjord
24°0'W
23°30'W
23°0'W
73°30'N
73°20'N
73°10'N
73°0'N
KEJSER FRANZ JOSEPH FJORD
Paralleldal
Back to overview map
Hjelmbjergene
GUNNAR ANDERSSON LAND
Dusén Fjord
Kap Graah
Vinterøer
Celsius Bjerg
YMER Ø
Kap Humbold
Robertson Ø
SOFIA SUND
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map.

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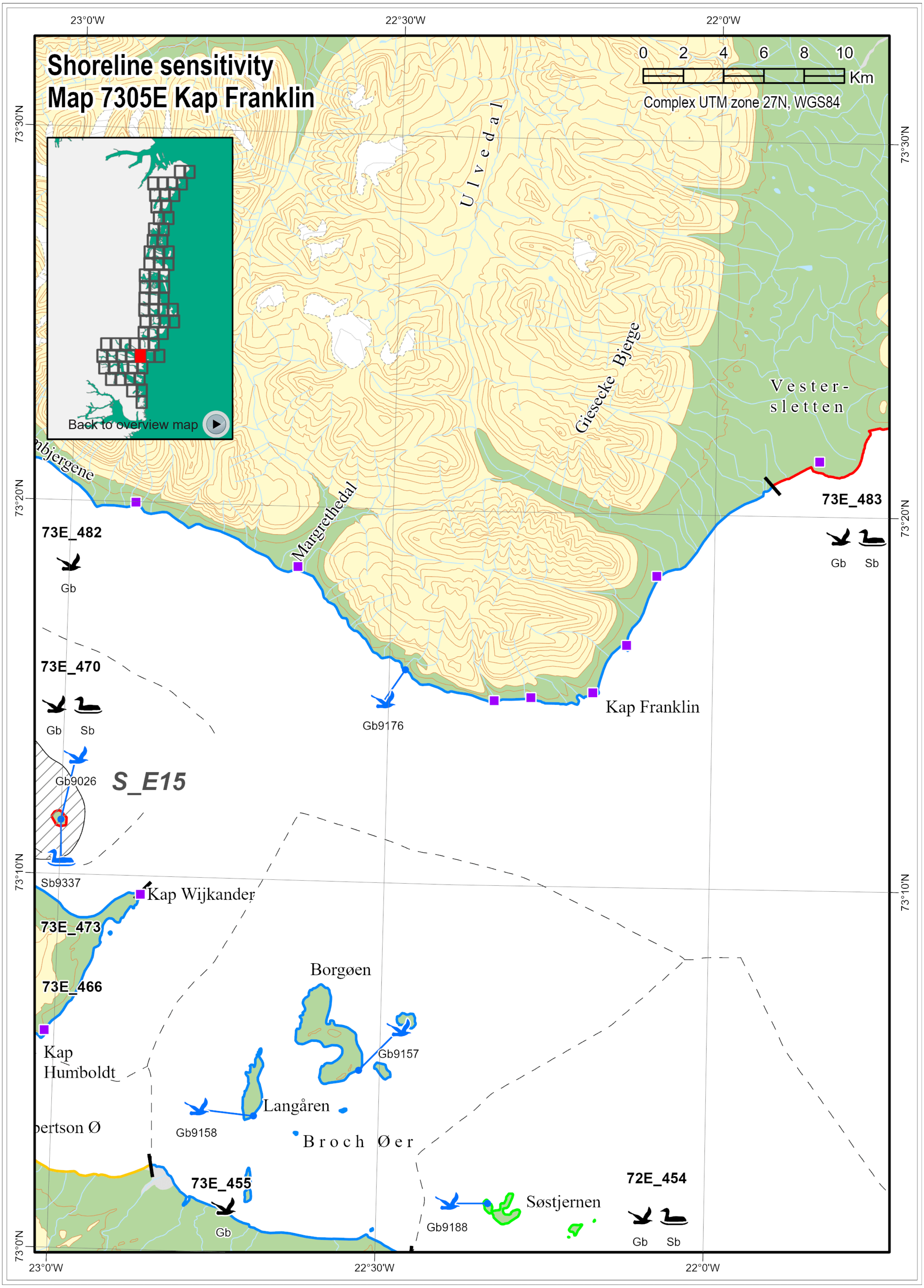

Shoreline sensitivity
Map 7305E Kap Franklin
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map
23°0'W
22°30'W
22°0'W
73°30'N
73°20'N
73°10'N
73°0'N
U l v e d a l
Giesecke Bjerge
Vester-
sletten
Margrethedal
Kap Franklin
73E_482
73E_483
73E_470
Gb
Sb
Gb9176
Gb9026
S_E15
Sb9337
Kap Wijkander
73E_473
73E_466
Kap
Humboldt
Borgøen
Gb9157
Langåren
Gb9158
B r o c h Ø e r
73E_455
Gb9188
Søstjernen
72E_454

8.17 Map 7305E - Kap Franklin

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

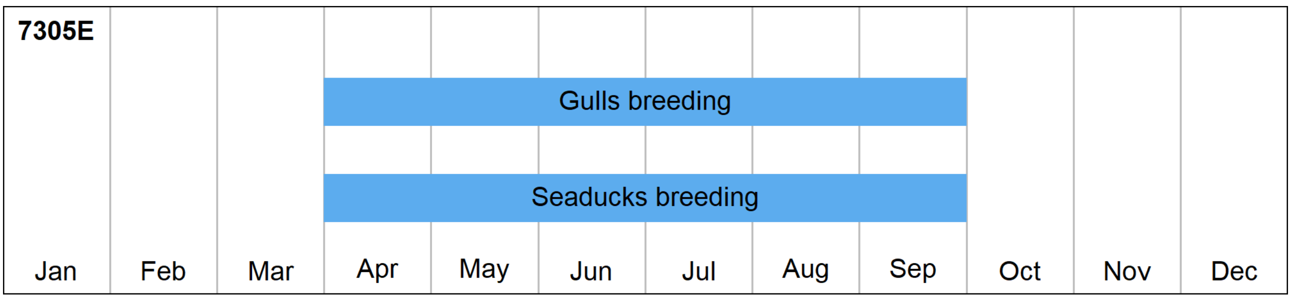
Gb73E_482	1 colony of glaucous gulls
Gb72E_454	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb73E_455	2 colonies of glaucous gulls
Gb73E_456	1 colony of glaucous gulls
Gb73E_470	1 colony of Arctic terns and 2 colonies of Sabine's gulls
Gb73E_483	3 colonies of Arctic terns and 1 colony of Sabine's gulls
Sb72E_454, Sb73E_456	1 colony of common eiders
Sb73E_470	2 colonies of common eiders
Sb73E_483	1 colony of common eiders

Site specific occurrence: blue icons

Gb9026	Breeding Sabine's gulls and Arctic terns **(S_E15)**
Gb9157, Gb9158	Breeding glaucous gulls
Gb9176	Breeding glaucous gulls
Gb9188	Breeding Arctic terns
Sb9337	Breeding common eiders **(S_E15)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
72E_454	17	Moderate
73E_455	15	Low
73E_456	22	High
73E_466	13	Low
73E_470	20	Extreme
73E_473	15	Low
73E_482	16	Low
73E_483	18	Extreme



Access
The nearshore waters in and around the islands in this map area are largely uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to July and heavy drift ice may occur year round. Additional dangers to navigation are present here due to icebergs.

Sofia Sund is entered from the E between Kap Humboldt, located 8 km SW of Kap Wijkander, and the N end of Robertson Ø. The entrance channel is narrow and deep with tidal currents that attain rates of up to 3 knots. The depths in its fairway are reported to be deep, with no known dangers. Vessels may obtain anchorage close NE of Kap Humboldt, in a depth of 58 m, with a former hunting station standing 1 km N of the cape bearing 313°, distant about 0.5 km. When approaching the berth, vessels should keep in depths of more than 27 m as a crescent-shaped reef fringes the shore abreast the hunting station. Ice is often present here. There are also anchorages at the islands of Borgøen and Søstjernen and at Margrethedal W of Kap Franklin (Chapter 14).

A STOL-airstrip apparently on the sea ice (“skiway”) is located N of Kap Franklin (Chapter 15).

Shorelines within this area are almost exclusively rock with some talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

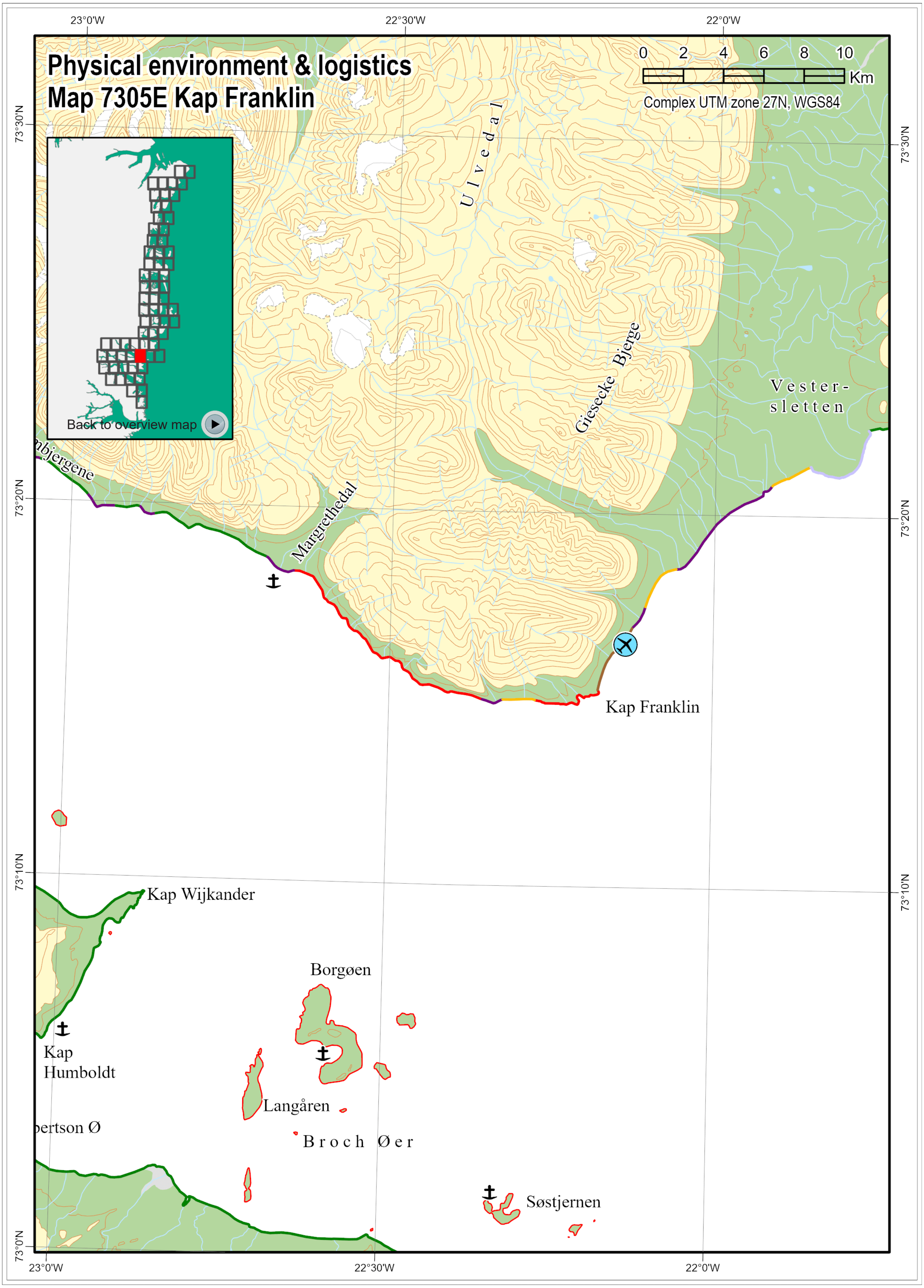
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

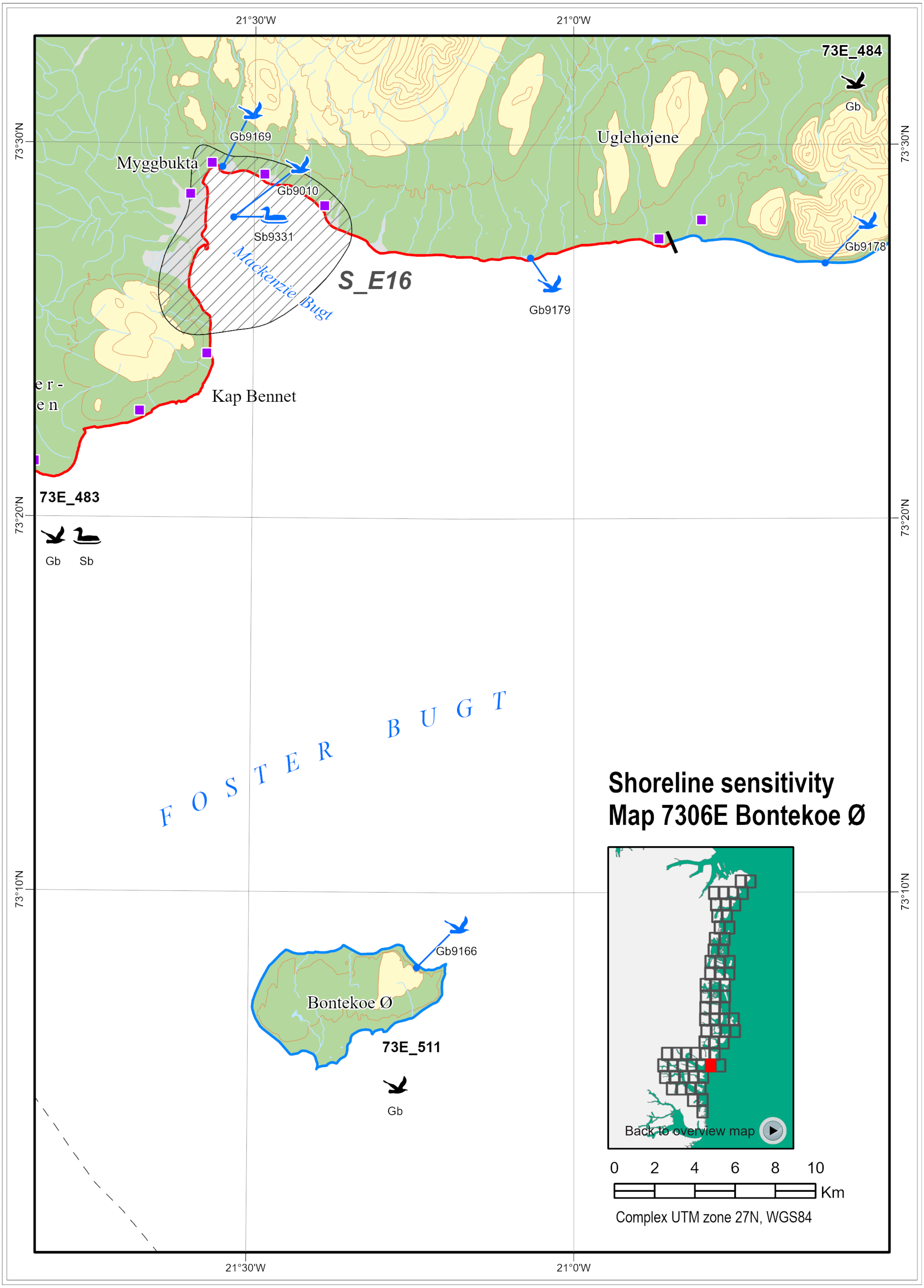
Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock with some talus, allowing with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7305E Kap Franklin
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
23°0'W
22°30'W
22°0'W
73°30'N
73°20'N
73°10'N
73°0'N
Back to overview map
Ulvedal
Giesecke Bjerge
Vester-sletten
Margrethedal
Kap Franklin
Kap Wijkander
Borgøen
Kap Humboldt
Langåren
Broch Øer
Søstjernen



21°30'W
21°0'W
73°30'N
73°20'N
73°10'N
73E_484
Gb
Gb9169
Myggbukta
Gb9010
Sb9331
Uglehøjene
Gb9178
Mackenzie Bugt
S_E16
Gb9179
Kap Bennet
73E_483
Gb
Sb
FOSTER BUGT
Gb9166
Bontekoe Ø
73E_511
Gb
Shoreline sensitivity
Map 7306E Bontekoe Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.18 Map 7306E - Bontekoe Ø

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

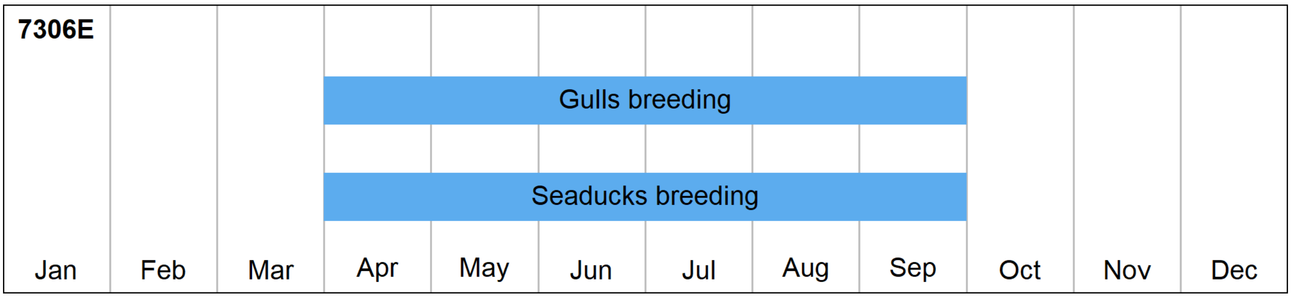
Gb73E_511	1 colony of glaucous gulls
Gb73E_484	2 colonies of glaucous gulls
Gb73E_483	3 colonies of Arctic terns and 1 colony of Sabine's gulls
Sb73E_483	1 colony of common eiders

Site specific occurrence: blue icons

Gb9010	Breeding Arctic terns and Sabine's gulls **(S_E16)**
Gb9166	Breeding glaucous gulls
Gb9169	Breeding Arctic terns **(S_E16)**
Gb9178	Breeding glaucous gulls
Gb9179	Breeding Arctic terns
Sb9331	Breeding common eiders **(S_E16)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_483	18	Extreme
73E_484	16	Low
73E_511	13	Low



Access
The nearshore waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December/January to July and heavy driftice may occur year round. Additional dangers to navigation are present here due to icebergs.

Bontekoe Ø (73°07'N, 21°20'W), an island, 353 m high, lies 38 km ESE of Kap Franklin. An isolated shoal patch, with a depth of 12 m, was reported (1954) to lie about 10 km W of this island.

Mackenzie Bugt (73°26'N, 21°30'W) is entered NW of Kap Bennet. Depths of 12 to 55 m lie in the bay, but the NW part is shoal. A submerged rock lies about 2 km off the W side of the bay, midway between Kap Bennet and the head. Vessels can anchor, in depths of 20 to 37 m, between 1.5 and 3 km from the head and 1 km off the NE shore. Ice conditions in the bay are controlled by the winds and tides. It is possible to anchor S of Bontekoe Ø (Chapter 14).

Three STOL- airstrips are identified E of Myggbukta a former hunting station (Chapter 15).

Shorelines within this area are rock, some talus and alluvial fans, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

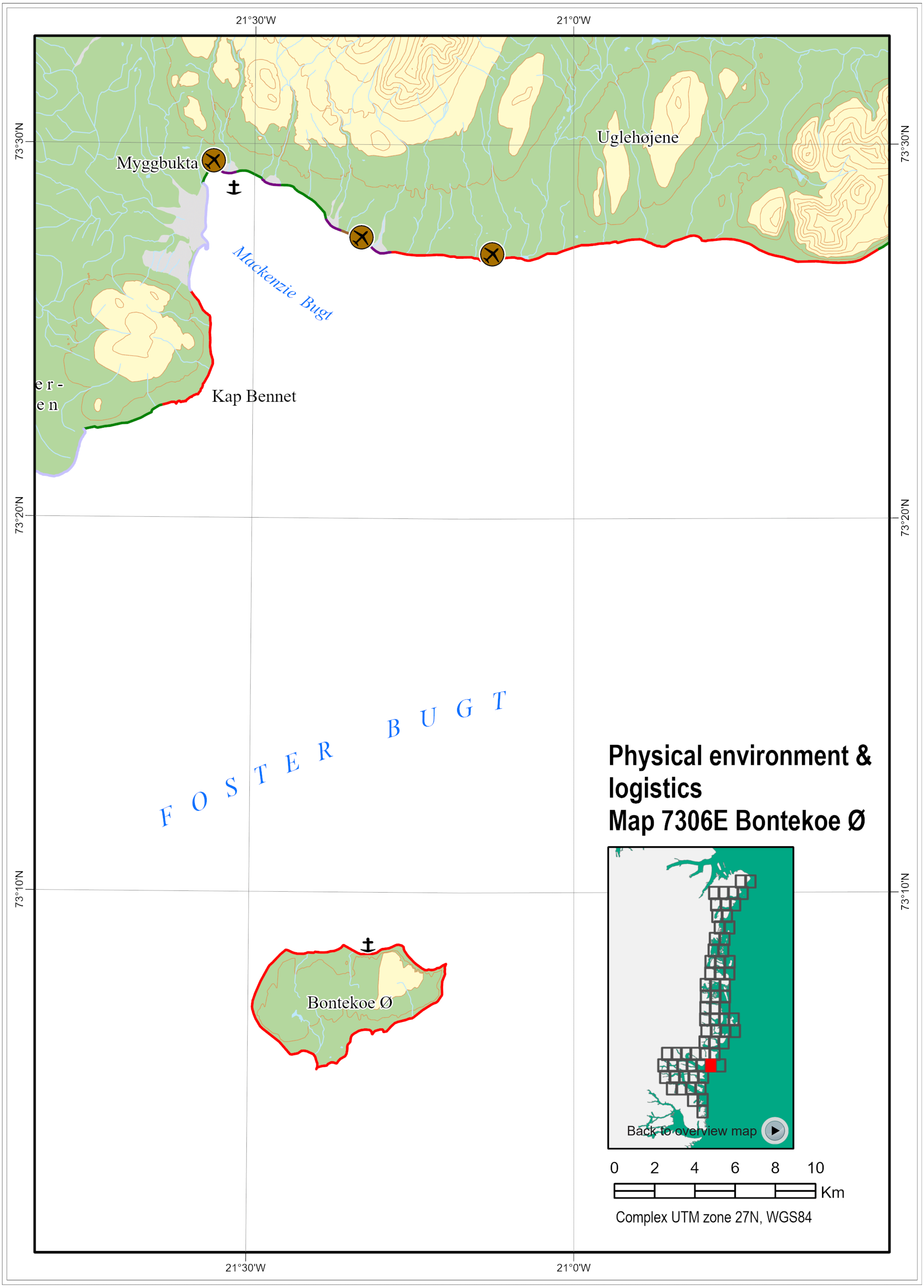
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

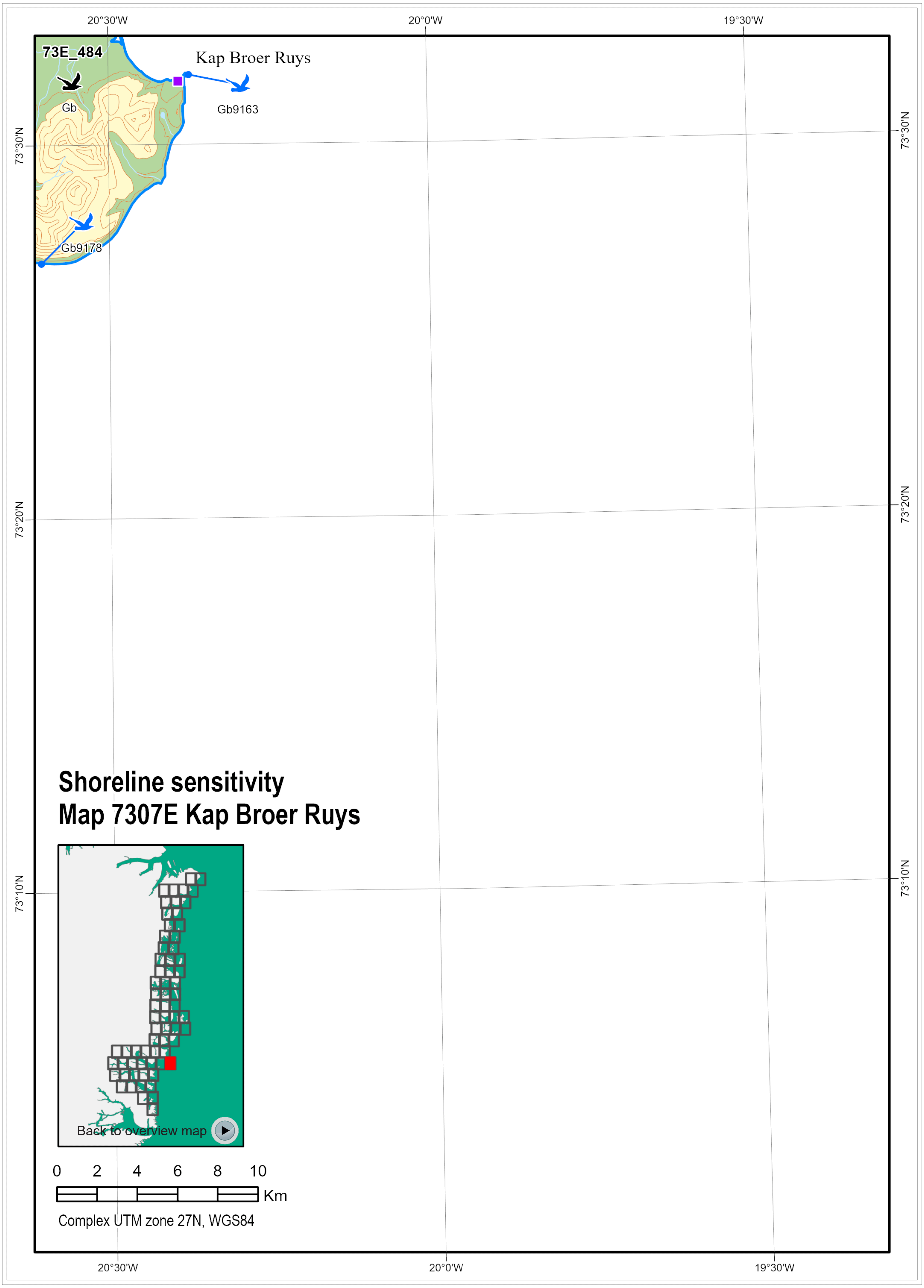
Shorelines within this area are almost exclusively rock, with some talus, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
Mackenzie Bugt could be considered as a potential safe haven, but the area is identified as "selectec area". Exclusion booming may be complicated by the excessive lengths of boom required to seal off the bay.


21°30'W
21°0'W
73°30'N
73°20'N
73°10'N
Myggbukta
Uglehøjene
Mackenzie Bugt
Kap Bennet
FOSTER BUGT
Bontekoe Ø
Physical environment & logistics
Map 7306E Bontekoe Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

Shoreline sensitivity
Map 7307E Kap Broer Ruys



8.19 Map 7307E - Kap Broer Ruys

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb73E_484	2 colonies of glaucous gulls

Site specific occurrence: blue icons

Gb9163, Gb9178	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_484	16	Low

7307E											
			Gulls breeding	Gulls breeding	Gulls breeding	Gulls breeding	Gulls breeding	Gulls breeding			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The nearshore waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

In the particular map heavy drift ice may cover the sea right into the coast from January to June. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

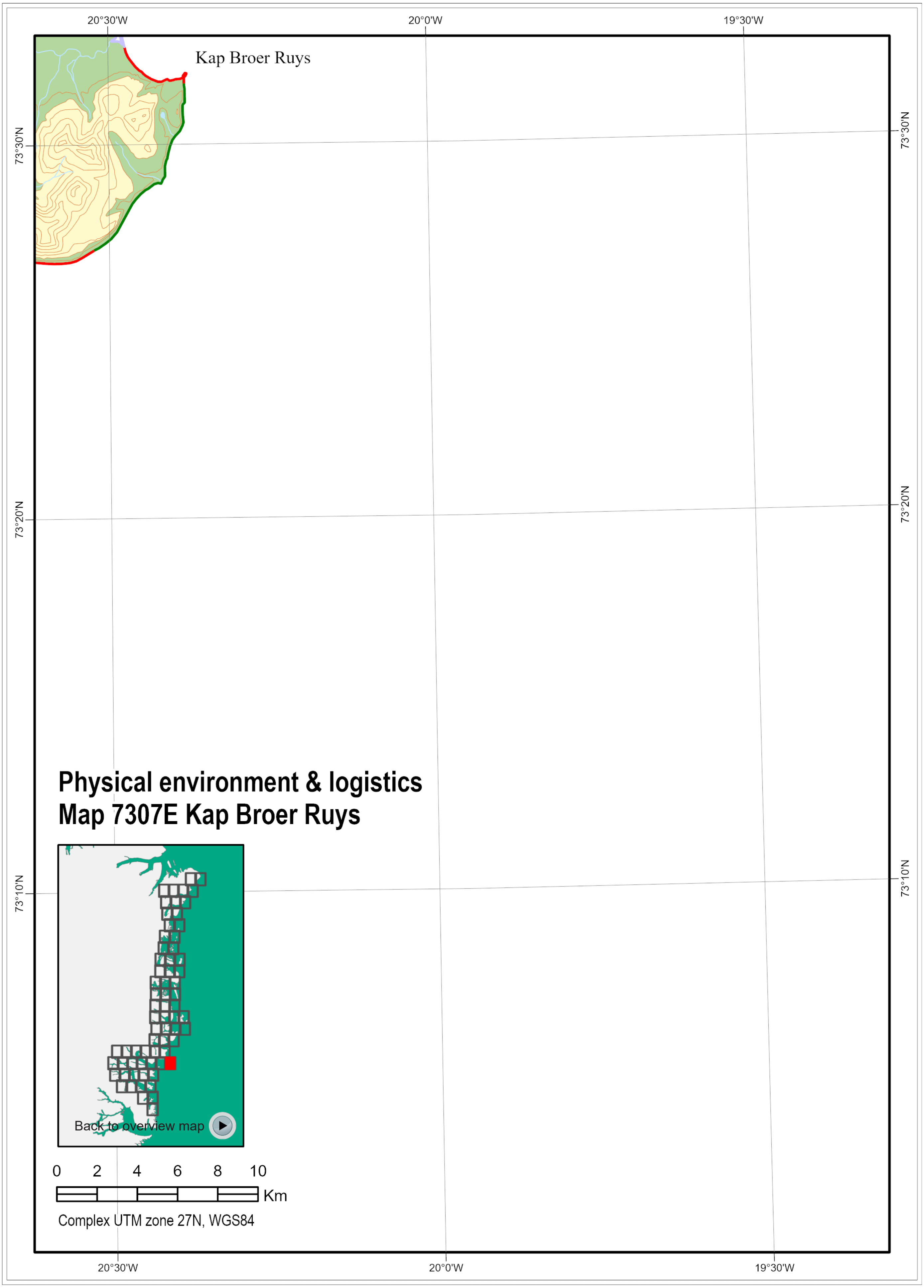
Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

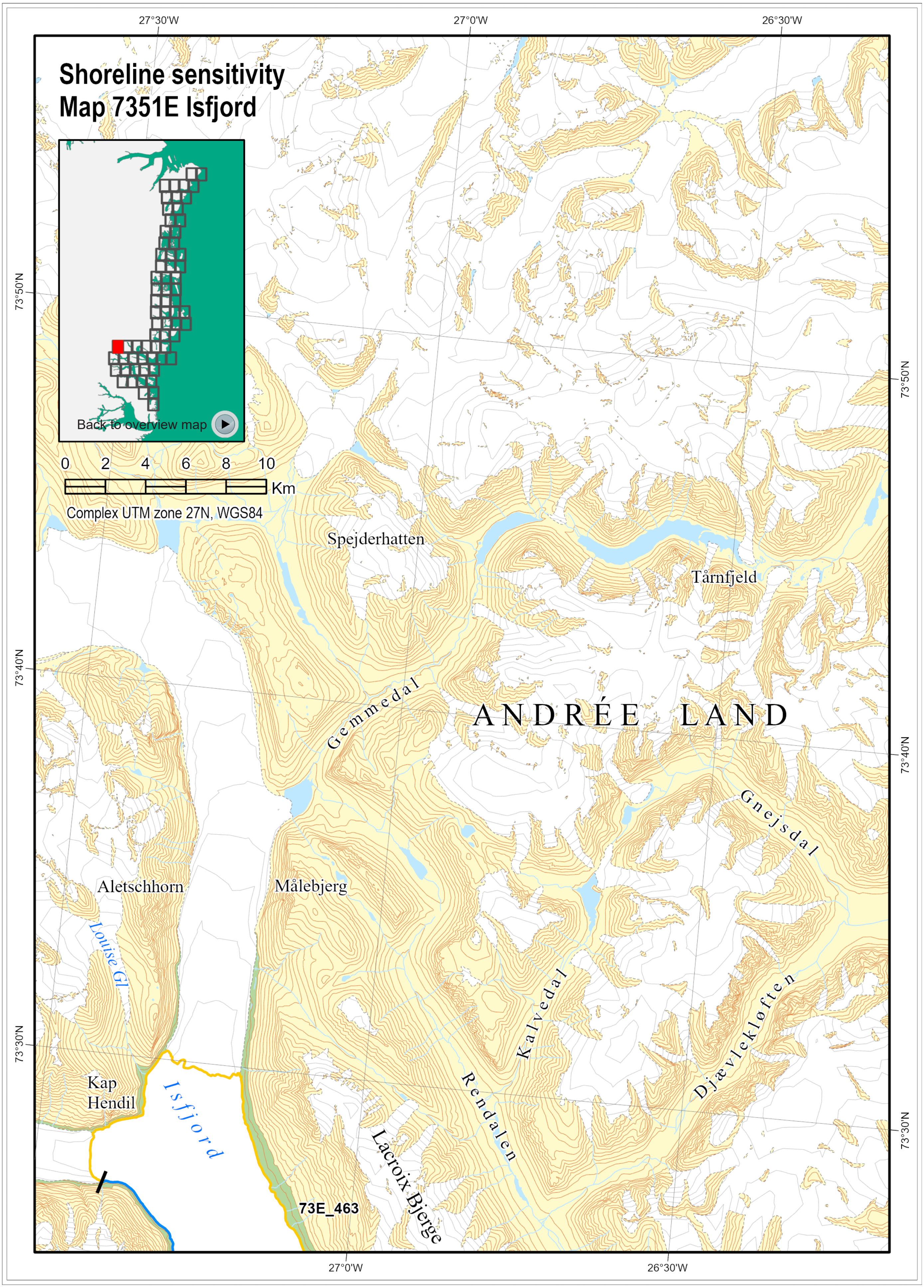
Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Shorelines within this area are predominantly rock and talus, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Safe Havens
There are no potential safe havens identified on this map.


20°30'W
20°0'W
19°30'W
73°30'N
73°20'N
73°10'N
Kap Broer Ruys
Physical environment & logistics
Map 7307E Kap Broer Ruys
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7351E Isfjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
27°30'W
27°0'W
26°30'W
73°50'N
73°40'N
73°30'N
Spejderhatten
Tårnfjeld
Gemmedal
ANDRÉE LAND
Gnejsdal
Aletschhorn
Målebjerg
Louise Gl
Kalvedal
Djævlekløften
Rendalen
Kap
Hendil
Isfjord
Lacroix Bjerge
73E_463

8.20 Map 7351E – Isfjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_462	15	Low
73E_463	19	High

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to June. Additional dangers to navigation are present here due to the large numbers of icebergs that are discharged from the glaciers.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are exclusively rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

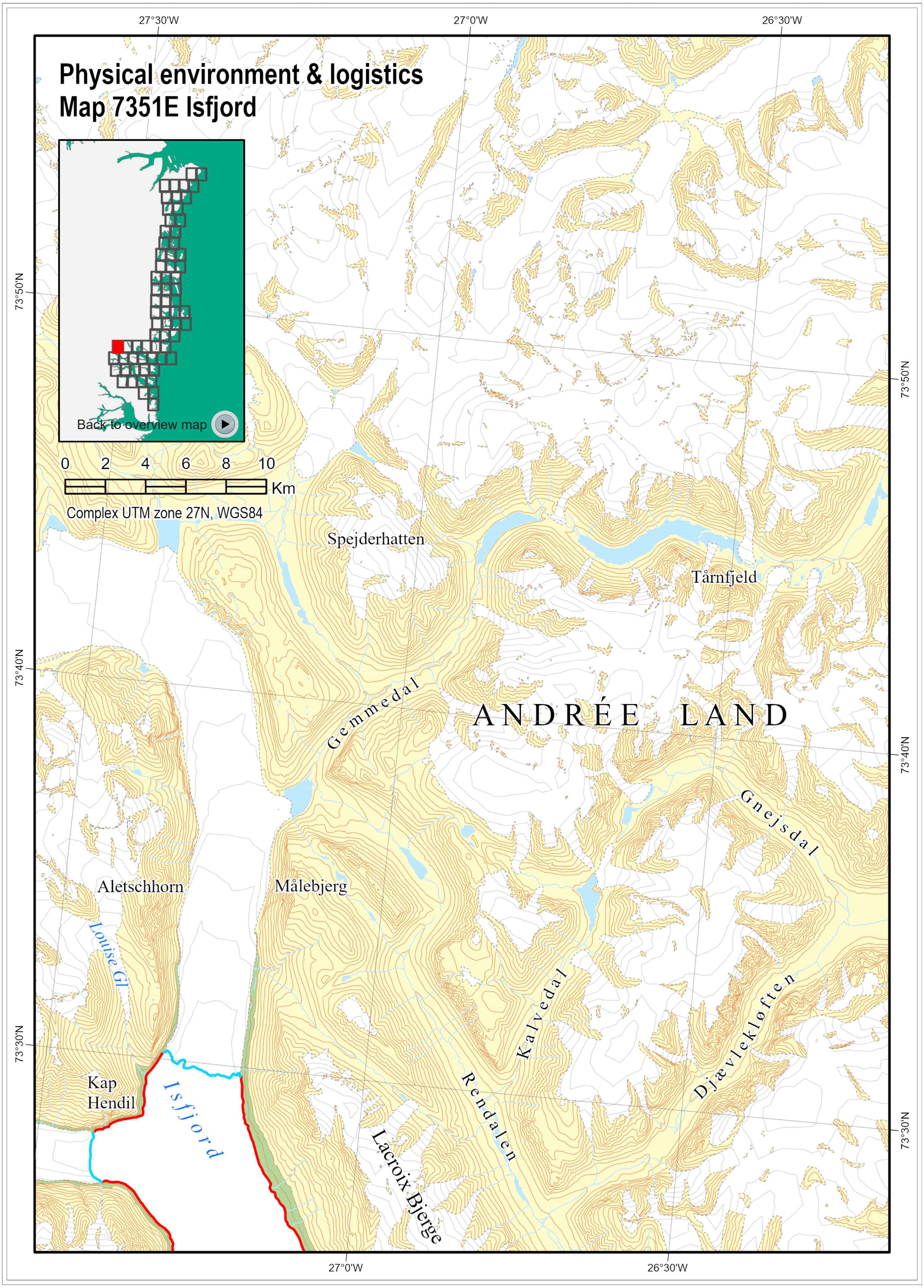
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

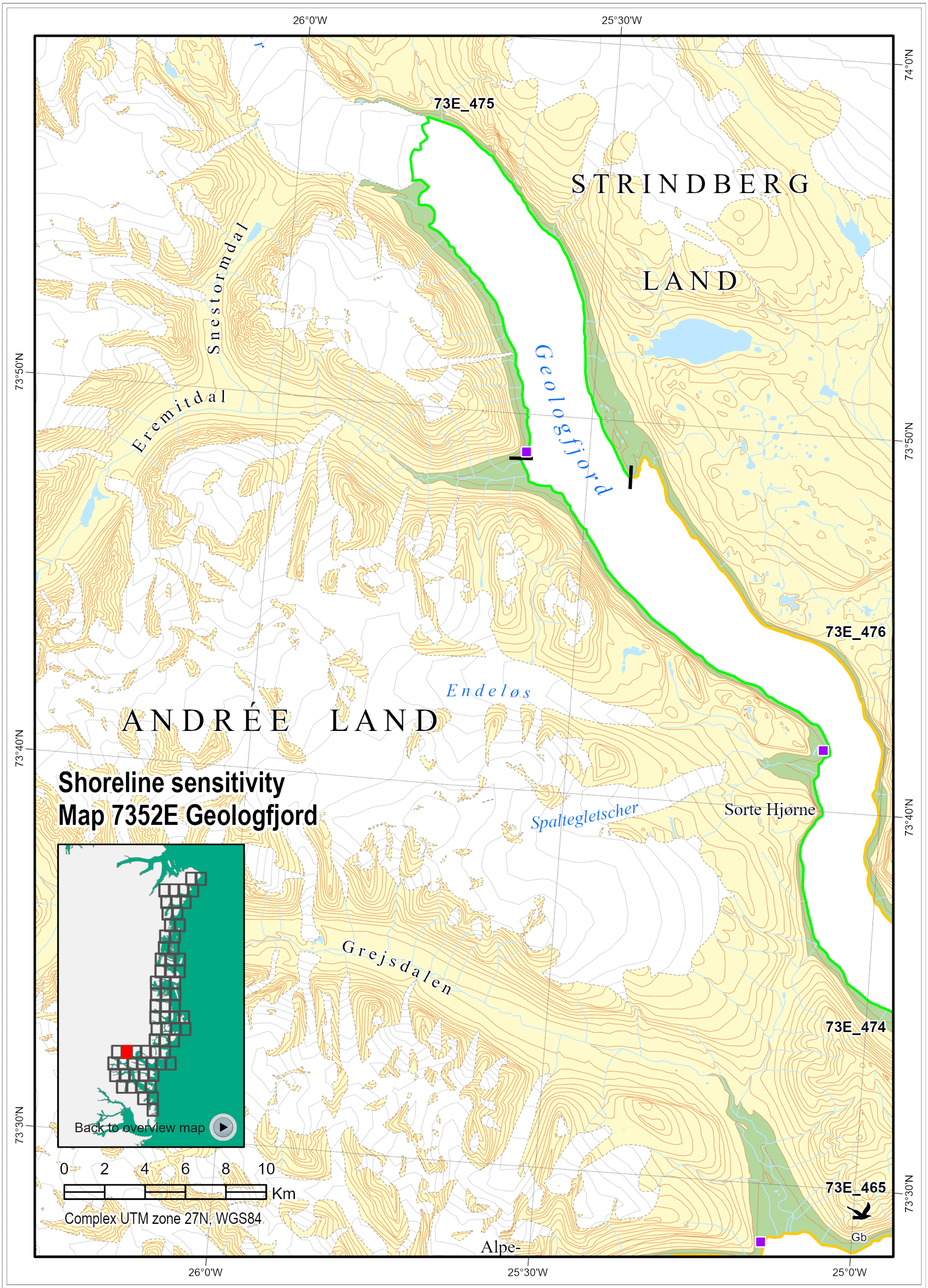
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required, the numerous icebergs and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7351E Isfjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
27°30'W
27°0'W
26°30'W
73°50'N
73°40'N
73°30'N
Spejderhatten
Tårnfjeld
ANDRÉE LAND
Gemmedal
Gnejsdal
Aletschhorn
Målebjerg
Louise Gl
Kalvedal
Djævlekløften
Rendalen
Kap Hendil
Isfjord
Lacroix Bjerge



Shoreline sensitivity
Map 7352E Geologfjord
STRINDBERG
LAND
ANDRÉE LAND
Geologfjord
Snestormdal
Eremitdal
Endeløs
Spaltegletscher
Sorte Hjørne
Grejsdalen
Alpe-
73E_475
73E_476
73E_474
73E_465
Gb
26°0'W
25°30'W
25°0'W
74°0'N
73°50'N
73°40'N
73°30'N
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.21 Map 7352E – Geologfjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb73E_465	2 colonies of glaucous gulls and 1 colony of Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_465	24	High
73E_474	17	Moderate
73E_475	17	Moderate
73E_476	20	High

<table>
<tr><td>7352E</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="6">Gulls breeding</td><td></td><td></td><td></td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
</table>

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There is a STOL-airstrip located in Grejsdalen (Chapter 15) in this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

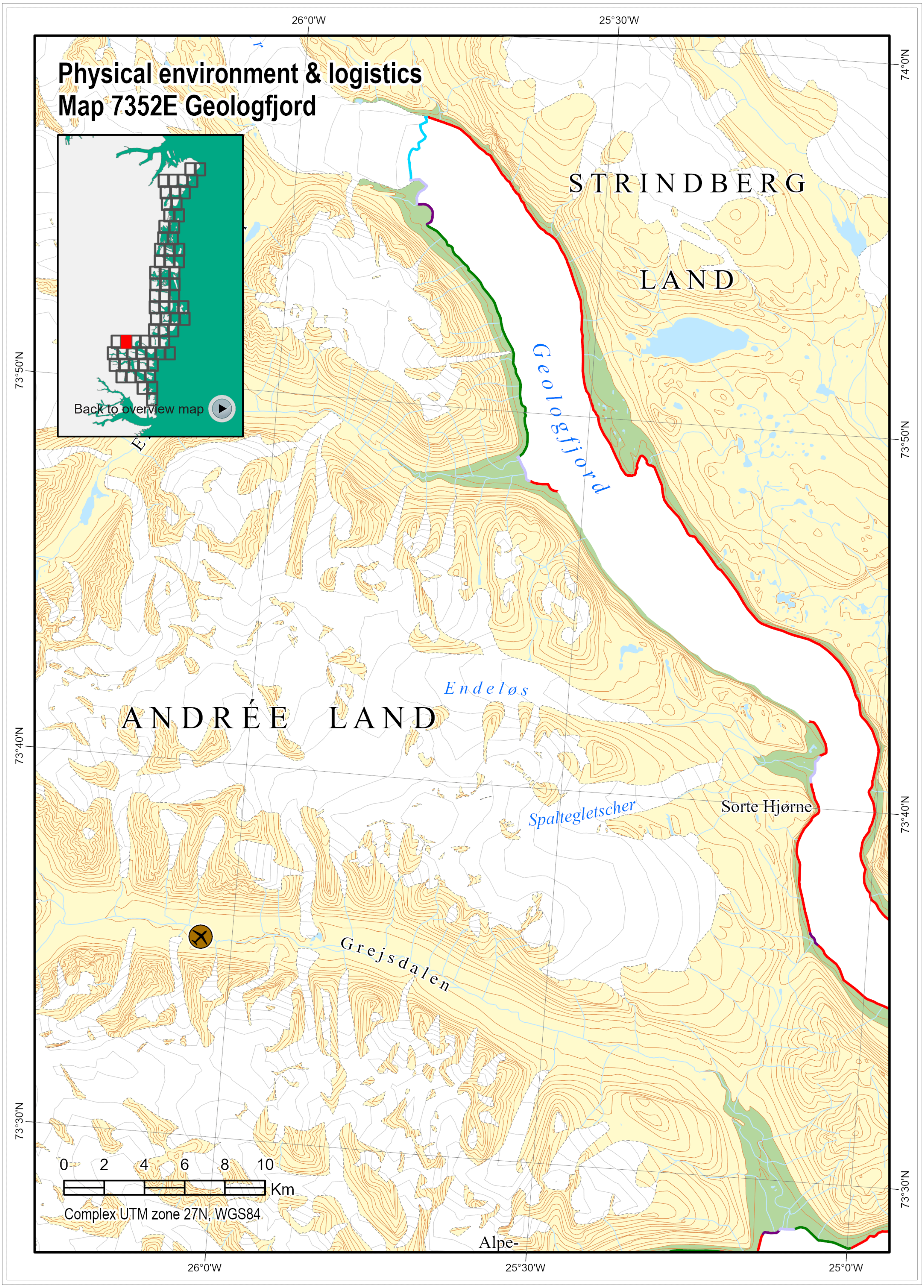
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

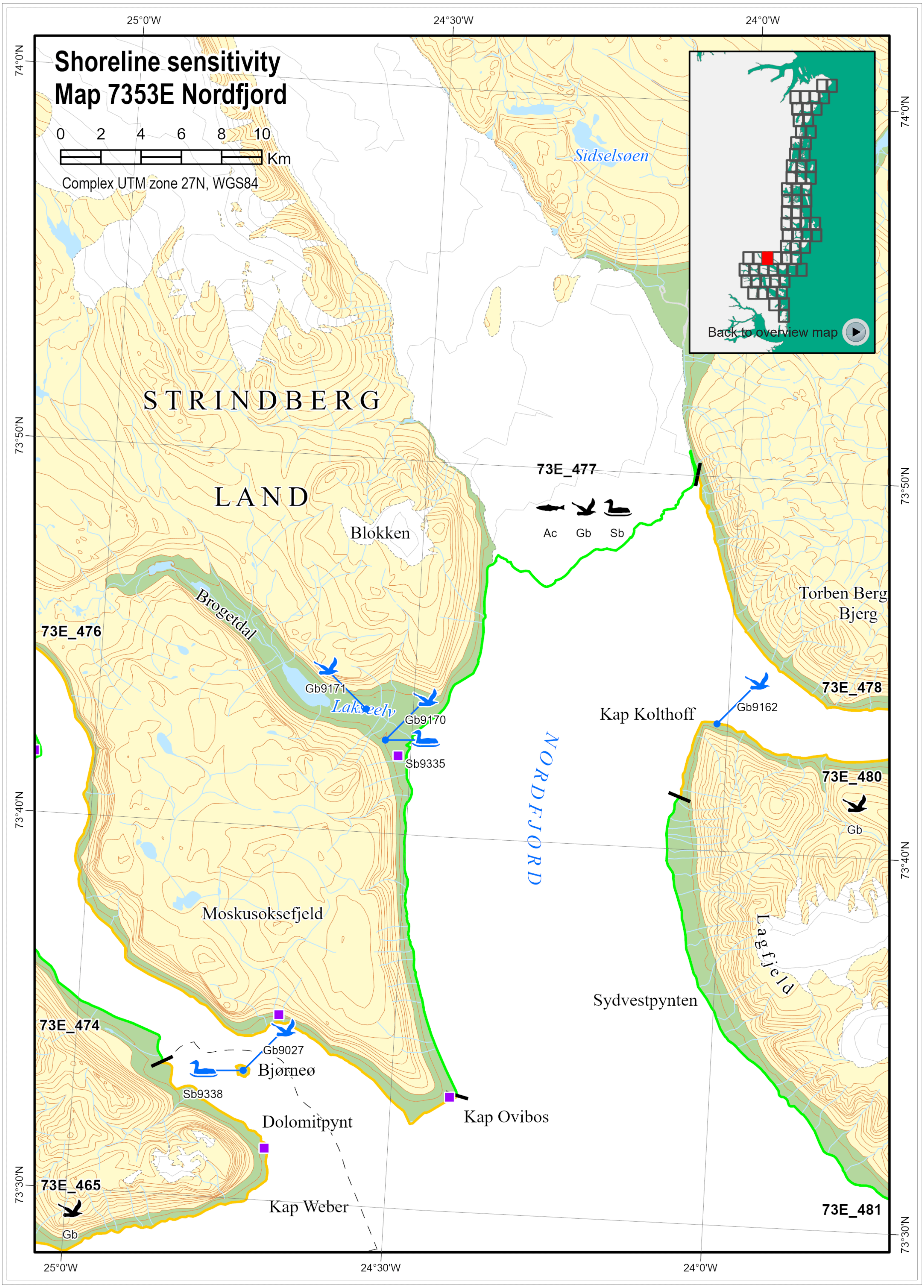
Diversion booming should be attempted at the fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7352E Geologfjord
Back to overview map
STRINDBERG
LAND
Geologfjord
ANDRÉE LAND
Endeløs
Spaltegletscher
Sorte Hjørne
Grejsdalen
Alpe-
26°0'W
25°30'W
25°0'W
74°0'N
73°50'N
73°40'N
73°30'N
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7353E Nordfjord
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
25°0'W
24°30'W
24°0'W
74°0'N
73°50'N
73°40'N
73°30'N
Back to overview map
Sidselsøen
STRINDBERG
LAND
Blokken
Brogetdal
Laksеelv
Torben Berg Bjerg
Kap Kolthoff
NORDFJORD
Lagfjeld
Sydvestpynten
Moskusoksefjeld
Bjørneø
Dolomitpynt
Kap Ovibos
Kap Weber
73E_477
73E_476
73E_478
73E_480
73E_474
73E_465
73E_481
Ac
Gb
Sb
Gb9171
Gb9170
Sb9335
Gb9162
Gb9027
Sb9338

8.22 Map 7353E – Nordfjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

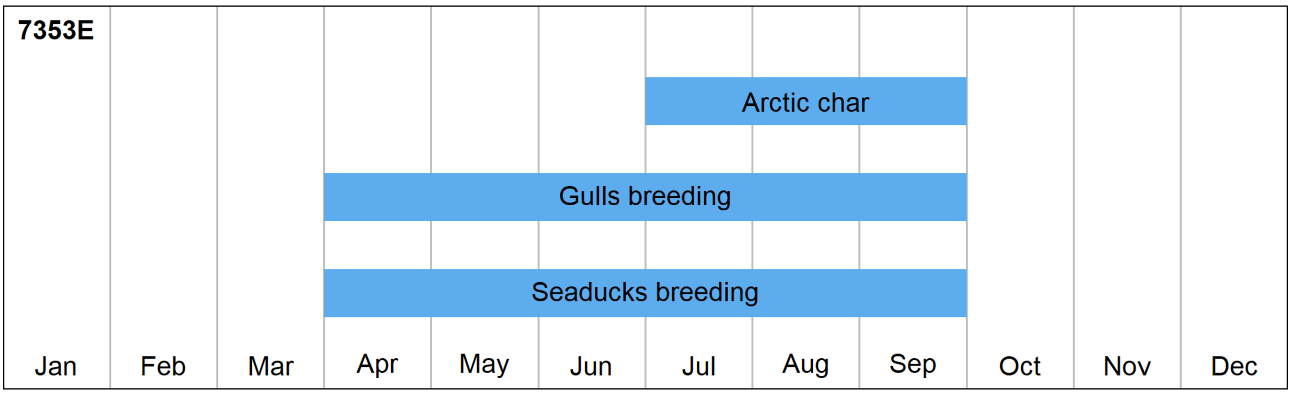
Sb73E_477	1 colony of common eiders
Ac73E_477	Important Arctic char river
Gb73E_480	1 colony of glaucous gulls
Gb73E_477	2 colonies of glaucous gulls
Gb73E_465	2 colonies of glaucous gulls and 1 colony of Arctic terns

Site specific occurrence: blue icons

Gb9027	Breeding glaucous gulls and Arctic terns
Gb9162	Breeding glaucous gulls
Gb9170, Gb9171	Breeding glaucous gulls
Sb9335, Sb9338	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_465	24	High
73E_474	17	Moderate
73E_476	20	High
73E_477	17	Moderate
73E_478	19	High
73E_480	21	High
73E_481	18	Moderate



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2701). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June. Additional dangers to navigation are present here due to the large numbers of icebergs that are discharged from the glacier in Nordfjord.

No anchorages are reported for this map area.

An STOL-airstrip is unidentified the mouth of Brogetdal on the W shoreline of Nordfjord, opposite Kap Kolthoff (Chapter 15).

Shorelines within this area are predominantly rock, talus, and glacier allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

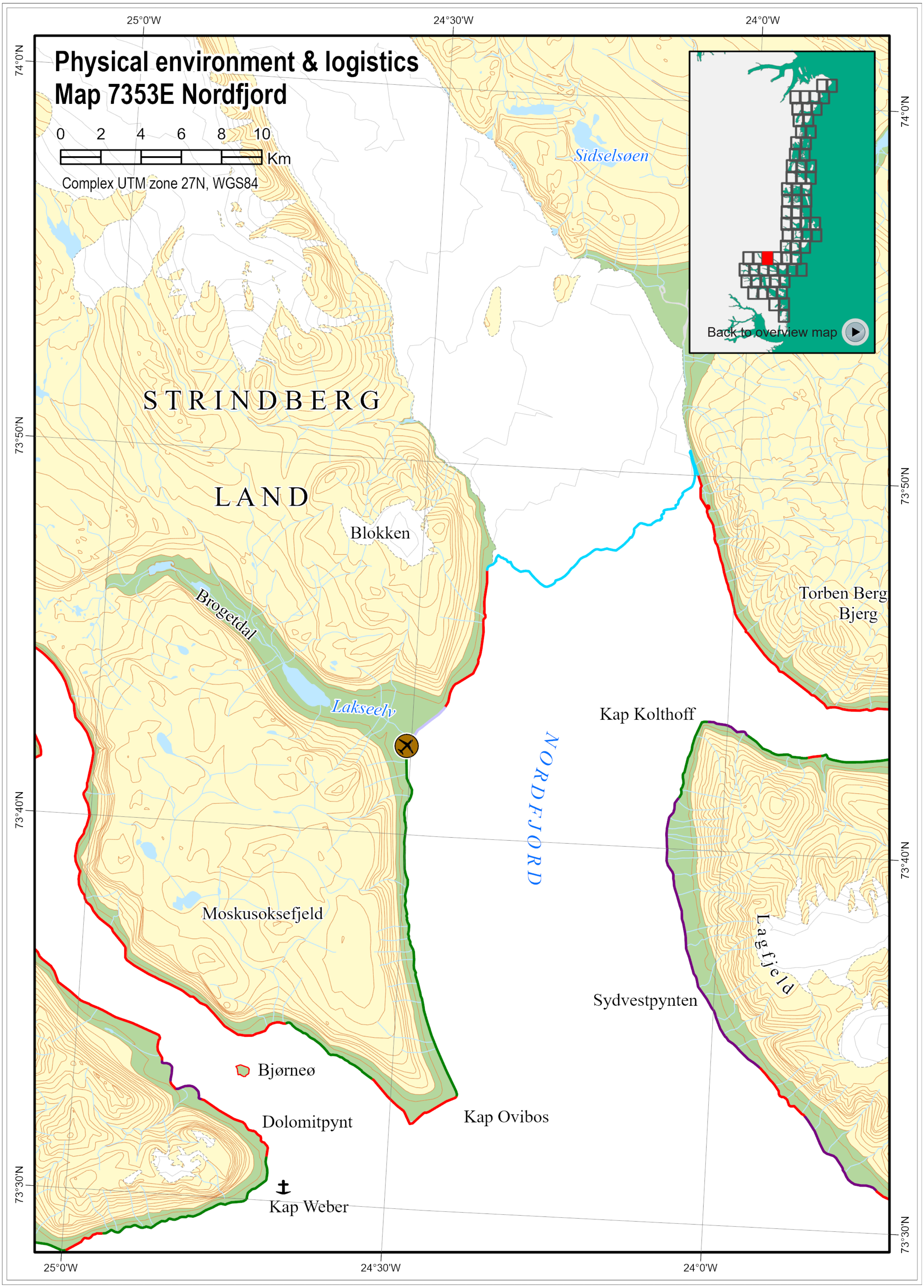
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

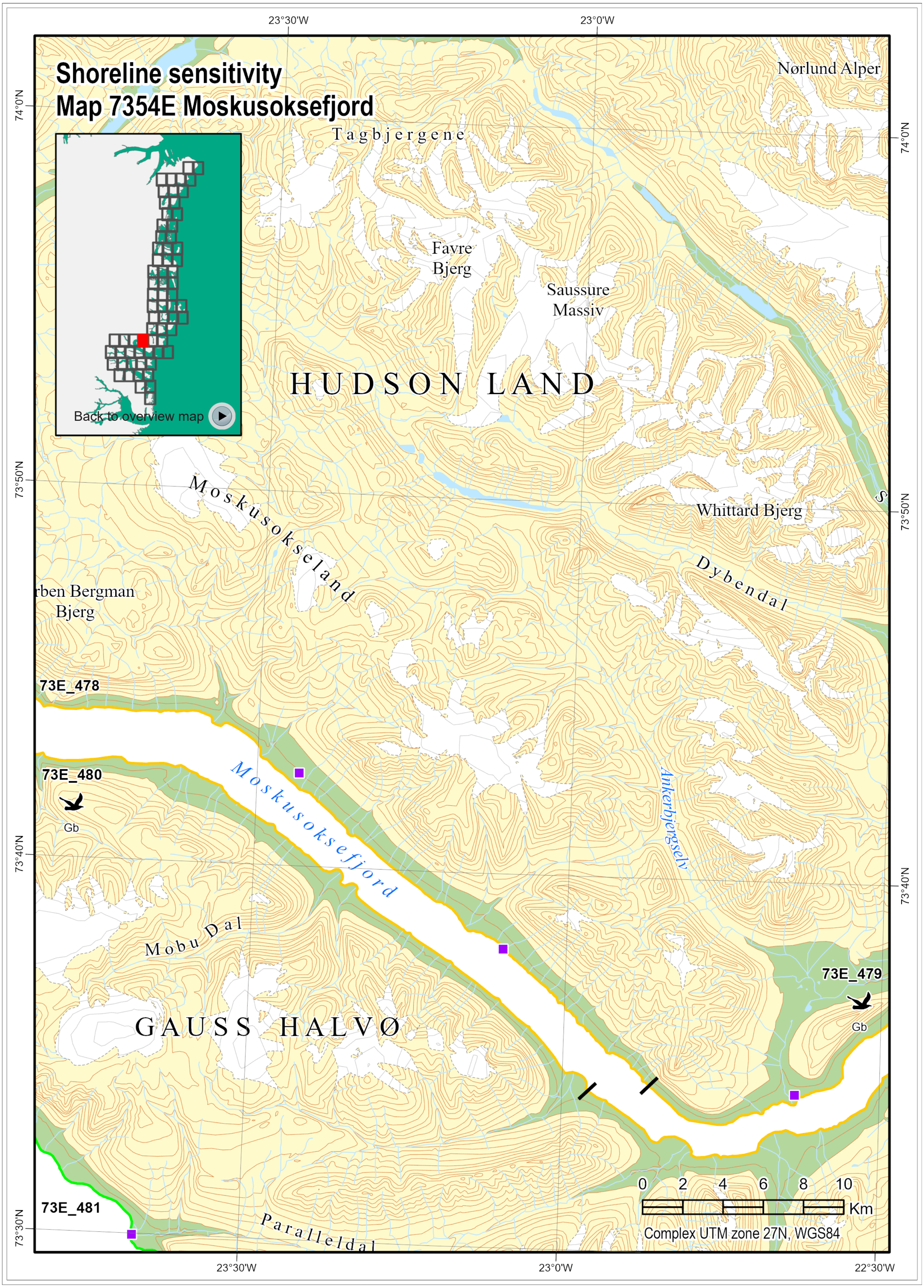
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required, the presence of numerous icebergs and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, talus, and glacier with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7353E Nordfjord
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
25°0'W
24°30'W
24°0'W
74°0'N
73°50'N
73°40'N
73°30'N
Back to overview map
Sidselsøen
STRINDBERG
LAND
Blokken
Brogetdal
Lakseelv
Torben Berg
Bjerg
Kap Kolthoff
NORDFJORD
Moskusoksefjeld
Lagfjeld
Sydvestpynten
Bjørneø
Dolomitpynt
Kap Ovibos
Kap Weber


Shoreline sensitivity
Map 7354E Moskusoksefjord
Back to overview map
23°30'W
23°0'W
22°30'W
74°0'N
73°50'N
73°40'N
73°30'N
Nørlund Alper
Tagbjergene
Favre Bjerg
Saussure Massiv
HUDSON LAND
Moskusokseland
Whittard Bjerg
Dybendal
rben Bergman Bjerg
73E_478
73E_480
Gb
Moskusoksefjord
Ankerbjergselv
Mobu Dal
73E_479
Gb
GAUSS HALVØ
73E_481
Paralleldal
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84

8.23 Map 7354E – Moskusoksefjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb73E_479	1 colony of glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_478	19	High
73E_479	20	High
73E_480	21	High
73E_481	18	Moderate

7354E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Physical environment and logistics, 7354E – Moskusoksefjord

Access
The waters of this map are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June. Additional dangers to navigation are present here due to icebergs that are discharged from the head of nearby fjords.

Moskusokse Fjord, an arm, is entered from Nordfjord at the E side of the head. It extends E, SE, and NE for a total distance of 55 km between Gauss Halvø and Hudson Land. Mountains, up to 220 m high, stand on each side of the entrance. Anchorage may be obtained close off the N shore of this fjord, about 11 km within the entrance (Chapter 14).

There are no airstrips or anchorages identified on this map area.

Shorelines within this area are predominantly rock, talus, and glacier allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

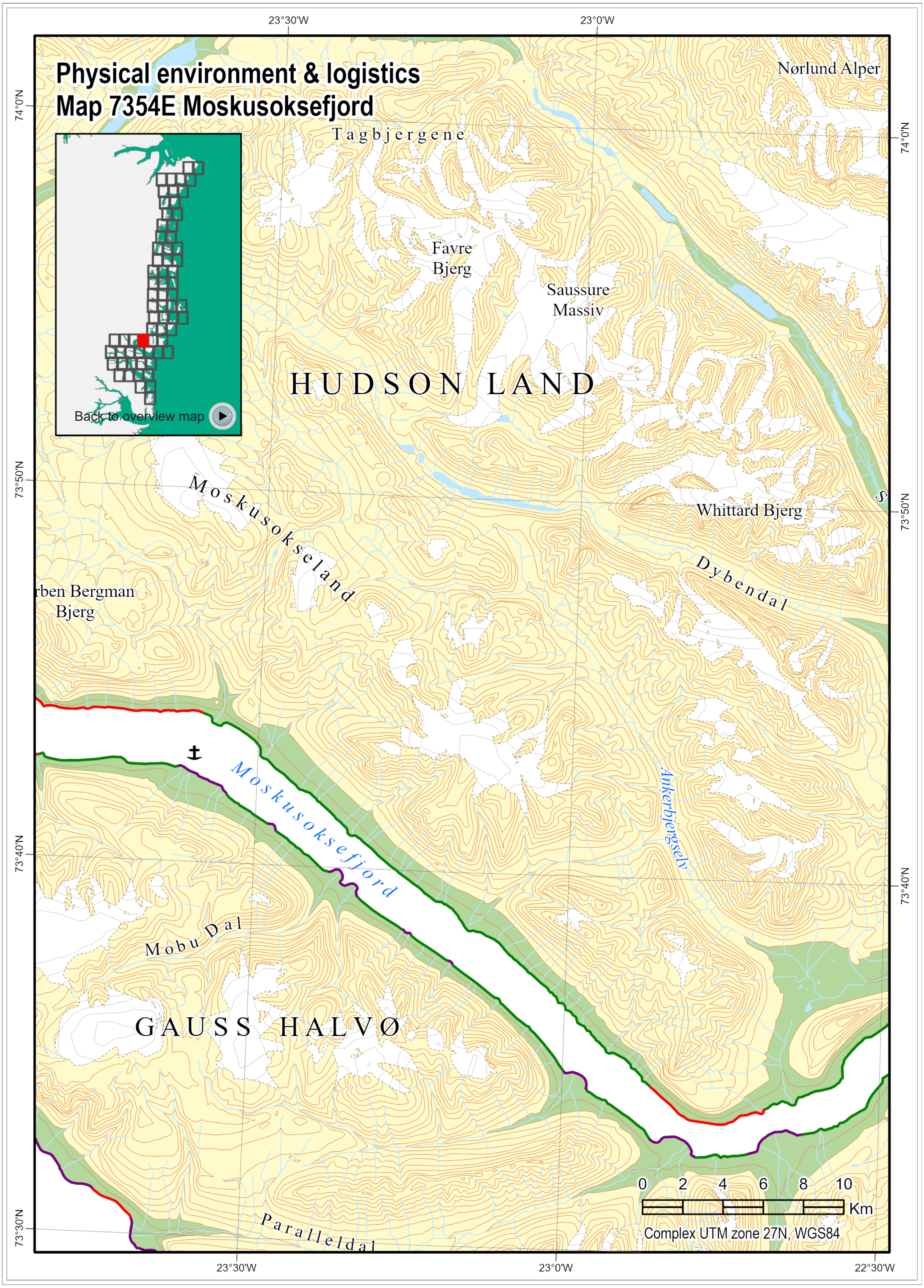
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

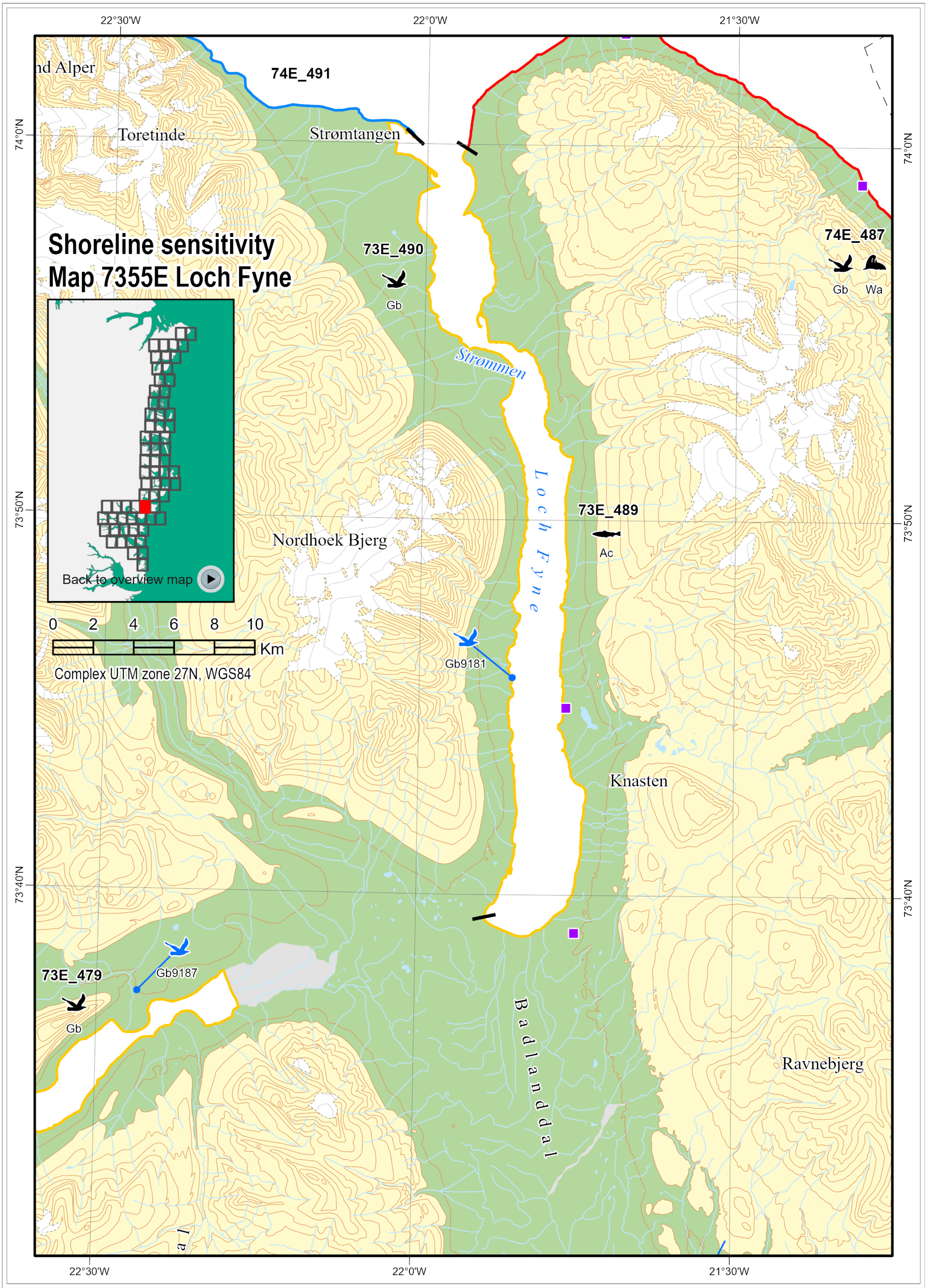
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and sediment beaches with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
Moskusokse Fjord could be considered a potential safe haven given its defined anchorage and excellent natural protection, except that is rated as relatively high sensitivity. Site surveys should be performed at the time of an incident to confirm the sensitivities.


Physical environment & logistics
Map 7354E Moskusoksefjord
Back to overview map
23°30'W
23°0'W
22°30'W
74°0'N
73°50'N
73°40'N
73°30'N
Nørlund Alper
Tagbjergene
Favre Bjerg
Saussure Massiv
HUDSON LAND
Moskusokseland
Whittard Bjerg
Dybendal
rben Bergman Bjerg
Moskusoksefjord
Ankerbjergselv
Mobu Dal
GAUSS HALVØ
Paralleldal
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 7355E Loch Fyne
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
74°0'N
73°50'N
73°40'N
nd Alper
Toretinde
74E_491
Strømtangen
73E_490
Gb
Strømmen
74E_487
Gb
Wa
Loch Fyne
73E_489
Ac
Nordhoek Bjerg
Gb9181
Knasten
73E_479
Gb9187
Gb
Badlanddal
Ravnebjerg

8.24 Map 7355E - Loch Fyne

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

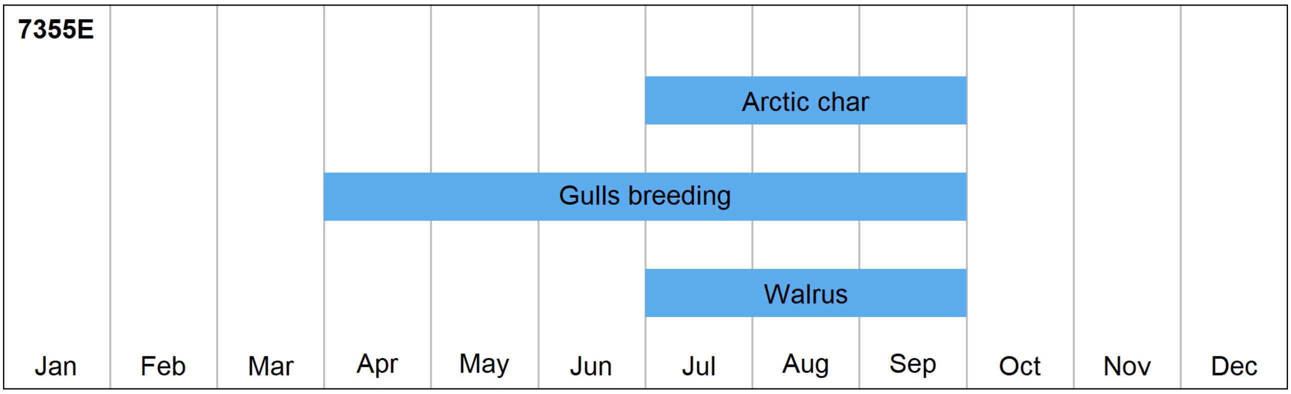
Gb73E_479	1 colony of glaucous gulls
Ac73E_489	Important Arctic char river
Gb73E_490	1 colony of glaucous gulls
Gb74E_487	1 colony of glaucous gulls and 2 colonies of Arctic terns
Wa74E_487	Walrus foraging

Site specific occurrence: blue icons

Gb9181, Gb9187	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_479	20	High
74E_487	27	Extreme
73E_489	21	High
73E_490	21	High
74E_491	15	Low



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June.

Vessels can anchor in Loch Fyne, in depths of 9 to 15 m, 5 km SSE of Strømtangen and, in depths of 7 to 9 m, 2.4 km farther S (Chapter 14).

Two STOL-airstrips are noted near the head of Loch Fyne, one of these apparently on the sea ice ("skiway") (Chapter 15).

Shorelines within this area are predominantly talus, sediment beach and alluvial fan, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

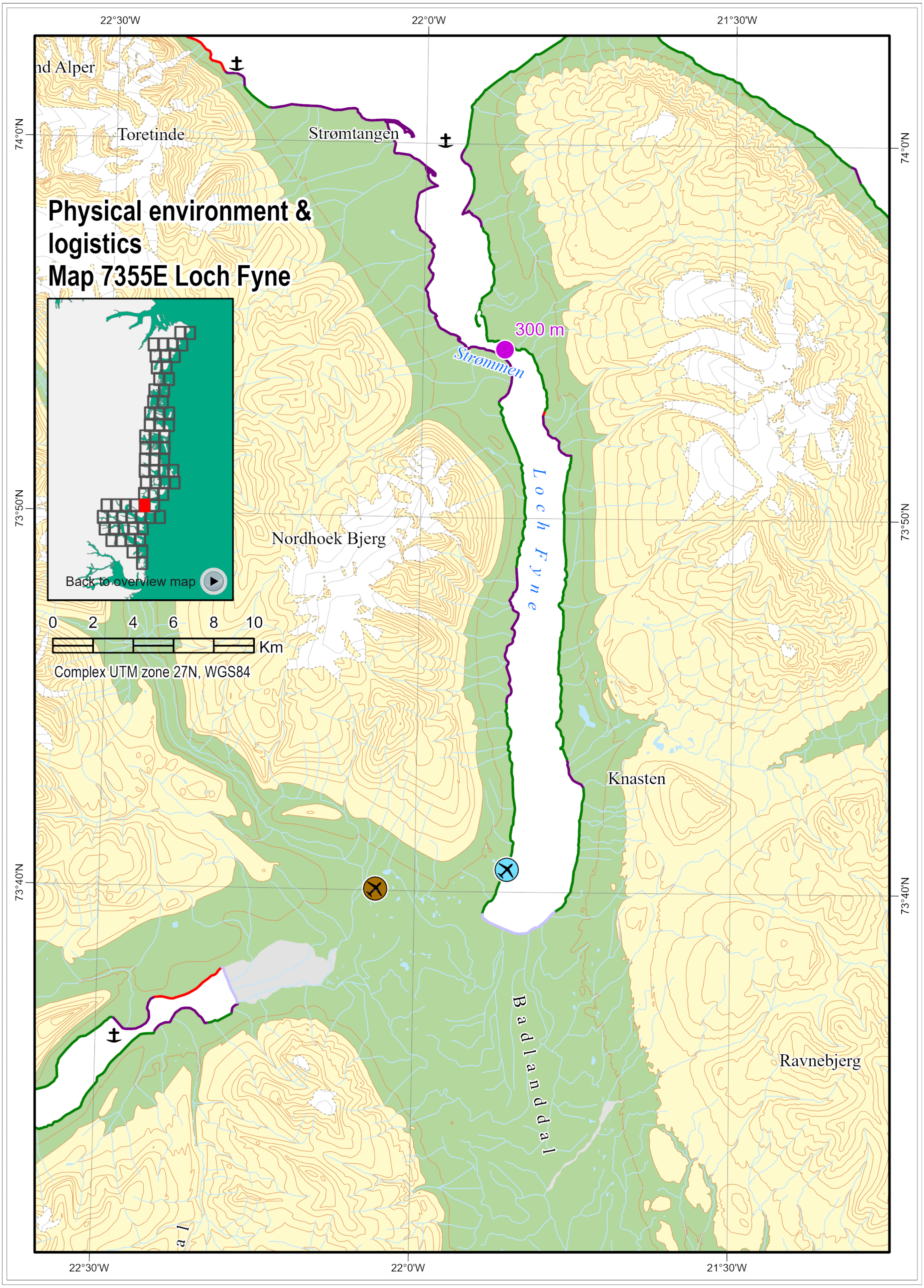
There is an opportunity for nearshore booming at Strømmen (800 m) where a relatively manageable length of exclusion boom can be used to prevent contamination of an extensive and highly sensitive inshore area.

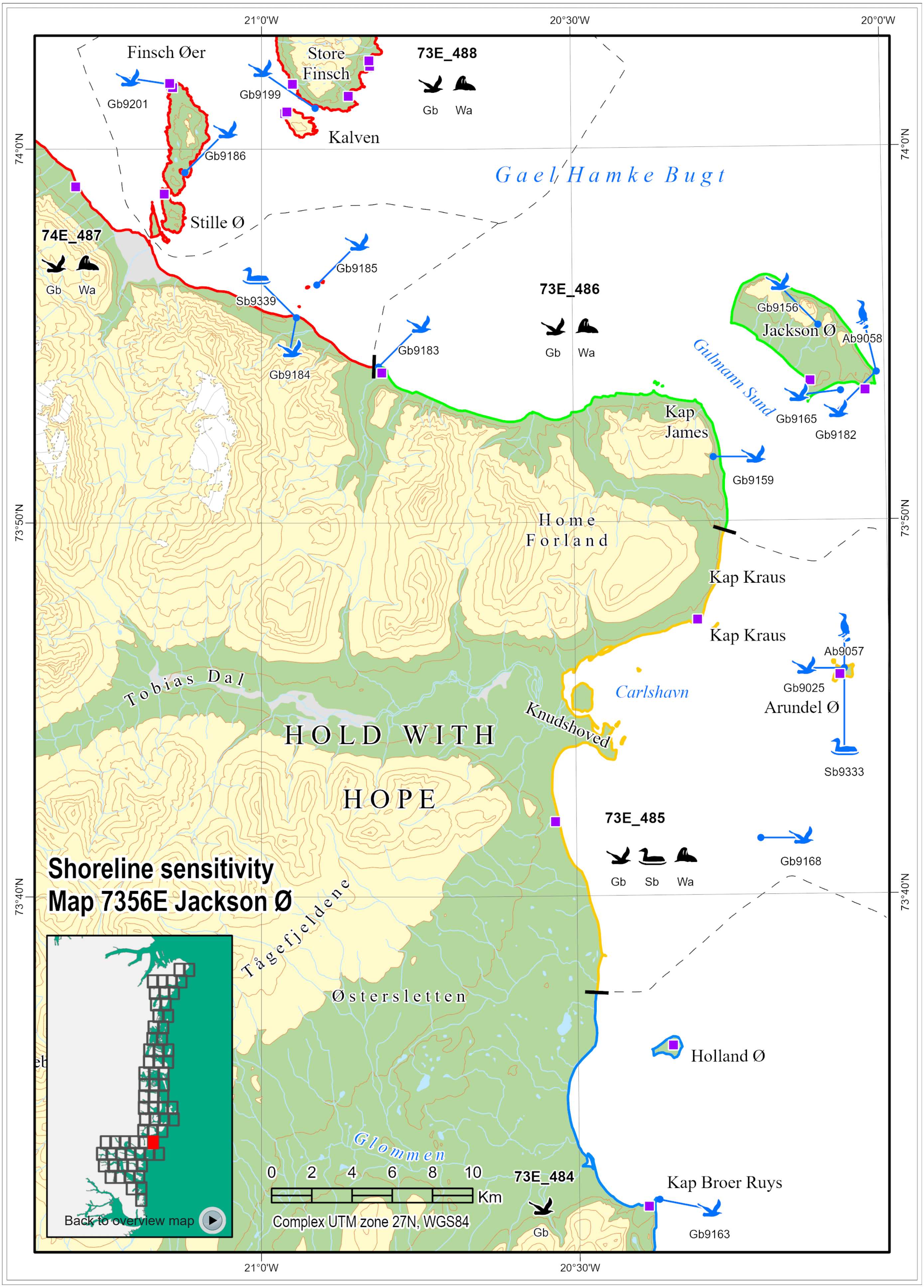
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly talus and alluvial fan, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7355E Loch Fyne
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
74°0'N
73°50'N
73°40'N
nd Alper
Toretinde
Strømtangen
300 m
Strømmen
Loch Fyne
Nordhoek Bjerg
Knasten
Badlanddal
Ravnebjerg



Shoreline sensitivity
Map 7356E Jackson Ø
21°0'W
20°30'W
20°0'W
74°0'N
73°50'N
73°40'N
Finsch Øer
Store Finsch
Kalven
Stille Ø
73E_488
74E_487
73E_486
73E_485
73E_484
Gb
Wa
Sb
Gb9201
Gb9199
Gb9186
Gb9185
Sb9339
Gb9184
Gb9183
Gb9156
Ab9058
Gb9165
Gb9182
Gb9159
Ab9057
Gb9025
Sb9333
Gb9168
Gb9163
Gael Hamke Bugt
Jackson Ø
Gulmann Sund
Kap James
Home Forland
Kap Kraus
Carlshavn
Knudshoved
Arundel Ø
Tobias Dal
HOLD WITH HOPE
Tågefjeldene
Østersletten
Holland Ø
Glommen
Kap Broer Ruys
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map

8.25 Map 7356E - Jackson Ø

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

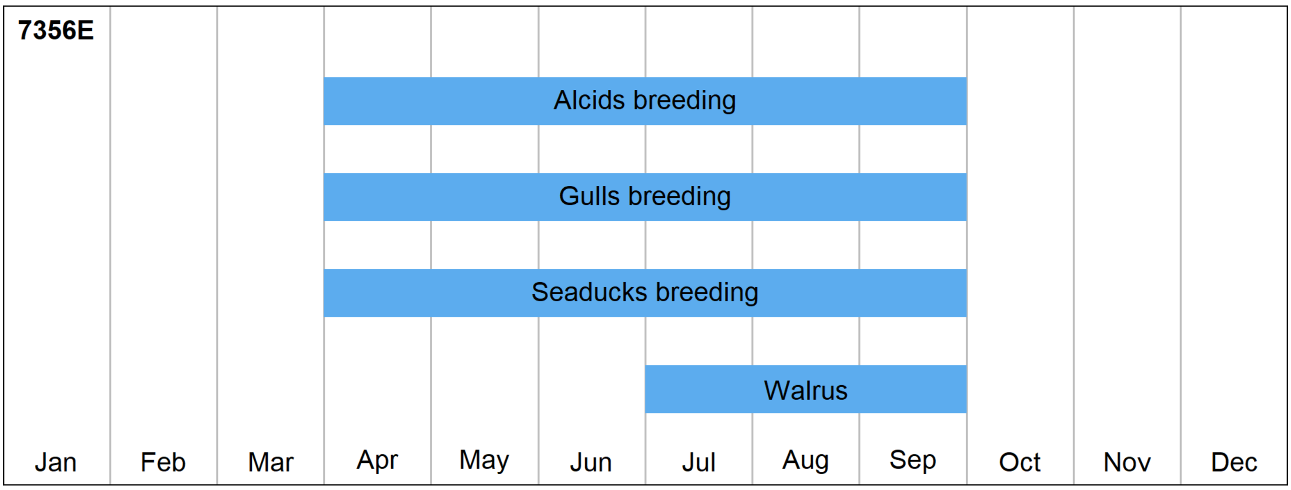
Gb73E_484	2 colonies of glaucous gulls
Gb73E_485	2 colonies of Arctic terns and 1 colony of Sabine's gulls
Gb73E_486	5 colonies of glaucous gulls
Gb73E_488	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb74E_487	1 colony of glaucous gulls and 2 colonies of Arctic terns
Sb73E_485	1 colony of common eiders
Wa73E_485 - Wa73E_488	Walrus foraging

Site specific occurrence: blue icons

Ab9057, Ab9058	Breeding black guillemots
Gb9025	Breeding Sabine's gulls and Arctic terns
Gb9156, Gb9159	Breeding glaucous gulls
Gb9163, Gb9165	Breeding glaucous gulls
Gb9168	Breeding Arctic terns
Gb9182 - Gb9184	Breeding glaucous gulls
Gb9185	Breeding Arctic terns
Gb9186	Breeding glaucous gulls
Gb9199	Breeding glaucous gulls
Gb9201	Breeding Arctic terns
Sb9333, Sb9339	Breeding common eiders

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_484	16	Low
73E_485	22	High
73E_486	18	Moderate
74E_487	27	Extreme
73E_488	31	Extreme



Physical environment and logistics, 7356E - Jackson Ø

Access
The nearshore waters in and around the islands in this map area are uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The coastal waters are covered by shorefast ice until June, while offshore waters are impacted by drift ice most of the year. Additional dangers to navigation are present here due to icebergs.

Finsch Øer, a group of islands, lies in the W part of Gael Hamkes Bugt between 20 and 27 km NNW of Kap James. Store Finsch, 376 m high, is the largest island of the group. The entrance to this bay is encumbered by submerged rocks. A 5.5 m shoal patch is reported to lie about 6 km E of Store Finsch. Submerged rocks are reported to lie in the passages between the other islands in the group; however, the depths in the passage lying between Store Finsch and Clavering Ø are deep.

Holland Ø, a small island, lies 6 km N of Kap Broer Ruys and 2 km offshore. A submerged rock lies 3 km N of the W extremity of the island. Depths of less than 5.5 m are reported to lie between the island and the mainland. A shoal patch, with a least depth of 11 m, lies 3.6 km ENE of the island. Temporary anchorage was taken by a vessel, in a depth of 44 m, close SE of this patch (Chapter 14).

Four other anchor sites are known from this site, but most of low quality (Chapter 14).

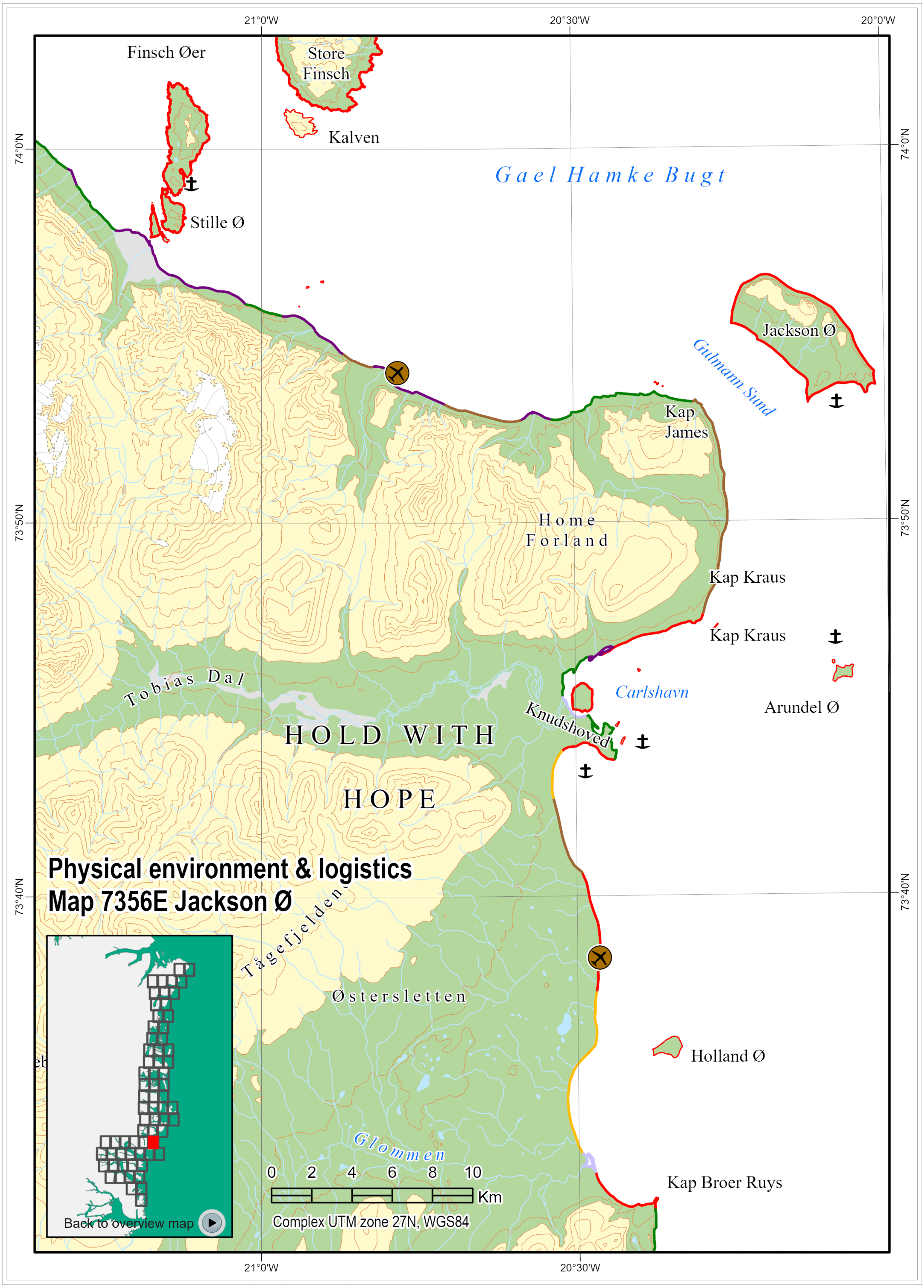
There is a STOL-airstrip noted just on the mainland coast NW of Holland Ø, and a beach airstrip on the S coast of Gael Hamke Bugt approximately 15 km W of Kap James (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.


21°0'W
20°30'W
20°0'W
74°0'N
73°50'N
73°40'N
Finsch Øer
Store Finsch
Kalven
Stille Ø
Gael Hamke Bugt
Jackson Ø
Gulmann Sund
Kap James
Home Forland
Kap Kraus
Kap Kraus
Carlshavn
Arundel Ø
Knudshoved
Tobias Dal
HOLD WITH HOPE
Physical environment & logistics
Map 7356E Jackson Ø
Tågefjelden
Østersletten
Holland Ø
Glommen
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Kap Broer Ruys
Back to overview map

Shorelines within this area are predominantly rock and talus with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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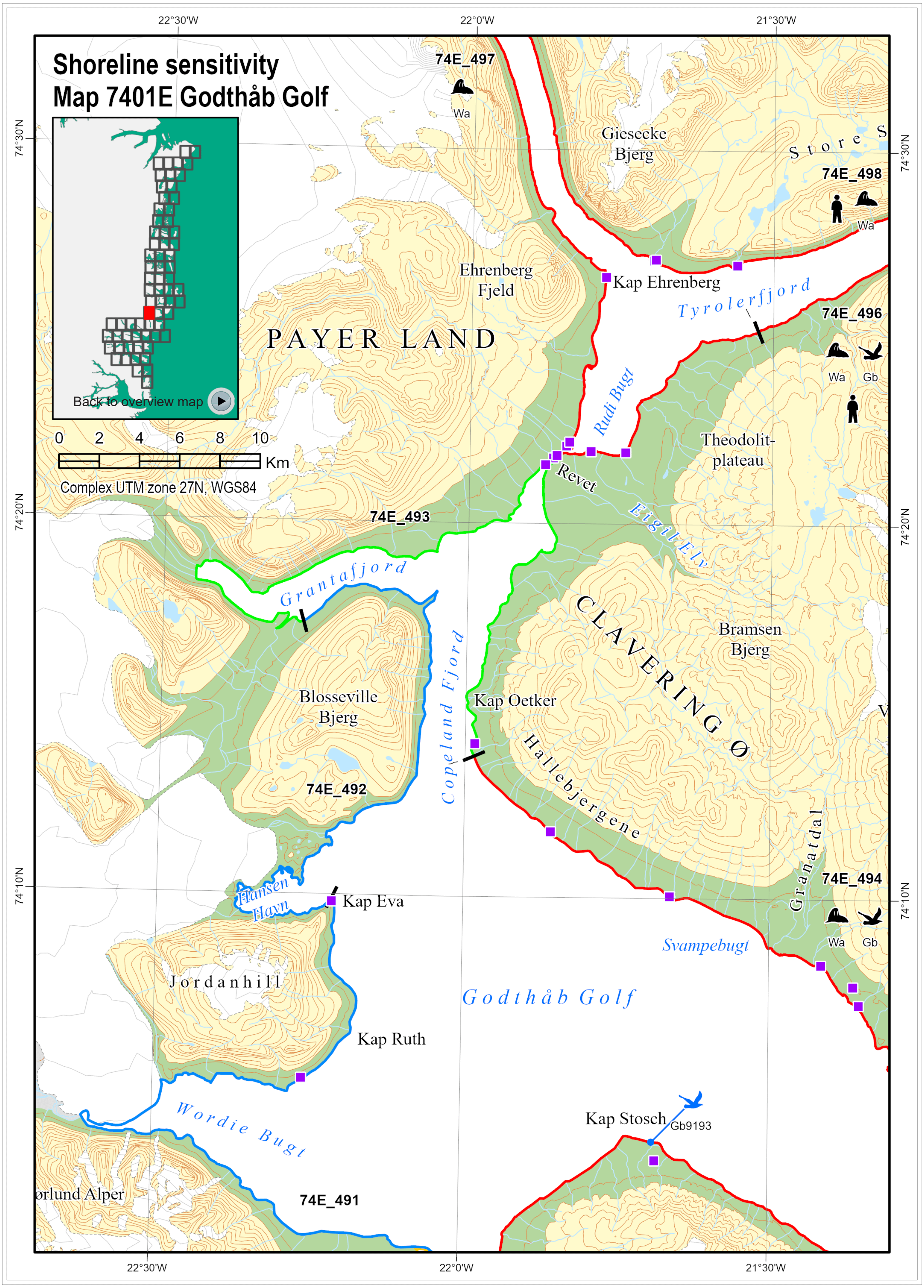

Shoreline sensitivity
Map 7401E Godthåb Golf
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
74°30'N
74°20'N
74°10'N
74E_497
74E_498
74E_496
74E_493
74E_492
74E_494
74E_491
Wa
Gb
Gb9193
Giesecke Bjerg
Store S
Ehrenberg Fjeld
Kap Ehrenberg
Tyrolerfjord
PAYER LAND
Rudi Bugt
Theodolit-plateau
Revet
Eigil Elv
Grantafjord
CLAVERING Ø
Bramsen Bjerg
Blosseville Bjerg
Copeland Fjord
Kap Oetker
Hallebjergene
Granatdal
Hansen Havn
Kap Eva
Svampebugt
Jordanhill
Godthåb Golf
Kap Ruth
Kap Stosch
Wordie Bugt
ørlund Alper

8.26 Map 7401E - Godthåb Golf

Shoreline sensitivity map

Human use

74E_496, 74E_498	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Daneborg (permanently manned military outpost) and Zackenberg Research Station (manned in April-October).

Species occurrence

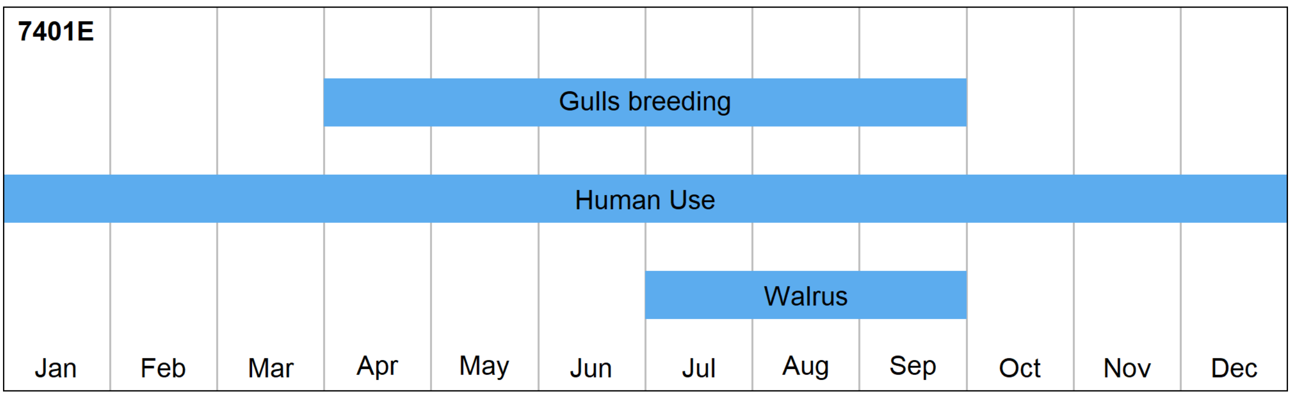
Gb74E_496	1 colony of glaucous gulls
Gb74E_494	2 colonies of glaucous gulls
Gb74E_487	1 colony of glaucous gulls and 2 colonies of Arctic terns
Wa74E_494	Walrus foraging
Wa74E_496 - Wa74E_498	Walrus foraging
Wa74E_487	Walrus foraging

Site specific occurrence: blue icons

Gb9193	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_487	27	Extreme
74E_491	15	Low
74E_492	15	Low
74E_493	18	Moderate
74E_494	35	Extreme
74E_496	39	Extreme
74E_497	29	Extreme
74E_498	28	Extreme



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to July.

There are five known anchorages reported for this map area (Chapter 14).

There is a STOL-airstrip at Revet (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

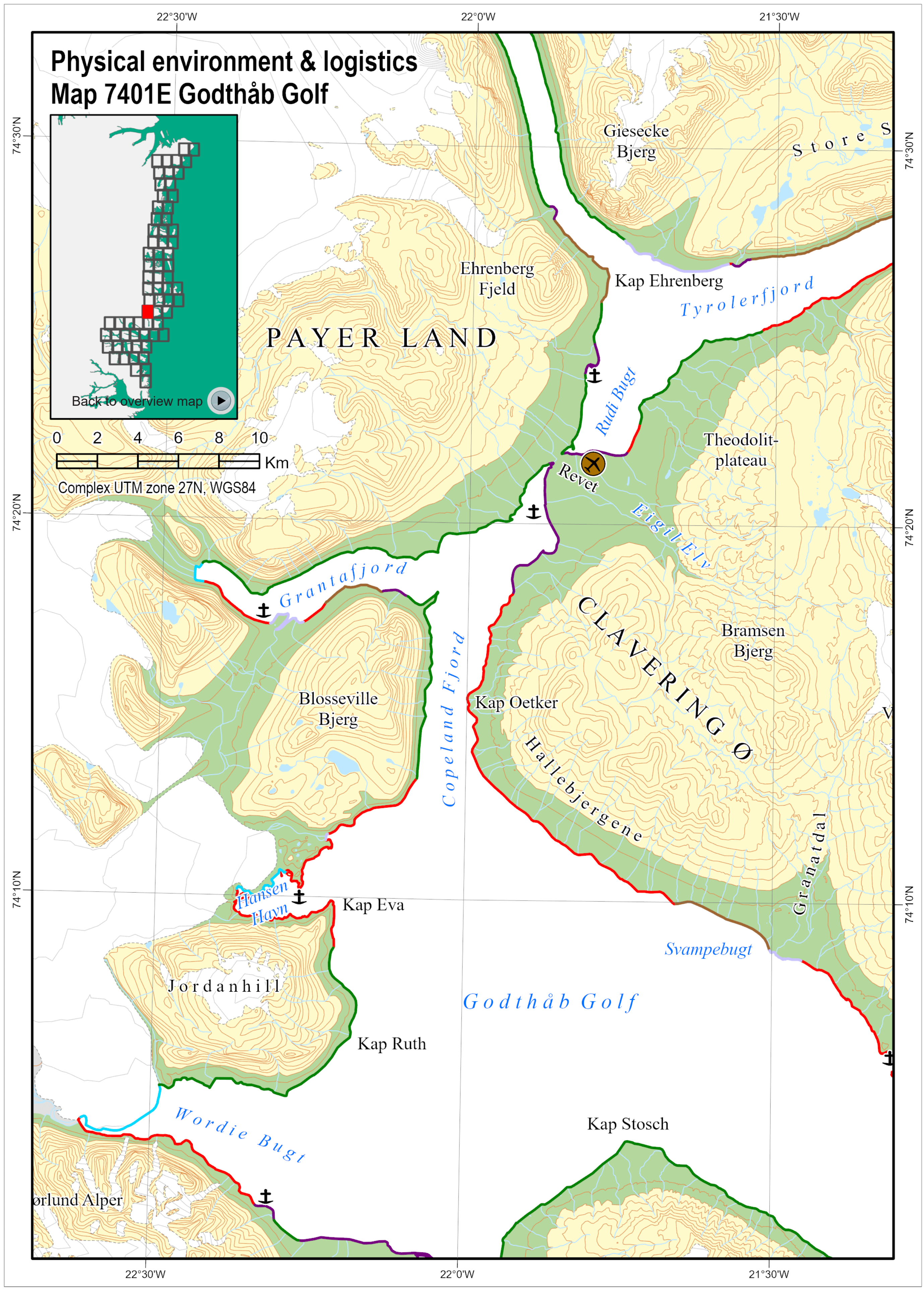
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7401E Godthåb Golf
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
74°30'N
74°20'N
74°10'N
Giesecke Bjerg
Store S
Ehrenberg Fjeld
Kap Ehrenberg
Tyrolerfjord
PAYER LAND
Rudi Bugt
Theodolit-plateau
Revet
Eigil Elv
Grantafjord
CLAVERING Ø
Bramsen Bjerg
Blosseville Bjerg
Copeland Fjord
Kap Oetker
Hallebjergene
Granatdal
Hansen Havn
Kap Eva
Svampebugt
Jordanhill
Godthåb Golf
Kap Ruth
Wordie Bugt
Kap Stosch
ørlund Alper


Shoreline sensitivity
Map 7402E Clavering Ø
Back to overview map
21°0'W
20°30'W
74°30'N
74°20'N
74°10'N
CLAVERING Ø
Zackenberg
Aucellapasset
Aucellabjerg
Tyrolerfjord
Zackenberg Bugt
Lerbugt
Young Sund
Basaltø
Lille Sødal
Daneborg
Sandøen
S_E17
Grønne dal
Moskusokseelv
Tagglescher
Dødemandsbugten
Gael Hamke Bugt
Eskimonæs
Finsch Øer
Store Finsch
Basaltkap
Dahl skær
Kap Mary
74E_498
74E_499
74E_496
74E_495
74E_494
73E_488
Wa
Gb
Ac
Sb
Sn
Gb9189
Sb9343
Gb9011
Sb9340
Wa9005
Gb9204
Ab9061
Gb9200
Gb9190
Gb9203
Gb9191
Sb9342
Gb9198
Gb9202
Gb9201
Gb9199
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84

8.27 Map 7402E - Clavering Ø

Shoreline sensitivity map

Human use

74E_495, 74E_496	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Daneborg (permanently manned military outpost) and Zackenberg Research Station (manned in April-October).
74E_498, 74E_500	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Daneborg (permanently manned military outpost) and Zackenberg Research Station (manned in April-October).

Species occurrence

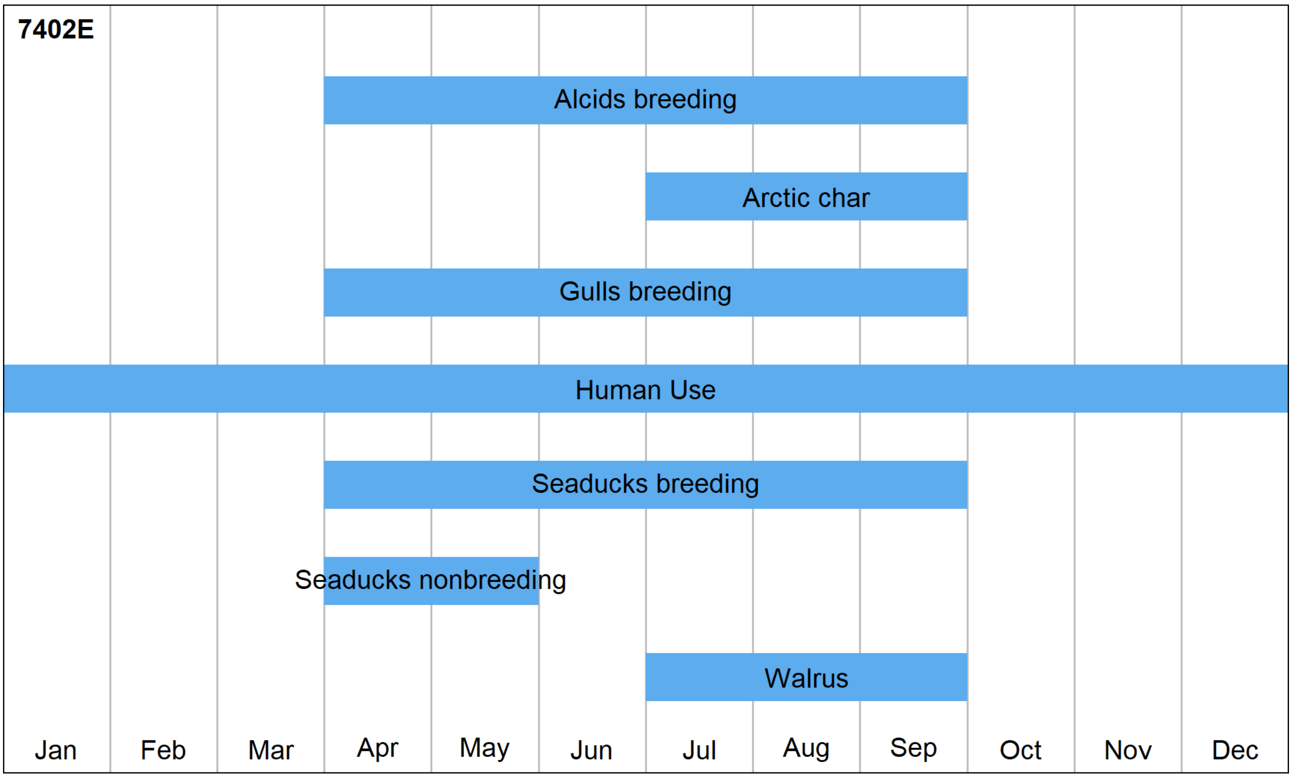
Sb74E_495	1 colony of common eiders
Ac74E_499	Important Arctic char river
Gb73E_488	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb74E_500	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb74E_494	2 colonies of glaucous gulls
Gb74E_495	4 colonies of glaucous gulls and 1 colony of Arctic terns
Gb74E_496	1 colony of glaucous gulls
Gb74E_499	1 colony of Sabine’s gulls and one colony of Arctic terns
Sb74E_499, Sb74E_500	1 colony of common eiders
Sn74E_495, Sn74E_500	Spring concentrations of common eiders and king eiders
Wa73E_488	Walrus foraging
Wa74E_494 - Wa74E_496	Walrus irregularly used haul-out site and foraging
Wa74E_498 - Wa74E_500	Walrus haul-out site

Site specific occurrence: blue icons

Ab9061	Breeding black guillemots
Gb9011	Breeding, Arctic terns and Sabine’s gulls **(S_E17)**
Gb9189	Breeding glaucous gulls
Gb9190, Gb9201	Breeding Arctic terns
Gb9191	Breeding glaucous gulls
Gb9198 - Gb9200	Breeding glaucous gulls
Gb9202 - Gb9204	Breeding glaucous gulls
Sb9340	Breeding common eiders **(S_E17)**
Sb9342, Sb9343	Breeding common eiders
Wa9005	Walrus haul-out site **(S_E17)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
73E_488	31	Extreme
74E_494	35	Extreme
74E_495	33	Extreme
74E_496	39	Extreme
74E_498	28	Extreme
74E_499	60	Extreme
74E_500	26	Extreme



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Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to icebergs.

Anchorage may be obtained at Dødemandsbugten (74°07′N, 20°52′W), a slight indentation in the S side of Clavering Ø, located 19 km WSW of Kap Mary; the anchorage has a depth of 37 m, 800 m from the head of the indentation.

A dangerous submerged rock lies close S of the point at Eskimonæs (74°05′N, 21°17′W), the S extremity of Clavering Ø.

Anchroage may also be obtained on each side of the hazard. Østhavn, on the E side of Eskimonæs, affords anchorage, in depths of 38 to 51 m. The berth lies on the alignment, bearing 049°, of two white circles, which are painted on rocks at the NE entrance point, and 275 m from the front mark. A boat landing is located at the NW comer of the harbour near the former site of a scientific station. Vesthavn, on the W side of Eskimonæs, also affords anchorage, in a depth of 46 m, 400 m from its head. Range beacons, in line bearing 040°, indicate the berth. A boat landing is located at the E side of the head (Chapter 14).

Vessels are advised to pass well S of the islet of Sandøen (74°15′N, 20°09′W), as depths in its vicinity are very irregular.

Daneborg a military outpost and the former trapper station Sandodden (74°18′N, 20°13′W), is situated 3 km NW of Kap Berghaus. Anchorage is obtainable, in a depth of 18 m, sand, good holding ground, 365 m offshore. Ring bolts are available on the shore for securing stern lines. Vessels up to 90 m in length and 7 m draft have used the anchorage (nautical chart 2750 and the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/78).

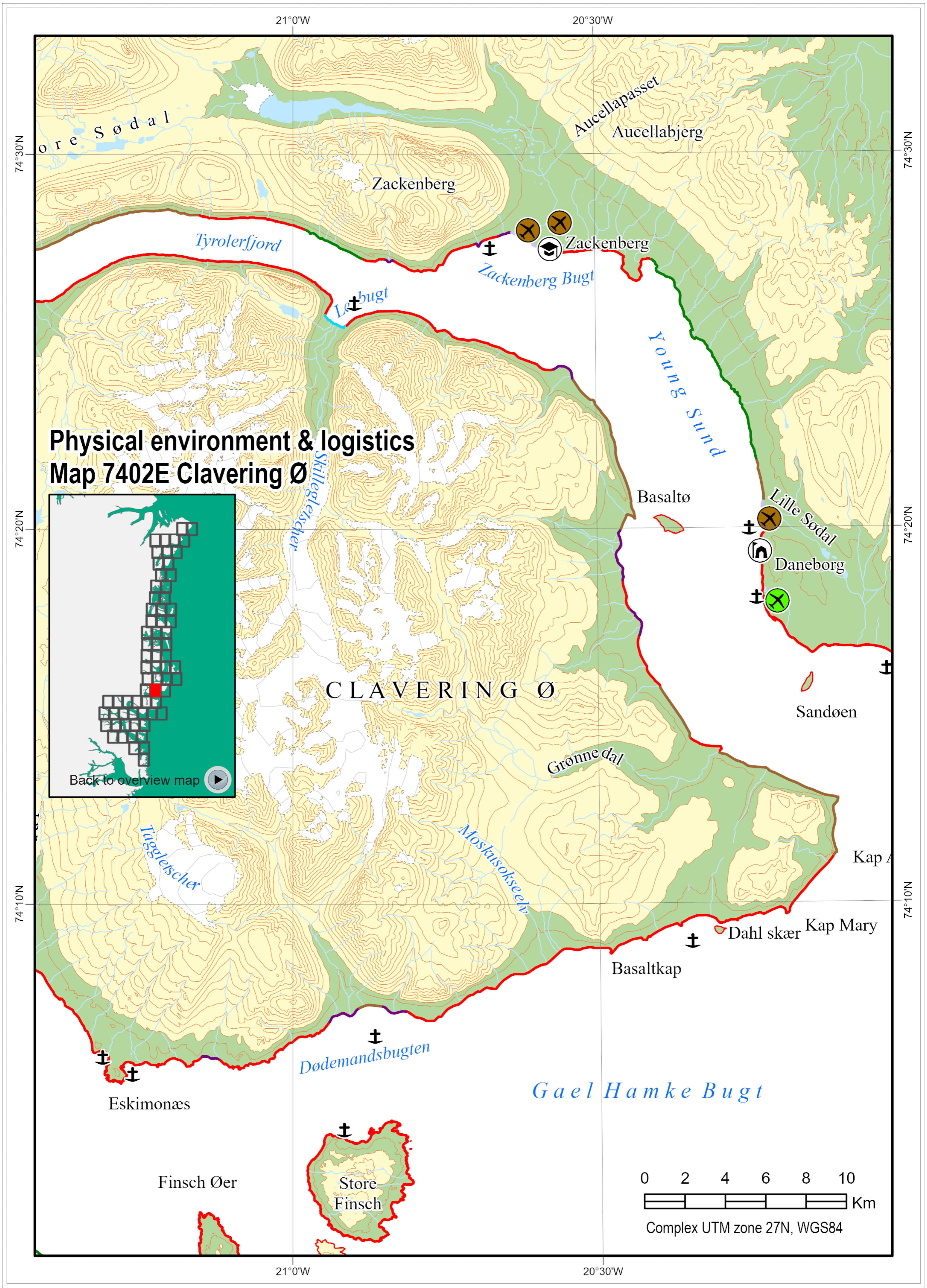
Zackenberg Bugt and Zackenberg Research station, located 22 km NW of Kap Berghaus. Anchorage is obtainable, in a depth of 16 m, between 300 and 365 m offshore. Caution is necessary when approaching the anchorage (see the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/96).

Other anchorages are found in Lerbugt, at Store Finch and W of Dahl Skær (Chapter 14).

One STOL-airstrips is found at Daneborg and two at Zackenberg (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended.



Physical environment & logistics
Map 7402E Clavering Ø
Back to overview map
21°0'W
20°30'W
74°30'N
74°20'N
74°10'N
ore Sødal
Zackenberg
Aucellapasset
Aucellabjerg
Tyrolerfjord
Zackenberg
Zackenberg Bugt
Young Sund
Skillegletscher
Basaltø
Lille Sødal
Daneborg
Sandøen
CLAVERING Ø
Grønne dal
Moskusokseelv
Tågletscher
Kap Mary
Dahl skær
Basaltkap
Dødemandsbugten
Eskimonæs
Gael Hamke Bugt
Finsch Øer
Store Finsch
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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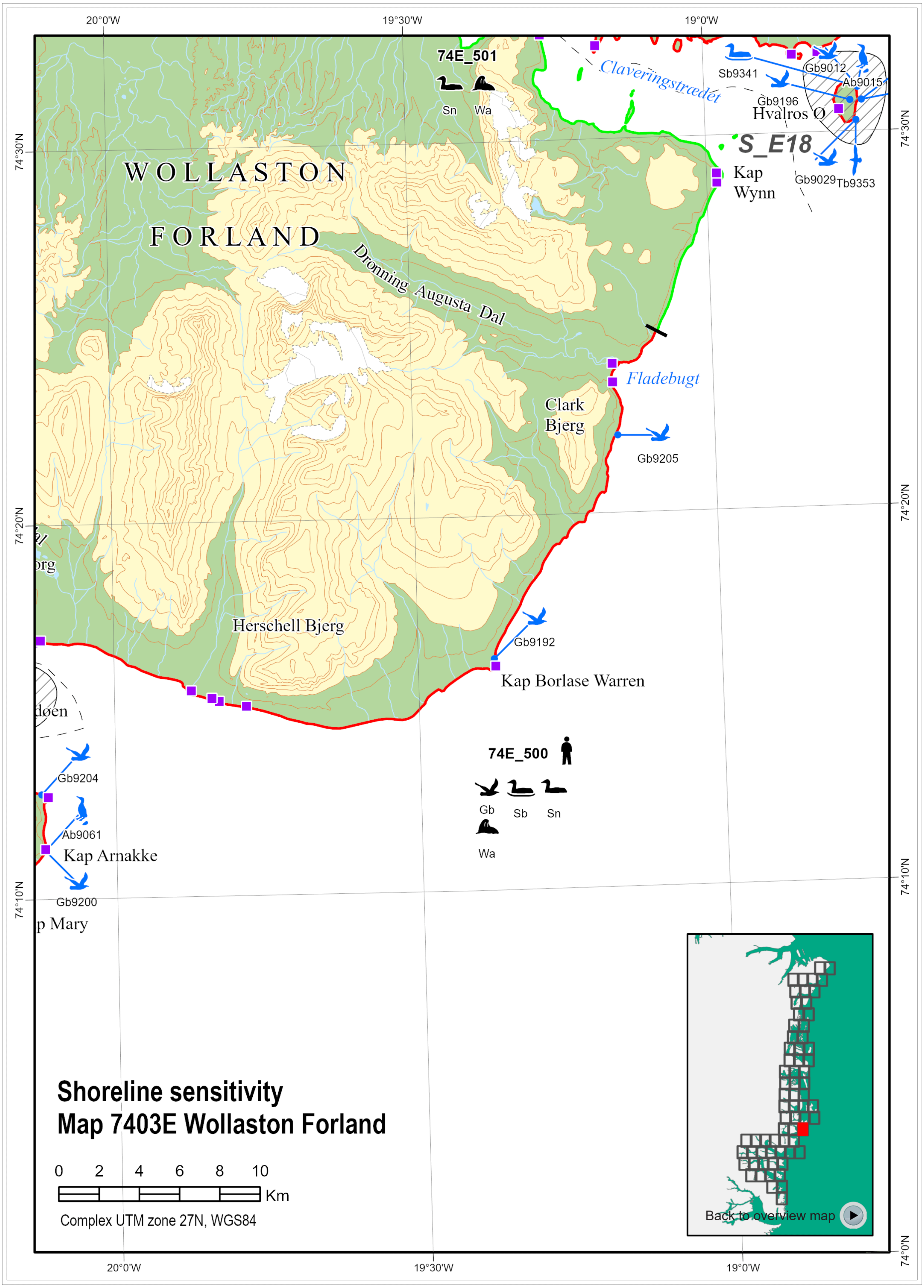

20°0'W
19°30'W
19°0'W
74°30'N
74°20'N
74°10'N
74°0'N
74E_501
Sn
Wa
Claveringstrædet
Sb9341
Gb9012
Ab9015
Gb9196
Hvalros Ø
S_E18
Kap
Wynn
Gb9029
Tb9353
WOLLASTON
FORLAND
Dronning Augusta Dal
Fladebugt
Clark
Bjerg
Gb9205
Herschell Bjerg
Gb9192
Kap Borlase Warren
74E_500
Gb
Sb
Sn
Wa
Gb9204
Ab9061
Kap Arnakke
Gb9200
p Mary
Shoreline sensitivity
Map 7403E Wollaston Forland
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map

8.28 Map 7403E - Wollaston Forland

Shoreline sensitivity map

Human use

74E_495, 74E_500	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Daneborg (permanently manned military outpost) and Zackenberg Research Station (manned in April-October).

Species occurrence

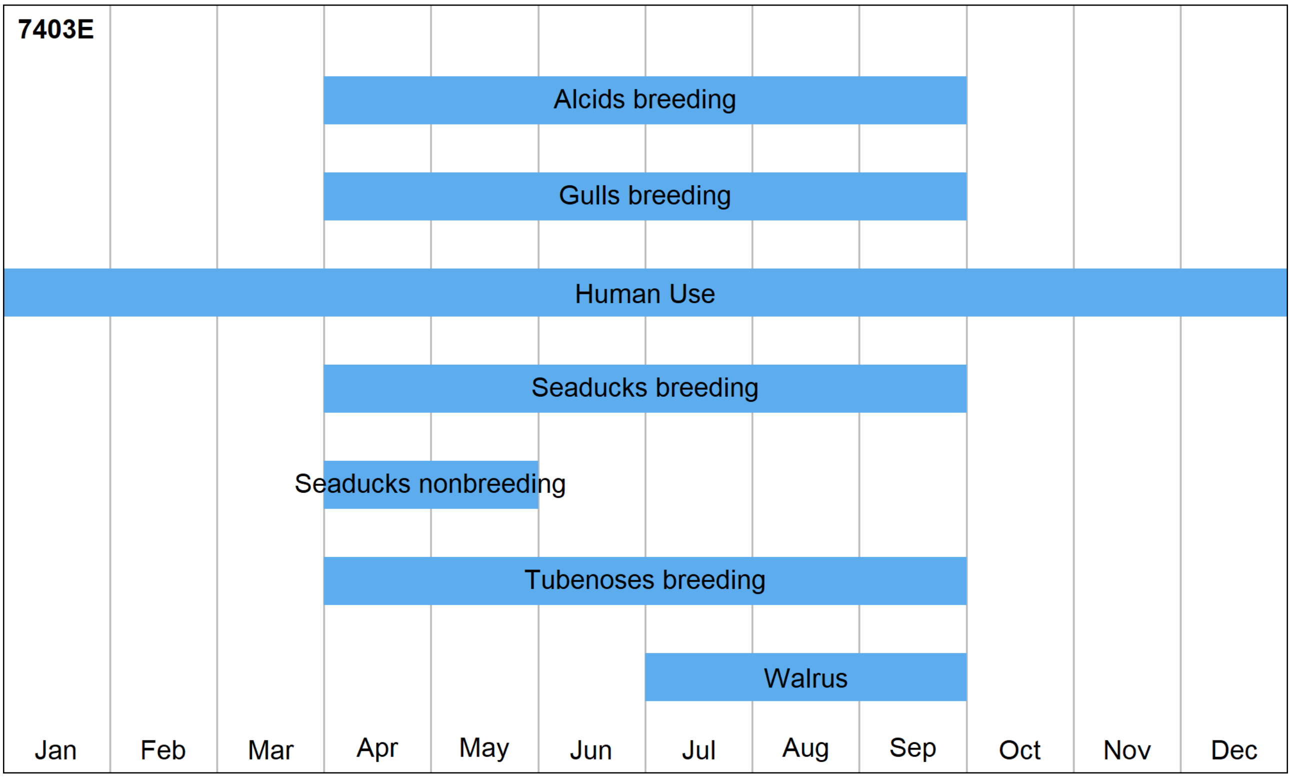
Sb74E_495	1 colony of common eiders
Tb74E_502	1 colony of Northern fulmars
Ab74E_502	1 possible colony of Atlantic puffins and 2 colonies of black guillemots
Gb74E_502	3 colonies of glaucous gulls, 3 colonies of black-legged kittiwakes and 2 colonies of Arctic terns
Gb74E_500	2 colonies of glaucous gulls and 1 colony of Arctic terns,
Gb74E_495	4 colonies of glaucous gulls and 1 colony of Arctic terns
Sb74E_500, Sb74E_502	1 colony of common eiders
Sn74E_495	Spring concentrations of common eiders and king eiders
Sn74E_500 - Sn74E_502	Spring concentrations of common eiders and king eiders
Wa74E_495	Walrus foraging
Wa74E_500 - Wa74E_502	Walrus foraging

Site specific occurrence: blue icons

Ab9015	Breeding black guillemots and possibly Atlantic puffins **(S_E18)**
Ab9059, Ab9061	Breeding black guillemots **(S_E18)**
Gb9012	Breeding glaucous gulls, Arctic terns and black-legged kittiwakes **(S_E18)**
Gb9028	Breeding glaucous gulls and black-legged kittiwakes **(S_E18)**
Gb9029	Breeding glaucous gulls and black-legged kittiwakes
Gb9192	Breeding glaucous gulls
Gb9196	Breeding Arctic terns **(S_E18)**
Gb9200	Breeding glaucous gulls
Gb9204, Gb9205	Breeding glaucous gulls
Sb9341	Breeding common eiders **(S_E18)**
Tb9353	Breeding northern fulmars **(S_E18)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_495	33	Extreme
74E_500	26	Extreme
74E_501	19	Moderate
74E_502	37	Extreme



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Access
The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The coastal waters are covered by shorefast ice until June. Offshore waters are coverd by drift ice, although a polynya is located here, with less ice than elsewhere. Additional dangers to navigation are present here due to icebergs.

Kap Borlase Warren (74°16'N, 19°23'W), the N entrance point of Gael Hamkes Bugt, consists of a sharp projecting group of rocks. It is also the SE extremity of Wollaston Forland, an extensive peninsula. Anchorage is reported to be obtainable 0.6 km offshore, 1.6 km SW of the cape.

Germania Havn, a small and almost circular harbor, is located at the SE extremity of Sabine Ø. Depths of 3.7 m and less lie in the entrance. Griper Red, a roadstead lying close W of Germania Havn, affords anchorage, but there is little shelter from storms and, at times, the berths are dangerous because of ice. Vessels may anchor 1.6 km offshore with the W entrance point of Germania Havn bearing 075°, the N end of Hvalros Ø bearing 104°, and Kap Wynn bearing 207°.

Lars Jakobsens Pynt (74°33'N, 19°12'W), the SW extremity of Sabine Ø, is a long narrow peninsula which projects into Claveringstrædet. The inlet affords good anchorage, in a depth of 44 m, with Lars Jakobsens Pynt bearing 128° and the outermost of the two small islets bearing 331° (Chapter 14).

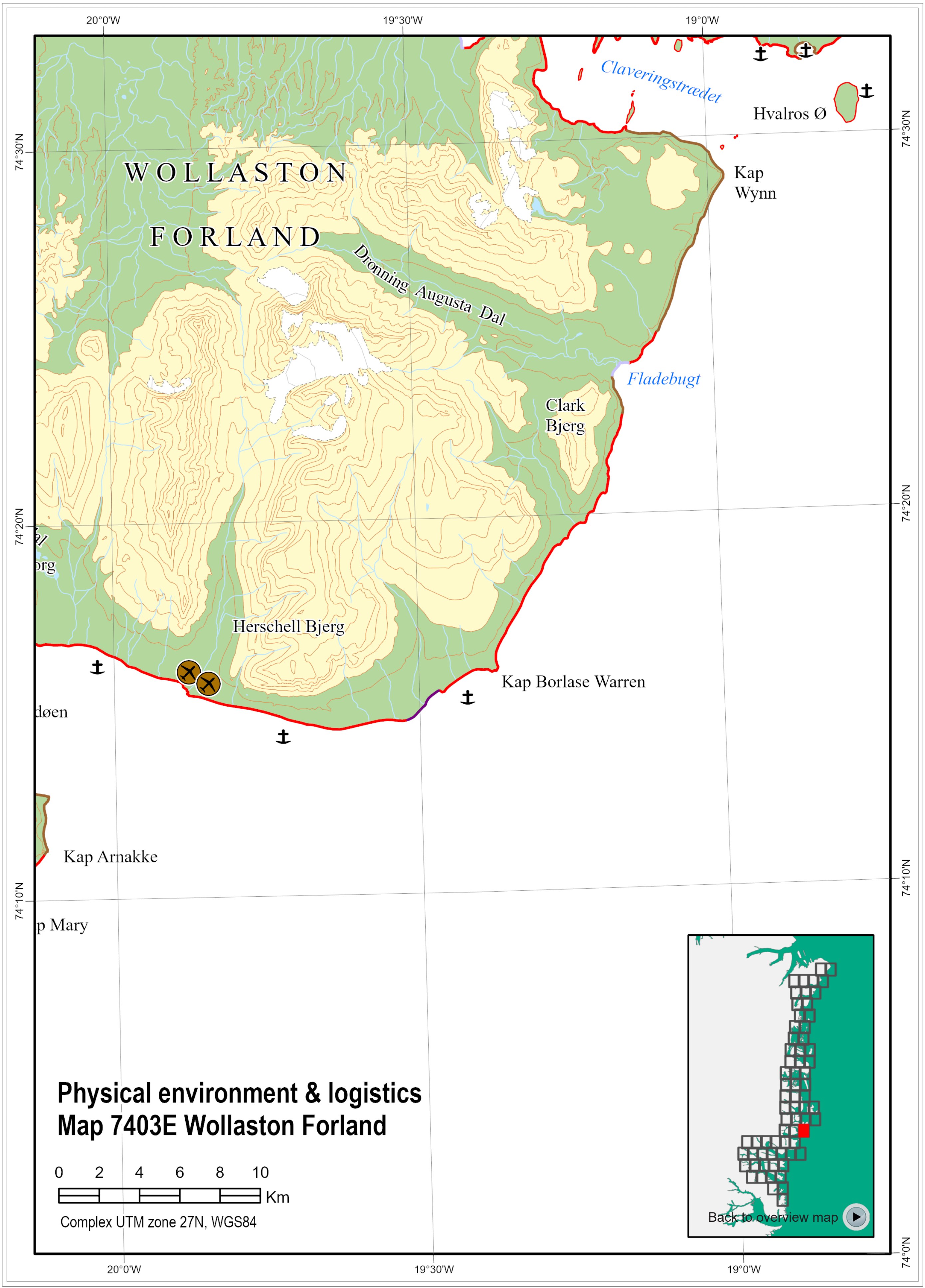
Two STOL-airstrips are noted on the S part of Wollaston Forland, Blæsedalen near Herschell Bjerg (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.


20°0'W
19°30'W
19°0'W
74°30'N
74°20'N
74°10'N
74°0'N
WOLLASTON
FORLAND
Dronning Augusta Dal
Claveringstrædet
Hvalros Ø
Kap
Wynn
Fladebugt
Clark
Bjerg
Herschell Bjerg
Kap Borlase Warren
døen
Kap Arnakke
p Mary
Physical environment & logistics
Map 7403E Wollaston Forland
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map

Shorelines within this area are predominantly rock and talus, with mostly high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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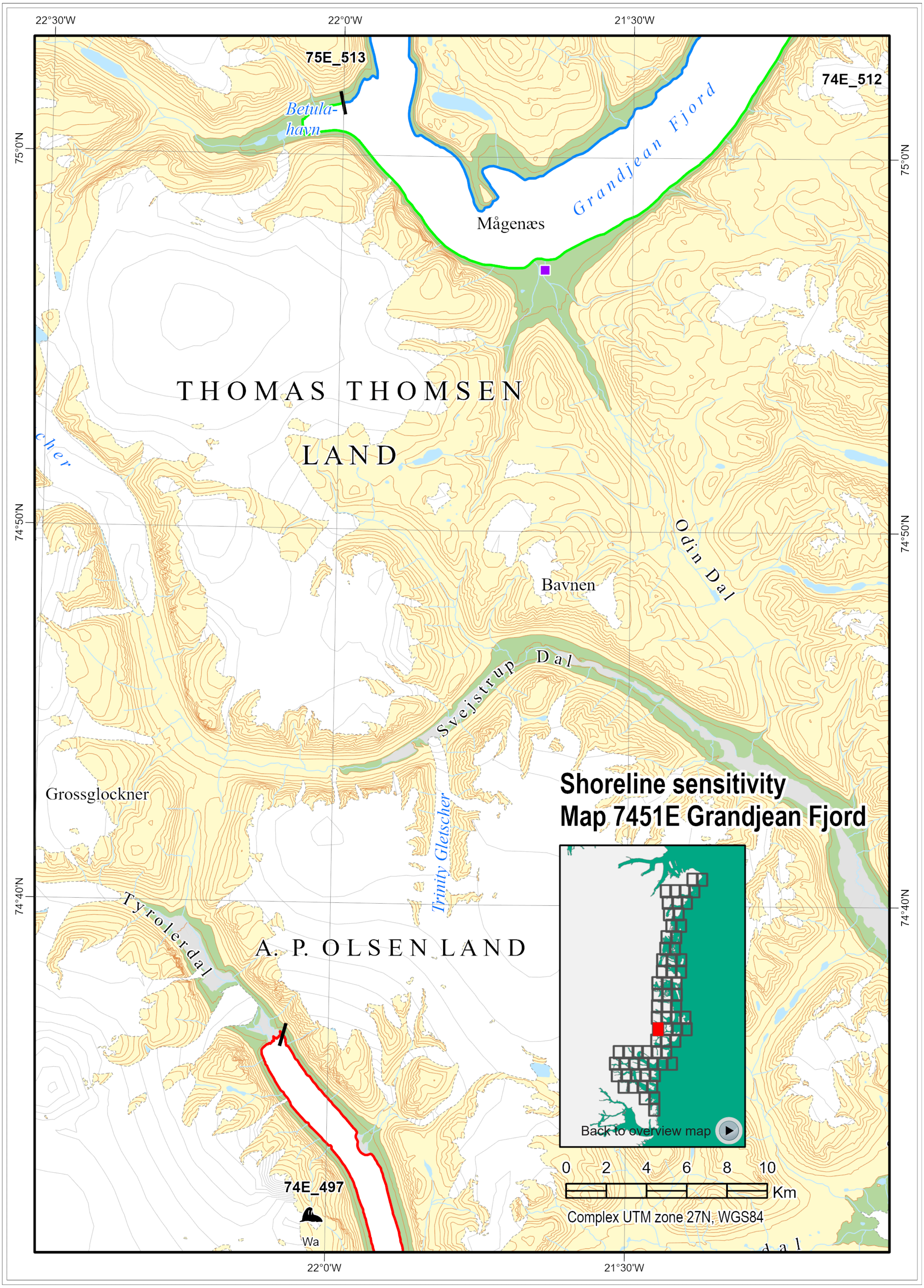

22°30'W
22°0'W
21°30'W
75°0'N
74°50'N
74°40'N
75E_513
74E_512
74E_497
Betula-
havn
Grandjean Fjord
Mågenæs
THOMAS THOMSEN
LAND
Odin Dal
Bavnen
Svejstrup Dal
Grossglockner
Trinity Gletscher
Tyrolerdal
A. P. OLSEN LAND
Wa
Shoreline sensitivity
Map 7451E Grandjean Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.29 Map 7451E - Grandjean Fjord

Shoreline sensitivity map

Human use

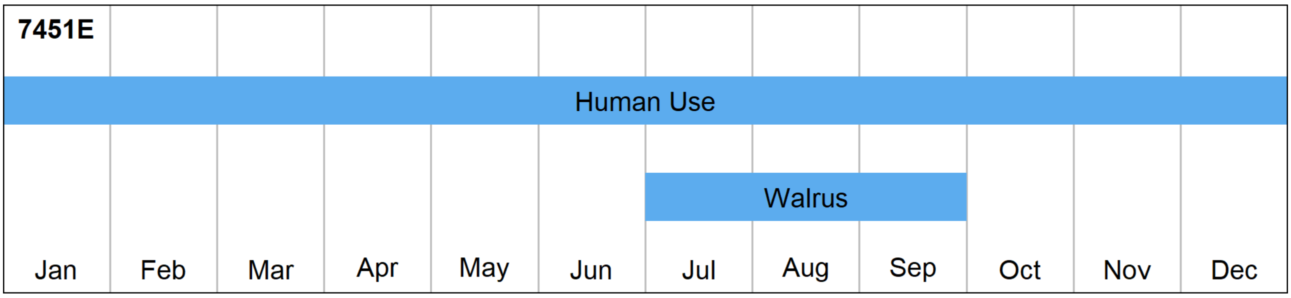
74E_498	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Daneborg (permanently manned military outpost) and Zackenberg Research Station (manned in April-October).

Species occurrence

Wa74E_497, Wa74E_498	Walrus foraging

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_497	29	Extreme
74E_498	28	Extreme
74E_512	18	Moderate
75E_513	16	Low
75E_514	16	Low



Access
The waters in in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June/July.

Betula Havn is an anchorages in this map area (Chapter 14).

A STOL-airstrip is noted in Odin Dal the S coast of Grandjean Fjord.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

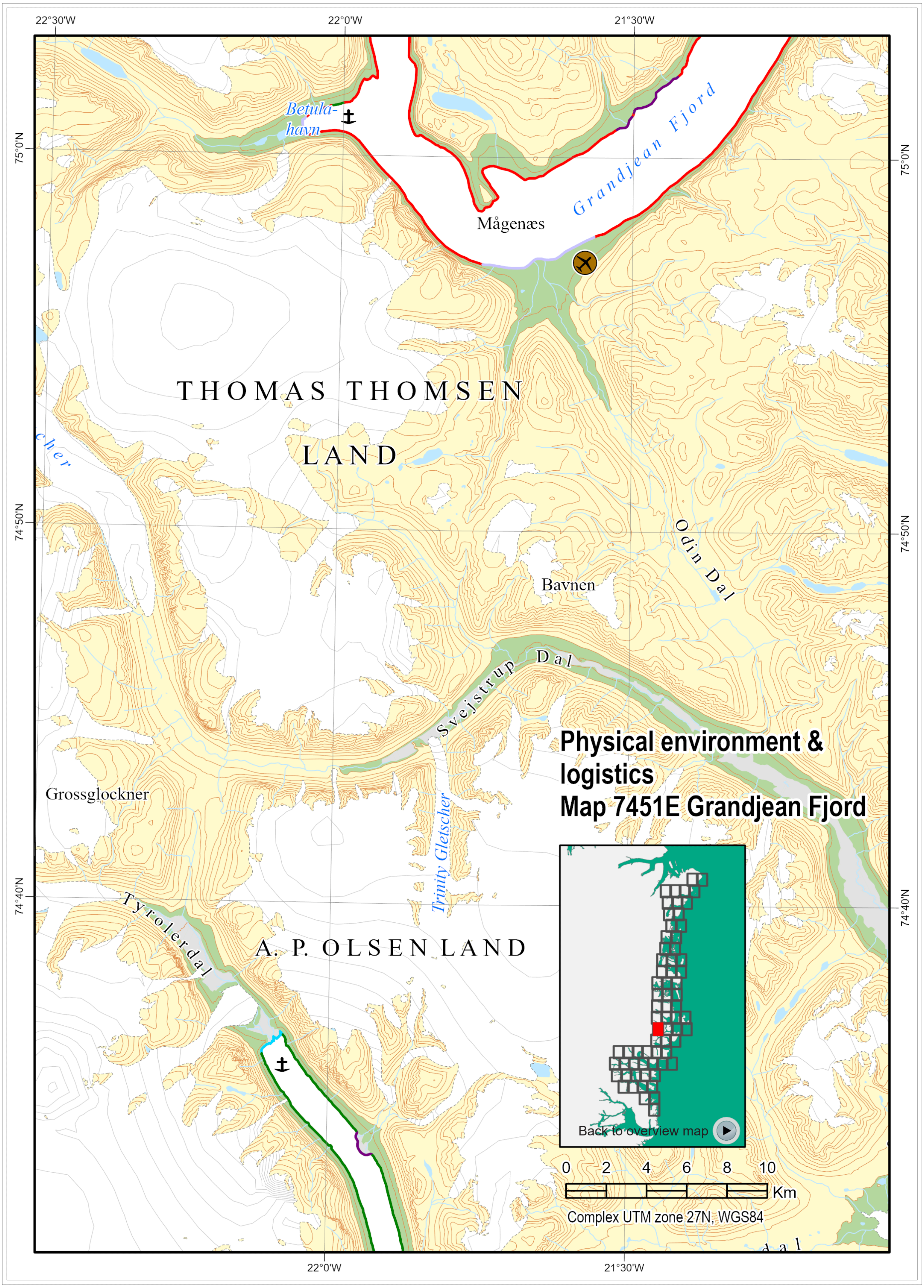
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

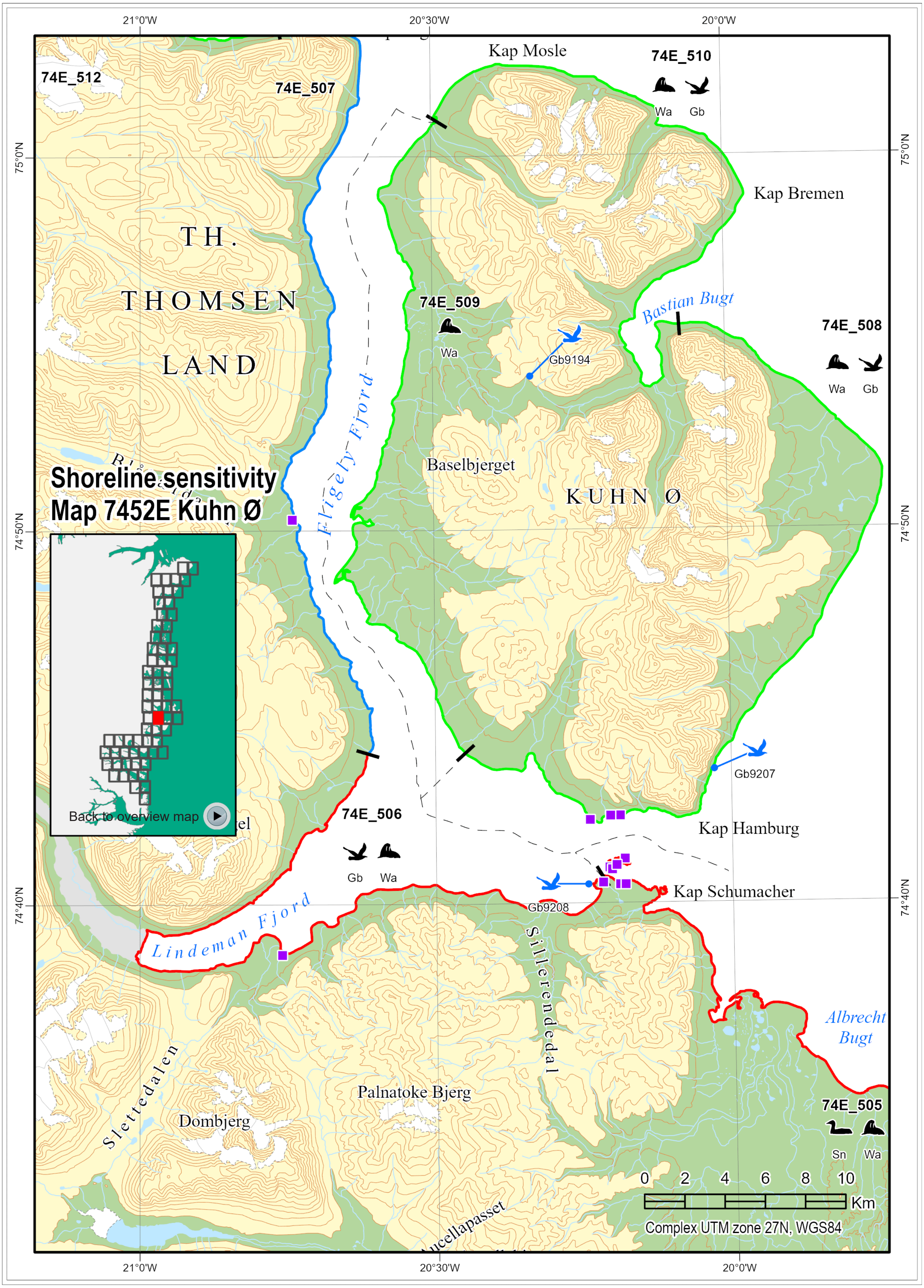
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


22°30'W
22°0'W
21°30'W
75°0'N
74°50'N
74°40'N
Betula-
havn
Grandjean Fjord
Mågenæs
THOMAS THOMSEN
LAND
Odin Dal
Bavnen
Svejstrup Dal
Grossglockner
Trinity Gletscher
Tyrolerdal
A. P. OLSEN LAND
Physical environment &
logistics
Map 7451E Grandjean Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7452E Kuhn Ø
Back to overview map
74E_512
74E_507
74E_510
74E_509
74E_508
74E_506
74E_505
Wa
Gb
Sn
Gb9194
Gb9207
Gb9208
Kap Mosle
Kap Bremen
Bastian Bugt
TH.
THOMSEN
LAND
Fligely Fjord
Baselbjerget
KUHN Ø
Kap Hamburg
Kap Schumacher
Lindeman Fjord
Sillerendedal
Albrecht
Bugt
Palnatoke Bjerg
Slettedalen
Dombjerg
21°0'W
20°30'W
20°0'W
75°0'N
74°50'N
74°40'N
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.30 Map 7452E - Kuhn Ø

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

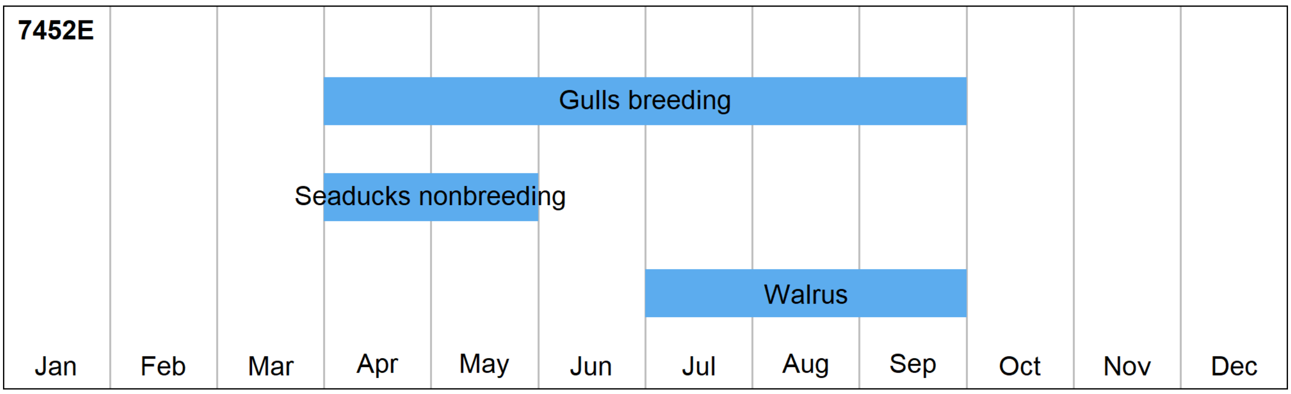
Gb74E_508	1 colony of glaucous gulls
Gb74E_510, Gb74E_506	1 colony of Arctic terns
Sn74E_505	Spring concentrations of common eiders and king eiders
Wa74E_505, Wa74E_506	Walrus foraging
Wa74E_508 - Wa74E_510	Walrus foraging

Site specific occurrence: blue icons

Gb9194	Breeding Arctic terns
Gb9207	Breeding glaucous gulls
Gb9208	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_505	29	Extreme
74E_506	33	Extreme
74E_507	15	Low
74E_508	20	Moderate
74E_509	22	Moderate
74E_510	21	Moderate
74E_512	18	Moderate



Physical environment and logistics, 7452E - Kuhn Ø

Access

The waters this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to June/ July. Additional dangers to navigation are present due to icebergs that are discharged from the fjords and driftice may occur throughout the year.

Anchorage is afforded, in a depth of 40 m, mud, some 2.4 km SSW of Kap Maurer, bearing 298°, and the SE extremity of the coast bearing 213°. During the approach to the berth from a position 8 km N of Bass Rock, the current was observed to set SE at a rate of up to 3 knots.

Vessels can anchor in Bastian Bugt, in a depth of 18 m, about 180 m off the mouth of a stream that discharges 1.2 km SW of Kap Bremen (Chapter 14).

STOL-airstrips are noted at Lindeman Fjord, Albrecht Bugt and two sites in Fligely Fjord (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

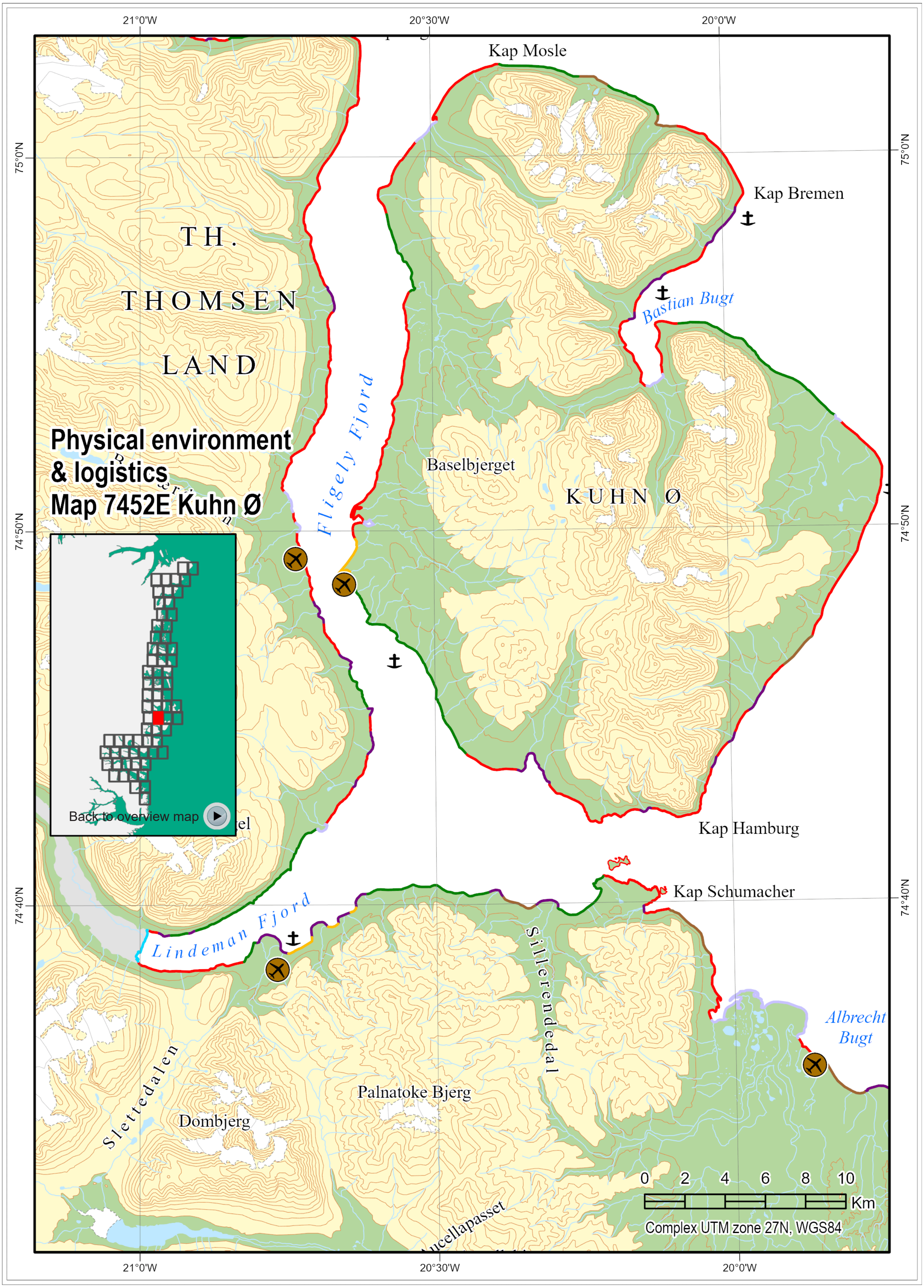
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

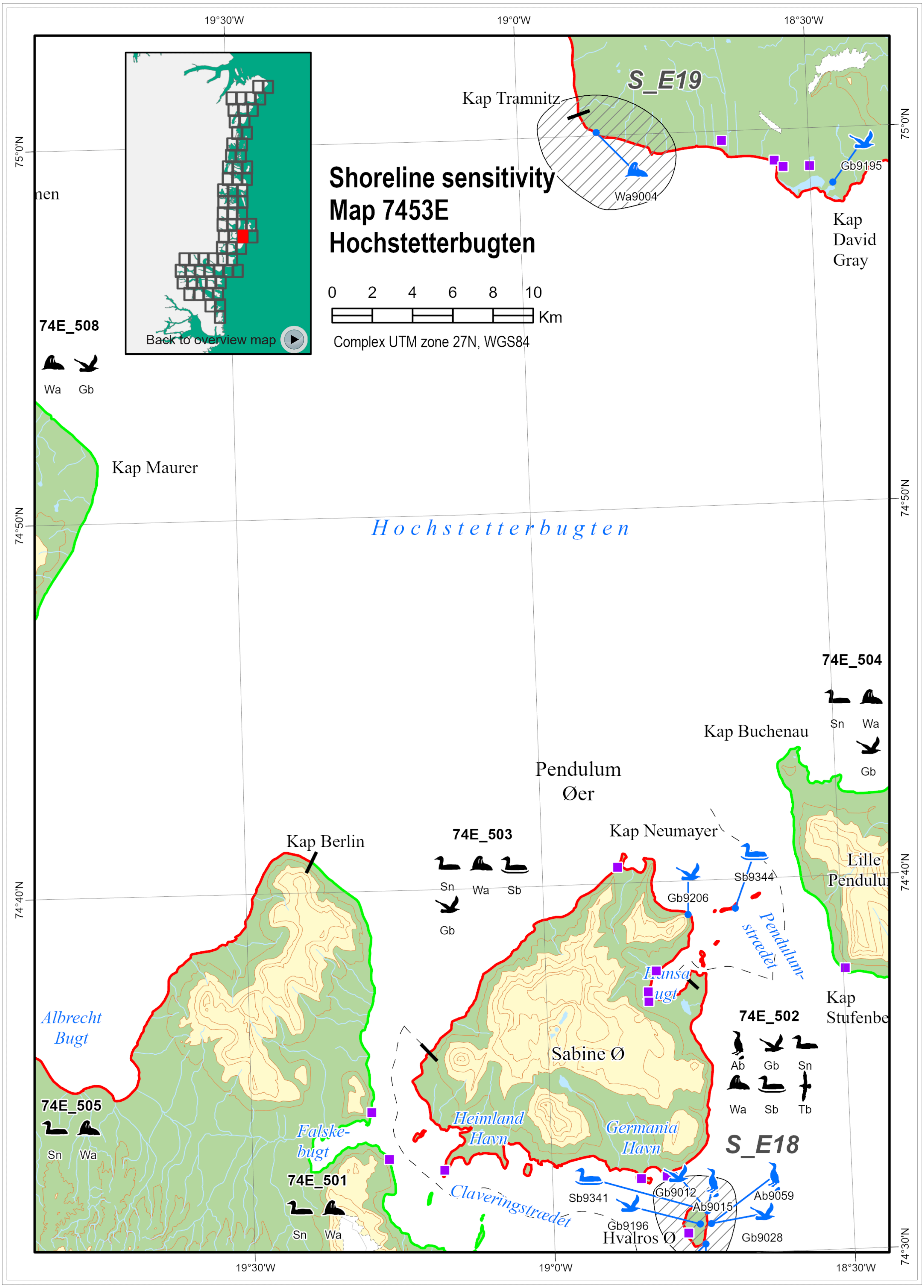
Shorelines within this area are predominantly rock and talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

Bastian Bugt affords a potential safe haven, with a defined anchorage, moderate sensitivity, and good natural protection. While exclusion booming may not be possible due to the width of the entrance to the bay, it may be possible to largely contain escaping oil without excessive amounts of boom.


Physical environment
& logistics
Map 7452E Kuhn Ø
Back to overview map
21°0'W
20°30'W
20°0'W
75°0'N
74°50'N
74°40'N
Kap Mosle
Kap Bremen
Bastian Bugt
TH.
THOMSEN
LAND
Fligely Fjord
Baselbjerget
KUHN Ø
Kap Hamburg
Kap Schumacher
Lindeman Fjord
Sillerendedal
Albrecht
Bugt
Palnatoke Bjerg
Dombjerg
Slettedalen
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7453E
Hochstetterbugten
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map
19°30'W
19°0'W
18°30'W
75°0'N
74°50'N
74°40'N
74°30'N
S_E19
S_E18
Kap Tramnitz
Wa9004
Gb9195
Kap David Gray
74E_508
Wa
Gb
Kap Maurer
Hochstetterbugten
74E_504
Sn
Wa
Gb
Kap Buchenau
Pendulum Øer
Kap Neumayer
Sb9344
Gb9206
Lille Pendulu
Pendulum-strædet
Kap Stufenbe
Kap Berlin
74E_503
Sn
Wa
Sb
Gb
Hansa Bugt
74E_502
Ab
Gb
Sn
Wa
Sb
Tb
Albrecht Bugt
Sabine Ø
74E_505
Sn
Wa
Heimland Havn
Germania Havn
Falske-bugt
74E_501
Sn
Wa
Claveringstrædet
Sb9341
Gb9012
Ab9015
Ab9059
Gb9196
Hvalros Ø
Gb9028

8.31 Map 7453E – Hochstetterbugten

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

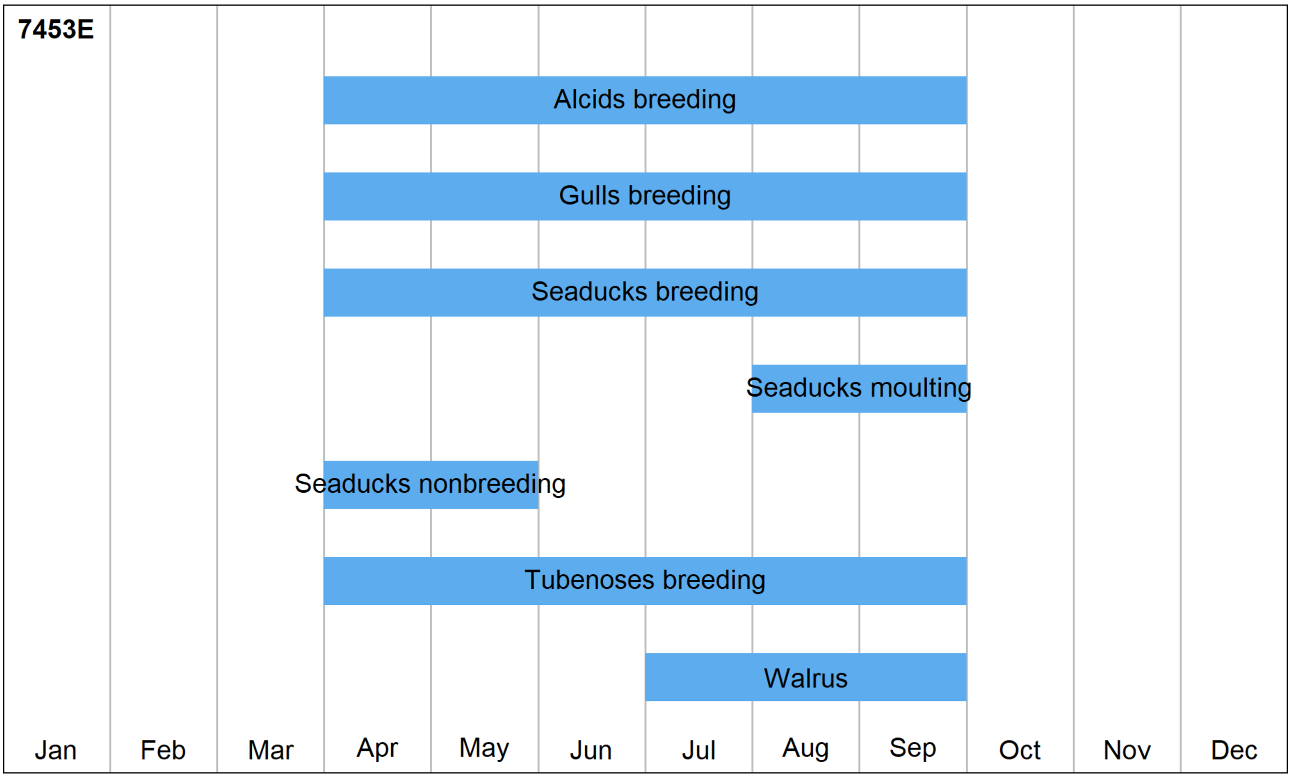
Gb74E_508, Gb75E_523	1 colony of glaucous gulls
Tb74E_502	1 colony of northern fulmars
Ab74E_502	1 possible colony of Atlantic puffins and 2 colonies of black guillemots
Gb74E_502	3 colonies of glaucous gulls, 3 colonies of black-legged kittiwakes and 2 colonies of Arctic terns
Gb74E_503, Gb74E_504	1 colony of glaucous gulls
Sb74E_502, Sb74E_503	1 colony of common eiders
Sm75E_523, Sm75E_524	Common eider and king eider moulting areas
Sn74E_501 - Sn74E_505	Spring concentrations of common eiders and king eiders
Sn75E_523	Spring concentrations of common eiders and king eiders
Wa74E_501 - Wa74E_505	Walrus foraging
Wa74E_508	Walrus foraging
Wa75E_523, Wa75E_524	Walrus foraging and haul-out site

Site specific occurrence: blue icons

Ab9015	Breeding black guillemots and possibly Atlantic puffins**(S_E18)**
Ab9059	Breeding black guillemots**(S_E18)**
Gb9012	Breeding glaucous gulls, Arctic terns and black-legged kittiwakes**(S_E18)**
Gb9028	Breeding glaucous gulls and black-legged kittiwakes **(S_E18)**
Gb9029	Breeding glaucous gulls and black-legged kittiwakes
Gb9195	Breeding glaucous gulls
Gb9196	Breeding Arctic terns **(S_E18)**
Gb9206	Breeding glaucous gulls
Sb9341	Breeding common eiders **(S_E18)**
Sb9344	Breeding common eiders
Tb9353	Breeding northern fulmars **(S_E18)**
Wa9004	Walrus haul-out site **(S_E19)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_501	19	Moderate
74E_502	37	Extreme
74E_503	34	Extreme
74E_504	19	Moderate
74E_505	29	Extreme
74E_508	20	Moderate
75E_523	22	Extreme
75E_524	25	Extreme



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Access
The nearshore waters in and around the islands in this map area are largely uncharted and caution should be exercised. In general, the waters offshore, nearshore, and within the islands appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to June/July melting earlier in the fjords than in Hochstetter Bugt. Additional dangers to navigation are present here due to icebergs.

Germania Havn, a small and almost circular harbor, is located at the SE extremity of Sabine Ø. Depths of 3.7 m and less lie in the entrance. Griper Red, a roadstead lying close W of Germania Havn, affords anchorage, but there is little shelter from storms and, at times, the berths are dangerous because of ice. Vessels may anchor 1.6 km offshore with the W entrance point of Germania Havn bearing 075°, the N end of Hvalros Ø bearing 104°, and Kap Wynn bearing 207°. There are no airstrips identified on this map area.

Lars Jakobsens Pynt (74°33’N, 19°12’W), the SW extremity of Sabine Ø, is a long narrow peninsula which projects into Claveringstrædet. The inlet affords good anchorage, in a depth of 44 m, with Lars Jakobsens Pynt bearing 128° and the outermost of the two small islets bearing 331°.

More anchorages are found in Falskebugt, Hansa Bugt, the bay S of Hansa Bugt, at SW corner of Lille Pendulum, at Kap Maurer and at Kap David Gray (Chapter 14).

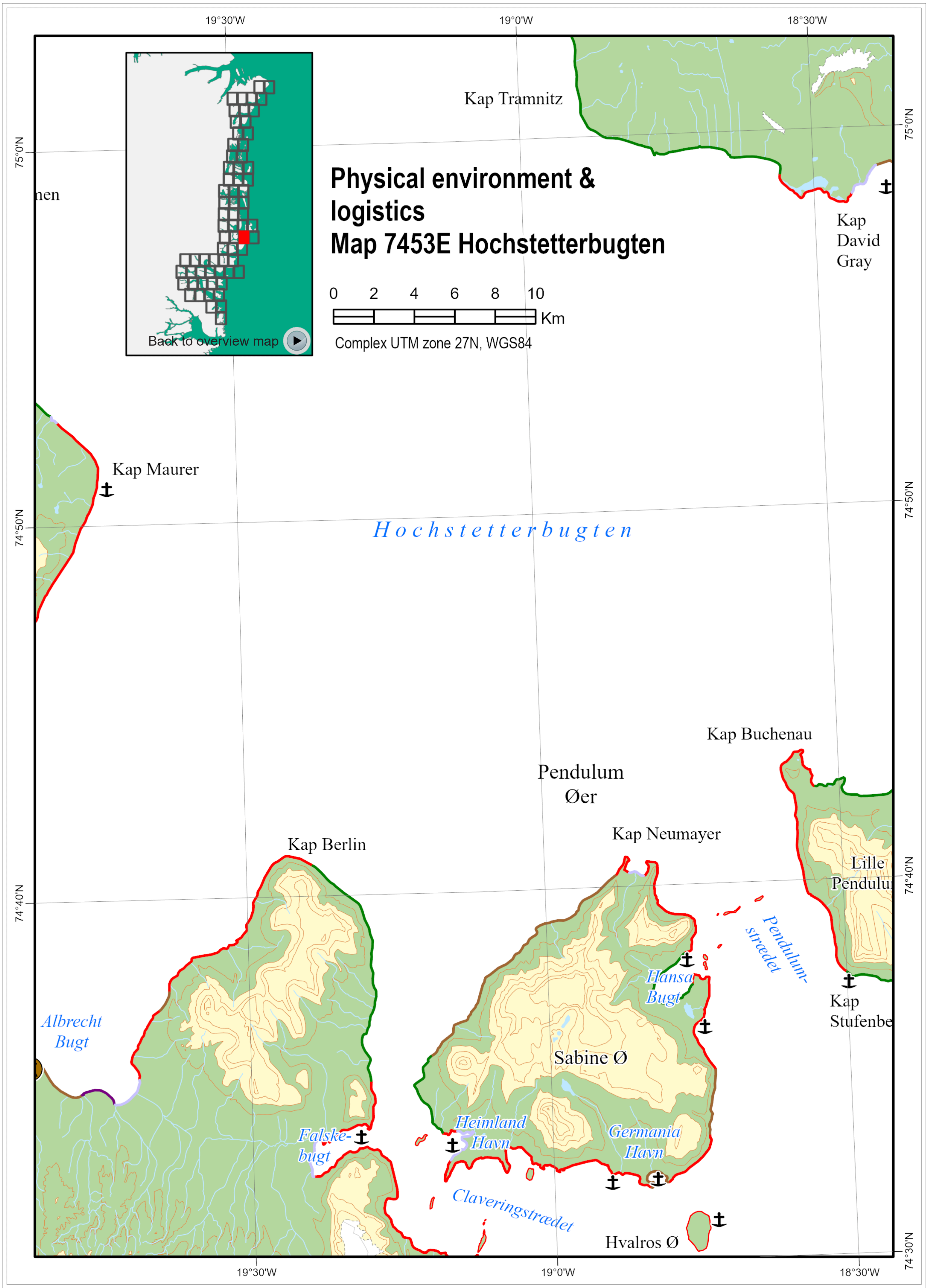
When navigating Pendulum Strædet, vessels are advised to favour the Lille Pendulum Ø side where there are no known dangers.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.



Physical environment &
logistics
Map 7453E Hochstetterbugten
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
19°30'W
19°0'W
18°30'W
75°0'N
74°50'N
74°40'N
74°30'N
Kap Tramnitz
Kap David Gray
nen
Kap Maurer
Hochstetterbugten
Kap Buchenau
Pendulum Øer
Kap Neumayer
Kap Berlin
Lille Pendulu
Pendulum-strædet
Hansa Bugt
Kap Stufenbe
Albrecht Bugt
Sabine Ø
Falske-bugt
Heimland Havn
Germania Havn
Claveringstrædet
Hvalros Ø

Shorelines within this area are predominantly rock and talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map. The two anchorages noted above, at Germania Havn and Lars Jakobsens Pynt could be considered as such but for their relatively high sensitivity. A potential safe haven exists at Falskebugt, being of moderate sensitivity and affording good natural protection. As its depths are unknown site surveys would be required at the time of and incident.

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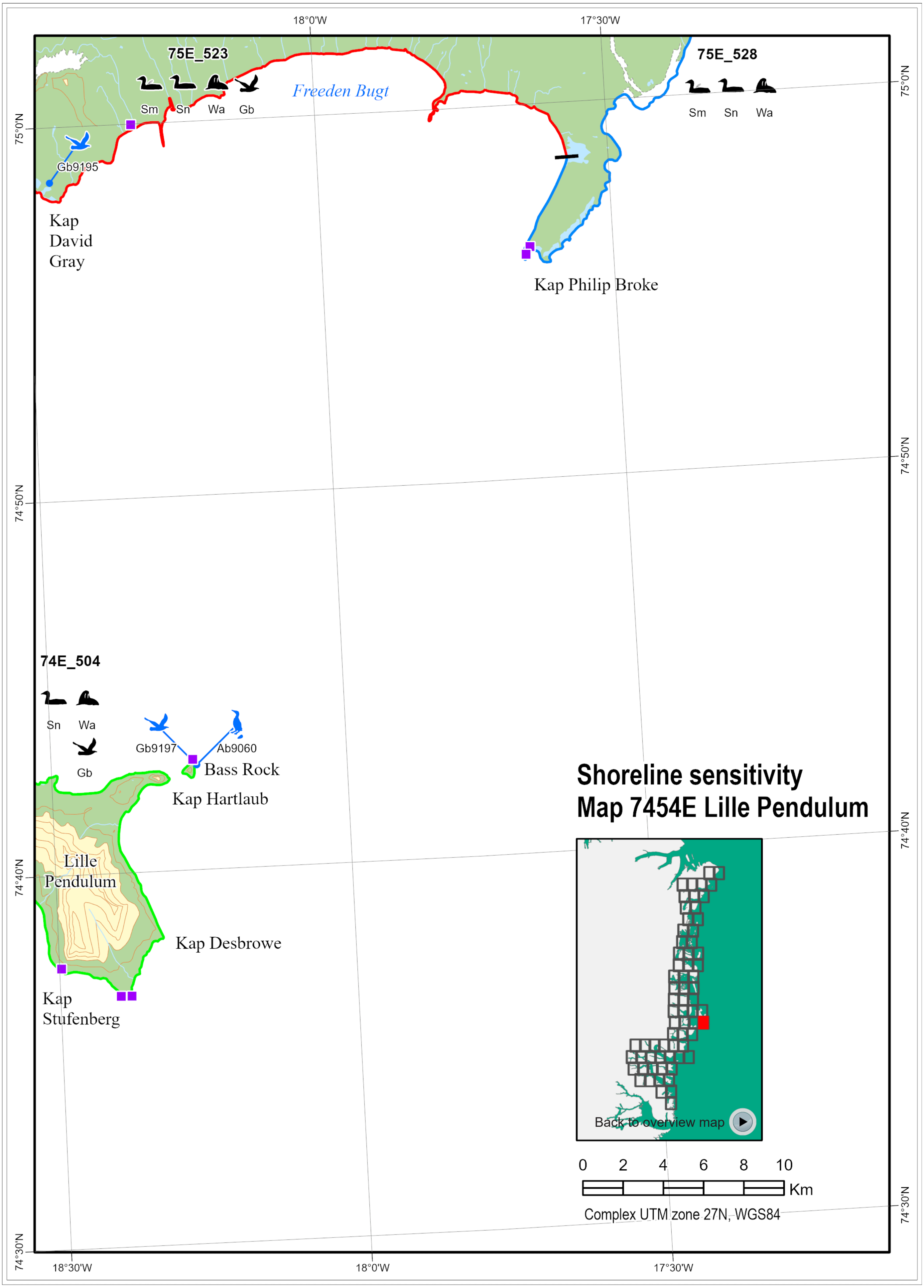

18°0'W
17°30'W
75°0'N
74°50'N
74°40'N
74°30'N
18°30'W
75E_523
Sm
Sn
Wa
Gb
Freeden Bugt
75E_528
Sm
Sn
Wa
Gb9195
Kap David Gray
Kap Philip Broke
74E_504
Sn
Wa
Gb
Gb9197
Ab9060
Bass Rock
Kap Hartlaub
Lille Pendulum
Kap Desbrowe
Kap Stufenberg
Shoreline sensitivity
Map 7454E Lille Pendulum
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84

8.32 Map 7454E - Lille Pendulum

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

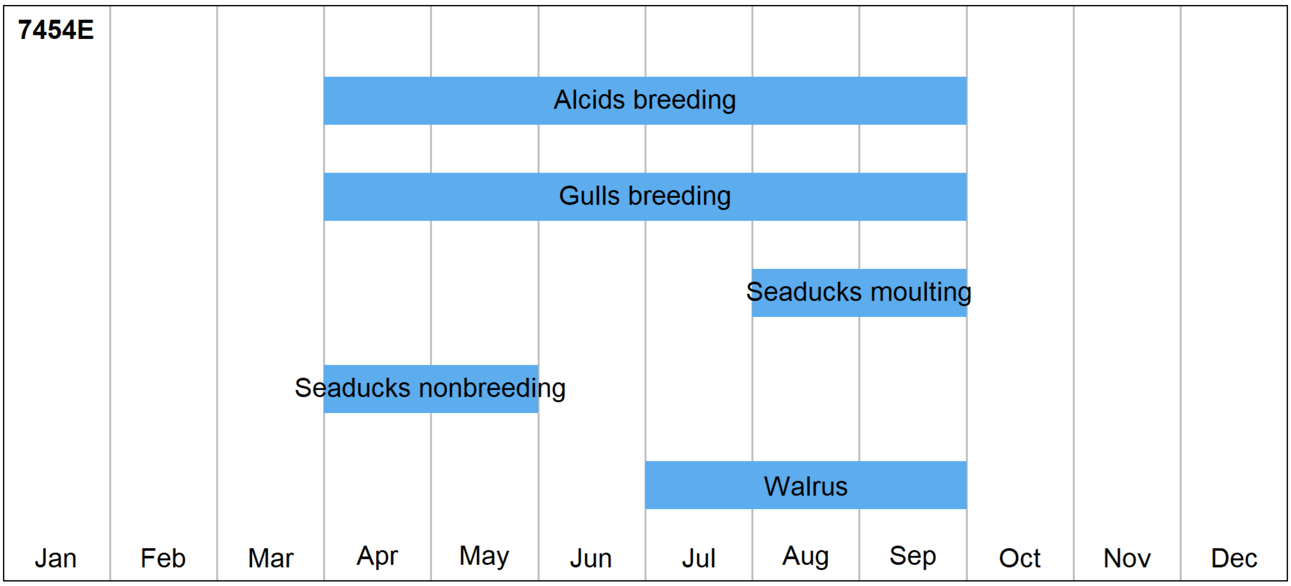
Gb75E_523, Gb74E_504	1 colony of glaucous gulls
Sm75E_528, Sm75E_523	Common eider and king eider moulting areas
Sn74E_504, Sn75E_523	Spring concentrations of common eiders and king eiders
Sn75E_528	Spring concentrations of common eiders and king eiders
Wa74E_504, Wa75E_523	Walrus foraging and irregularly used haul-out site
Wa75E_528	Walrus foraging

Site specific occurrence: blue icons

Ab9060	Breeding black guillemots
Gb9195, Gb9197	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_504	19	Moderate
75E_523	22	Extreme
75E_528	17	Low



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from December to July, but drift ice may occur throughout the year. Additional dangers to navigation are present here due to icebergs.

Freeden Bugt is a wide-open bay on the S coast of Shannon Ø. Caution should be exercised when entering the bay. Depths decrease rapidly N of the line joining the entrance points and the bottom is irregular. A reef, with a depth of 2 m (2009), lies 5 km W of Kap Philip Broke. A number of streams flow into the bay. The greater depths are reported to be in the W part, close to Kap David Gray. Anchorage has been obtained in several places within the bay; however, the recommended berth lies, in a depth of 33 m, 2 km E of Kap David Gray with the summit of Tellplatte, standing at a height of 196 m, 5 km N of the cape, bearing 350°.

The SW corner of Lille Pendulum is also reported as anchorage (Chapter 14).

When navigating Pendulum Strædet, vessels are advised to favour the Lille Pendulum Ø side where there are no known dangers.

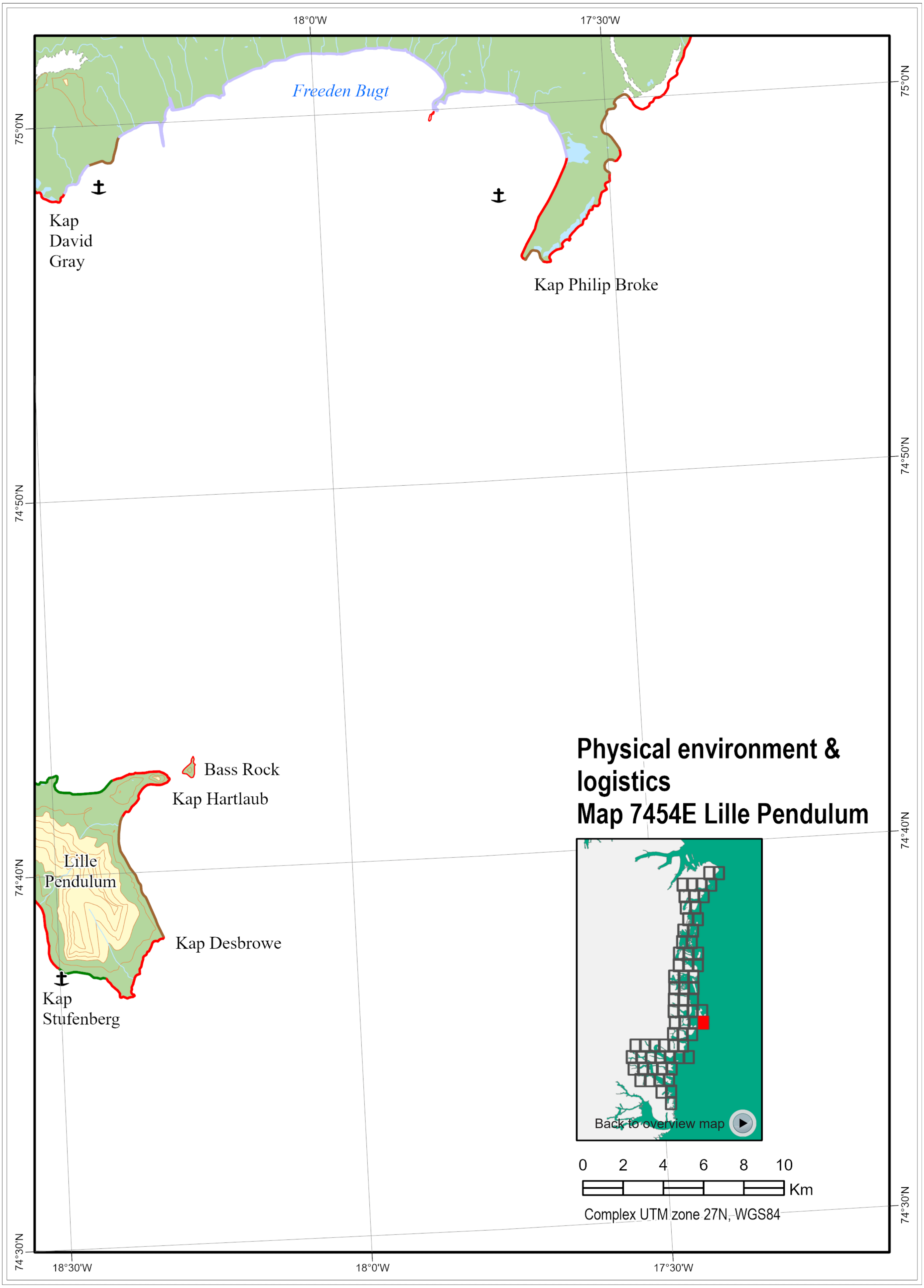
The E coast of Shannon Ø extends 24 km NNE from Kap Philip Broke to Kap Pansch, the N ex- tremity of a low peninsula. Caution: It was reported that several submerged rocks exist and they are indicated by growing kelp, off the S part of this coast. There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access. Landings may be possible in the area noted as delta; site surveys would be required to confirm this.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.



18°0'W
17°30'W
75°0'N
Freeden Bugt
Kap
David
Gray
Kap Philip Broke
74°50'N
Bass Rock
Kap Hartlaub
Lille
Pendulum
Kap Desbrowe
Kap
Stufenberg
74°40'N
Physical environment &
logistics
Map 7454E Lille Pendulum
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84
74°30'N
18°30'W
18°0'W
17°30'W

Shorelines shown on this map are all highly exposed and may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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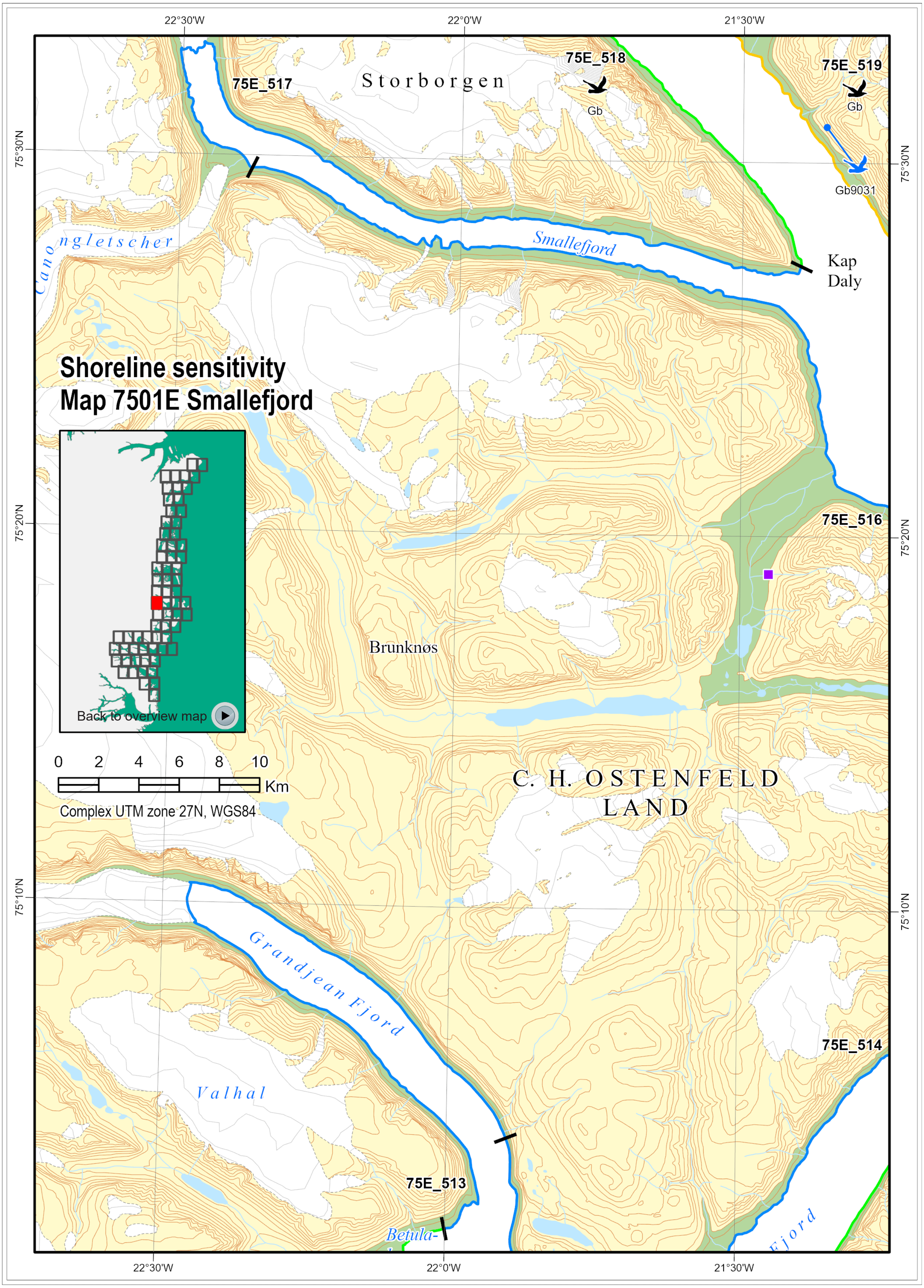


Shoreline sensitivity
Map 7501E Smallefjord
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
75°30'N
75°20'N
75°10'N
75E_517
75E_518
75E_519
75E_516
75E_514
75E_513
Storborgen
Gb
Gb9031
Kap Daly
Smallefjord
ngletscher
Brunknøs
C. H. OSTENFELD LAND
Grandjean Fjord
Valhal
Betula-
Fjord

8.33 Map 7501E – Smallefjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

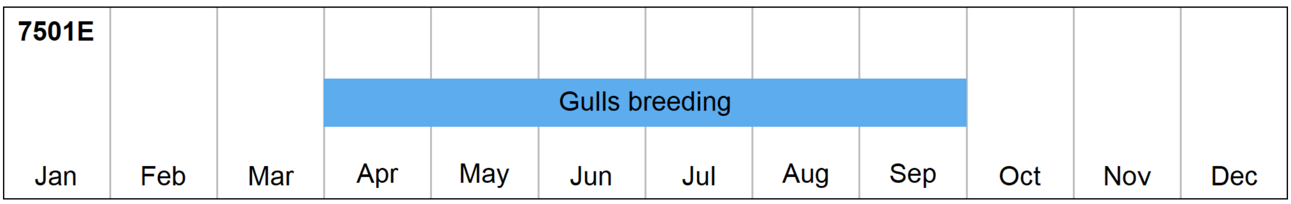
Gb75E_518	1 colony of glaucous gulls
Gb75E_519	2 colonies of glaucous gulls and 1 colony of Arctic terns

Site specific occurrence: blue icons

Gb9031	Breeding glaucous gulls and Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_512	18	Moderate
75E_513	16	Low
75E_514	16	Low
75E_516	16	Low
75E_517	15	Low
75E_518	19	Moderate
75E_519	24	High



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to July.

Betula Havn is the only anchorages reported for this map area (Chapter 14).

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

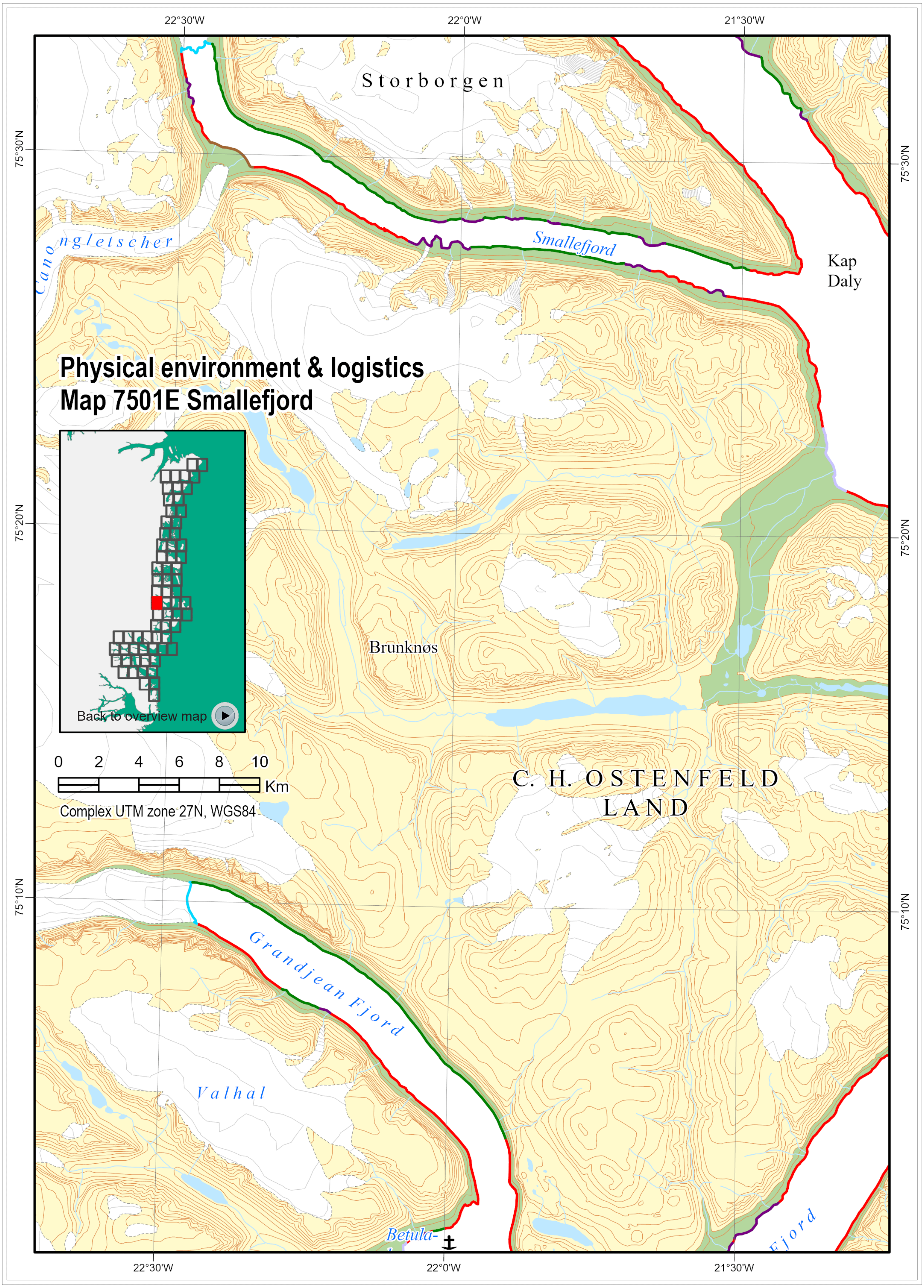
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

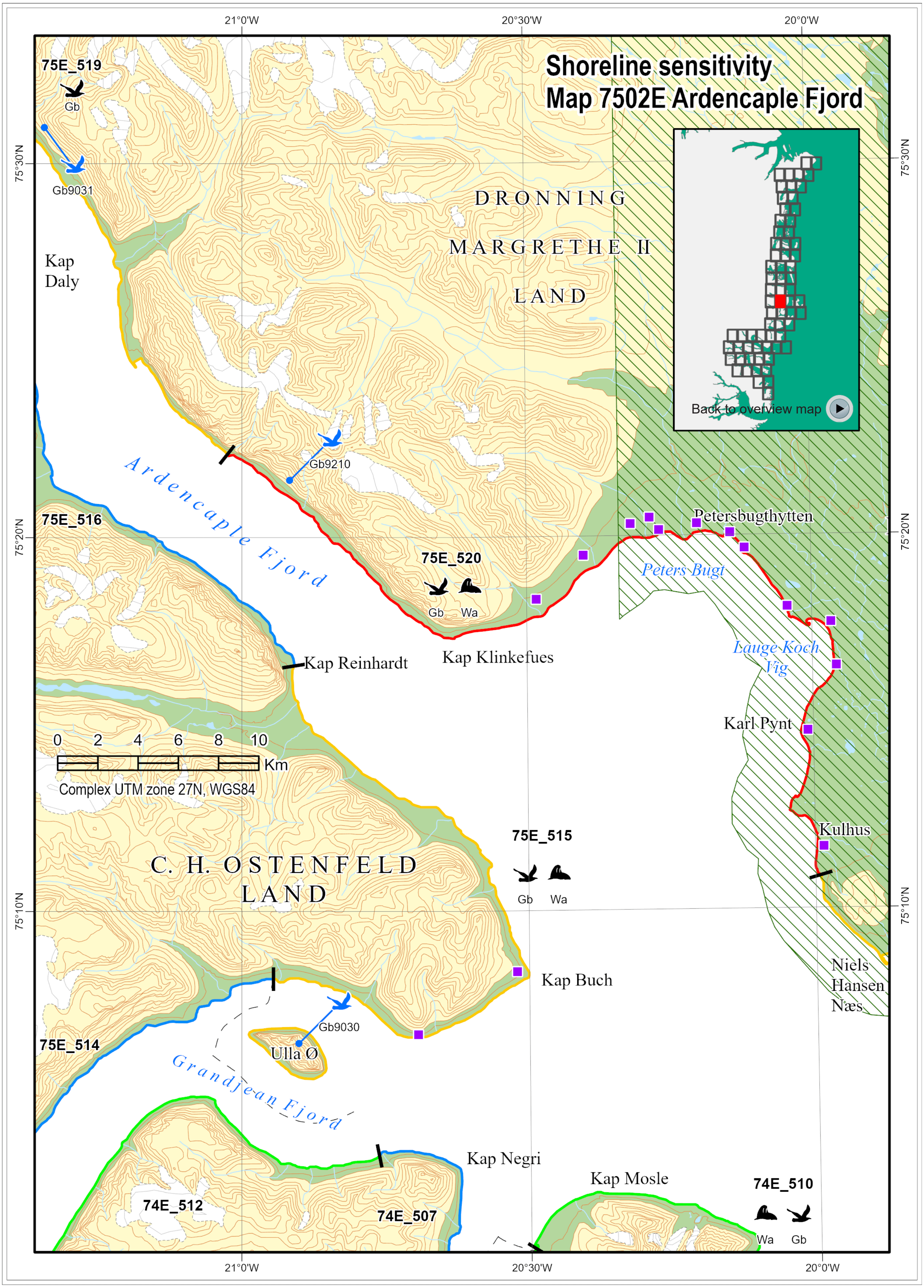
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock, talus, and glacier, all with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7501E Smallefjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
75°30'N
75°20'N
75°10'N
Storborgen
Smallefjord
Kap
Daly
ngletscher
Brunknøs
C. H. OSTENFELD
LAND
Grandjean Fjord
Valhal
Betula-
Fjord


Shoreline sensitivity
Map 7502E Ardencaple Fjord
Back to overview map
21°0'W
20°30'W
20°0'W
75°30'N
75°20'N
75°10'N
75E_519
Gb
Gb9031
Kap
Daly
DRONNING
MARGRETHE II
LAND
Ardencaple Fjord
Gb9210
75E_516
75E_520
Gb
Wa
Petersbugthytten
Peters Bugt
Lauge Koch
Vig
Kap Reinhardt
Kap Klinkefues
Karl Pynt
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Kulhus
75E_515
Gb
Wa
C. H. OSTENFELD
LAND
Kap Buch
Niels
Hansen
Næs
Gb9030
75E_514
Ulla Ø
Grandjean Fjord
Kap Negri
Kap Mosle
74E_510
Wa
Gb
74E_512
74E_507

8.34 Map 7502E - Ardencaple Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

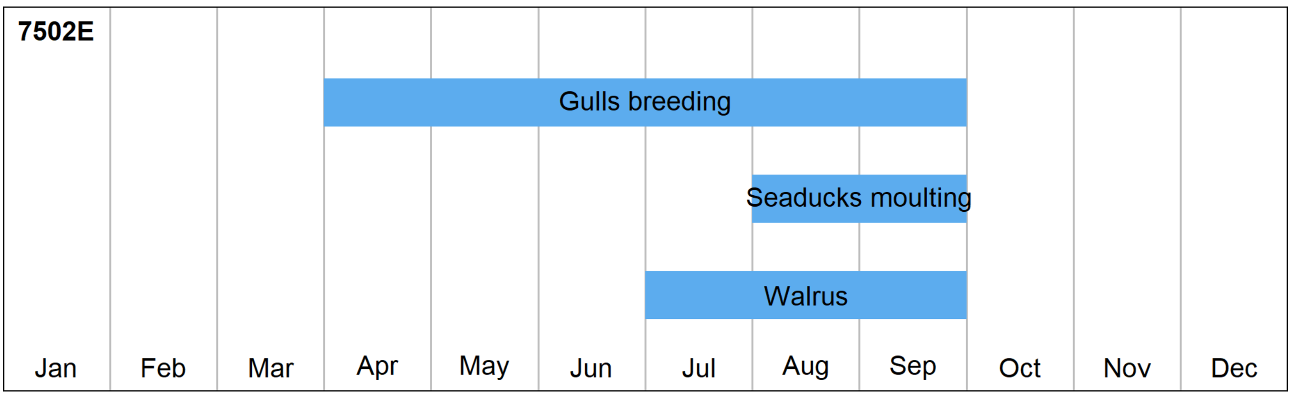
Gb75E_521	1 colony of Arctic terns and 1 colony of Sabine’s gulls
Gb74E_510	1 colony of Arctic terns
Gb75E_520	1 colony of glaucous gulls
Gb75E_519	2 colonies of glaucous gulls and 1 colony of Arctic terns
Gb75E_515	1 colony of glaucous gulls
Sm75E_521	Common eider and king eider moulting area
Wa74E_510 - Wa75E_515	Walrus foraging
Wa75E_520, Wa75E_521	Walrus foraging

Site specific occurrence: blue icons

Gb9030	Breeding glaucous gulls
Gb9031	Breeding glaucous gulls and Arctic terns
Gb9210	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
74E_507	15	Low
74E_510	21	Moderate
74E_512	18	Moderate
75E_514	16	Low
75E_515	23	High
75E_516	16	Low
75E_519	24	High
75E_520	38	Extreme
75E_521	24	High



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to July and driftoce may occur all other months. Additional dangers to navigation are present here due icebergs.

Peters Bugt is entered between Karl Pynt, located 5 km N of Kulhus, and Kap Klinkerfues, 14 km WNW. Lauge Koch Vig, located 3 km N of Karls Pynt, is a small cove with a hunting hut at its head. Jonsbu, located 6 km ENE of Kap Klinkerfues, is the site of a former radio and hunting station which was destroyed (1979). Anchorage is available, in a depth of 46 m, with the SE extremity of the land near Kap Klinkerfues bearing 240° and the site of the former station bearing 356°. Safe anchorage may be obtained, in a depth of 55 m, 180 m off the mouth of a stream located 3 km SW of Jonsbu (Chapter 14).

Caution: A submerged rock lies about 4.3 km S of Kap Klinkerfues and 5.9 km ESE of Kap Reinhardt, near the entrance to Ardencaple Fjord. A rock, with a depth of 2 m, lies in the entrance of Ardencaple Fjord near position 75°14.7’N, 20°40.6’W.

A STOL-airstrip is noted SW of Petersbugthytten (Chapter 15).

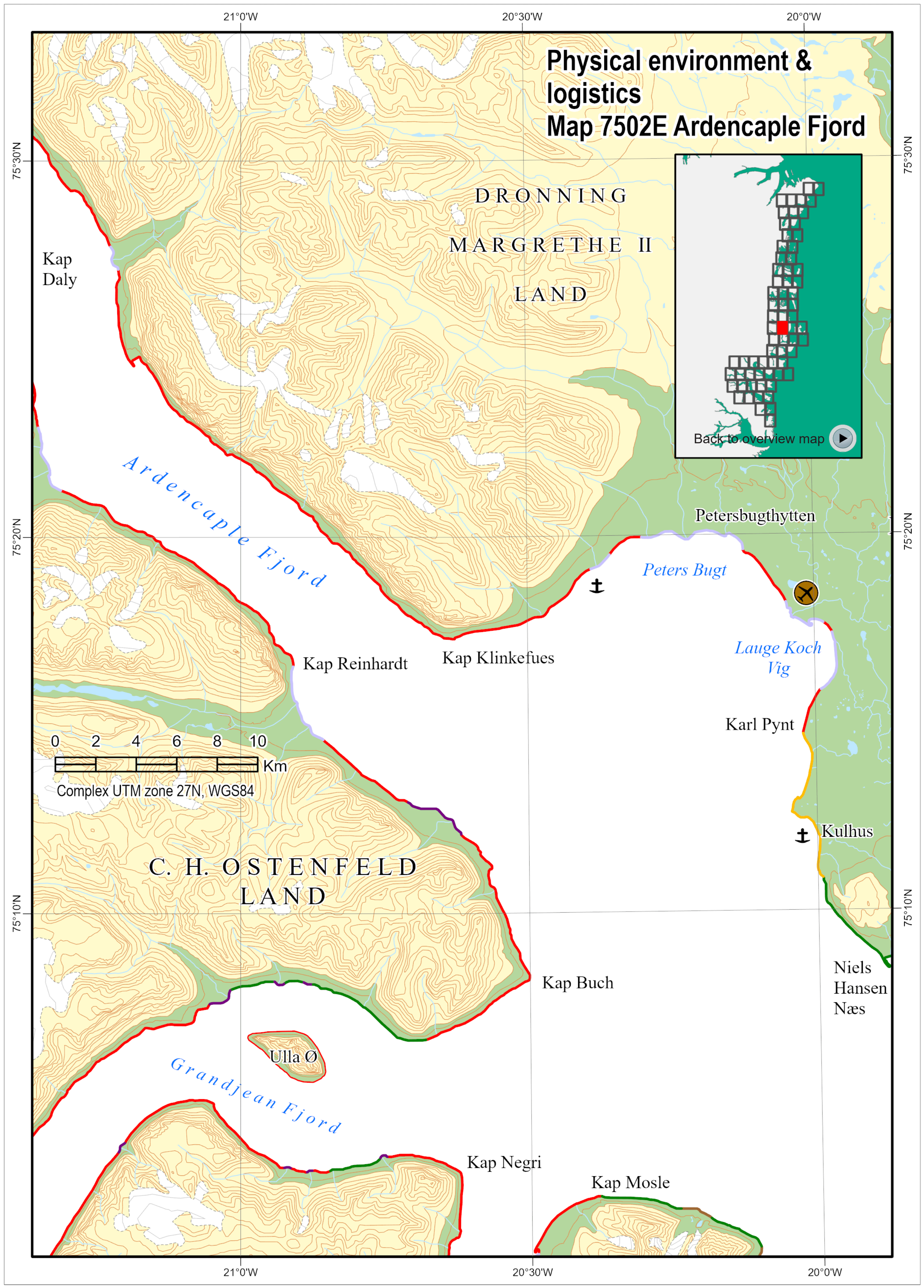
Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Low exposure shorelines will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.


Physical environment & logistics
Map 7502E Ardencaple Fjord
21°0'W
20°30'W
20°0'W
75°30'N
75°20'N
75°10'N
DRONNING
MARGRETHE II
LAND
Kap Daly
Ardencaple Fjord
Petersbugthytten
Peters Bugt
Lauge Koch Vig
Kap Reinhardt
Kap Klinkefues
Karl Pynt
Kulhus
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
C. H. OSTENFELD LAND
Kap Buch
Niels Hansen Næs
Ulla Ø
Grandjean Fjord
Kap Negri
Kap Mosle
Back to overview map

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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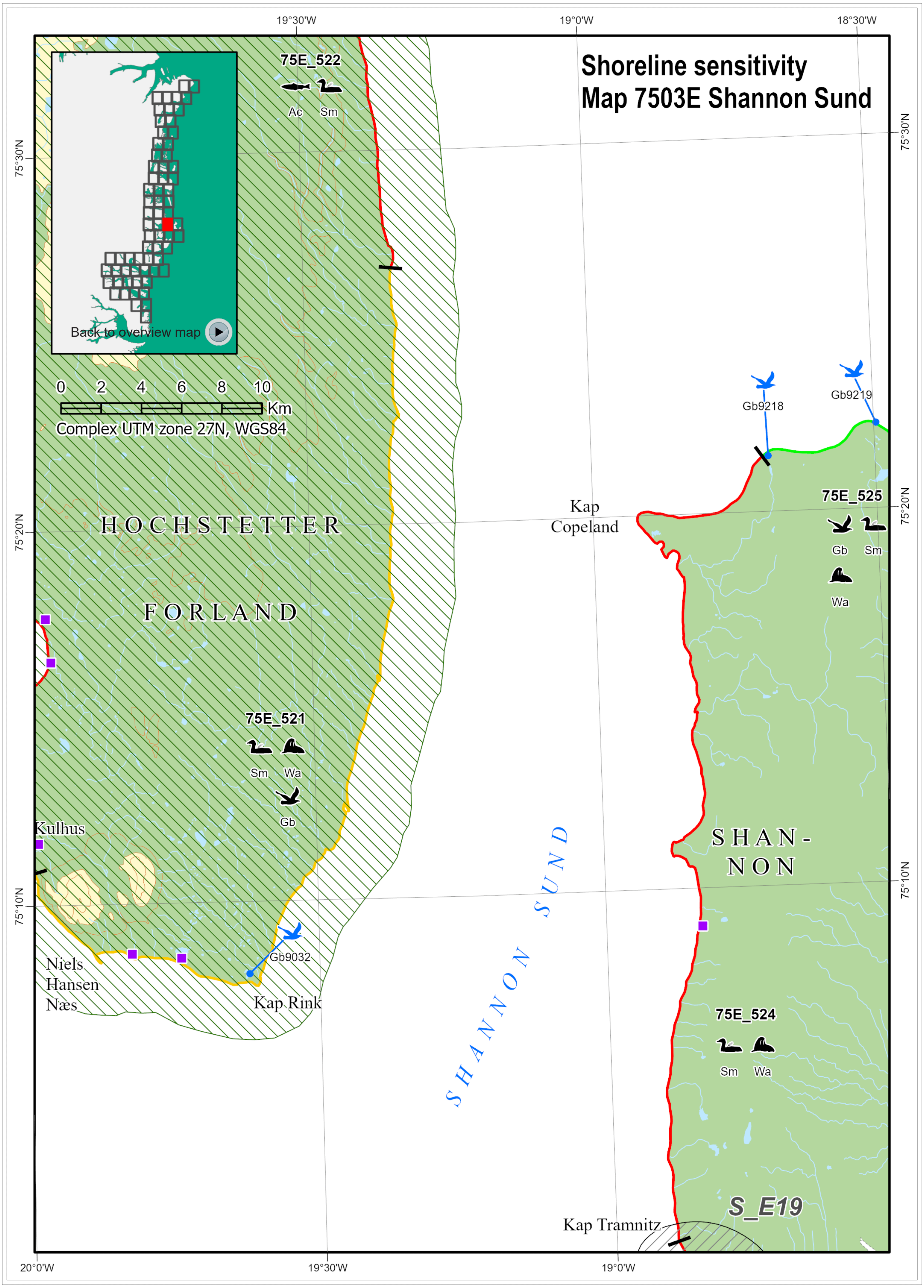

Shoreline sensitivity
Map 7503E Shannon Sund
19°30'W
19°0'W
18°30'W
75°30'N
75°20'N
75°10'N
20°0'W
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
75E_522
Ac
Sm
HOCHSTETTER
FORLAND
75E_521
Sm
Wa
Gb
Kulhus
Gb9032
Niels
Hansen
Næs
Kap Rink
SHANNON SUND
Kap
Copeland
Gb9218
Gb9219
75E_525
Gb
Sm
Wa
SHAN-
NON
75E_524
Sm
Wa
S_E19
Kap Tramnitz

8.35 Map 7503E - Shannon Sund

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

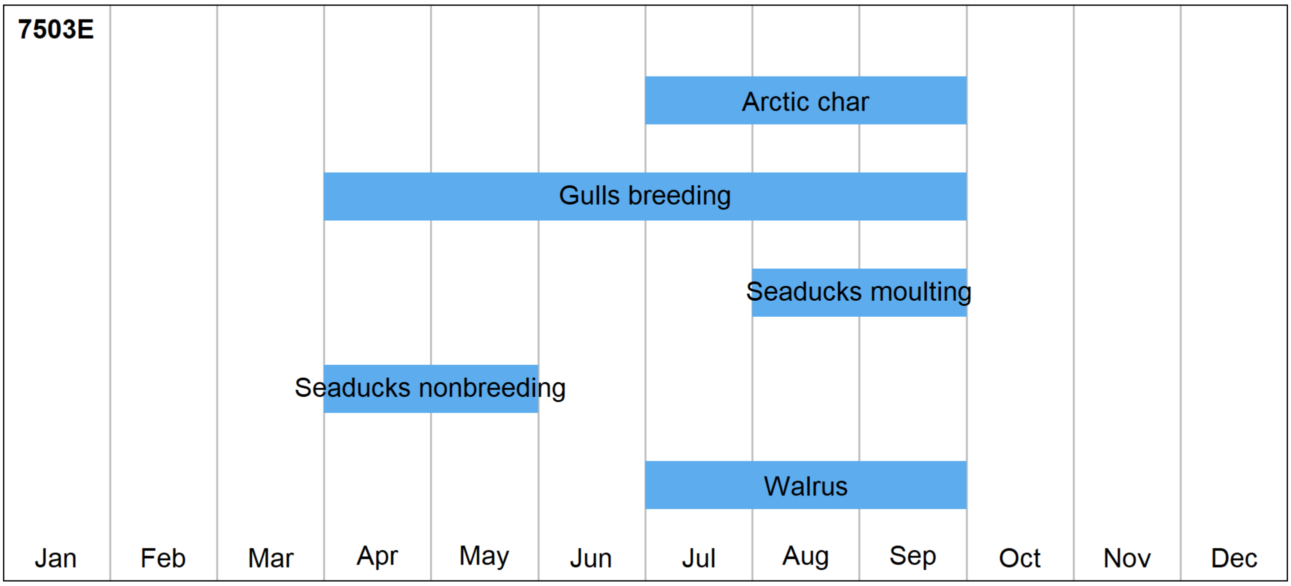
Gb75E_521	1 colony of Arctic terns and 1 colony of Sabine’s gulls
Gb75E_523	1 colony of glaucous gulls
Ac75E_522	Important Arctic char river
Gb75E_520	1 colony of glaucous gulls
Gb75E_525	3 colonies of glaucous gulls
Sm75E_521 - Sm75E_525	Common eider and king eider moulting area
Sn75E_523	Spring concentrations of common eiders and king eiders
Wa75E_520, Wa75E_521	Walrus foraging
Wa75E_523 - Wa75E_525	Walrus foraging

Site specific occurrence: blue icons

Gb9032	Breeding Sabine’s gulls and Arctic terns
Gb9218, Gb9219	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_520	38	Extreme
75E_521	24	High
75E_522	30	Extreme
75E_523	22	Extreme
75E_524	25	Extreme
75E_525	19	Moderate



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to July and drift ice may occur all other months. Additional dangers to navigation are present here due to icebergs.

Shannon Sund is entered between Kap Rink and Kap Tramnitz, extends 26 km; shoal depths are reported to lie close off this shore for about 16 km N of the cape. Depths of 33 to 91 m lie in the fairway and a mid-channel course may be safely followed through the sound. Vessels are advised to stay 5 km from Kap Copeland, the NW extremity of Shannon Island.

Nanok (75°09'N, 19°47'W), a former hunting station, is situated 4 km WNW of Kap Rink, near the head of a slight indentation. Vessels can anchor, in a depth of 55 m, in an open roadstead lying 800 m offshore, with Kap Rink bearing 093° and the hunting station bearing 017°. Mainly due to the continual movement of pack ice S through Shannon Sund, it is not uncommon for a summer to pass with- out a vessel being able to reach the vicinity of Nanok (Chapter 14).

Two STOL-airstrips are noted close W and approximately 8 km NE of Kap Rink (Chapter 15).

Shorelines within this area are predominantly rock, talus and barrier beach allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

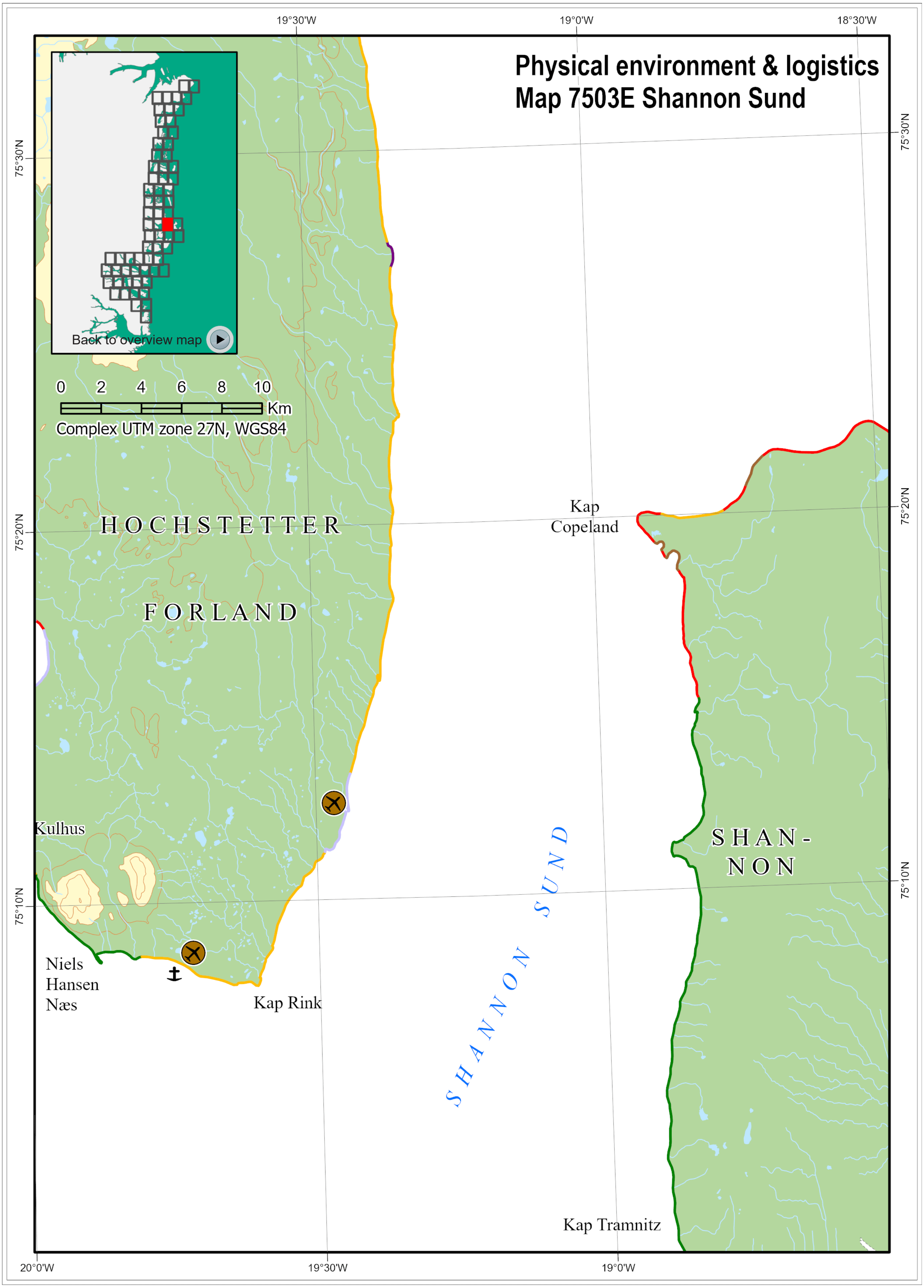
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

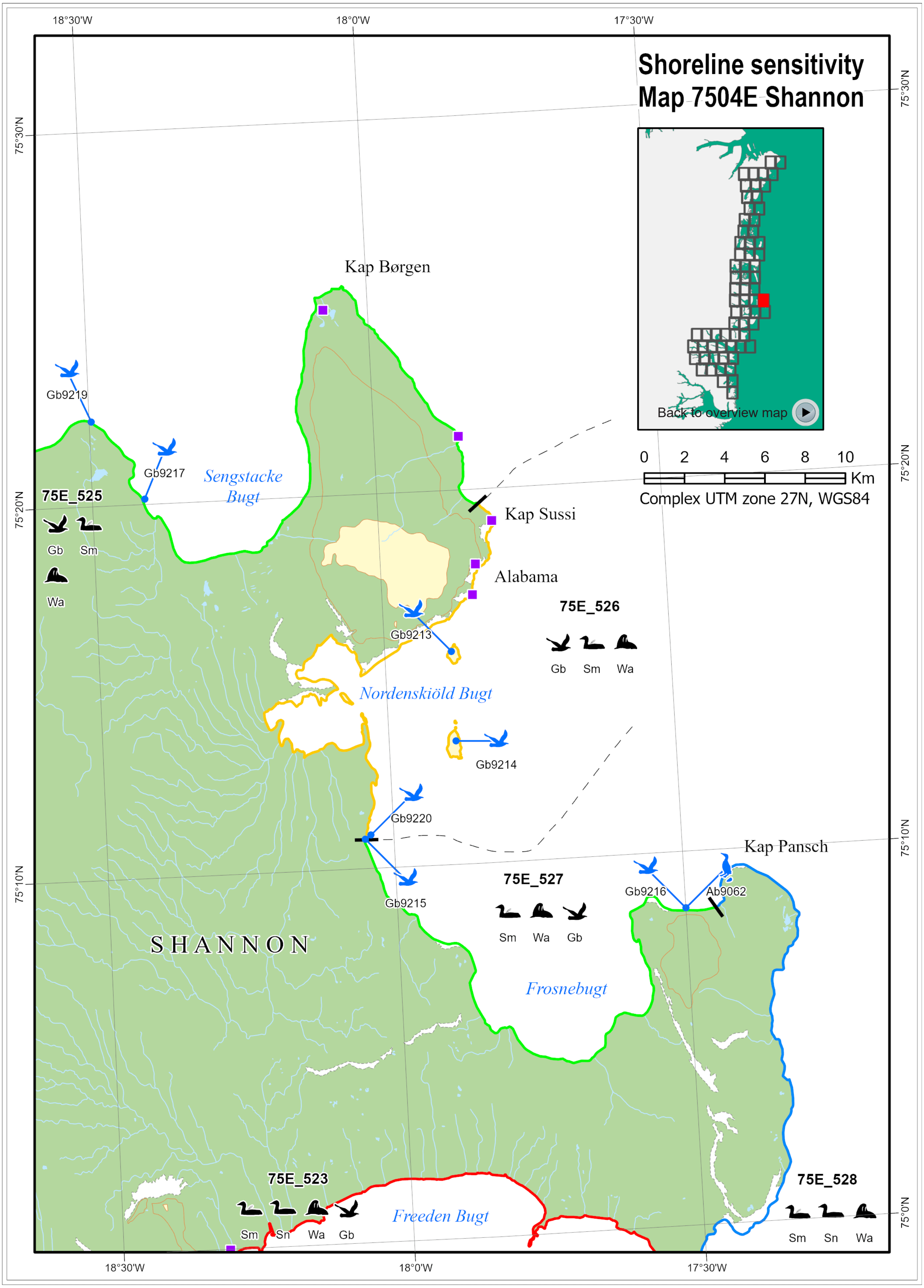
Shorelines shown on this map are predominantly rock and talus with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7503E Shannon Sund
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°30'W
19°0'W
18°30'W
75°30'N
75°20'N
75°10'N
20°0'W
HOCHSTETTER
FORLAND
Kap
Copeland
Kulhus
Niels
Hansen
Næs
Kap Rink
SHANNON SUND
SHAN-
NON
Kap Tramnitz


Shoreline sensitivity
Map 7504E Shannon
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
18°30'W
18°0'W
17°30'W
75°30'N
75°20'N
75°10'N
75°0'N
Kap Børgen
Kap Sussi
Alabama
Kap Pansch
Sengstacke Bugt
Nordenskiöld Bugt
Frosnebugt
Freeden Bugt
SHANNON
75E_525
Gb Sm
Wa
75E_526
Gb Sm Wa
75E_527
Sm Wa Gb
75E_523
Sm Sn Wa Gb
75E_528
Sm Sn Wa
Gb9219
Gb9217
Gb9213
Gb9214
Gb9220
Gb9215
Gb9216
Ab9062

8.36 Map 7504E – Shannon

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

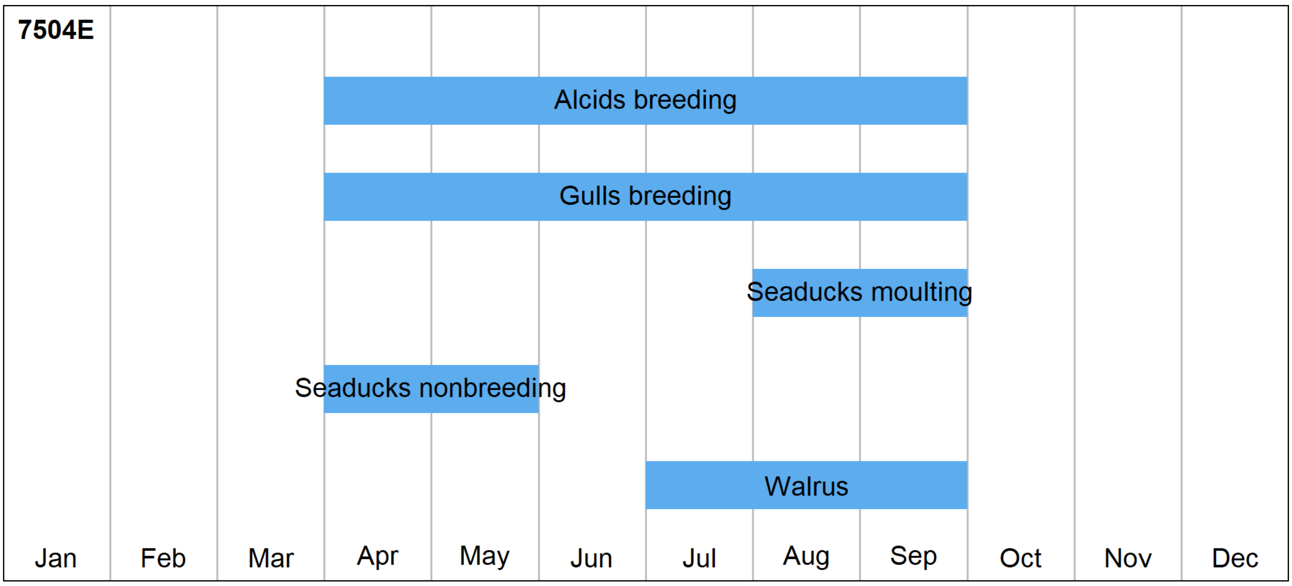
Gb75E_523, Gb75E_527	1 colony of glaucous gulls
Gb75E_526	2 colonies of glaucous gulls and 2 colonies of Arctic terns
Gb75E_525	3 colonies of glaucous gulls
Sm75E_523 - Sm75E_528	Common eider and king eider moulting area
Sn75E_523, Sn75E_528	Spring concentrations of common eiders and king eiders
Wa75E_523	Walrus foraging
Wa75E_525 - Wa75E_528	Walrus foraging

Site specific occurrence: blue icons

Ab9062	Breeding black guillemots
Gb9213, Gb9214	Breeding Arctic terns
Gb9215 - Gb9217	Breeding glaucous gulls
Gb9219, Gb9220	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_523	22	Extreme
75E_525	19	Moderate
75E_526	22	High
75E_527	19	Moderate
75E_528	17	Low



Access

The nearshore waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2702). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to June/July. However, the easternmost coasts borders drift ice covered waters, where the ice limit varies from season to season. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area, except for the bay (Alabama Havn) to the south of Alabama, but no information is available.

The E coast of Shannon Ø extends 24 km NNE from Kap Philip Broke to Kap Pansch, the N extremity of a low peninsula. Caution: It was reported that several submerged rocks exist and they are indicated by growing kelp, off the S part of this coast.

Two STOL-airstrips are noted on this map area: one at Kap Pansch and one at Alabama. The former is very rough and in area with frequent fog and the latter is only a "skiway" (Chapter 15).

Shorelines within this area are predominantly rock, allowing little opportunity for marine access. The areas noted as delta could be considered for landings; as the waters are uncharted, site surveys would be required to confirm this.

Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

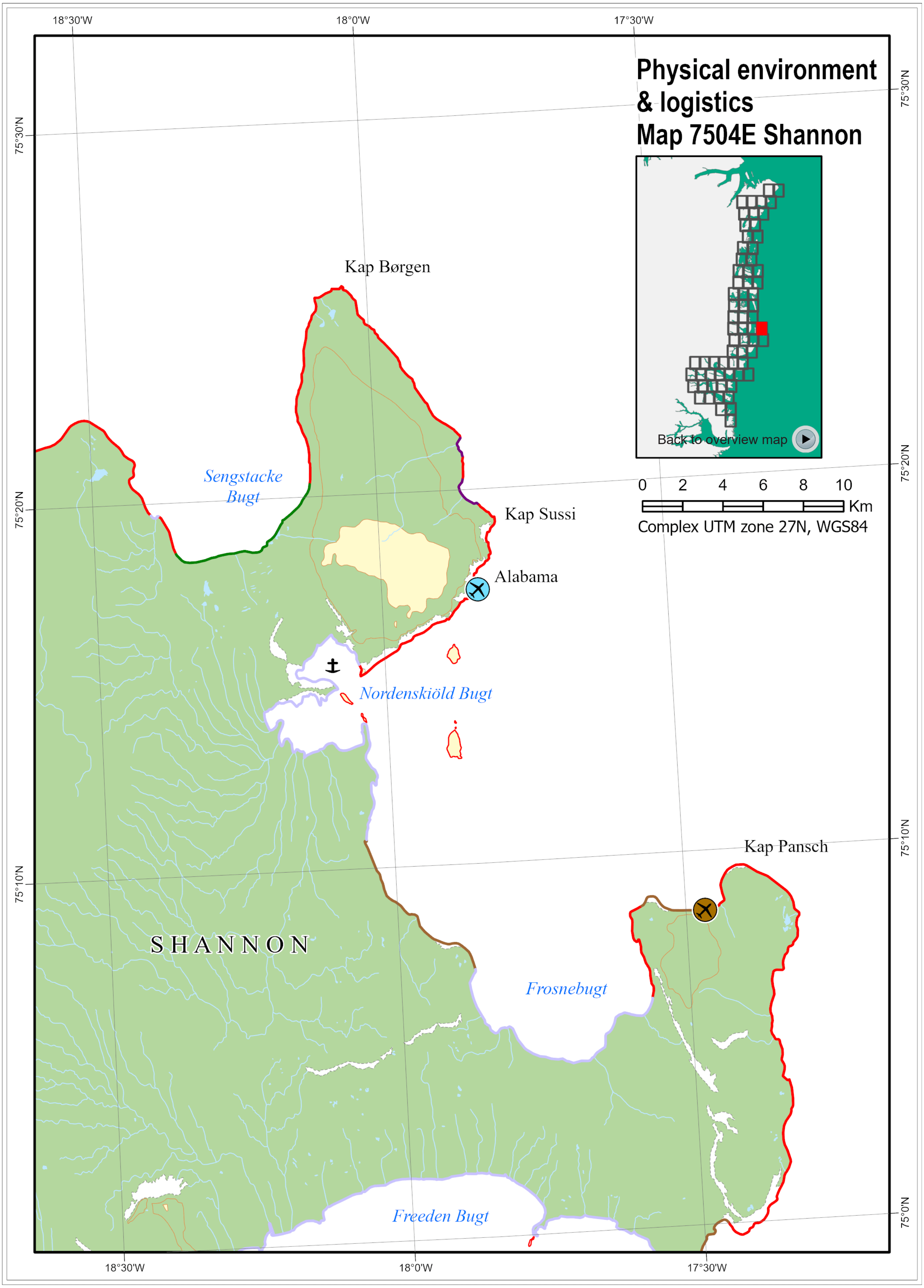
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

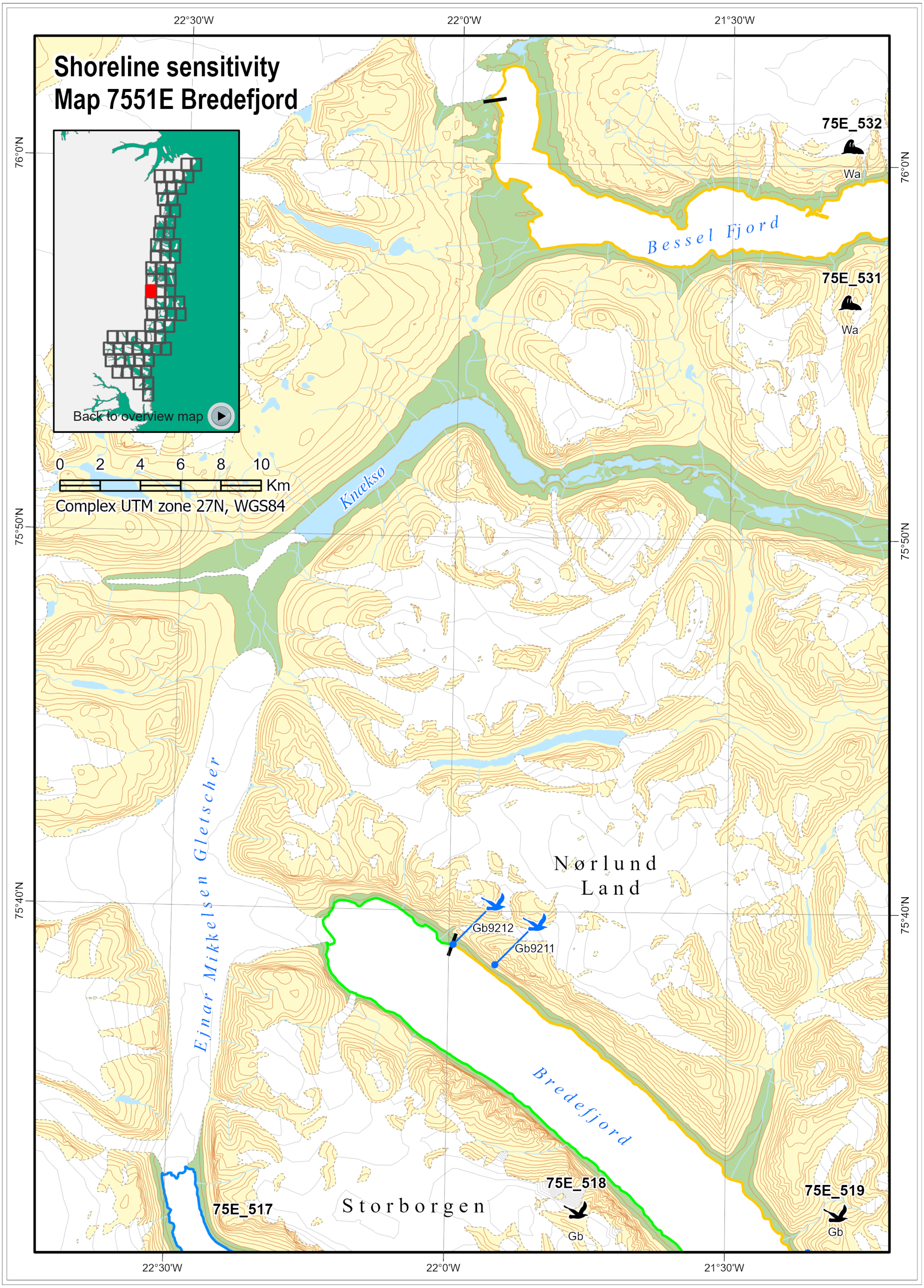
Shorelines shown on this map are predominantly rock with some delta, all of which is highly exposed and may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7504E Shannon
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
18°30'W
18°0'W
17°30'W
75°30'N
75°20'N
75°10'N
75°0'N
Kap Børgen
Sengstacke Bugt
Kap Sussi
Alabama
Nordenskiöld Bugt
Kap Pansch
SHANNON
Frosnebugt
Freeden Bugt



Shoreline sensitivity
Map 7551E Bredefjord
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
76°0'N
75°50'N
75°40'N
75E_532
Wa
75E_531
Wa
Bessel Fjord
Knæksø
Ejnar Mikkelsen Gletscher
Nørlund Land
Gb9212
Gb9211
Bredefjord
Storborgen
75E_518
Gb
75E_517
75E_519
Gb

8.37 Map 7551E – Bredefjord

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

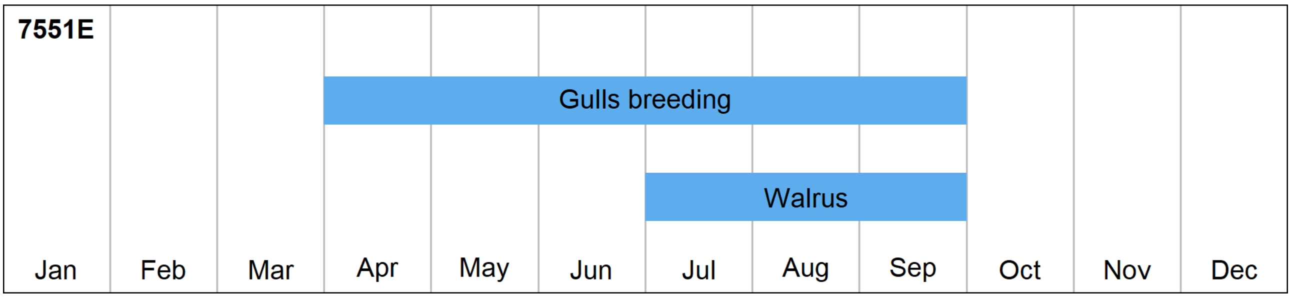
Gb75E_518	1 colony of glaucous gulls
Gb75E_519	2 colonies of glaucous gulls and 1 colony of Arctic terns
Wa75E_532, Wa75E_531	Walrus foraging

Site specific occurrence: blue icons

Gb9211, Gb9212	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_517	15	Low
75E_518	19	Moderate
75E_519	24	High
75E_531	23	High
75E_532	21	High



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June/July.

Anchorage is available at the head of Bessel Fjord. Vessels can anchor, in a depth of 58 m, sand, near the middle of the entrance to the S bay located at the head of the fiord. From the middle of the entrance to the bay, the depths decrease regularly from 91 to 9 m, about 230 m from the shore (Chapter 14).

A STOL-airstrip is noted near the head of Bessel Fjord (Chapter 15).

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

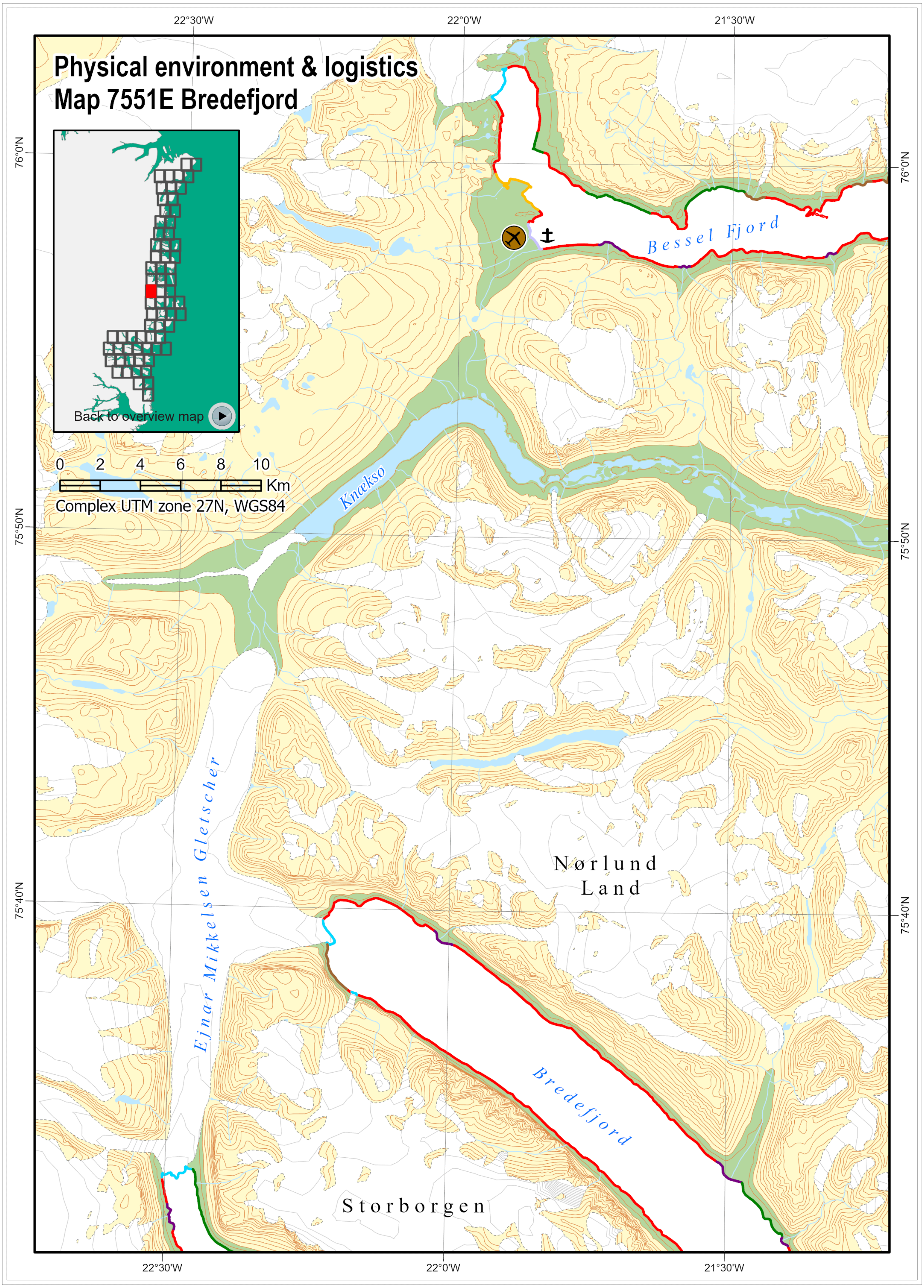
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

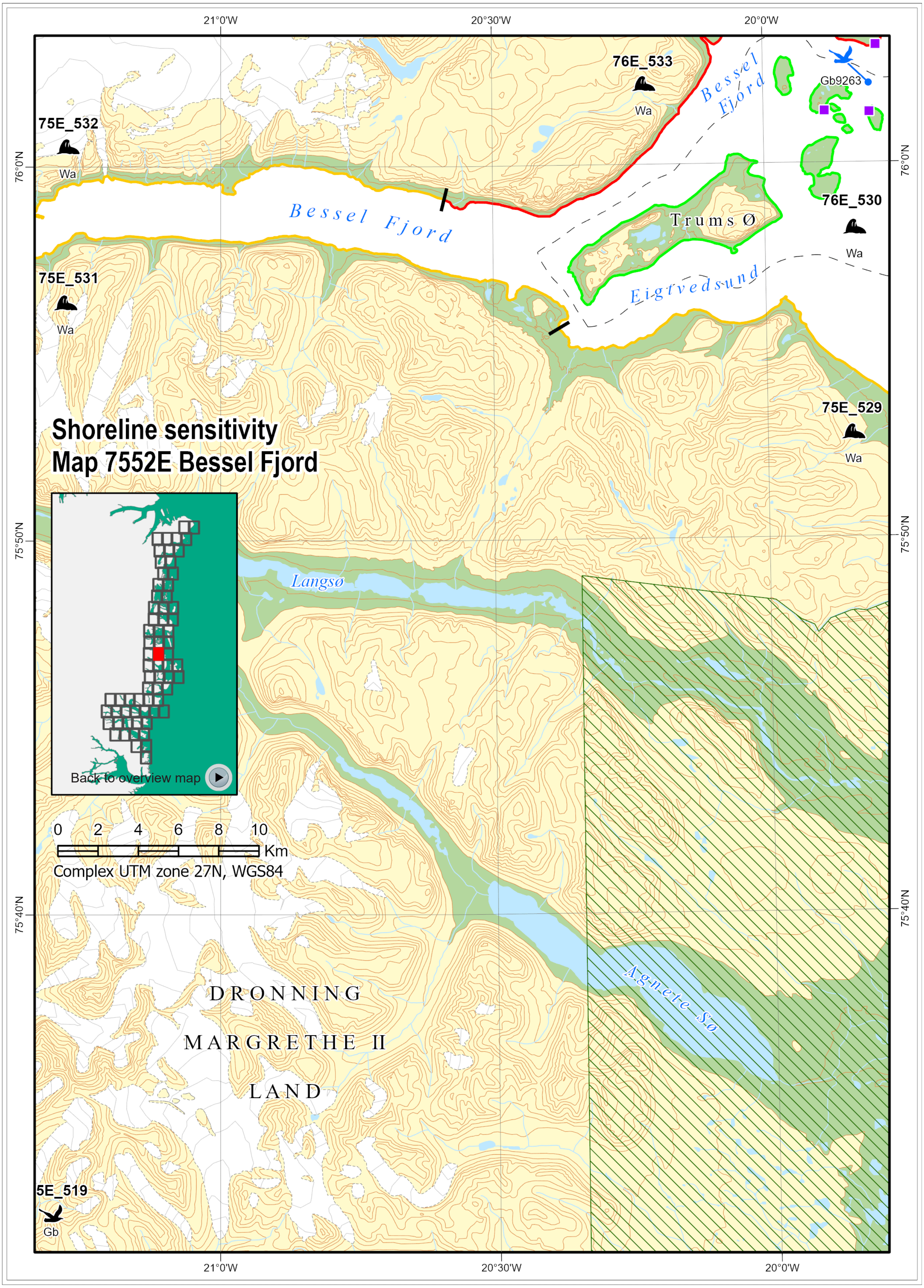
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7551E Bredefjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
22°30'W
22°0'W
21°30'W
76°0'N
75°50'N
75°40'N
Bessel Fjord
Knækso
Ejnar Mikkelsen Gletscher
Nørlund Land
Bredefjord
Storborgen



21°0'W
20°30'W
20°0'W
76°0'N
75°50'N
75°40'N
76E_533
Wa
75E_532
Wa
Bessel Fjord
Gb9263
76E_530
Wa
Trums Ø
Eigtvedsund
75E_531
Wa
75E_529
Wa
Shoreline sensitivity
Map 7552E Bessel Fjord
Back to overview map
Langsø
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Agnete Sø
DRONNING
MARGRETHE II
LAND
5E_519
Gb

8.38 Map 7552E - Bessel Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

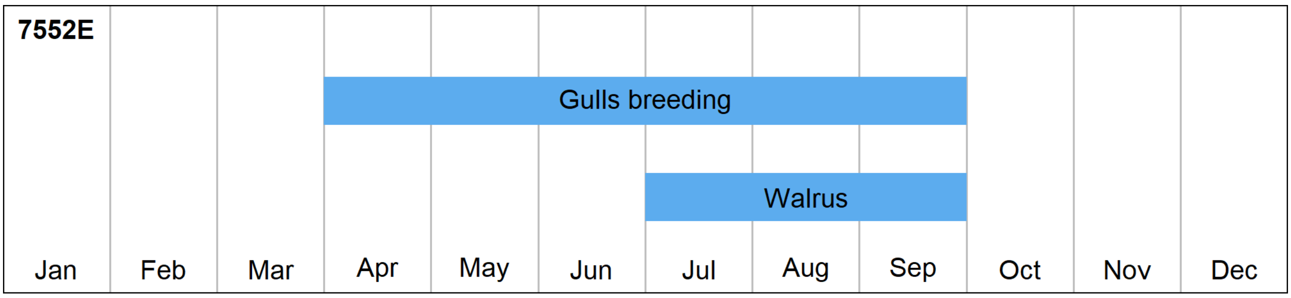
Wa75E_529, Wa76E_530	Walrus foraging
Wa76E_533	Walrus foraging

Site specific occurrence: blue icons

Gb9263	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_529	24	High
76E_530	17	Moderate
75E_531	23	High
75E_532	21	High
76E_533	19	Extreme



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from November to June and drift ice may occur all other months. Additional dangers to navigation are present here due to icebergs.

No anchorage sites are located in this map.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

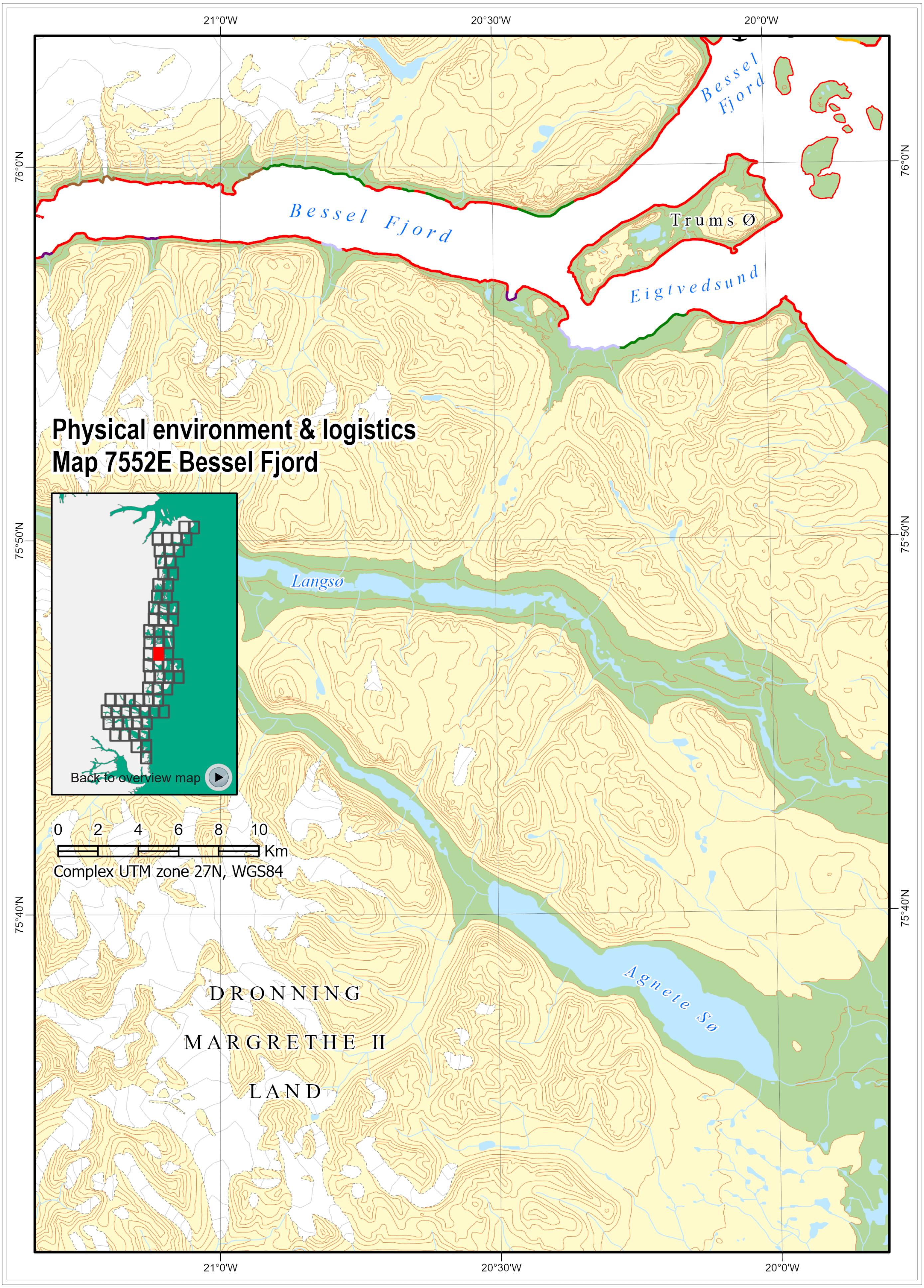
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

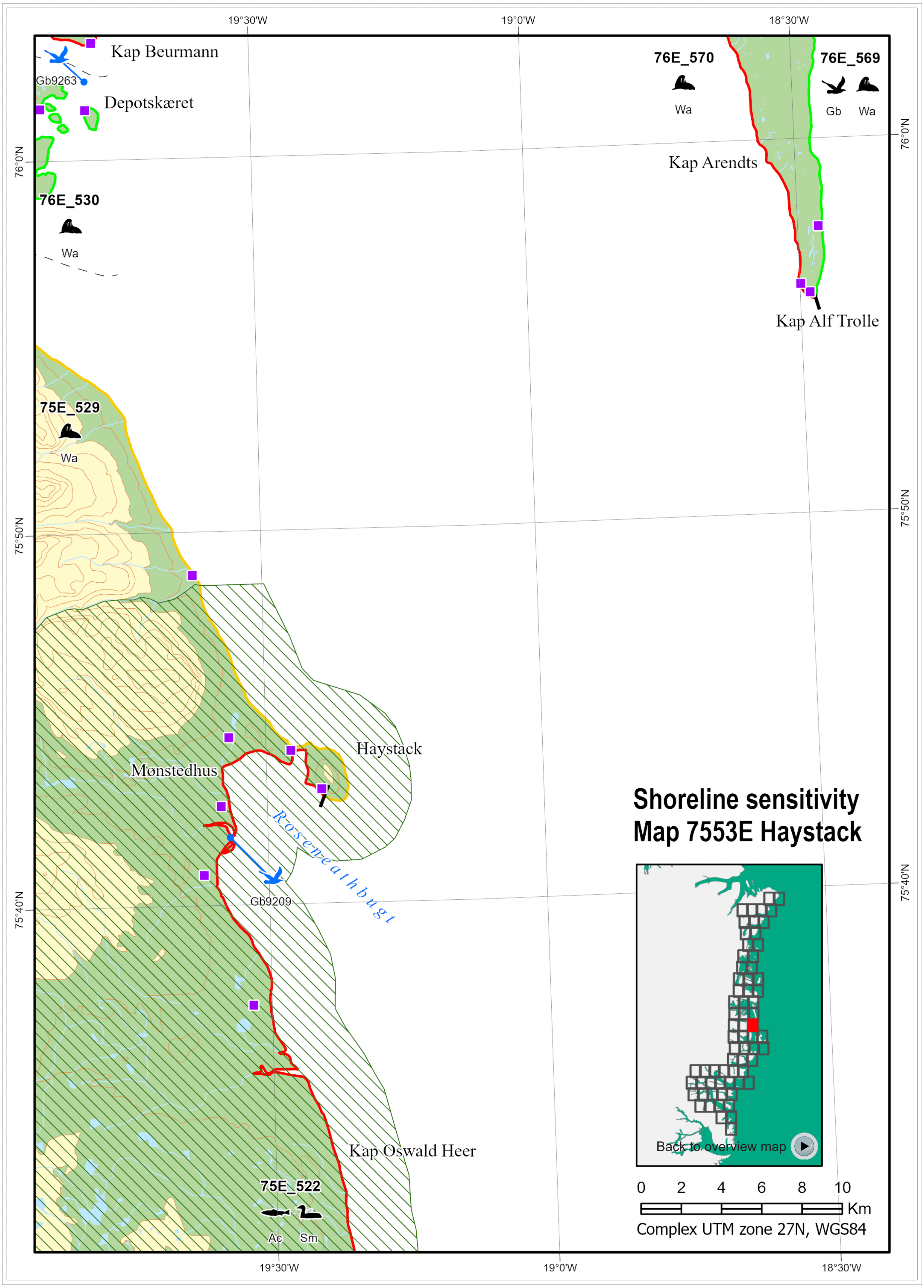
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and talus, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. The low exposure shorelines will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7552E Bessel Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
21°0'W
20°30'W
20°0'W
76°0'N
75°50'N
75°40'N
Bessel Fjord
Trums Ø
Eigtvedsund
Langsø
Agnete Sø
DRONNING
MARGRETHE II
LAND


19°30'W
19°0'W
18°30'W
Kap Beurmann
Gb9263
Depotskæret
76°0'N
76E_530
Wa
76E_570
Wa
76E_569
Gb
Wa
Kap Arendts
Kap Alf Trolle
75E_529
Wa
75°50'N
Haystack
Mønstedhus
Rosenœathbugt
Gb9209
75°40'N
Kap Oswald Heer
75E_522
Ac
Sm
Shoreline sensitivity
Map 7553E Haystack
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.39 Map 7553E – Haystack

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

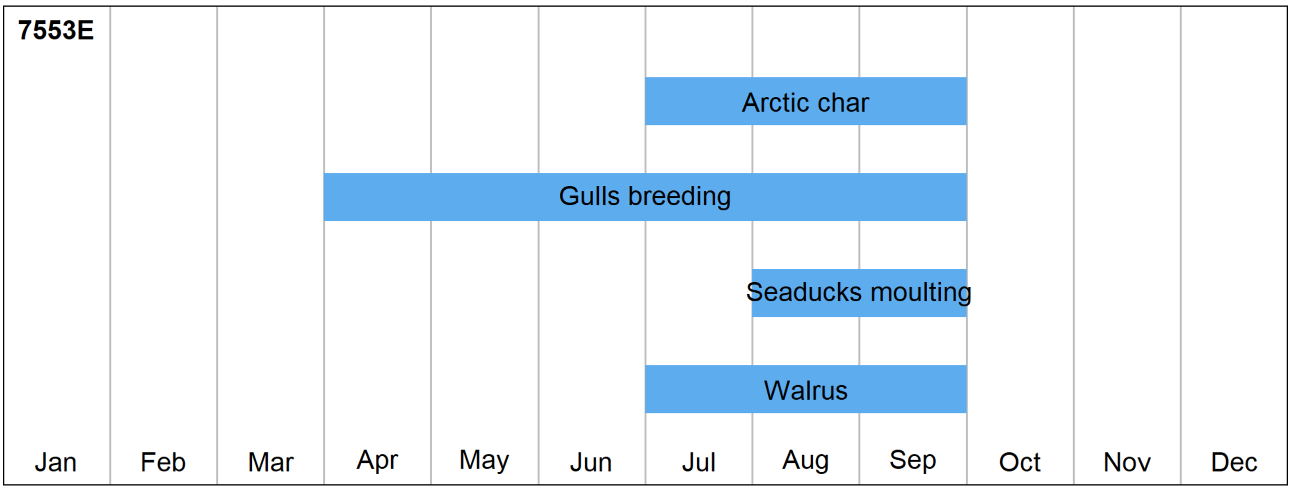
Ac75E_522	Important Arctic char river
Gb76E_569	2 colonies of glaucous gulls
Sm75E_522	Common eider and king eider moulting area
Wa75E_529, Wa76E_530	Walrus foraging
Wa76E_533	Walrus foraging
Wa76E_569, Wa76E_570	Walrus irregularly used haul-out site and foraging

Site specific occurrence: blue icons

Gb9209	Breeding Arctic terns
Gb9263	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_522	30	Extreme
75E_529	24	High
76E_530	17	Moderate
76E_533	19	Extreme
76E_569	17	Moderate
76E_570	27	Extreme



Access

The coastal waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to July/August and drift ice may occur in the other months. Additional dangers to navigation are present here due to icebergs.

Vessels can anchor, in a depth of 8 m, within a bay located 3 km W of Kap Beurmann.

Anchorage is available at Roseneath Bugt. A former hunting station (Mønstedhus) with several buildings was located on the W shore of the bay, but now replaced by a small hut. Depths of 55 m lie in the E part of the bay and decrease moderately towards the shore; however, abreast the hunting station, depths of 3 to 5 m lie up to 0.8 km offshore. During the month of August, a vessel anchored 1.2 km from the W shore of the bay with the cairn on the summit of Haystack bearing 051° and the hunting station bearing 282°. The bay was earlier reported to often remain frozen over throughout the year (Chapter 14).

A STOL-airstrip is located at Mønstedhus (Chapter 15).

Shorelines within this area are predominantly rock on the north peninsula, and a mix of barrier beach and delta on the southern portions, the E coast of Hochstetter Forland. The areas noted as beach and delta could be considered for landings; as the waters are uncharted, site surveys would be required to confirm this.

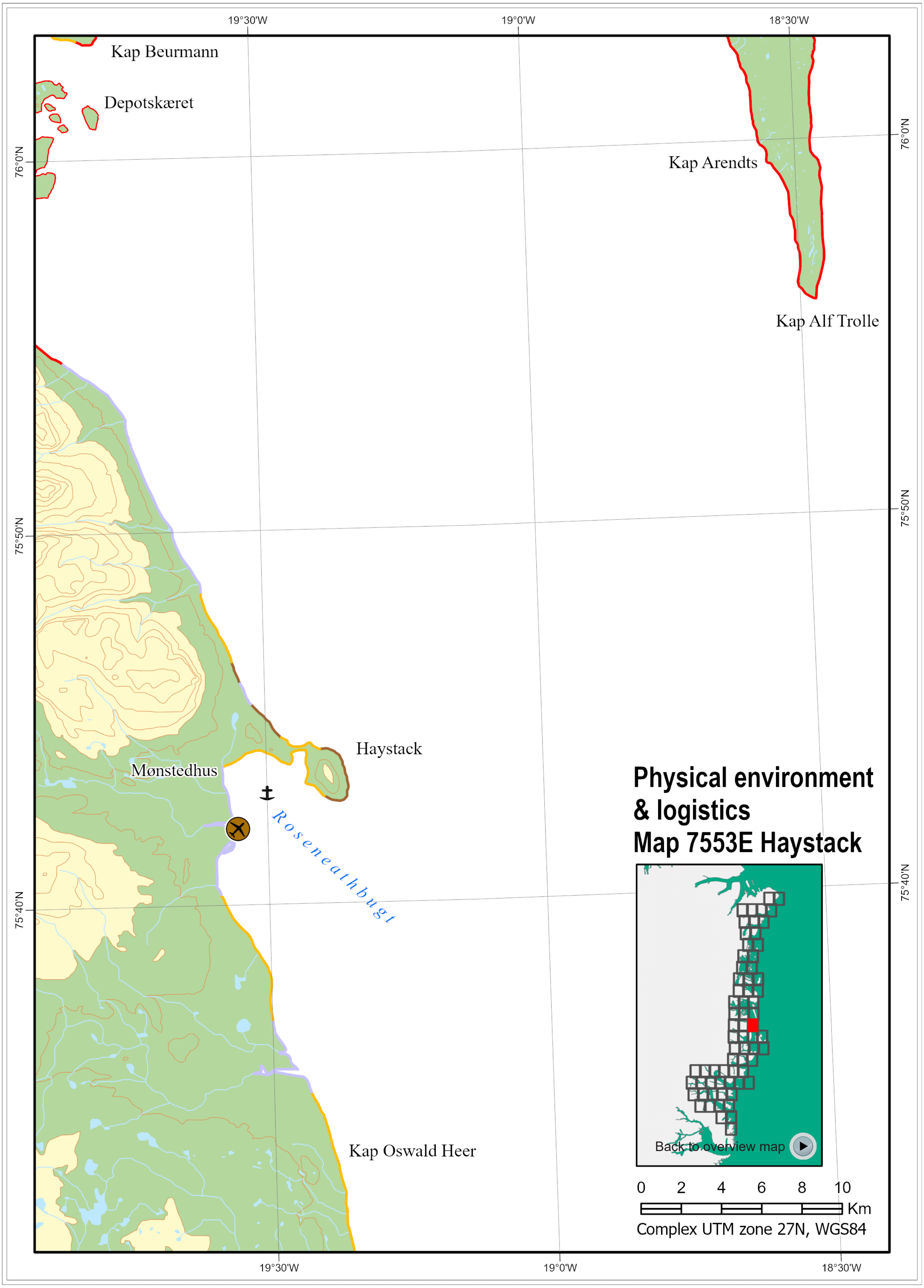
Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.


19°30'W
19°0'W
18°30'W
76°0'N
75°50'N
75°40'N
Kap Beurmann
Depotskæret
Kap Arendts
Kap Alf Trolle
Haystack
Mønstedhus
Roseneathbugt
Kap Oswald Heer
Physical environment
& logistics
Map 7553E Haystack
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map. Roseneath Bugt could be considered as such, but its extreme sensitivity rating precludes this.

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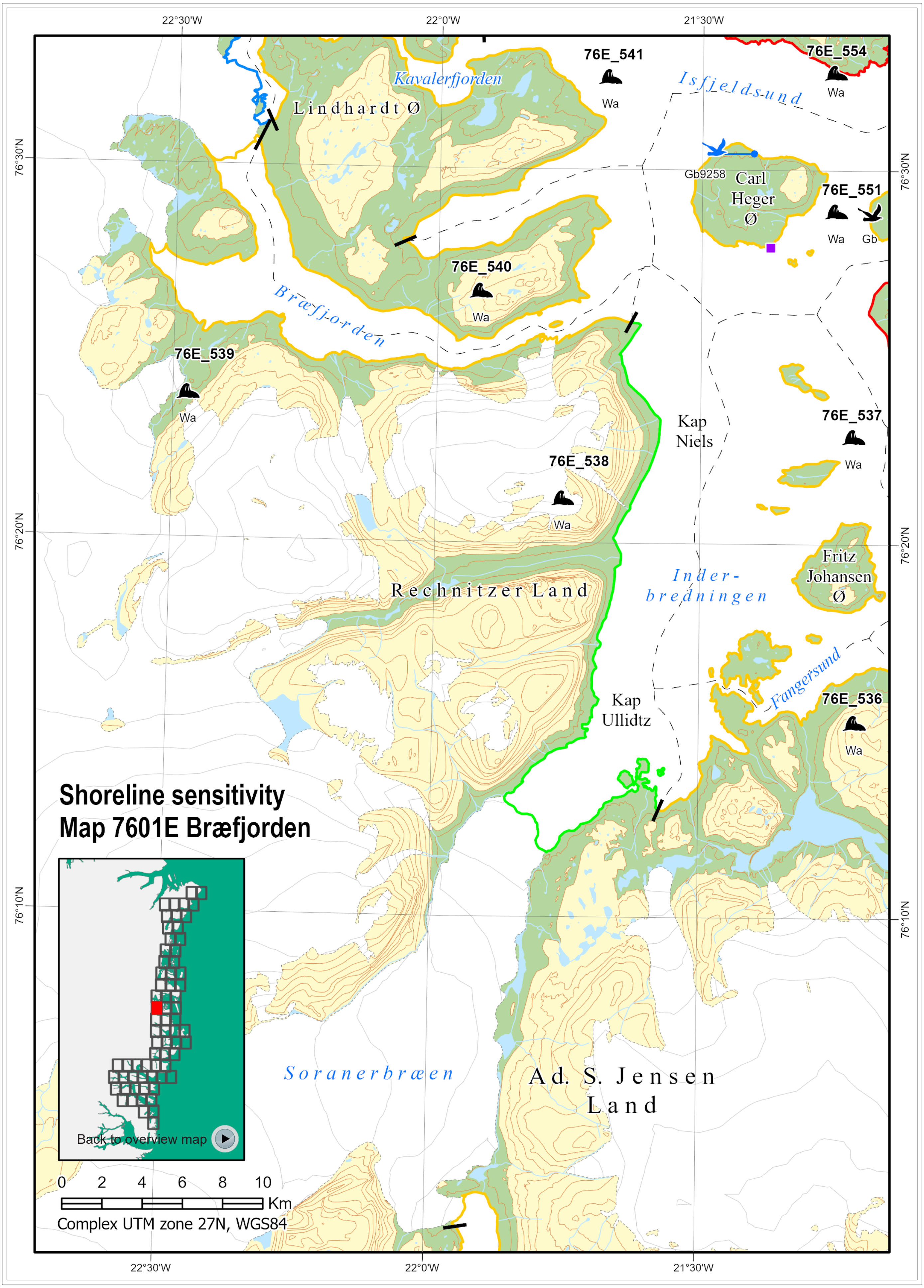


Shoreline sensitivity
Map 7601E Bræfjorden
Lindhardt Ø
Kavalerfjorden
Bræfjorden
Isfjeldsund
Carl Heger Ø
Gb9258
Kap Niels
Rechnitzer Land
Inder-bredningen
Fritz Johansen Ø
Fangersund
Kap Ullidtz
Soranerbræen
Ad. S. Jensen Land
76E_541
76E_554
76E_551
76E_540
76E_539
76E_538
76E_537
76E_536
Wa
Gb
22°30'W
22°0'W
21°30'W
76°30'N
76°20'N
76°10'N
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84

8.40 Map 7601E – Brøfjorden

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

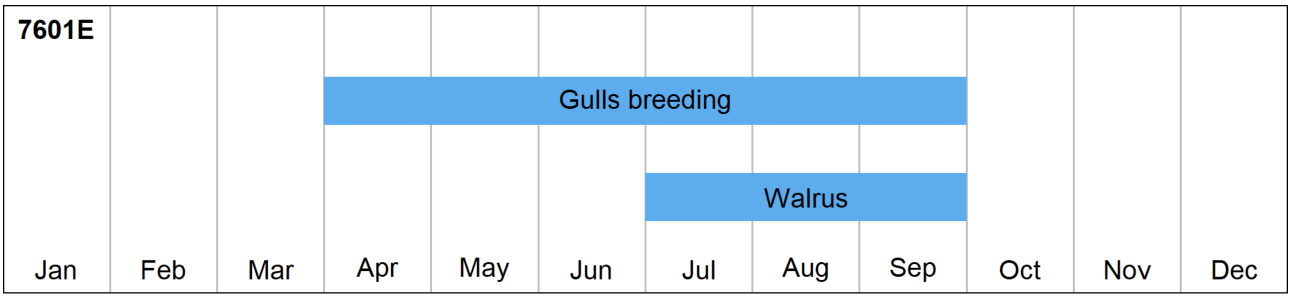
Gb76E_551	1 colony of glaucous gulls
Gb76E_550	1 colony of glaucous gulls and 3 colonies of Arctic terns
Wa75E_531, Wa75E_532	Walrus foragingt
Wa76E_536 - Wa76E_543	Walrus foraging
Wa76E_550, Wa76E_551	Walrus foraging
Wa76E_554	Walrus foraging

Site specific occurrence: blue icons

Gb9258	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
75E_531	23	High
75E_532	21	High
76E_536	22	High
76E_537	22	High
76E_538	20	Moderate
76E_539	20	High
76E_540	21	High
76E_541	22	High
76E_542	22	High
76E_543	14	Low
76E_550	36	Extreme
76E_551	23	High
76E_554	27	Extreme



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to numerous icebergs.

No anchorages are reported for this map area.

A STOL-airstrip is noted 6 km S of Kap Niels in Rechnitzer Land (Chapter 15).

Shorelines within this area are predominantly rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

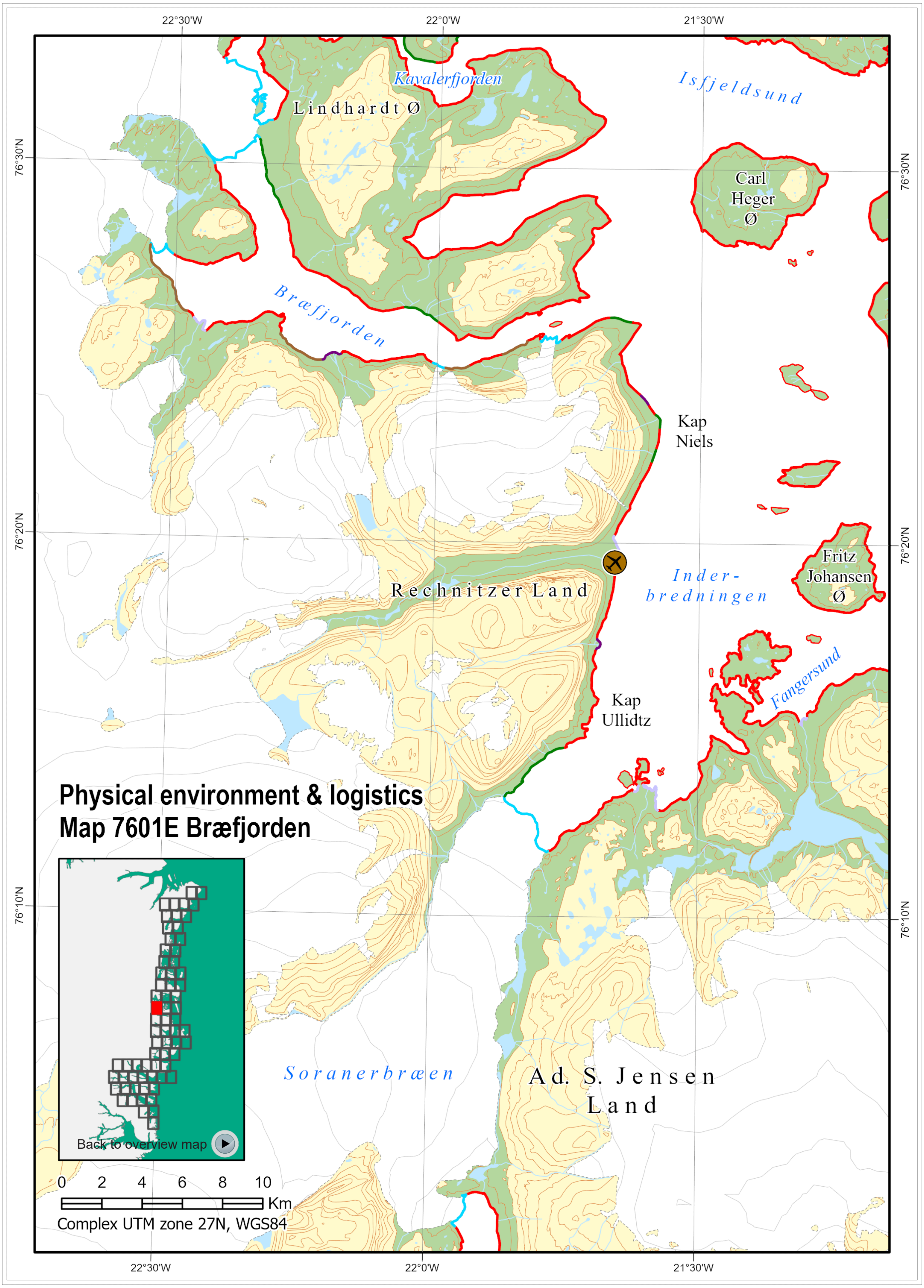
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

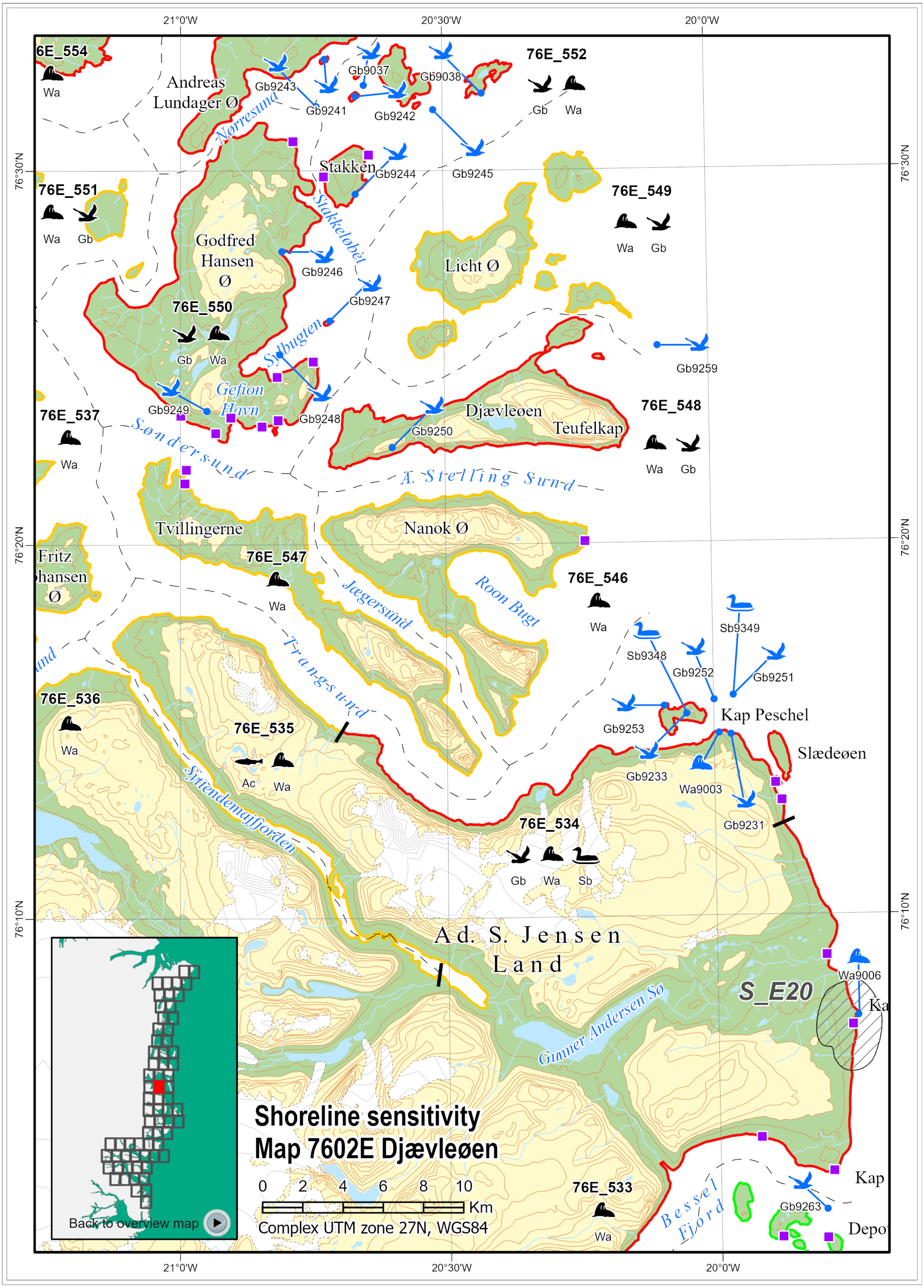
Shorelines within this area are predominantly rock and glacier, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7601E Bræfjorden
22°30'W
22°0'W
21°30'W
76°30'N
76°20'N
76°10'N
Kayalerfjorden
Lindhardt Ø
Isfjeldsund
Carl
Heger
Ø
Bræfjorden
Kap
Niels
Inder-
bredningen
Fritz
Johansen
Ø
Rechnitzer Land
Fangersund
Kap
Ullidtz
Soranerbræen
Ad. S. Jensen
Land
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84


21°0'W
20°30'W
20°0'W
76°30'N
76°20'N
76°10'N
76E_554
Wa
Andreas
Lundager Ø
Nørresund
Gb9243
Gb9241
Gb9037
Gb9038
Gb9242
76E_552
Gb
Wa
Stakken
Gb9244
Gb9245
76E_551
Wa
Gb
Stakkeløbet
Godfred
Hansen
Ø
Gb9246
Licht Ø
76E_549
Wa
Gb
Gb9247
76E_550
Gb
Wa
Sylbugten
Gefion
Havn
Gb9249
Gb9248
Gb9259
Djævleøen
Teufelkap
Gb9250
76E_548
Wa
Gb
76E_537
Wa
Søndersund
A. Stelling Sund
Tvillingerne
Nanok Ø
Fritz
hansen
Ø
76E_547
Wa
76E_546
Wa
Jægersund
Roon Bugt
Sb9349
Sb9348
Gb9252
Gb9251
Trangsund
Kap Peschel
Gb9253
76E_536
Wa
76E_535
Ac
Wa
Gb9233
Wa9003
Slædeøen
Gb9231
Sydøstdemaijfjorden
76E_534
Gb
Wa
Sb
Ad. S. Jensen
Land
Wa9006
S_E20
Ka
Gunner Andersen Sø
Back to overview map
Shoreline sensitivity
Map 7602E Djævleøen
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
76E_533
Wa
Bessel Fjord
Kap
Gb9263
Depo

8.41 Map 7602E – Djævleøen

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb76E_551	1 colony of glaucous gulls
Ac76E_535	Important Arctic char river
Gb76E_553	3 colonies of Arctic terns and 1 colony of Sabine's gulls
Gb76E_552	3 colonies of glaucous gulls and 5 colonies of Arctic terns
Gb76E_550	1 colony of glaucous gulls and 3 colonies of Arctic terns
Gb76E_549	1 colony of Arctic terns
Gb76E_548	1 colony of glaucous gulls
Gb76E_534	2 colonies of glaucous gulls and 3 colonies of Arctic terns
Sb76E_534	2 colonies of common eiders
Wa76E_530	Walrus haul-out
Wa76E_533 - Wa76E_537	Walrus haul-out and foraging
Wa76E_546 - Wa76E_554	Walrus foraging
Wa76E_547	Walrus foraging

Site specific occurrence: blue icons

Gb9037, Gb9038	Breeding glaucous gulls and Arctic terns
Gb9231	Breeding glaucous gulls
Gb9233	Breeding Arctic terns
Gb9241 - Gb9243	Breeding Arctic terns
Gb9244	Breeding glaucous gulls
Gb9245 - Gb9248	Breeding Arctic terns
Gb9249, Gb9250	Breeding glaucous gulls
Gb9251, Gb9252	Breeding Arctic terns
Gb9253	Breeding glaucous gulls
Gb9259, Gb9263	Breeding Arctic terns
Sb9348, Sb9349	Breeding common eiders
Sb9351	Breeding common eiders
Wa9003	Walrus haul-out site
Wa9006	Walrus haul-out site **(S_E20)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_530	17	Moderate
76E_533	19	Extreme
76E_534	36	Extreme
76E_535	25	High
76E_536	22	High
76E_537	22	High
76E_546	22	High
76E_547	25	High
76E_548	26	Extreme
76E_549	23	High
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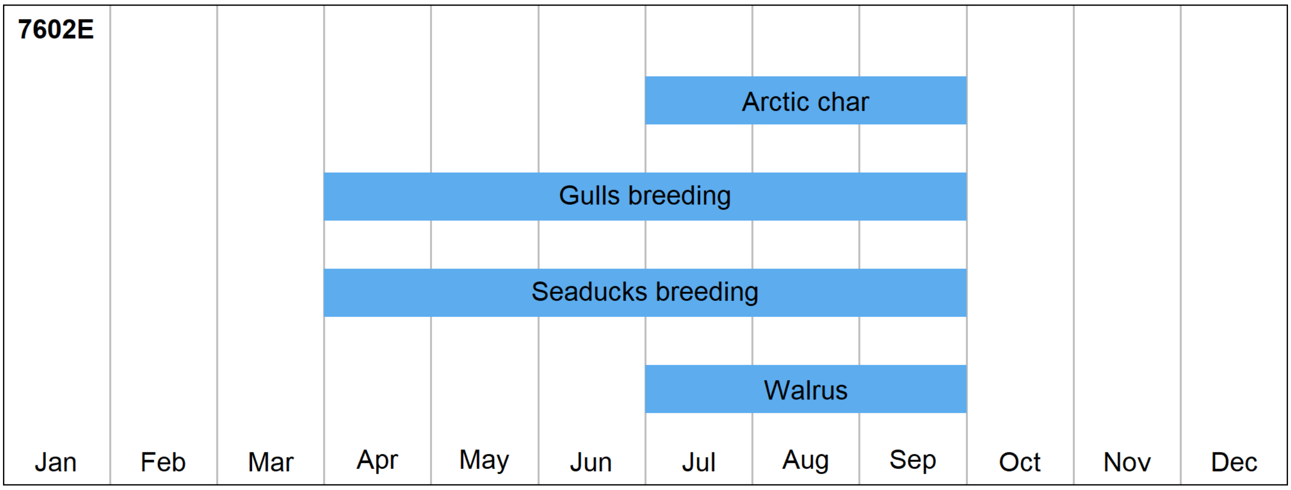
76E_551	23	High
76E_552	34	Extreme
76E_553	29	Extreme
76E_554	27	Extreme



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Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from december to July/ August and drift ice may occur in the other months. Additional dangers to navigation are present here due to numerous icebergs.

Gefion Havn is sheltered from all winds and deep water lies close inshore. Anchorage is available, in a depth of 82 m, soft mud and good holding ground, 550 m SSE of the former hunting station. Anchorage is also available, in a depth of 30 m, good holding ground, 180 m from the head of the harbor.

Vessels can anchor, in a depth of 8 m, in Bessel Fjord within a bay located 3 km W of Kap Beurmann (Chapter 14).

A STOL-airstrip is noted at Påskenæsset N of Kap Carl Ritter (Chapter 15) and one apparently on the sea ice ("skiway") NW of Kap Peschel.

Shorelines within this area are almost exclusively rock, with some talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

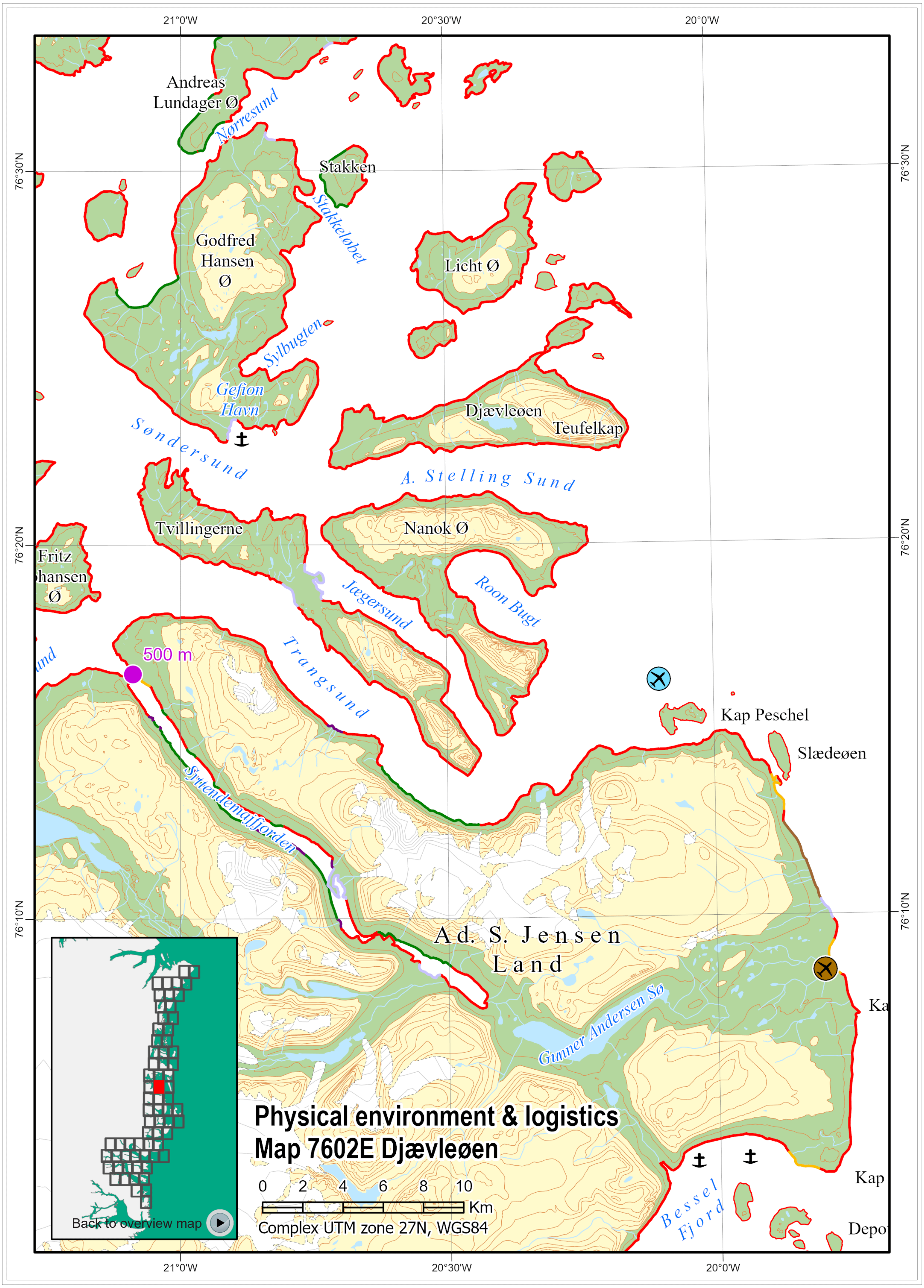
An opportunity for nearshore booming exists at the entrance to Syttendemajfjorden, where a modest length of exclusion boom could be used at the entrance (est. 500 m) to protect a large and highly sensitive inshore area.

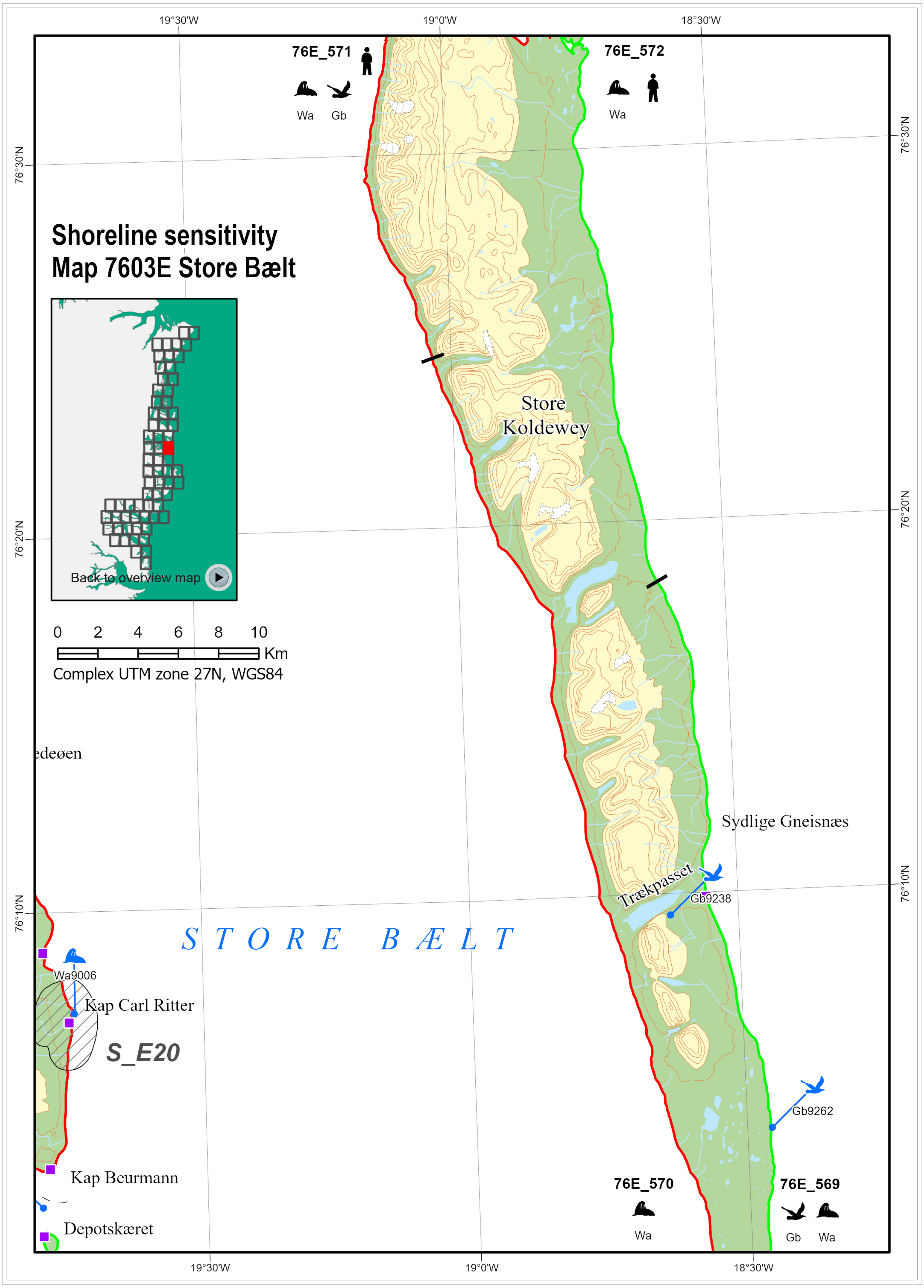
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier with moderate exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7602E Djævleøen
Andreas
Lundager Ø
Nørresund
Stakken
Stakkeløbet
Godfred
Hansen
Ø
Licht Ø
Sylbugten
Gefion
Havn
Djævleøen
Teufelkap
Søndersund
A. Stelling Sund
Tvillingerne
Nanok Ø
Fritz
hansen
Ø
Jægersund
Roon Bugt
500 m
Trangsund
Kap Peschel
Slædeøen
Syttendemajfjorden
Ad. S. Jensen
Land
Gunner Andersen Sø
Ka
Kap
Depo
Bessel
Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
21°0'W
20°30'W
20°0'W
76°30'N
76°20'N
76°10'N


Shoreline sensitivity
Map 7603E Store Bælt
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°30'W
19°0'W
18°30'W
76°30'N
76°20'N
76°10'N
76E_571
Wa
Gb
76E_572
Wa
Store
Koldewey
edeøen
Sydlige Gneisnæs
Trækpasset
Gb9238
STORE BÆLT
Wa9006
Kap Carl Ritter
S_E20
Gb9262
Kap Beurmann
Depotskæret
76E_570
Wa
76E_569
Gb
Wa

8.42 Map 7603E - Store Bælt

Shoreline sensitivity map

Human use

76E_571, 76E_572	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Danmarkshavn (permanently manned weather station).

Species occurrence

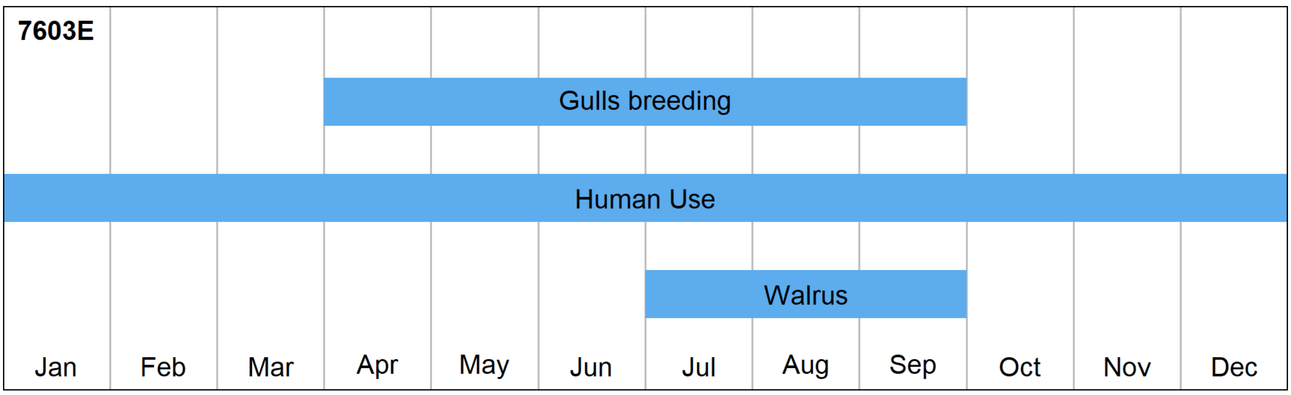
Gb76E_571	1 colony of glaucous gulls
Gb76E_569	2 colonies of glaucous gulls
Wa76E_530, Wa76E_533	Walrus haul-out site and foraging
Wa76E_569 - Wa76E_572	Walrus foraging

Site specific occurrence: blue icons

Gb9238	Breeding glaucous gulls
Gb9262	Breeding glaucous gulls
Gb9263	Breeding Arctic terns
Wa9006	Walrus haul-out site **(S_E20)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_530	17	Moderate
76E_533	19	Extreme
76E_569	17	Moderate
76E_570	27	Extreme
76E_571	32	Extreme
76E_572	16	Moderate



Access
The coastal waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters to the west of the island Store Koldewey are covered by shorefast ice from January to July/August and to the east by a semi-permanent ice shelf. Additional dangers to navigation are present here due to numerous icebergs.

No anchorages are reported for this map area.

Three STOL-airstrips are noted at Påskenæsset N of Kap Carl Ritter, and at two sites on the island Store Koldewey, Trækpasset and 10 km S of that (Chapter 15).

Shorelines within this area are exclusively rock, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

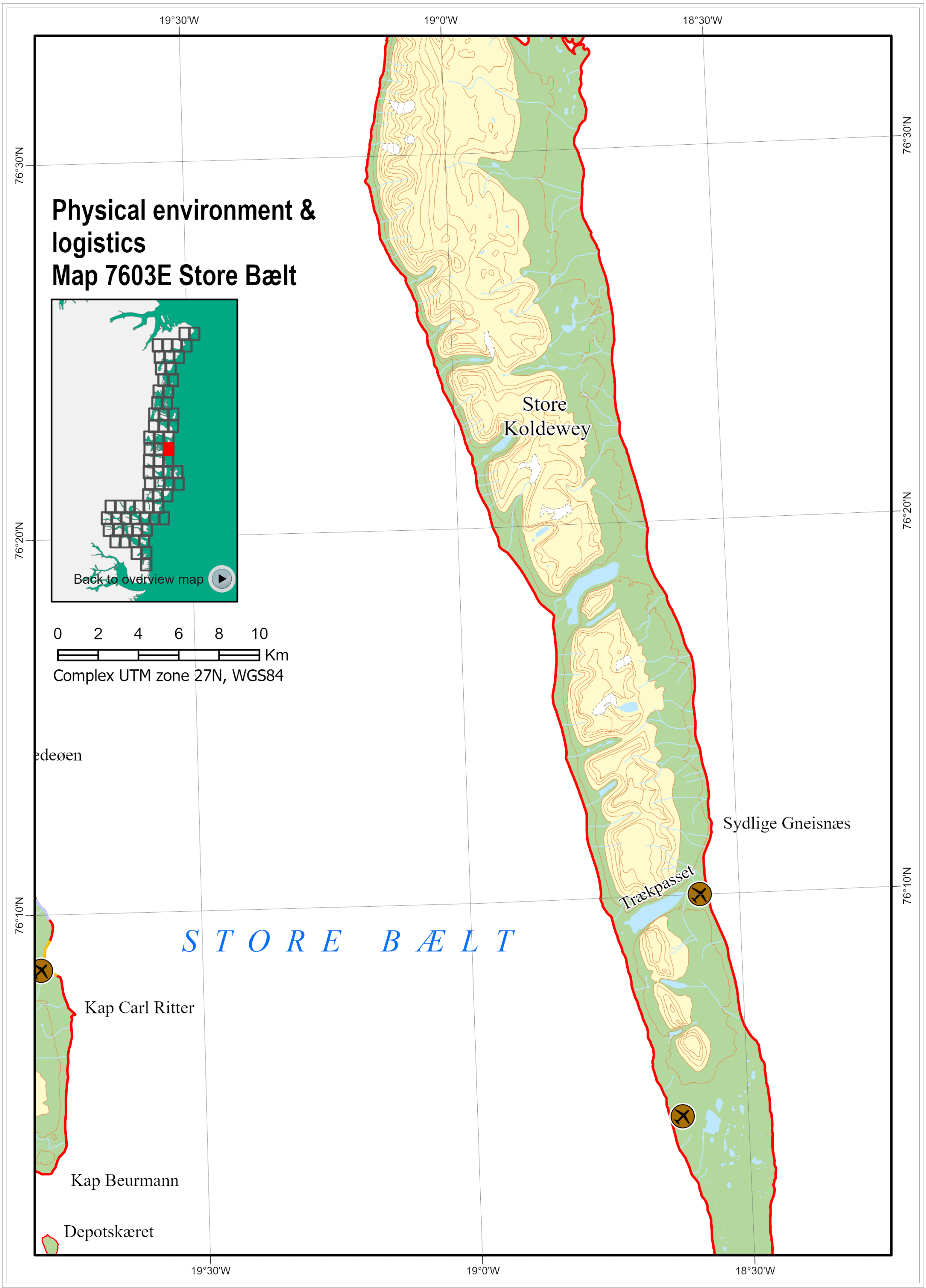
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

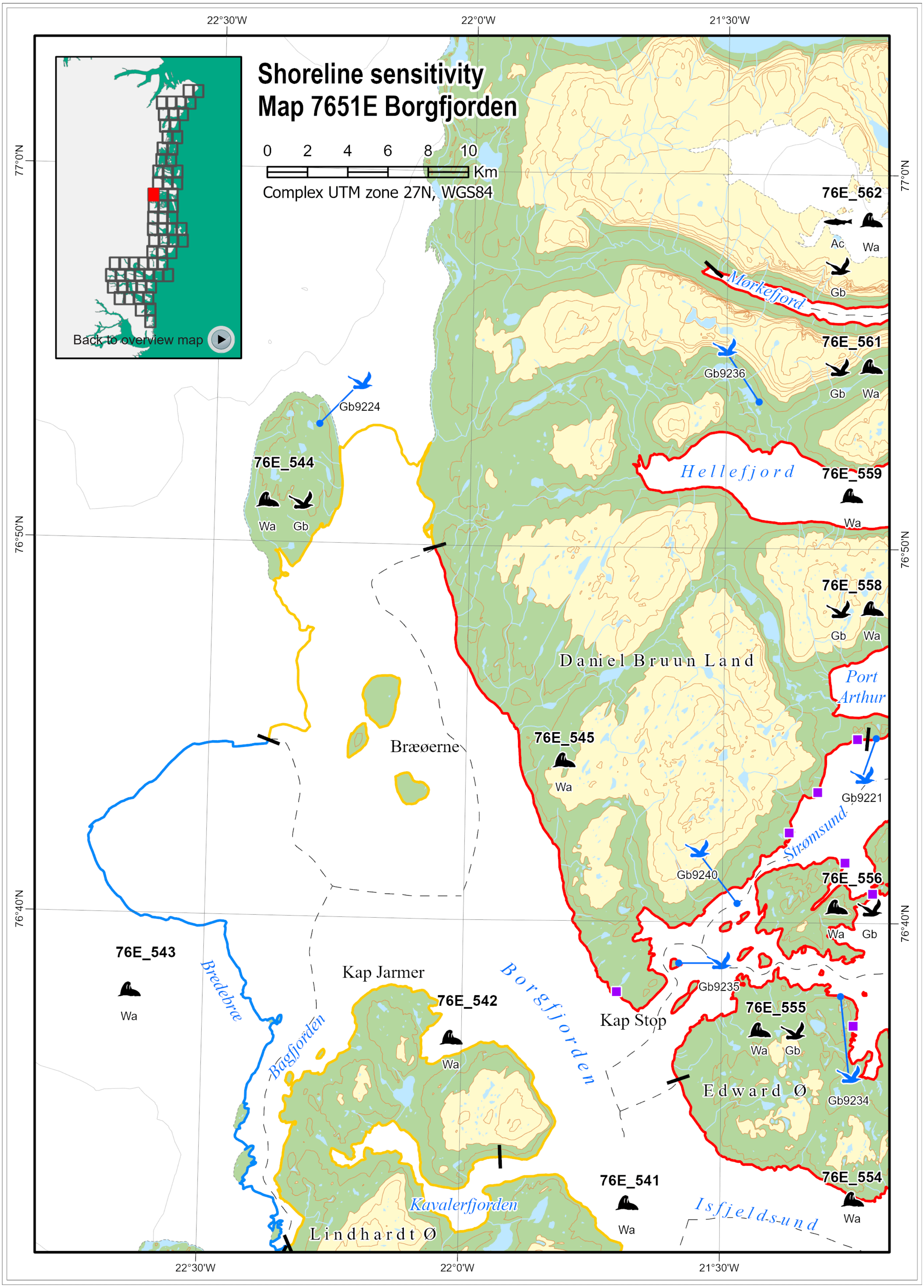
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are exclusively rock, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7603E Store Bælt
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°30'W
19°0'W
18°30'W
76°30'N
76°20'N
76°10'N
Store Koldewey
edeøen
Sydlige Gneisnæs
Trækpasset
S T O R E B Æ L T
Kap Carl Ritter
Kap Beurmann
Depotskæret


Shoreline sensitivity
Map 7651E Borgfjorden
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
22°30'W
22°0'W
21°30'W
77°0'N
76°50'N
76°40'N
76E_562
Ac
Wa
Gb
Mørkefjord
76E_561
Gb9236
Gb
Wa
Gb9224
76E_544
Wa
Gb
Hellefjord
76E_559
Wa
76E_558
Gb
Wa
Daniel Bruun Land
Port Arthur
76E_545
Wa
Bræøerne
Gb9221
Strømsund
Gb9240
76E_556
Wa
Gb
76E_543
Wa
Bredebræ
Kap Jarmer
76E_542
Wa
Bagfjorden
Borgfjorden
Gb9235
Kap Stop
76E_555
Wa
Gb
Edward Ø
Gb9234
76E_554
Wa
76E_541
Wa
Kavalerfjorden
Lindhardt Ø
Isfjeldsund

8.43 Map 7651E – Borgfjorden

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

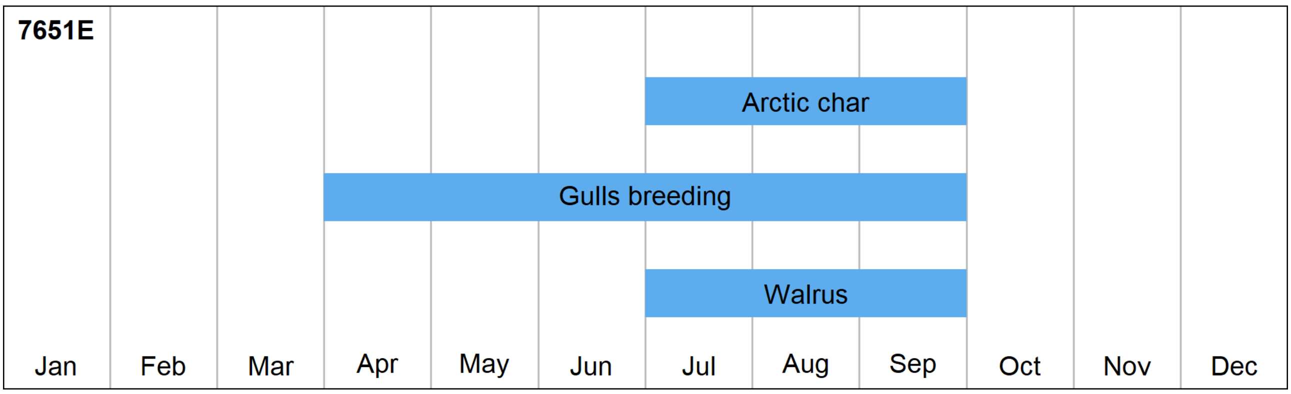
Ac76E_562	Important Arctic char river
Gb76E_558	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb76E_544	1 colony of glaucous gulls
Gb76E_556	2 colonies of Arctic terns
Gb76E_561	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb76E_562	1 colony of glaucous gulls
Gb76E_555	2 colonies of glaucous gulls
Wa76E_541 - Wa76E_545	Walrus foraging
Wa76E_554 - Wa76E_556	Walrus foragingt
Wa76E_558, Wa76E_559	Walrus foraging
Wa76E_561, Wa76E_562	Walrus foraging

Site specific occurrence: blue icons

Gb9221, Gb9224	Breeding glaucous gulls
Gb9234, Gb9235	Breeding glaucous gulls
Gb9236, Gb9240	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_541	22	High
76E_542	22	High
76E_543	14	Low
76E_544	20	High
76E_545	28	Extreme
76E_554	27	Extreme
76E_555	32	Extreme
76E_556	31	Extreme
76E_558	26	Extreme
76E_559	25	Extreme
76E_561	33	Extreme
76E_562	36	Extreme



Access

The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July. Additional dangers to navigation are present here due to numerous icebergs.

No anchorages are reported for this map area.

A STOL-airstrip is located at Kap Stop apparently on the sea ice (“skiway”), the southernmost extremity of Daniel Bruun Land (Chapter 15).

Shorelines within this area are predominantly rock, talus, and glacier, allowing little opportunity for marine access.

Countermeasures

In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

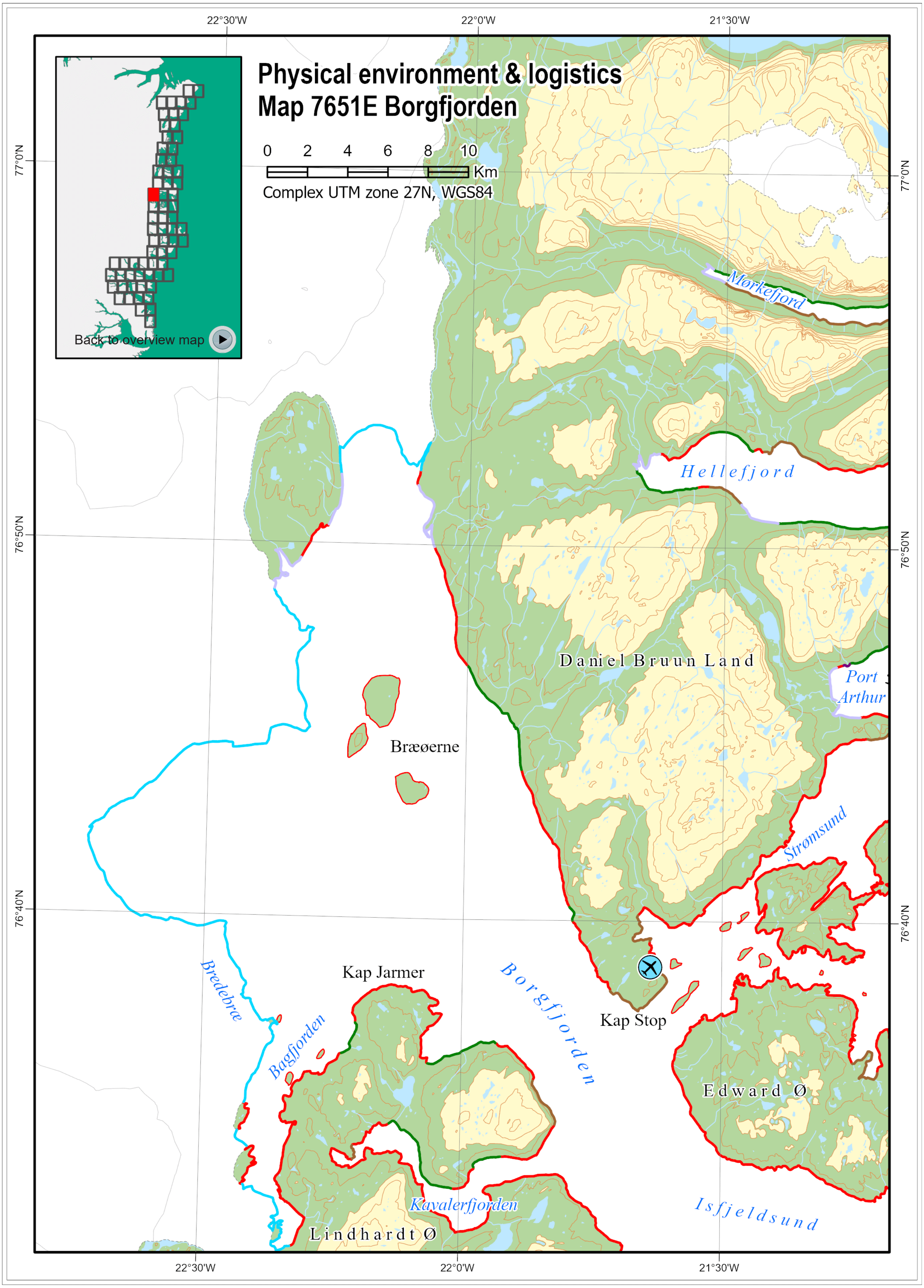
Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

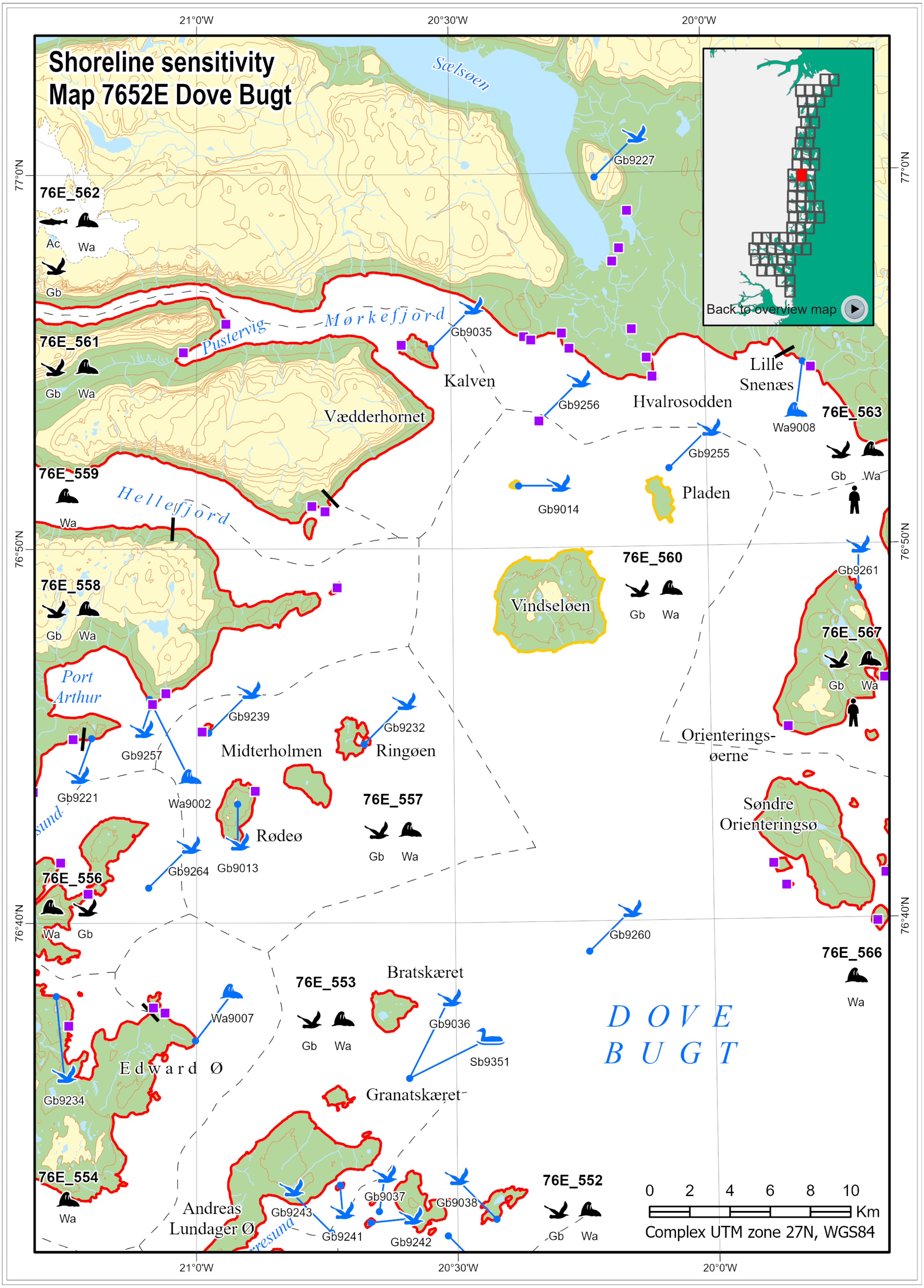
Shorelines within this area are predominantly rock, talus, and glacier, with low to moderate high exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7651E Borgfjorden
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
22°30'W
22°0'W
21°30'W
77°0'N
76°50'N
76°40'N
Mørkefjord
Hellefjord
Daniel Bruun Land
Port Arthur
Bræøerne
Strømsund
Kap Jarmer
Borgfjorden
Kap Stop
Bredebræ
Bagfjorden
Edward Ø
Kavalerfjorden
Isfjeldsund
Lindhardt Ø



Shoreline sensitivity
Map 7652E Dove Bugt
21°0'W
20°30'W
20°0'W
77°0'N
76°50'N
76°40'N
Sælsøen
Mørkefjord
Pustervig
Hellefjord
Port Arthur
Kalven
Vædderhornet
Hvalrosodden
Lille Snenæs
Pladen
Vindseløen
Midterholmen
Ringøen
Rødeø
Orienterings-øerne
Søndre Orienteringsø
Bratskæret
Granatskæret
Edward Ø
Andreas Lundager Ø
DOVE BUGT
76E_562
76E_561
76E_559
76E_558
76E_556
76E_554
76E_553
76E_557
76E_560
76E_563
76E_567
76E_566
76E_552
Ac
Wa
Gb
Gb9227
Gb9035
Gb9256
Gb9255
Wa9008
Gb9014
Gb9261
Gb9239
Gb9232
Gb9257
Gb9221
Wa9002
Gb9264
Gb9013
Gb9260
Wa9007
Gb9036
Sb9351
Gb9234
Gb9243
Gb9037
Gb9038
Gb9241
Gb9242
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84

8.44 Map 7652E - Dove Bugt

Shoreline sensitivity map

Human use

76E_563, 76E_567	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Danmarkshavn (permanently manned weather station).

Species occurrence

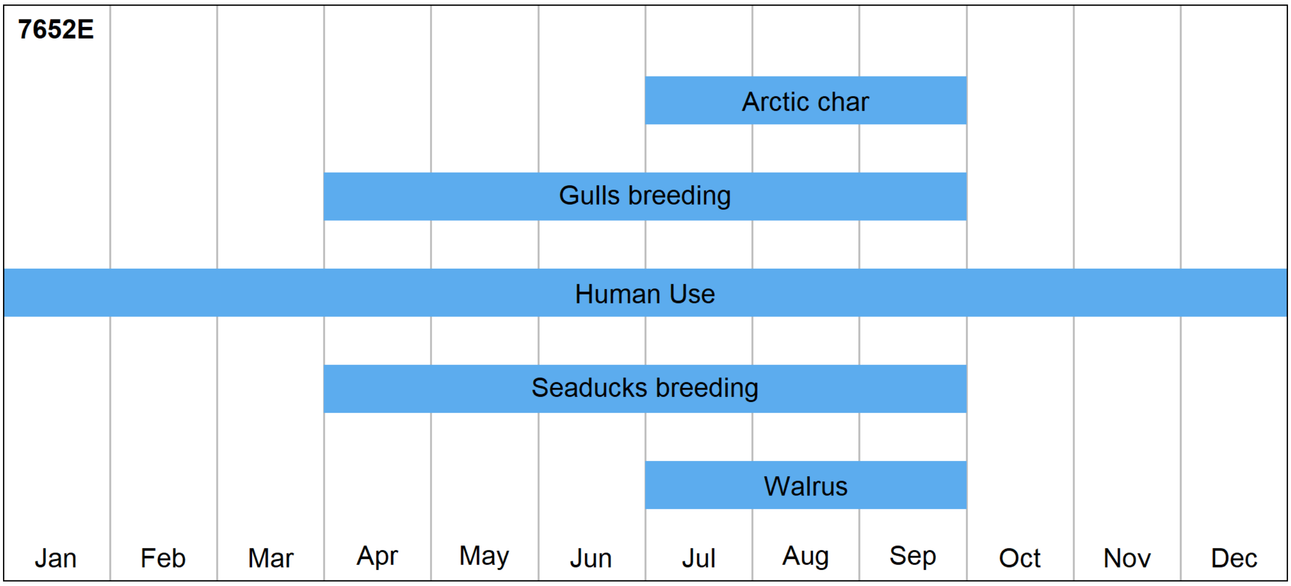
Ac76E_562	Important Arctic char river
Gb76E_567	2 colonies of glaucous gulls
Gb76E_563	2 colonies of Arctic terns and 1 colony of Sabine’s gulls
Gb76E_562	1 colony of glaucous gulls
Gb76E_561	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb76E_560	3 colonies of Arctic terns, 1 colony of Sabine’s gulls and 1 colony of black-legged kittiwakes
Gb76E_558	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb76E_557	3 colonies of Arctic terns, 1 colony of Sabine’s gulls and 1 colony of black-legged kittiwakes
Gb76E_556	2 colonies of Arctic terns
Gb76E_555	2 colonies of glaucous gulls
Gb76E_553	3 colonies of Arctic terns and 1 colony of Sabine’s gulls
Gb76E_552	3 colonies of glaucous gulls and 5 colonies of Arctic terns
Wa76E_545	Walrus foraging
Wa76E_552 - Wa76E_563	Walrus haul-out site and foraging
Wa76E_566, Wa76E_567	Walrus foraging

Site specific occurrence: blue icons

Gb9013, Gb9014	Breeding Sabine’s gulls, Arctic terns and black-legged kittiwakes
Gb9035	Breeding glaucous gulls and Arctic terns
Gb9036	Breeding Sabine’s gulls and Arctic terns
Gb9037, Gb9038	Breeding glaucous gulls and Arctic terns
Gb9221, Gb9227	Breeding glaucous gulls
Gb9232	Breeding Arctic terns
Gb9234	Breeding glaucous gulls
Gb9239	Breeding Arctic terns
Gb9241 - Gb9243	Breeding Arctic terns
Gb9245	Breeding Arctic terns
Gb9255 - Gb9257	Breeding Arctic terns
Gb9260	Breeding Arctic terns
Gb9261	Breeding glaucous gulls
Gb9264	Breeding Arctic terns
Sb9351	Breeding common eiders
Wa9007	Walrus haul-out site
Wa9002, Wa9008	Walrus irregularly used haul-out sites

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_545	28	Extreme
76E_552	34	Extreme
76E_553	29	Extreme
76E_554	27	Extreme
76E_555	32	Extreme
76E_556	31	Extreme
76E_557	28	Extreme
76E_558	26	Extreme
76E_559	25	Extreme
76E_560	22	High
76E_561	33	Extreme
76E_562	36	Extreme
76E_563	34	Extreme
76E_566	26	Extreme
76E_567	34	Extreme



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Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from December to July/ August. Additional dangers to navigation are present here due to numerous icebergs.

Hvalrosodden (76°54'N, 20°09'W), located 7.2 km W of Lille Snenæs, is the site of a former hunting station. Anchorage is obtainable, in a depth of 51 m, 0.8 km SSW of the station. Pladen Ø, lying 4 km S of Hvalrosodden, is a narrow island with a submerged rock close N of it.

Mørkefjord (76°55'N, 20°40'W) is entered between Vædderhornet (76°52'N, 20°35'W) and Mørkejord Station, an old expedition house, 5 km ENE. Anchorage may be obtained 1.6 km SE of Mørkefjord Station, in a depth of 43 m. However, it has been reported that S winds make this anchorage dangerous on account of ice. In such case, vessels may anchor N of the NW end of Kalven Ø. Port Arthur is also known anchor site (Chapter 14).

Two STOL-airstrips are noted close N of Hvalrosodden (Chapter 15).

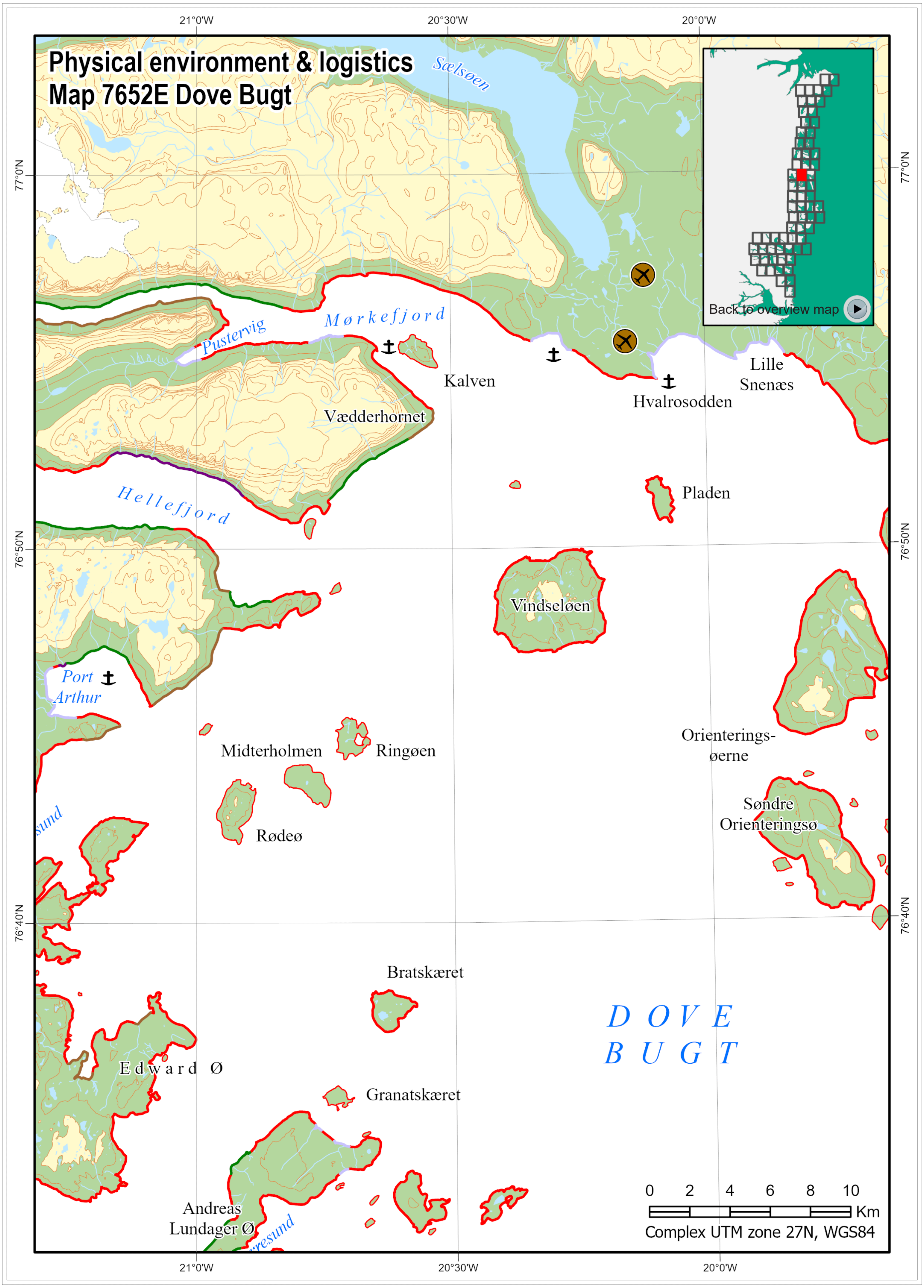
Shorelines within this area are predominantly rock, talus, and glacier allowing little opportunity for marine access. At Hvalrosodden there are low beaches which could be considered for landings; as the waters are uncharted, site surveys would be required to confirm this.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, talus, and with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.



Physical environment & logistics
Map 7652E Dove Bugt
21°0'W
20°30'W
20°0'W
77°0'N
76°50'N
76°40'N
Sælsøen
Pustervig
Mørkefjord
Kalven
Vædderhornet
Hvalrosodden
Lille Snenæs
Hellefjord
Pladen
Vindseløen
Port Arthur
Midterholmen
Ringøen
Orienterings-øerne
Søndre Orienteringsø
Rødeø
Bratskæret
DOVE BUGT
Edward Ø
Granatskæret
Andreas Lundager Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens

There are no potential safe havens identified on this map. The anchorages noted above at Port Arthur, Hvalrosodden and Mørkefjord could be considered as such except that they are all rated as extreme sensitivity.

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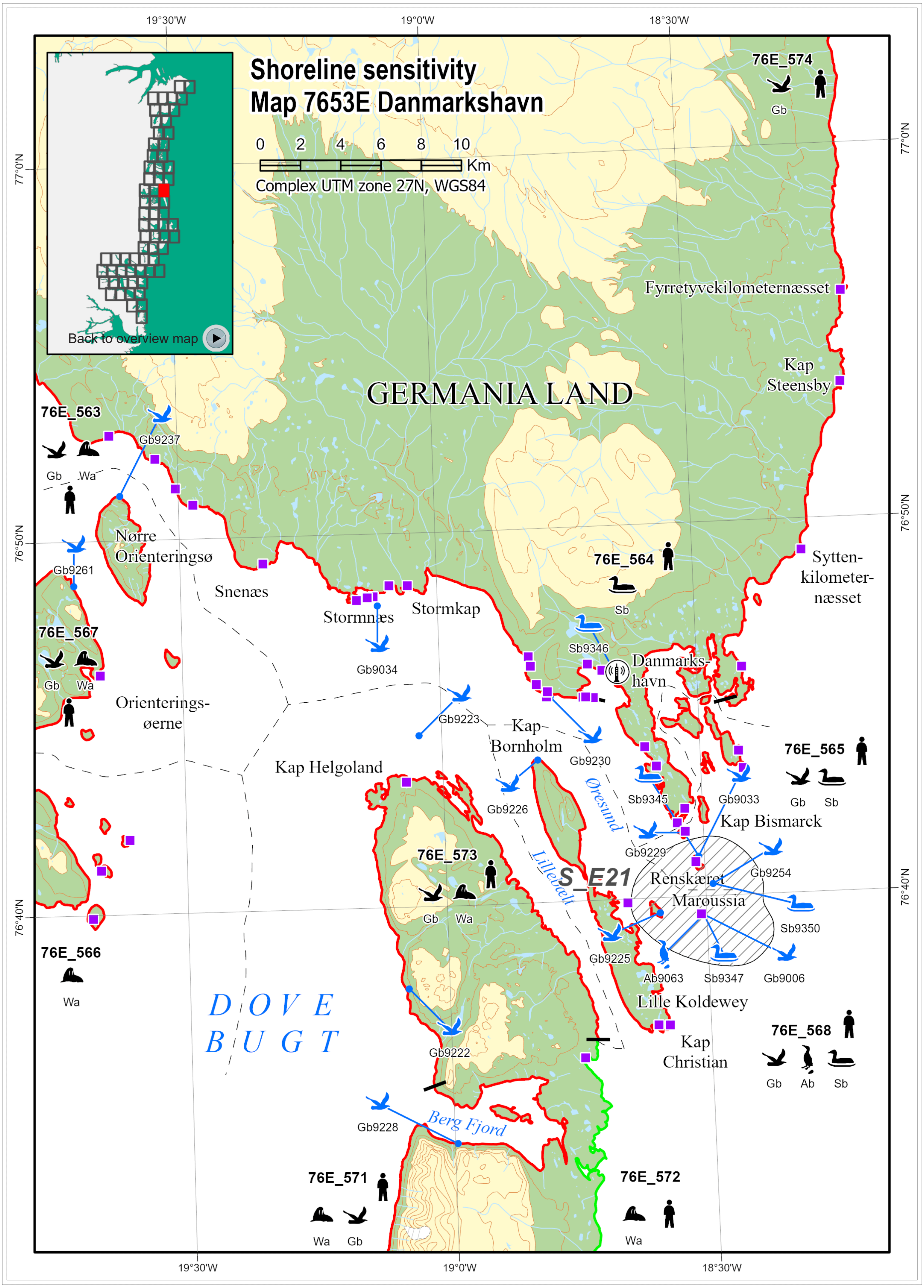

Shoreline sensitivity
Map 7653E Danmarkshavn
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map
19°30'W
19°0'W
18°30'W
77°0'N
76°50'N
76°40'N
GERMANIA LAND
76E_574
Gb
Fyrretyvekilometernæsset
Kap Steensby
76E_563
Gb
Wa
Gb9237
Nørre Orienteringsø
Gb9261
Snenæs
Stormnæs
Stormkap
Gb9034
76E_564
Sb
Sytten-kilometer-næsset
Sb9346
Danmarks-havn
76E_567
Gb
Wa
Orienterings-øerne
Gb9223
Kap Bornholm
Gb9230
Kap Helgoland
Gb9226
Øresund
Sb9345
Gb9033
76E_565
Gb
Sb
Kap Bismarck
Gb9229
76E_573
Gb
Wa
Lilleelt
S_E21
Renskæret
Gb9254
Maroussia
Sb9350
Gb9225
Ab9063
Sb9347
Gb9006
76E_566
Wa
DOVE BUGT
Lille Koldewey
Gb9222
76E_568
Gb
Ab
Sb
Kap Christian
Gb9228
Berg Fjord
76E_571
Wa
Gb
76E_572
Wa

8.45 Map 7653E – Danmarkshavn

Shoreline sensitivity map

Human use

76E_563 - 76E_568	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Danmarkshavn (permanently manned weather station).
76E_571 - 76E_574	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Danmarkshavn (permanently manned weather station).

Species occurrence

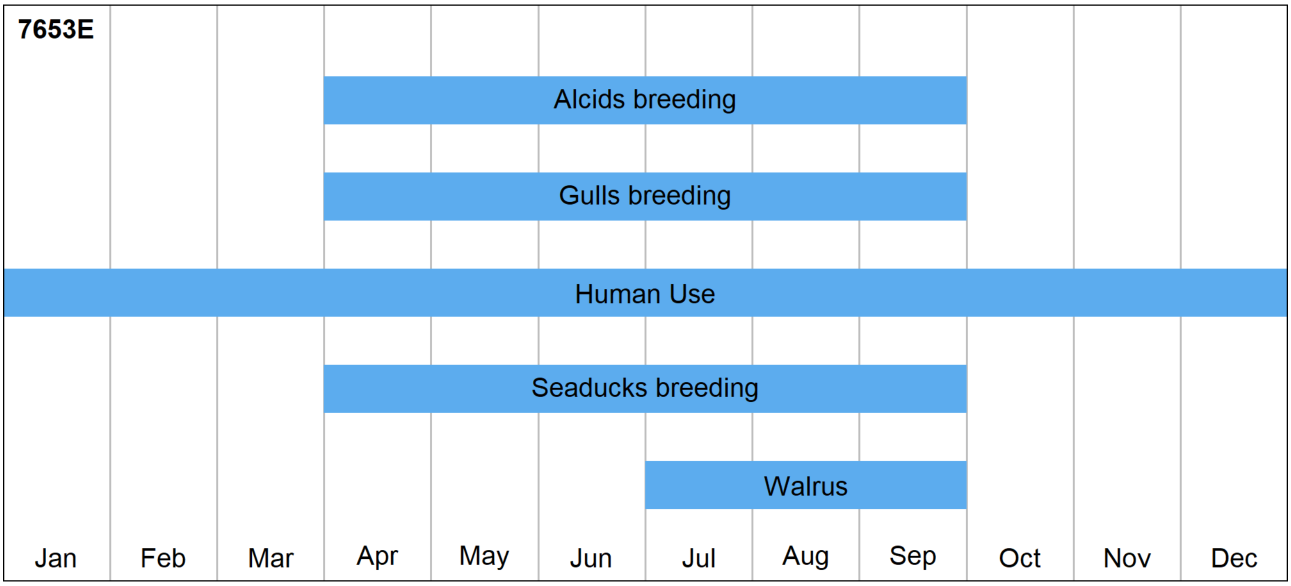
Ab76E_568	1 colony of black guillemots
Gb76E_574	1 colony of Arctic terns
Sb76E_565	2 colonies of common eiders
Sb76E_568	1 colony of common eiders
Gb76E_573	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb76E_571	1 colony of glaucous gulls
Gb76E_568	2 colonies of glaucous gulls, 1 colony of Sabine's gulls, 2 colonies of Arctic terns and 1 colony of black-legged kittiwakes
Gb76E_567	2 colonies of glaucous gulls
Gb76E_565	3 colonies of Arctic terns and 1 colony of Sabine's gulls
Gb76E_563	2 colonies of Arctic terns and 1 colony of Sabine's gulls
Sb76E_564	1 colony of common eiders
Wa76E_563	Walrus foraging
Wa76E_566, Wa76E_567	Walrus foraging
Wa76E_571 - Wa76E_573	Walrus foraging

Site specific occurrence: blue icons

Ab9063	Breeding black guillemots **(S_E21)**
Gb9006	Breeding glaucous gulls, Arctic terns, Sabine's gulls and black-legged kittiwakes **(S_E21)**
Gb9033, Gb9034	Breeding Sabine's gulls and Arctic terns
Gb9222	Breeding glaucous gulls
Gb9223	Breeding Arctic terns
Gb9225	Breeding Arctic terns **(S_E21)**
Gb9226, Gb9228	Breeding glaucous gulls
Gb9229, Gb9230	Breeding Arctic terns
Gb9237	Breeding glaucous gulls
Gb9254	Breeding Arctic terns
Gb9261	Breeding glaucous gulls
Sb9346	Breeding common eiders
Sb9345, Sb9347	Breeding common eiders **(S_E21)**
Sb9350	Breeding common eiders **(S_E21)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_563	34	Extreme
76E_564	32	Extreme
76E_565	32	Extreme
76E_566	26	Extreme
76E_567	34	Extreme
76E_568	22	Extreme
76E_571	32	Extreme
76E_572	16	Moderate
76E_573	26	Extreme
76E_574	24	Extreme



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Access
The waters in this map area are largely uncharted except for the access routes to Danmarkshavn and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical charts 2801 and 2750). Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from January to July and driftice may occur all other months. Additional dangers to navigation are present here due to icebergs.

Kap Helgoland (76°43’N, 19°09’W), the N extremity of Store Koldewey Ø, lies 14 km N of Berg Fjord and is high and steep. Three small islets, fringed by foul ground, lie 2 km N of the N end of the island.

Anchorage is obtainable within Berg Fjord between the large island and the N shore of the fjord, where depths of more than 64 m have been reported; however, the bottom is mostly soft mud and the holding ground is poor. Tidal currents in the entrance to the fjord are reported to attain a rate of up to 2 knots.

J.P. Jacobsen Ø (76°40’N, 18°40’W) is the outermost and largest islet of Simonsen Skær, a group of islets and rocks that lie close off the E coast of Lille Koldewey Ø. Shoal depths extend up to 180 m SE of the islet and a dangerous submerged rock lies 1.6 km S of it. Maroussia Ø, marked by a cairn, is located 1.6 km E of J.P. Jacobsen Ø; a rock, dangerous to navigation, was reported (1977) to lie about 180 m N of this islet. Renskæret, a rocky islet 15 m high, is located 2.4 km NE of J.P. Jacobsen Ø. A dangerous rock was reported (1977) to lie about 275 m SSE of this islet. Two skerries are reported to lie between Maroussia Ø and Renskæret.

Danmarks Havn extends 1.6 km and is sheltered from the prevailing NW winds by low and undulating hills which rise to a height of 180 m. A reef extends from Vester Havnenæs and the depths are deeper at the E side of the entrance. Anchorage is obtainable, in depths of 16 to 27 m, sand and gravel, with Vester Havnenæs bearing 223°. Clear water is likely to be found in the harbor from July until the end of September. There are no pilots, but persons with local knowledge are available. Vessels of up to 70 m in length and 8 m draft have used the anchorage (nautical chart 2750 and the Greenland Harbour Pilot, https://www.gronlandskehavnelods.dk/Details/77?&lang=ENG).

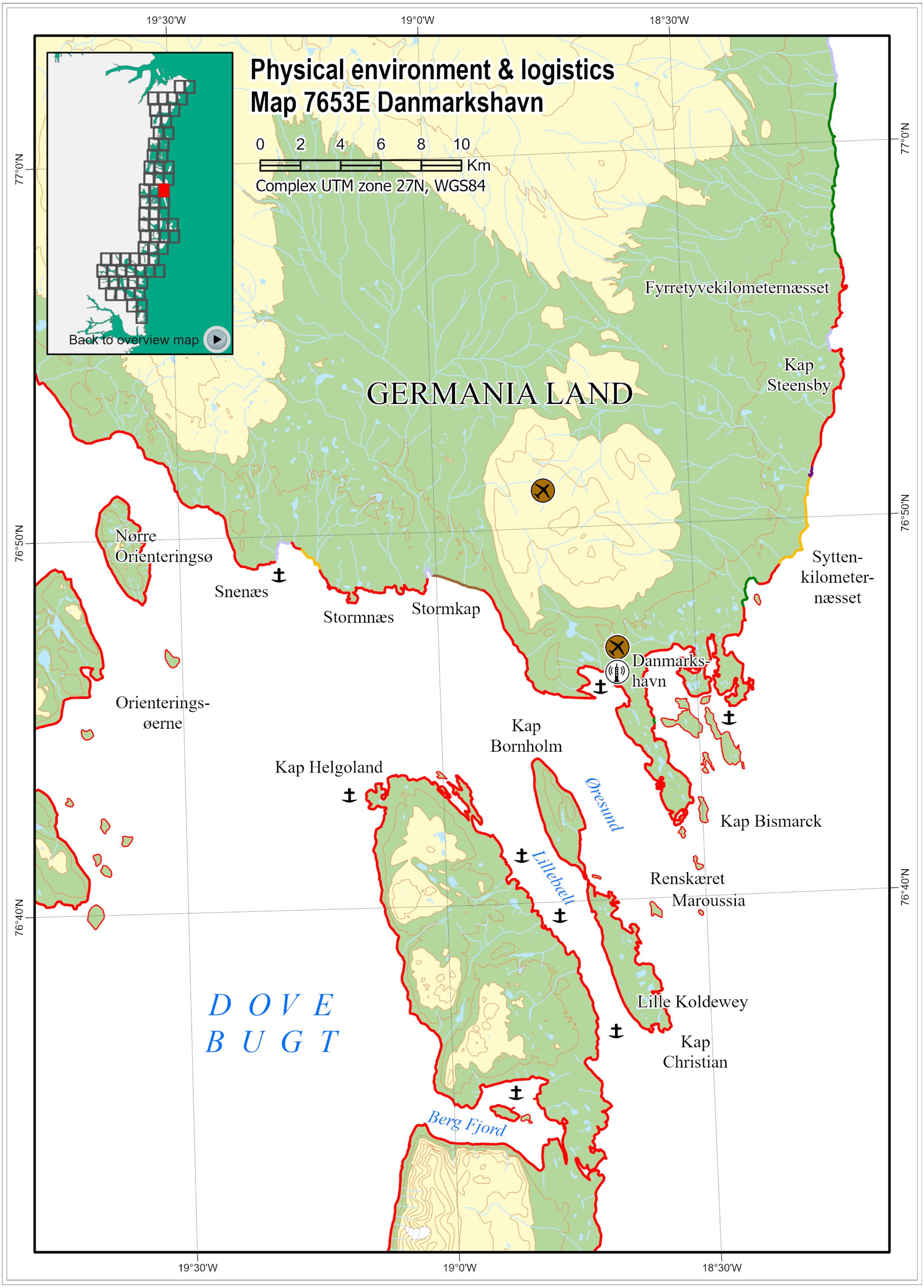
Other anchor sites are found at Snenæs and in Lille Bælt (Chapter 14).

Two STOL-airstrips are located in the map areas. One at the weather station Danmarkshavn and one 10 km NW of Danmarkshavn (Chapter 15).

Danmarkshavn is a weather station with several buildings and an airstrip.

Shorelines within this area are almost exclusively rock, with some talus and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore wa-


Physical environment & logistics
Map 7653E Danmarkshavn
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
19°30'W
19°0'W
18°30'W
77°0'N
76°50'N
76°40'N
GERMANIA LAND
Fyrretyvekilometernæsset
Kap Steensby
Sytten-kilometer-næsset
Nørre Orienteringsø
Snenæs
Stormnæs
Stormkap
Danmarks-havn
Orienterings-øerne
Kap Bornholm
Kap Helgoland
Øresund
Lillebælt
Kap Bismarck
Renskæret
Maroussia
Lille Koldewey
Kap Christian
Berg Fjord
DOVE BUGT

ters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock, with some talus and glacier, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

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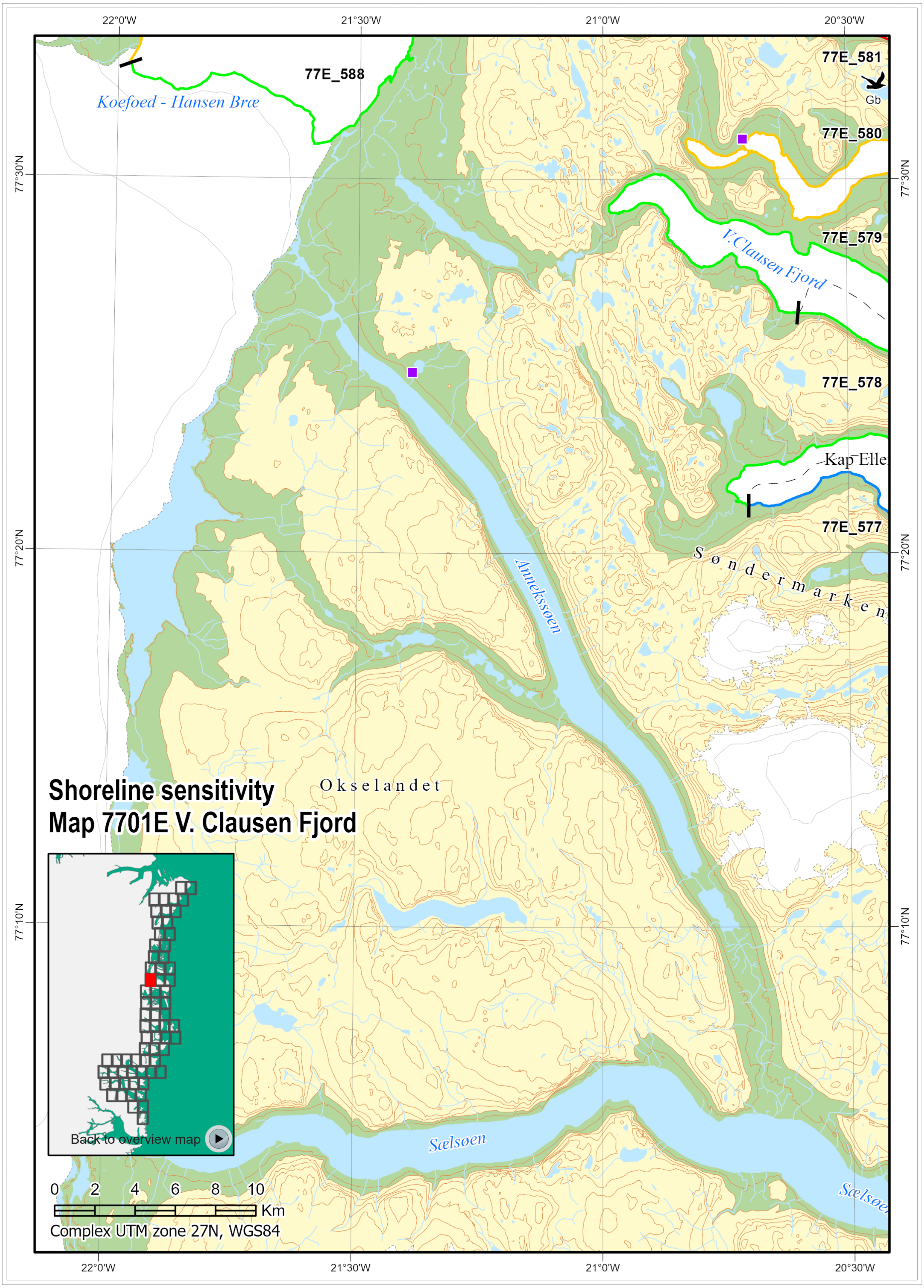

Shoreline sensitivity
Map 7701E V. Clausen Fjord
22°0'W
21°30'W
21°0'W
20°30'W
77°30'N
77°20'N
77°10'N
77E_588
77E_581
Gb
77E_580
77E_579
77E_578
77E_577
Koefoed - Hansen Bræ
V.Clausen Fjord
Kap Elle
Søndermarken
Anneksøen
Okselandet
Sælsøen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.46 Map 7701E - V. Clausen Fjord

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
77E_577	13	Low
77E_578	15	Moderate
77E_579	14	Moderate
77E_580	19	High
77E_588	16	Moderate
77E_589	20	High

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from October to July and driftice may occur all other months. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There is a single STOL-airstrip located in this map at the north shore of Sælsøen (Chapter 15).

Shorelines within this area are exclusively rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

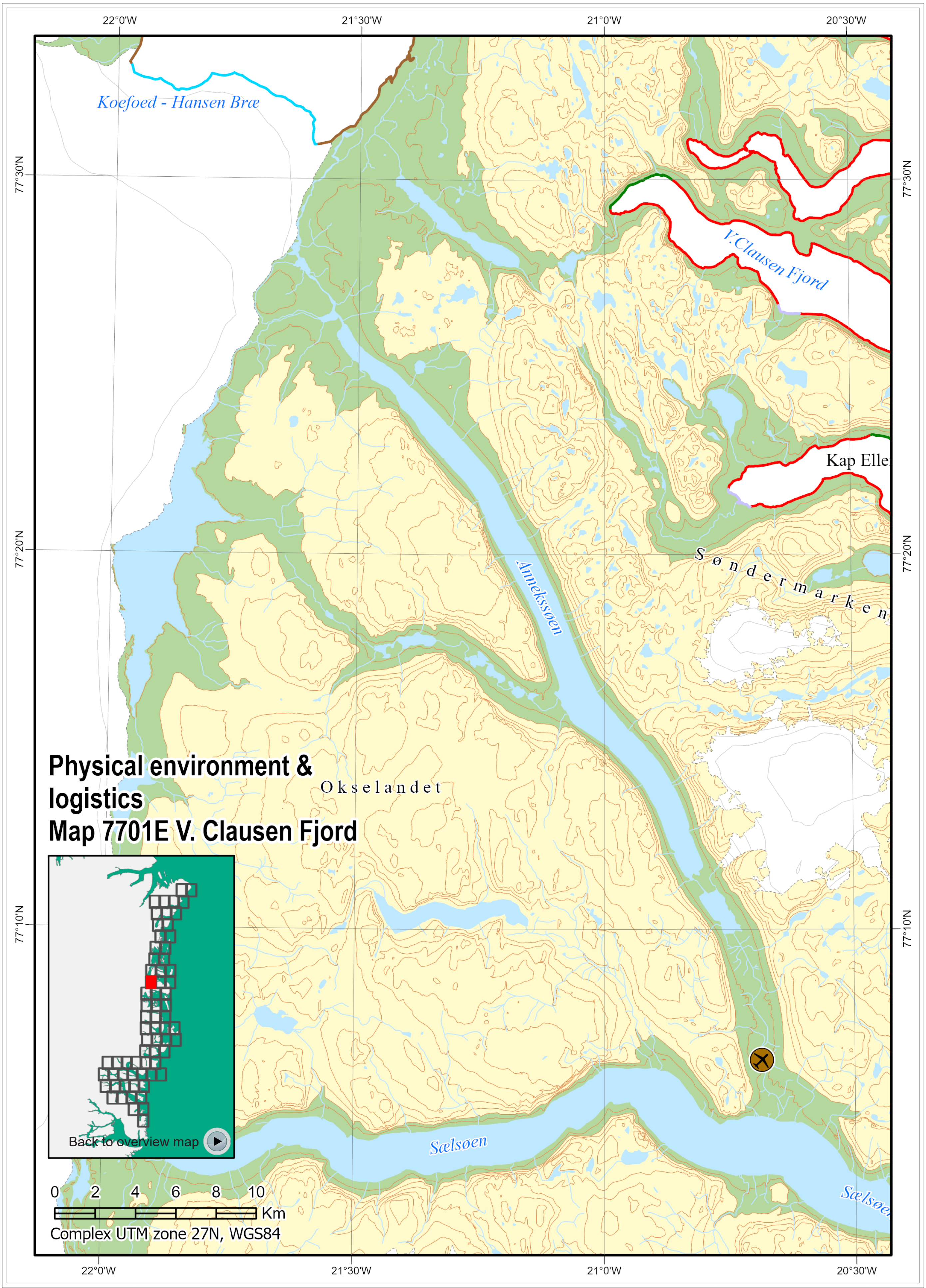
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

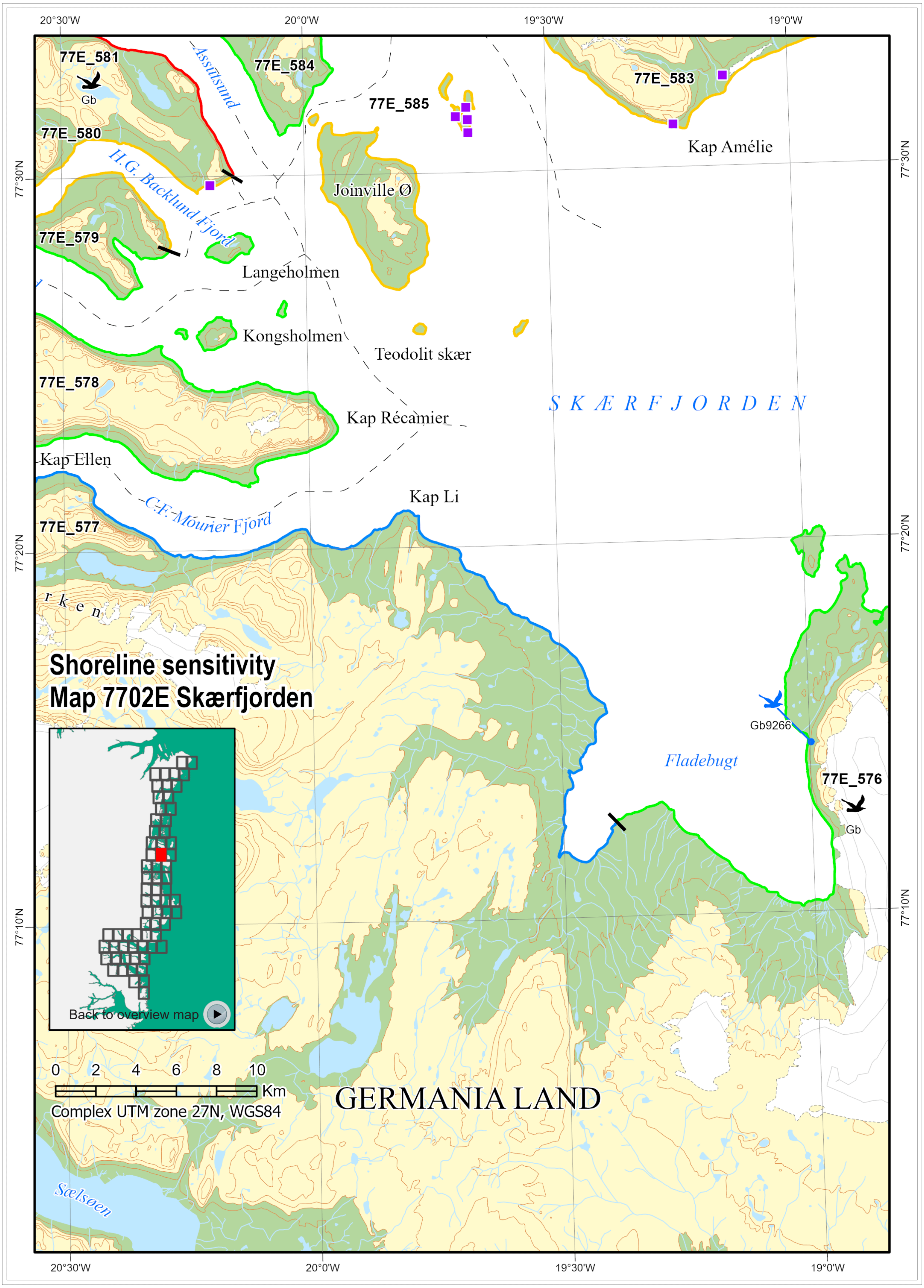
Shorelines within this area are exclusively rock and glacier, with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7701E V. Clausen Fjord
Koefoed - Hansen Bræ
V.Clausen Fjord
Kap Elle
Søndermarken
Annekssøen
Okselandet
Sælsøen
Sælsøe
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
22°0'W
21°30'W
21°0'W
20°30'W
77°30'N
77°20'N
77°10'N


20°30'W
20°0'W
19°30'W
19°0'W
77°30'N
77°20'N
77°10'N
77E_581
Gb
77E_584
Assitsund
77E_585
77E_583
77E_580
Kap Amélie
H.G. Backlund Fjord
Joinville Ø
77E_579
Langeholmen
Kongsholmen
Teodolit skær
77E_578
SKÆRFJORDEN
Kap Récamier
Kap Ellen
C.F. Mourier Fjord
Kap Li
77E_577
Shoreline sensitivity
Map 7702E Skærfjorden
Gb9266
Fladebugt
77E_576
Gb
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
GERMANIA LAND
Sælsøen

8.47 Map 7702E – Skærfjorden

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb77E_581, Gb77E_576	1 colony of glaucous gulls

Site specific occurrence: blue icons

Gb9266	Breeding glaucous gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
77E_576	15	Moderate
77E_577	13	Low
77E_578	15	Moderate
77E_579	14	Moderate
77E_580	19	High
77E_581	25	Extreme
77E_583	19	High
77E_584	16	Moderate
77E_585	17	High

7702E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from October to July/August. In the eastern parts also by drift ice and in varying amounts and time periods. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

A STOL-airstrip apparently on the sea ice ("skiway") is noted close N of Kap Amelie (Chapter 15).

Shorelines within this area are predominantly rock, with some talus and alluvial fan, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

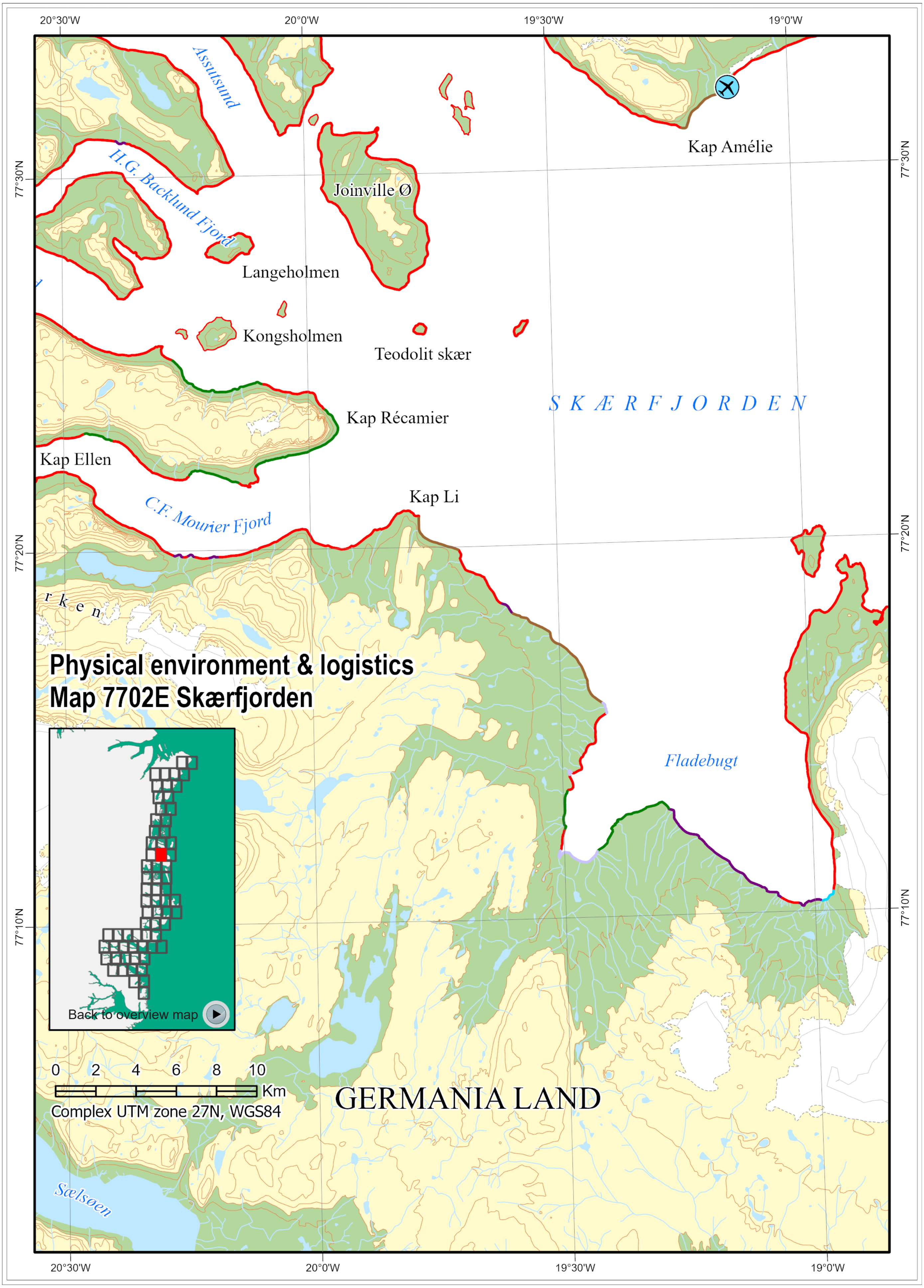
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

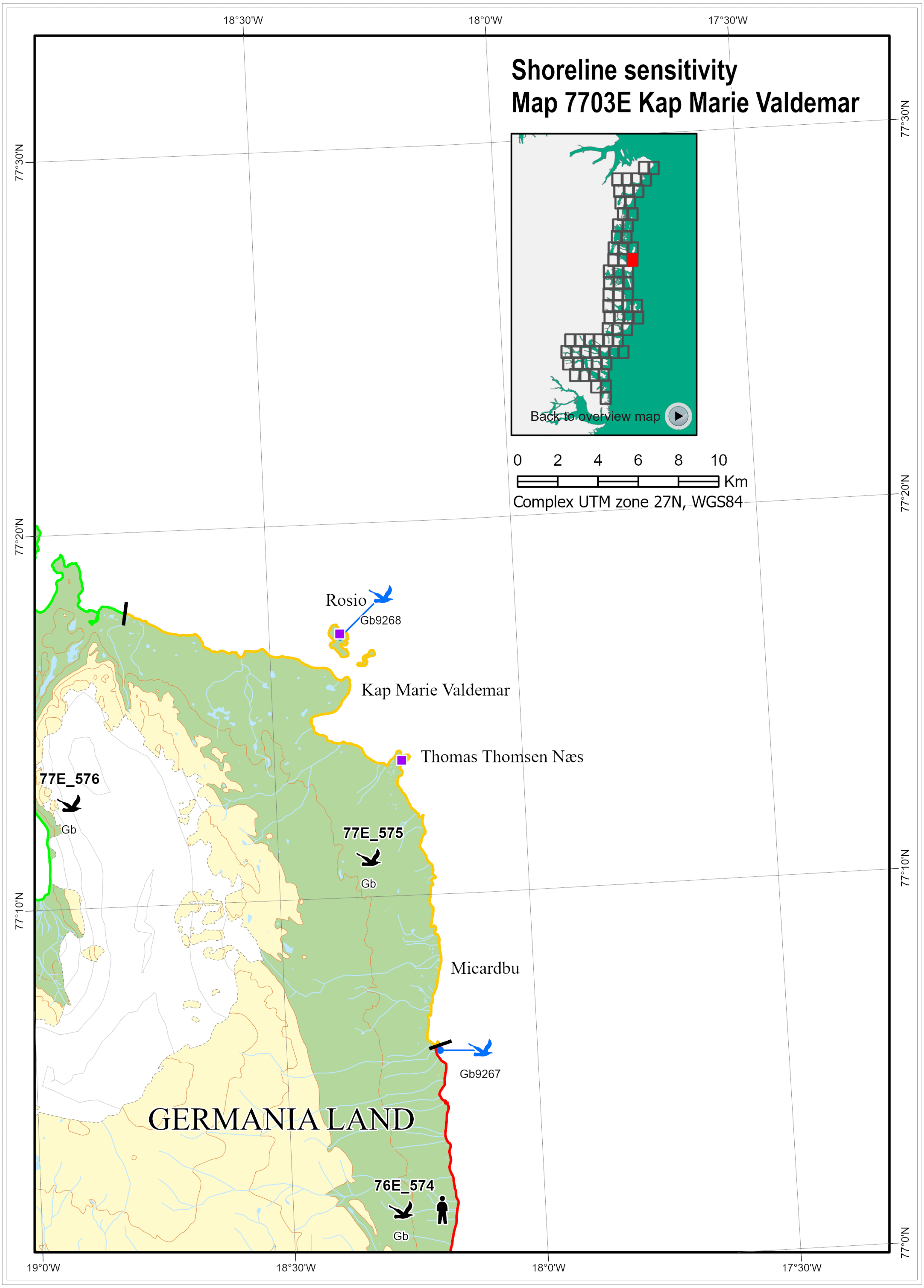
Shorelines within this area are predominantly rock, with some talus and alluvial fan, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



20°30'W
20°0'W
19°30'W
19°0'W
77°30'N
77°20'N
77°10'N
Assutsund
H.G. Backlund Fjord
Joinville Ø
Kap Amélie
Langeholmen
Kongsholmen
Teodolit skær
Kap Récamier
SKÆRFJORDEN
Kap Ellen
C.F. Mourier Fjord
Kap Li
Fladebugt
Physical environment & logistics
Map 7702E Skærfjorden
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
GERMANIA LAND
Sælsøen


Shoreline sensitivity
Map 7703E Kap Marie Valdemar
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
18°30'W
18°0'W
17°30'W
19°0'W
77°30'N
77°20'N
77°10'N
77°0'N
Rosio
Gb9268
Kap Marie Valdemar
Thomas Thomsen Næs
77E_576
Gb
77E_575
Gb
Micardbu
Gb9267
GERMANIA LAND
76E_574
Gb

8.48 Map 7703E - Kap Marie Valdemar

Shoreline sensitivity map

Human use

76E_574	Area inside the National Park in North and East Greenland with occasional tourist cruises, expeditions and scientific activities in coastal areas during Jul-Sep. Close proximity to Danmarkshavn (permanently manned weather station).

Species occurrence

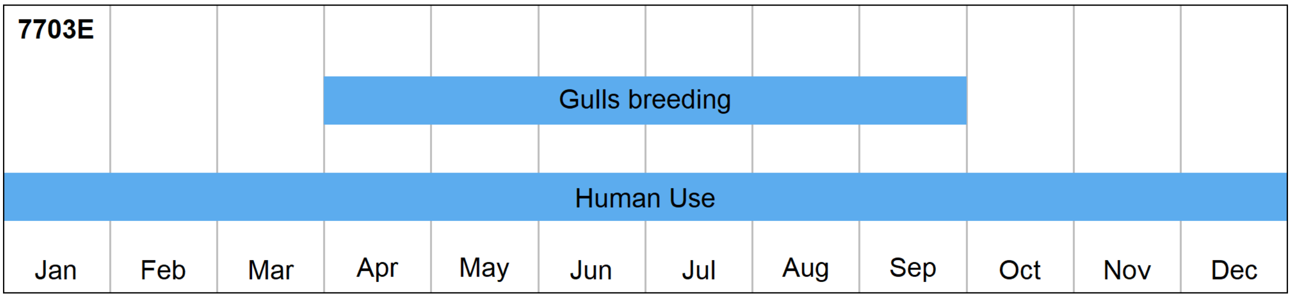
Gb76E_574, Gb77E_575	1 colony of Arctic terns
Gb77E_576	1 colony of glaucous gulls

Site specific occurrence: blue icons

Gb9267, Gb9268	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
76E_574	24	Extreme
77E_575	19	High
77E_576	15	Moderate



Access
The waters in this map area are largely uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist (nautical chart 2801). Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year, but drift ice is almost always present. Additional dangers to navigation are present here due to high abundance of icebergs that are discharged from the coastal glaciers.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock, talus, and low beaches allowing limited opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

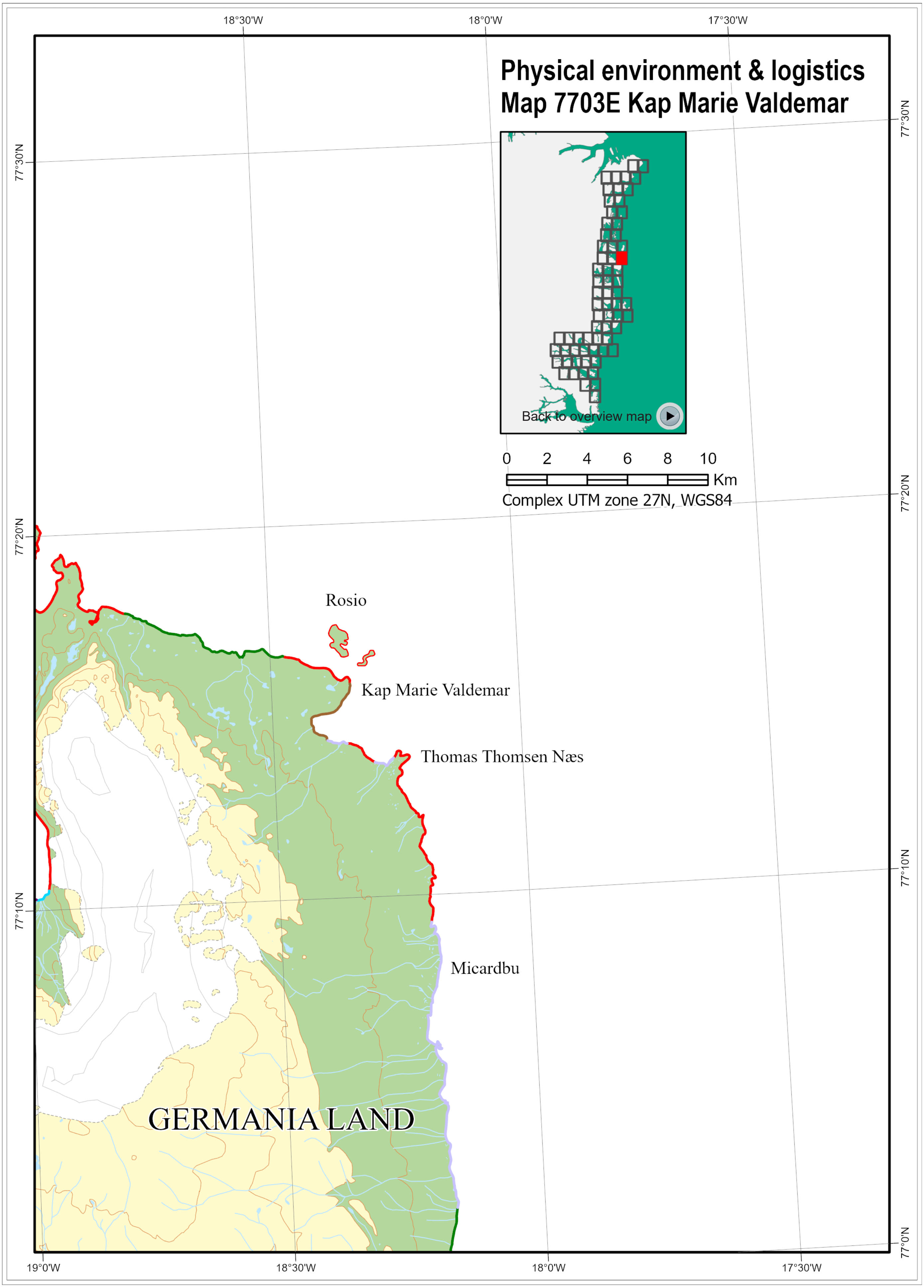
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

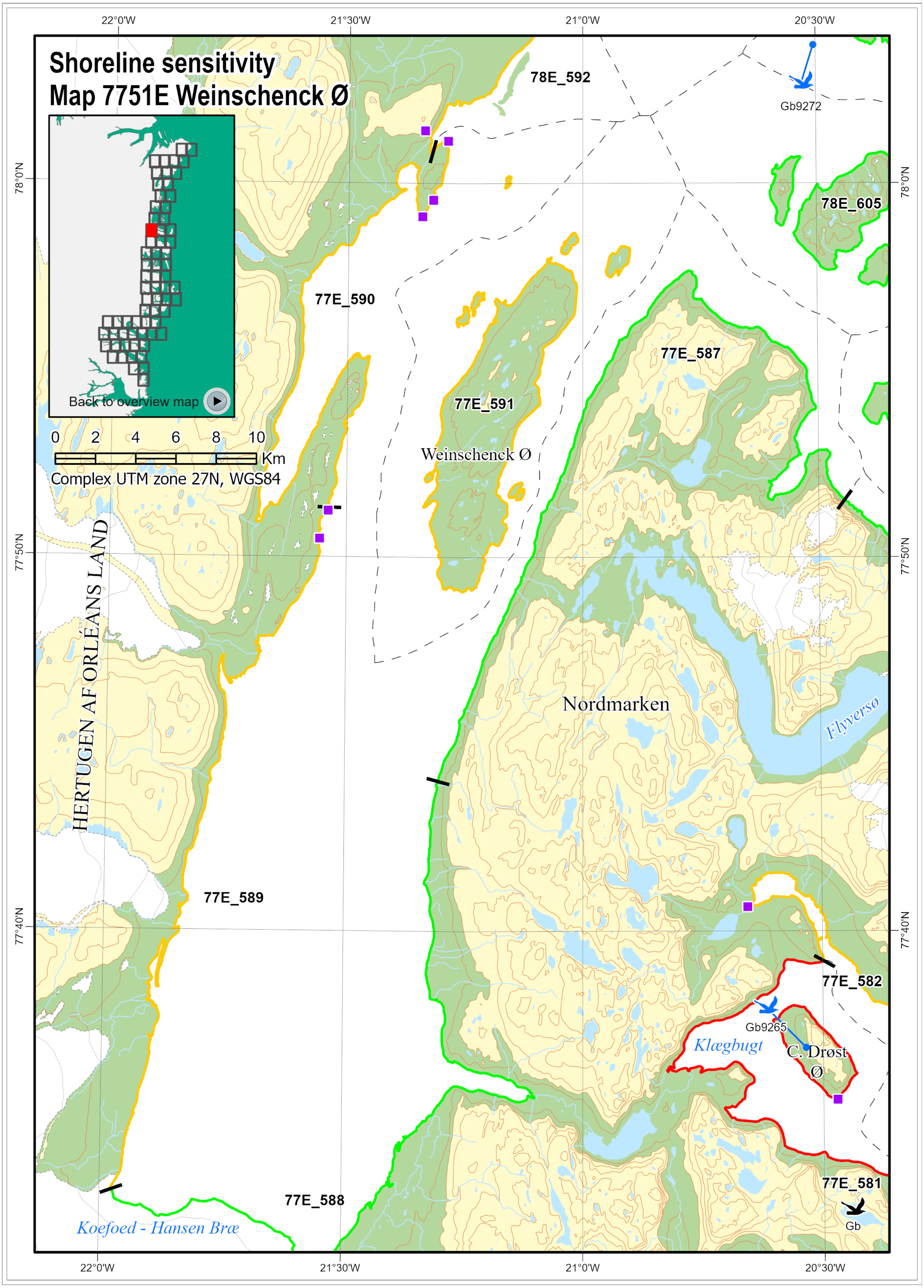
Shorelines within this area are predominantly rock, talus, and delta, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 7703E Kap Marie Valdemar
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Rosio
Kap Marie Valdemar
Thomas Thomsen Næs
Micardbu
GERMANIA LAND
18°30'W
18°0'W
17°30'W
19°0'W
77°30'N
77°20'N
77°10'N
77°0'N


Shoreline sensitivity
Map 7751E Weinschenck Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
22°0'W
21°30'W
21°0'W
20°30'W
78°0'N
77°50'N
77°40'N
78E_592
78E_605
77E_590
77E_591
77E_587
77E_589
77E_588
77E_582
77E_581
Gb9272
Gb9265
Gb
Weinschenck Ø
Nordmarken
HERTUGEN AF ORLÉANS LAND
Flyverso
Klægbugt
C. Drøst Ø
Koefoed - Hansen Bræ

8.49 Map 7751E - Weinschenck Ø

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb77E_581	1 colony of glaucous gulls

Site specific occurrence: blue icons

Gb9265	Breeding glaucous gulls
Gb9272	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
77E_581	25	Extreme
77E_582	18	High
77E_586	17	Moderate
77E_587	17	Moderate
77E_588	16	Moderate
77E_589	20	High
77E_590	21	High
77E_591	17	High
78E_592	19	High
77E_604	17	Moderate
78E_605	16	Moderate
78E_606	16	Moderate

7751E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from September to July/ August. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock, with some talus and moraine, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

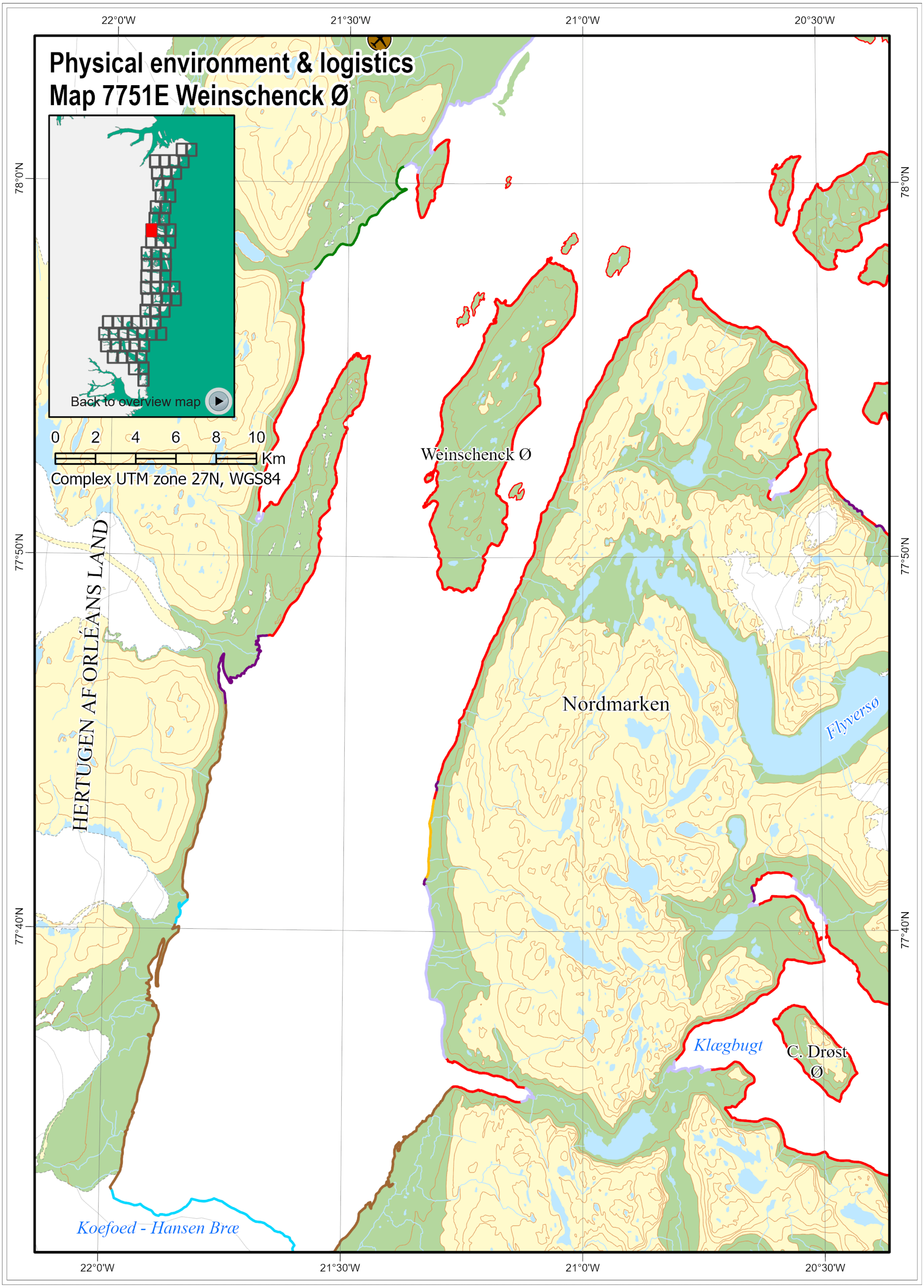
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

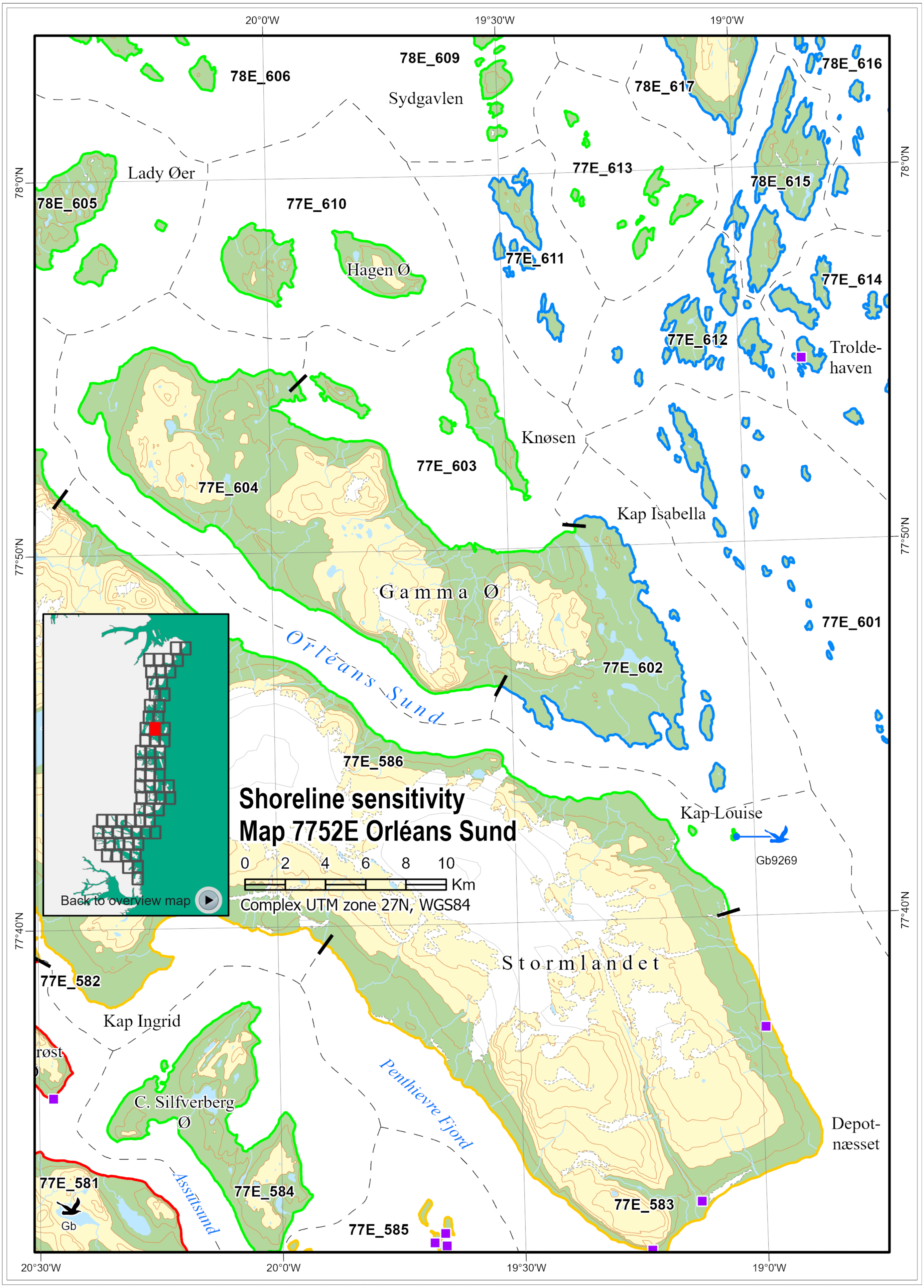
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, with some talus and moraine, with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7751E Weinschenck Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
22°0'W
21°30'W
21°0'W
20°30'W
78°0'N
77°50'N
77°40'N
Weinschenck Ø
Nordmarken
Flyversø
Klægbugt
C. Drøst Ø
HERTUGEN AF ORLÉANS LAND
Koefoed - Hansen Bræ


Shoreline sensitivity
Map 7752E Orléans Sund
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Back to overview map
20°0'W
19°30'W
19°0'W
20°30'W
78°0'N
77°50'N
77°40'N
78E_609
78E_606
78E_616
78E_617
Sydgavlen
Lady Øer
77E_613
78E_605
77E_610
78E_615
77E_611
Hagen Ø
77E_614
77E_612
Trolde-
haven
Knøsen
77E_603
77E_604
Kap Isabella
Gamma Ø
Orléans Sund
77E_601
77E_602
77E_586
Kap Louise
Gb9269
Stormlandet
77E_582
Kap Ingrid
C. Silfverberg
Ø
Penthievre Fjord
Depot-
næsset
77E_581
Gb
77E_584
77E_583
77E_585
Asststund

8.50 Map 7752E - Orléans Sund

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb77E_581	1 colony of glaucous gulls

Site specific occurrence: blue icons

Gb9269	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
77E_581	25	Extreme
77E_582	18	High
77E_583	19	High
77E_584	16	Moderate
77E_585	17	High
77E_586	17	Moderate
77E_587	17	Moderate
77E_601	11	Low
77E_602	11	Low
77E_603	16	Moderate
77E_604	17	Moderate
78E_605	16	Moderate
78E_606	16	Moderate
78E_609	16	Moderate
77E_610	16	Moderate
77E_611	12	Low
77E_612	13	Low
77E_613	15	Moderate
77E_614	14	Low
78E_615	12	Low
78E_616	11	Low
78E_617	11	Low

7752E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

The waters in this map are covered by shorefast ice from October to August. Additional dangers to navigation are present here due to numerous icebergs.

No anchorages are reported for this map area.

A STOL-airstrip apparently on the sea ice (“skiway”) is noted at the SE extremity of Stormlandet (Chapter 15).

Shorelines within this area are almost exclusively rock, with some archipelago and talus, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

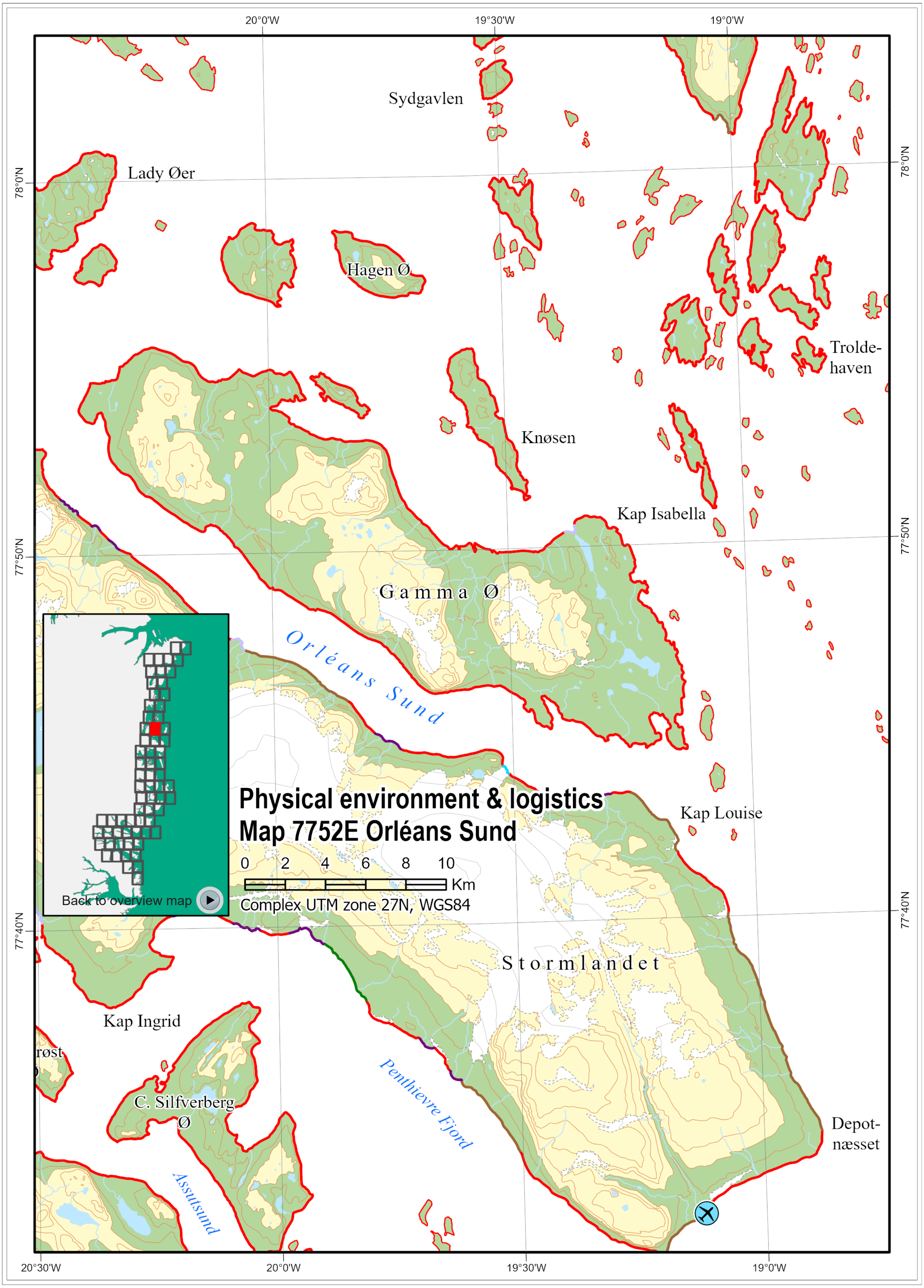
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

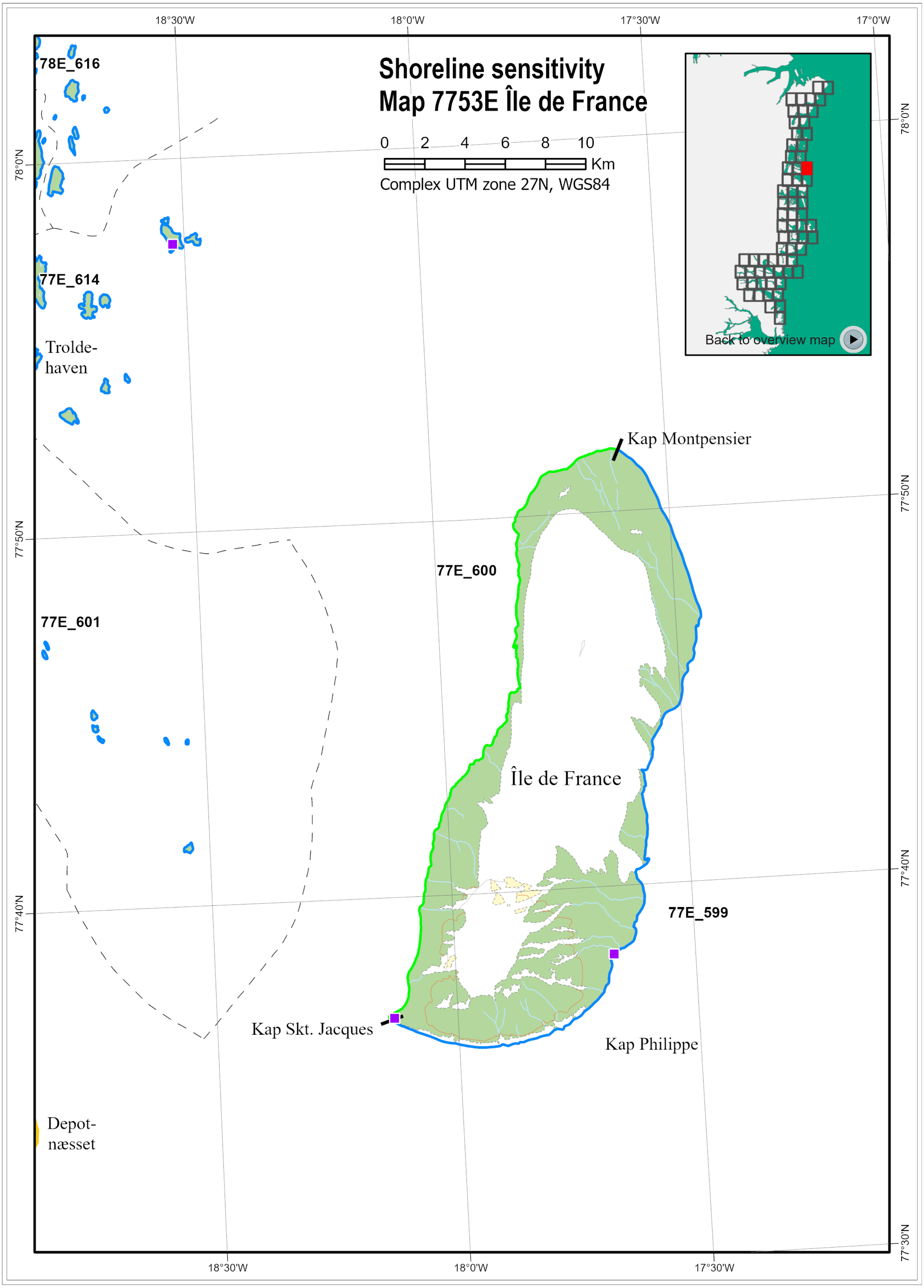
Shorelines within this area are almost exclusively rock, with some archipelago and talus, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



20°0'W
19°30'W
19°0'W
78°0'N
77°50'N
77°40'N
20°30'W
Sydgavlen
Lady Øer
Hagen Ø
Trolde-
haven
Knøsen
Kap Isabella
Gamma Ø
Orléans Sund
Kap Louise
Physical environment & logistics
Map 7752E Orléans Sund
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
Stormlandet
Kap Ingrid
C. Silfverberg
Ø
Penthievre Fjord
Depot-
næsset
Assutsund


Shoreline sensitivity
Map 7753E Île de France
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
18°30'W
18°0'W
17°30'W
17°0'W
78°0'N
77°50'N
77°40'N
77°30'N
78E_616
77E_614
Trolde-
haven
77E_601
77E_600
77E_599
Kap Montpensier
Île de France
Kap Skt. Jacques
Kap Philippe
Depot-
næsset

8.51 Map 7753E - Île de France

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
77E_599	11	Low
77E_600	16	Moderate
77E_601	11	Low
77E_614	14	Low
78E_615	12	Low
78E_616	11	Low

Physical environment and logistics, 7753E - Île de France

Access
The waters in this map area are uncharted and caution should be exercised. In general, the waters appear to be deep, however, uncharted dangers may exist. Local knowledge is essential for navigation.

Sea ice is present year round. Additional dangers to navigation are present here due to icebergs.

Kap Philippe, the SE extremity of Île de France, is located 11 km ENE of Kap Sankt Jacques. During early August, a vessel anchored, in a depth of 55 m, about 3 km ESE of Kap Sankt Jacques with Kap Philippe bearing 073°. The depths in this area are reported to be regular and it is more ice-free, in good weather, than any other place off the island.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and alluvial fan, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

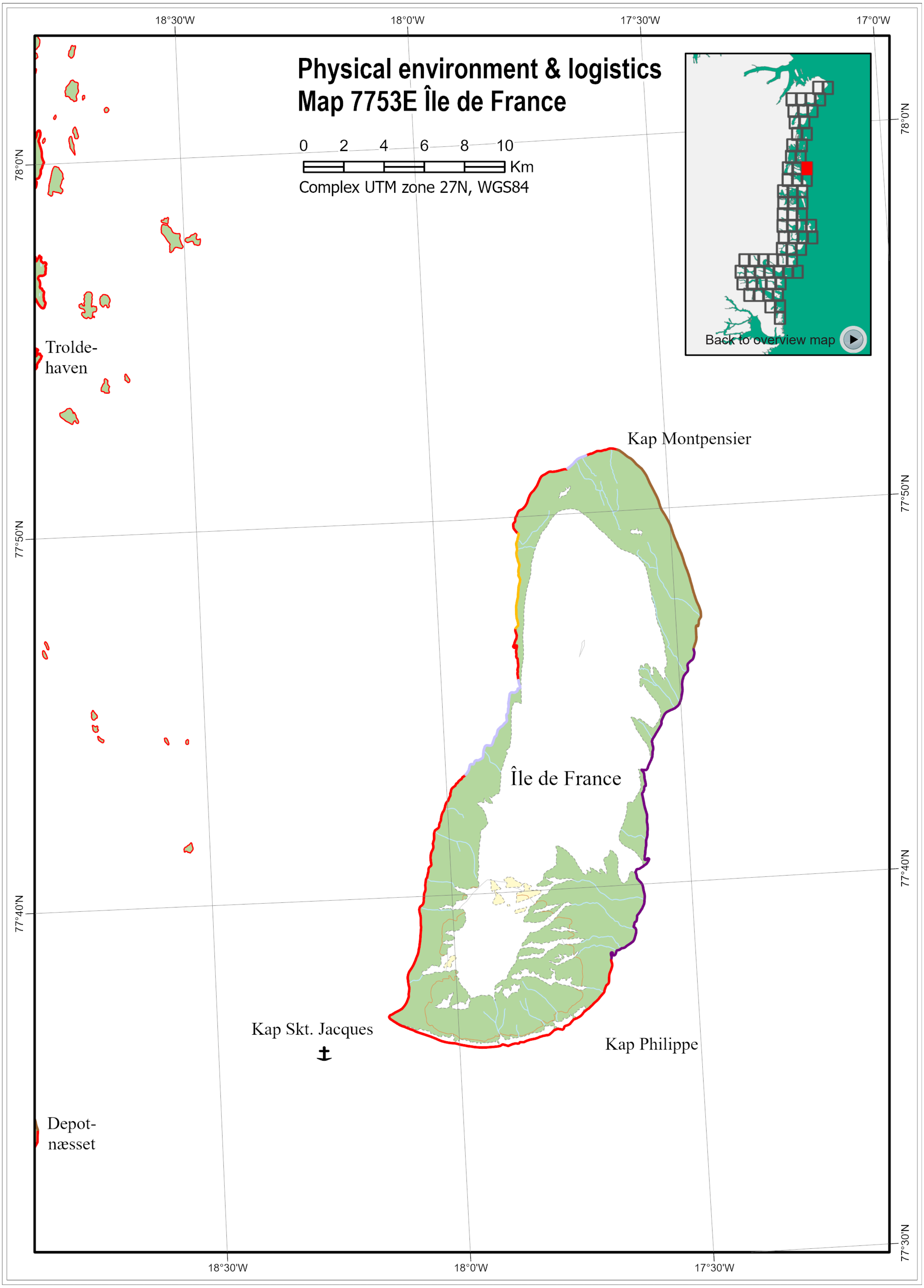
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

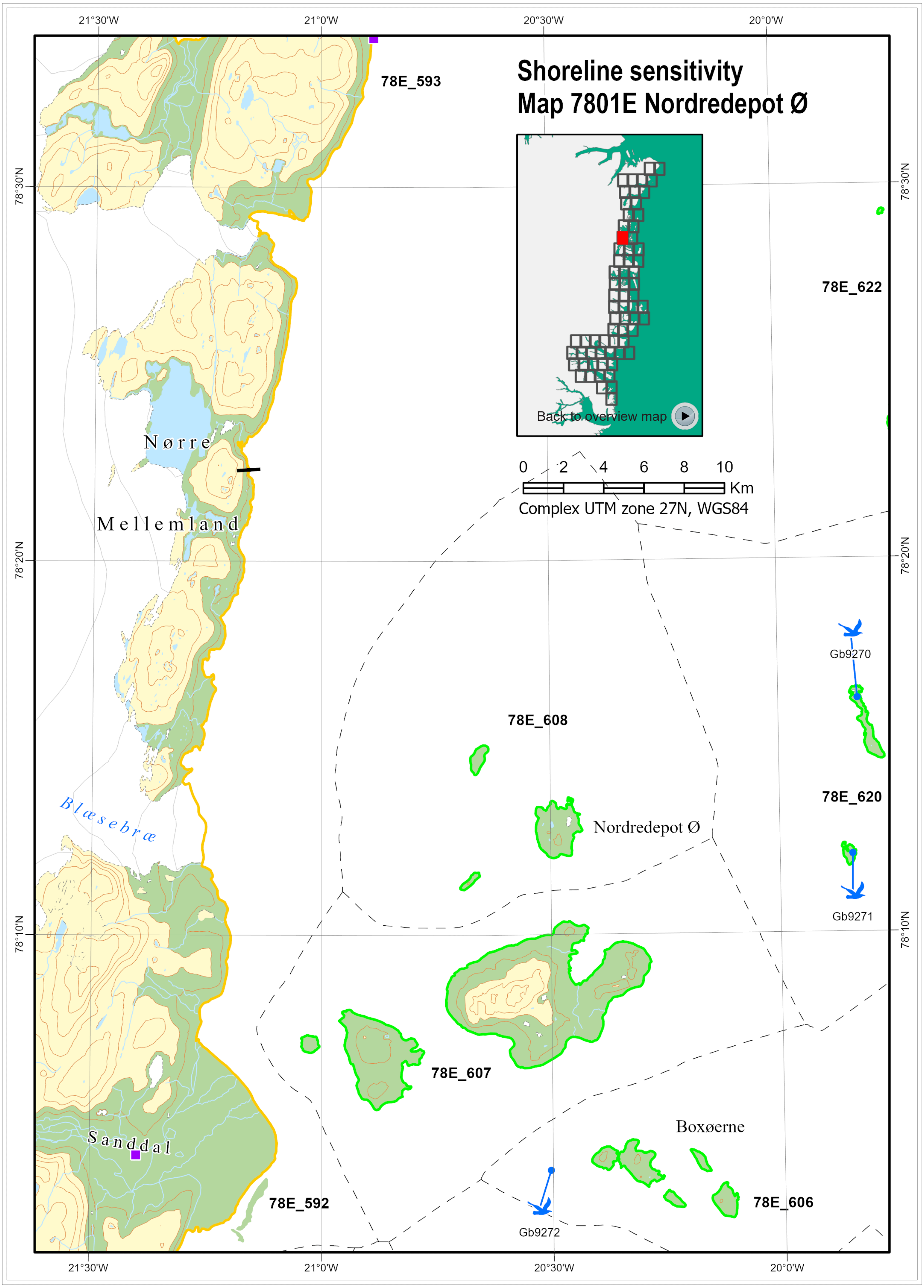
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and alluvial fan, glacier with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7753E Île de France
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
18°30'W
18°0'W
17°30'W
17°0'W
78°0'N
77°50'N
77°40'N
77°30'N
Back to overview map
Trolde-
haven
Kap Montpensier
Île de France
Kap Skt. Jacques
Kap Philippe
Depot-
næsset



Shoreline sensitivity
Map 7801E Nordredepot Ø
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
21°30'W
21°0'W
20°30'W
20°0'W
78°30'N
78°20'N
78°10'N
78E_593
78E_622
78E_608
78E_620
78E_607
78E_592
78E_606
Nørre
Mellemland
Blæsebræ
Sanddal
Nordredepot Ø
Boxøerne
Gb9270
Gb9271
Gb9272

8.52 Map 7801E - Nordredepot Ø

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map. A few small Arctic tern colonies is registered.

Site specific occurrence: blue icons

Gb9270 - Gb9272	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
78E_592	19	High
78E_593	19	High
78E_606	16	Moderate
78E_607	15	Moderate
78E_608	16	Moderate
78E_620	16	Moderate
78E_622	14	Moderate

7801E											
			Gulls breeding								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation.

The waters are ice covered throughout the year, with open waters close to the coast in late summer, and consolidated ice further east, making the area only accessible by icebreaker. Additional dangers to navigation are present here icebergs.

No anchorages are reported for this map area.

A STOL-airstrip is noted at Sanddal (Chapter 15).

Shorelines within this area are predominantly rock and archipelago, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

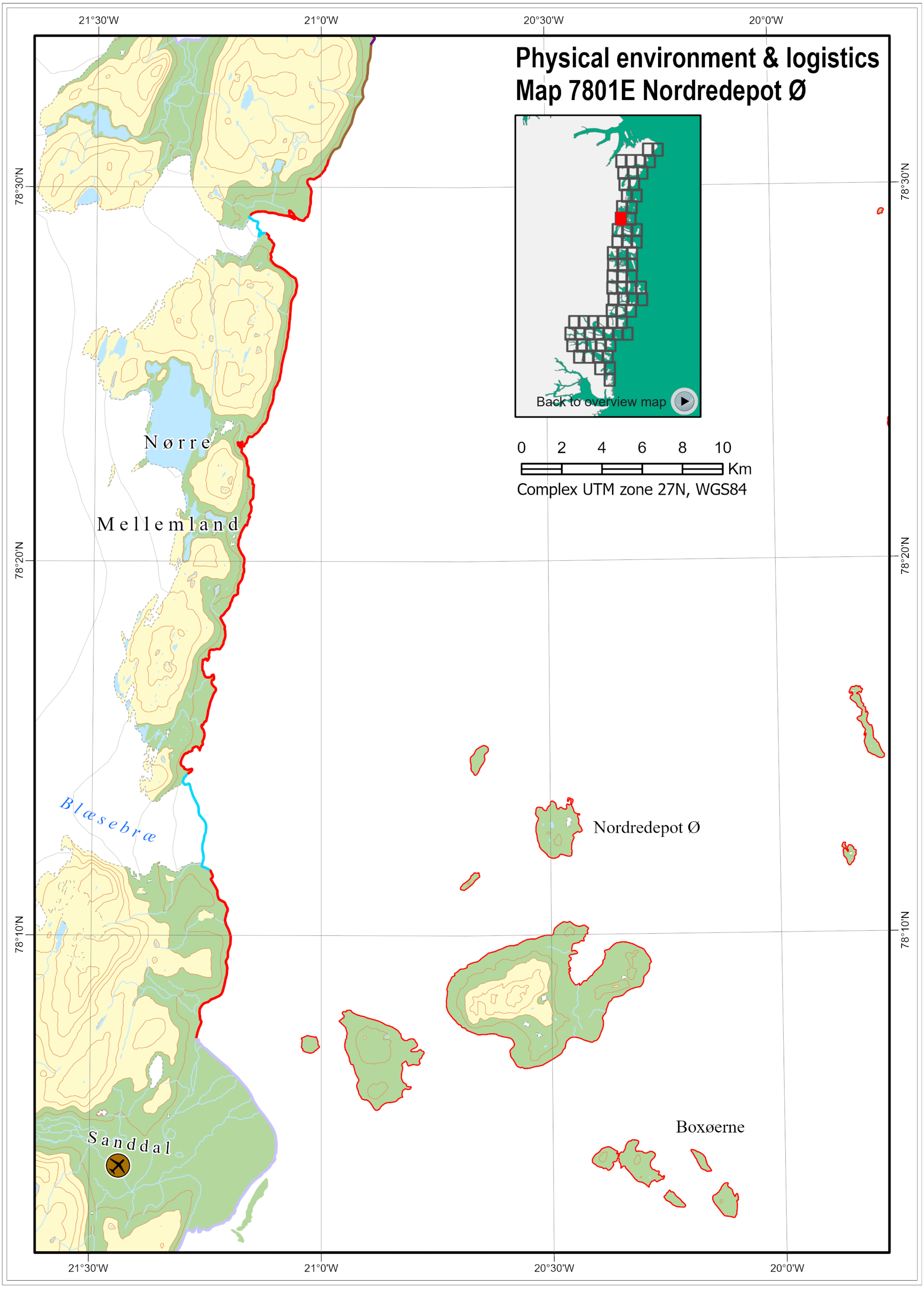
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

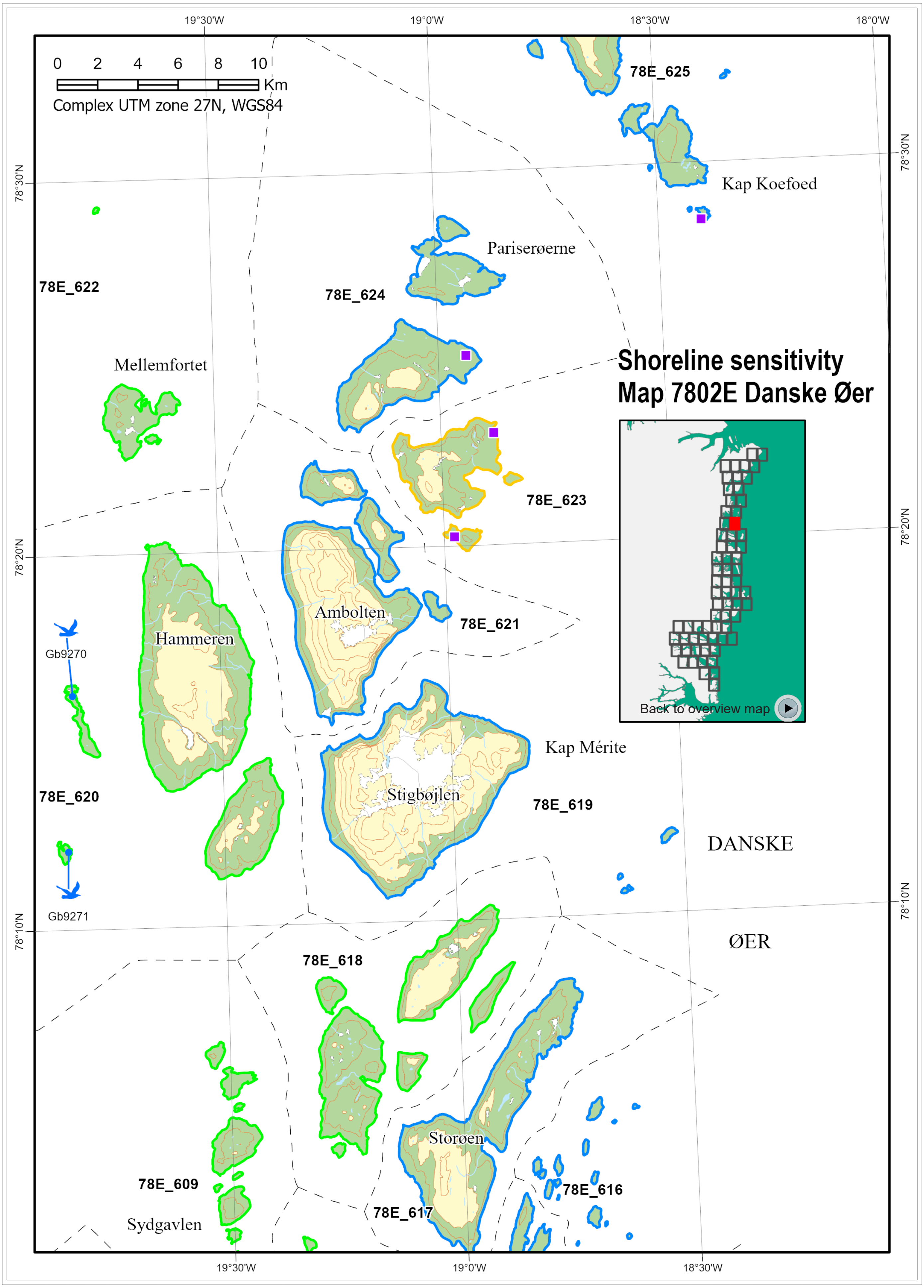
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and archipelago with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7801E Nordredepot Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
21°30'W
21°0'W
20°30'W
20°0'W
78°30'N
78°20'N
78°10'N
Nørre
Mellemland
Blæsebræ
Nordredepot Ø
Sanddal
Boxøerne


Shoreline sensitivity
Map 7802E Danske Øer
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°30'W
19°0'W
18°30'W
18°0'W
78°30'N
78°20'N
78°10'N
78E_625
Kap Koefoed
Pariserøerne
78E_622
78E_624
Mellemfortet
78E_623
Ambolten
78E_621
Hammeren
Gb9270
Kap Mérite
Stigbøjlen
78E_619
78E_620
DANSKE
ØER
Gb9271
78E_618
Storøen
78E_609
78E_616
78E_617
Sydgavlen
Back to overview map

8.53 Map 7802E - Danske Øer

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Site specific occurrence: blue icons

Gb9270, Gb9271	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
78E_609	16	Moderate
77E_613	15	Moderate
78E_615	12	Low
78E_616	11	Low
78E_617	11	Low
78E_618	14	Moderate
78E_619	12	Low
78E_620	16	Moderate
78E_621	12	Low
78E_622	14	Moderate
78E_623	17	High
78E_624	13	Low
78E_625	13	Low

<table>
<tr><td>7802E</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td colspan="6">Gulls breeding</td><td></td><td></td><td></td></tr>
<tr><td>Jan</td><td>Feb</td><td>Mar</td><td>Apr</td><td>May</td><td>Jun</td><td>Jul</td><td>Aug</td><td>Sep</td><td>Oct</td><td>Nov</td><td>Dec</td></tr>
</table>

Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation.

The waters are ice covered throughout the year, only with limited open waters in late summer making the area usually only accessible by icebreaker. Additional dangers to navigation are present here icebergs.

No anchorages are reported for this map area.

Belgica Bank (78°20′N, 15°00′W) was discovered (1905) by the Belgica expedition while on passage from Svalbard to Greenland. The least known depth on the bank is 46 m and depths of 395 to 490 m were found to lie between its W edge and the land ice. A depth of 46 m was reported (1961) to lie about 100 km NE of the shallowest part of the bank.

A STOL-airstrip apparently on the sea ice (“skiway”) is noted on the NE coast of Hammeren (Chapter 15).

Shorelines within this area are exclusively rock and archipelago, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

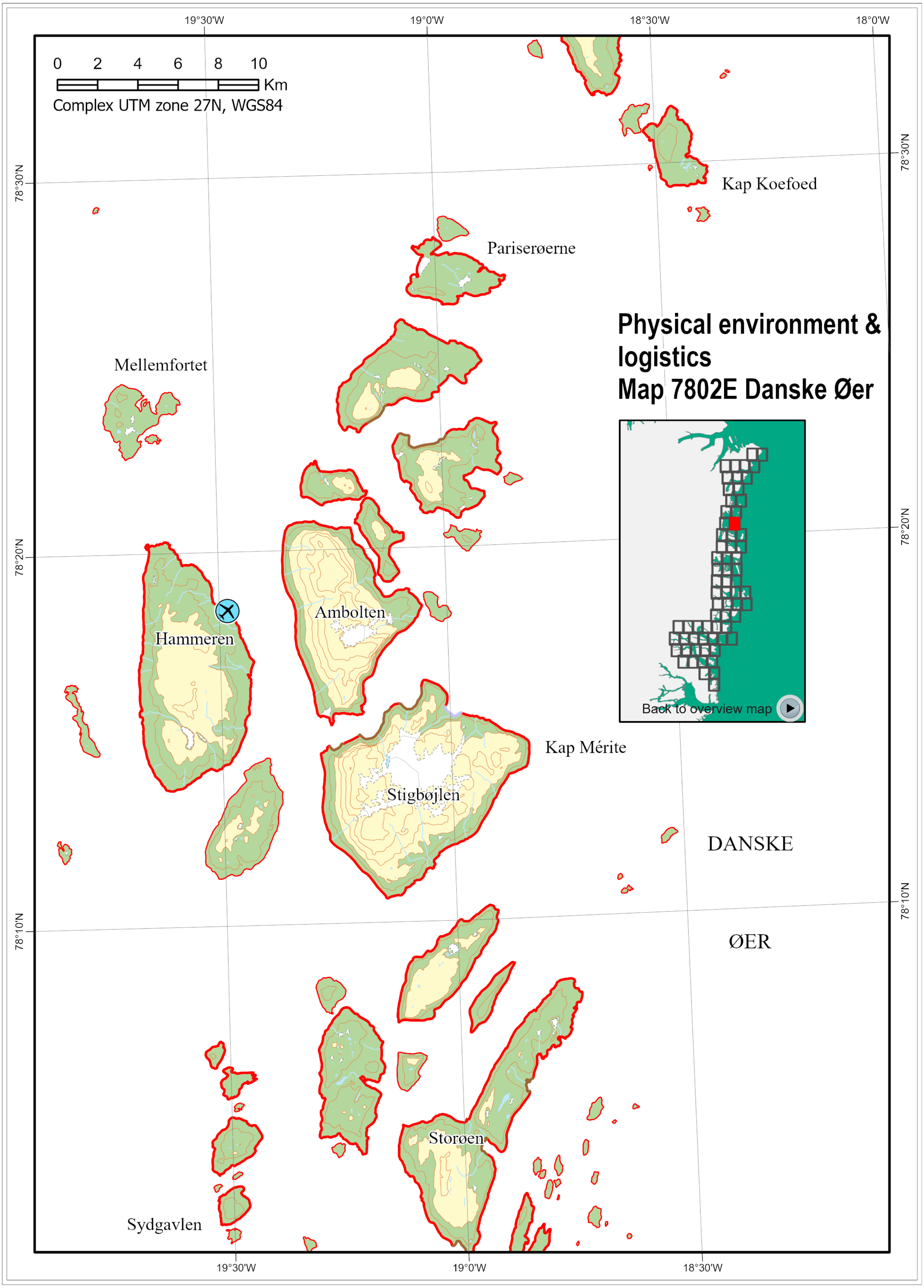
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

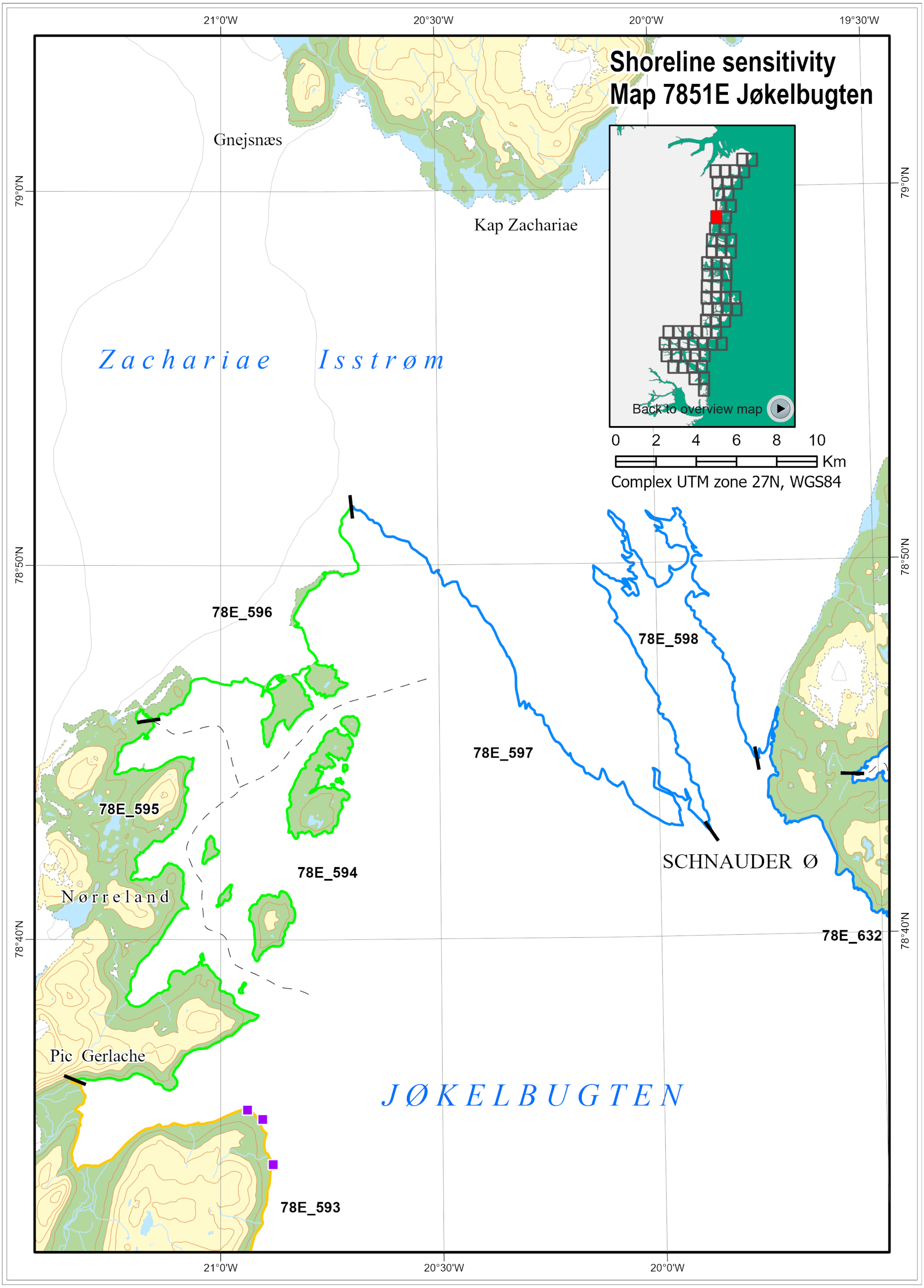
Shorelines within this area are exclusively rock and archipelago, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



19°30'W
19°0'W
18°30'W
18°0'W
78°30'N
78°20'N
78°10'N
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Kap Koefoed
Pariserøerne
Physical environment & logistics
Map 7802E Danske Øer
Back to overview map
Mellemfortet
Hammeren
Ambolten
Kap Mérite
Stigbøjlen
DANSKE
ØER
Storøen
Sydgavlen



Shoreline sensitivity
Map 7851E Jøkelbugten
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
21°0'W
20°30'W
20°0'W
19°30'W
79°0'N
78°50'N
78°40'N
Gnejsnæs
Kap Zachariae
Zachariae Isstrøm
78E_596
78E_598
78E_597
78E_595
78E_594
SCHNAUDER Ø
Nørreland
78E_632
Pic Gerlache
JØKELBUGTEN
78E_593

8.54 Map 7851E – Jøkelbugten

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
78E_593	19	High
78E_594	15	Moderate
78E_595	14	Moderate
78E_596	14	Moderate
78E_597	11	Low
78E_598	11	Low
78E_632	12	Low
78E_633	12	Low

Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually inaccessible, as they are ice covered throughout the year, only with limited open waters in late summer. Moreover are numerous icebergs present.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, *in-situ* burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

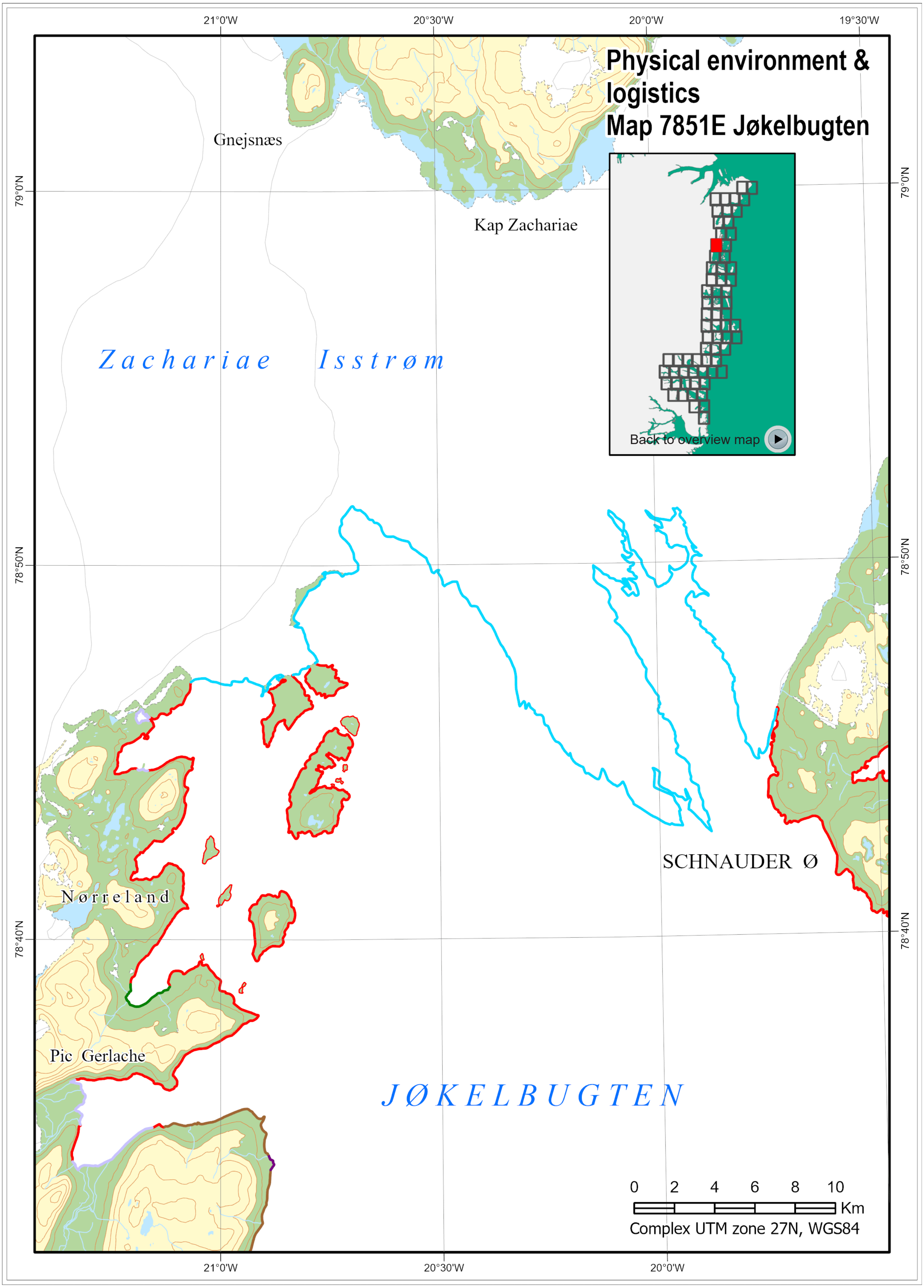
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

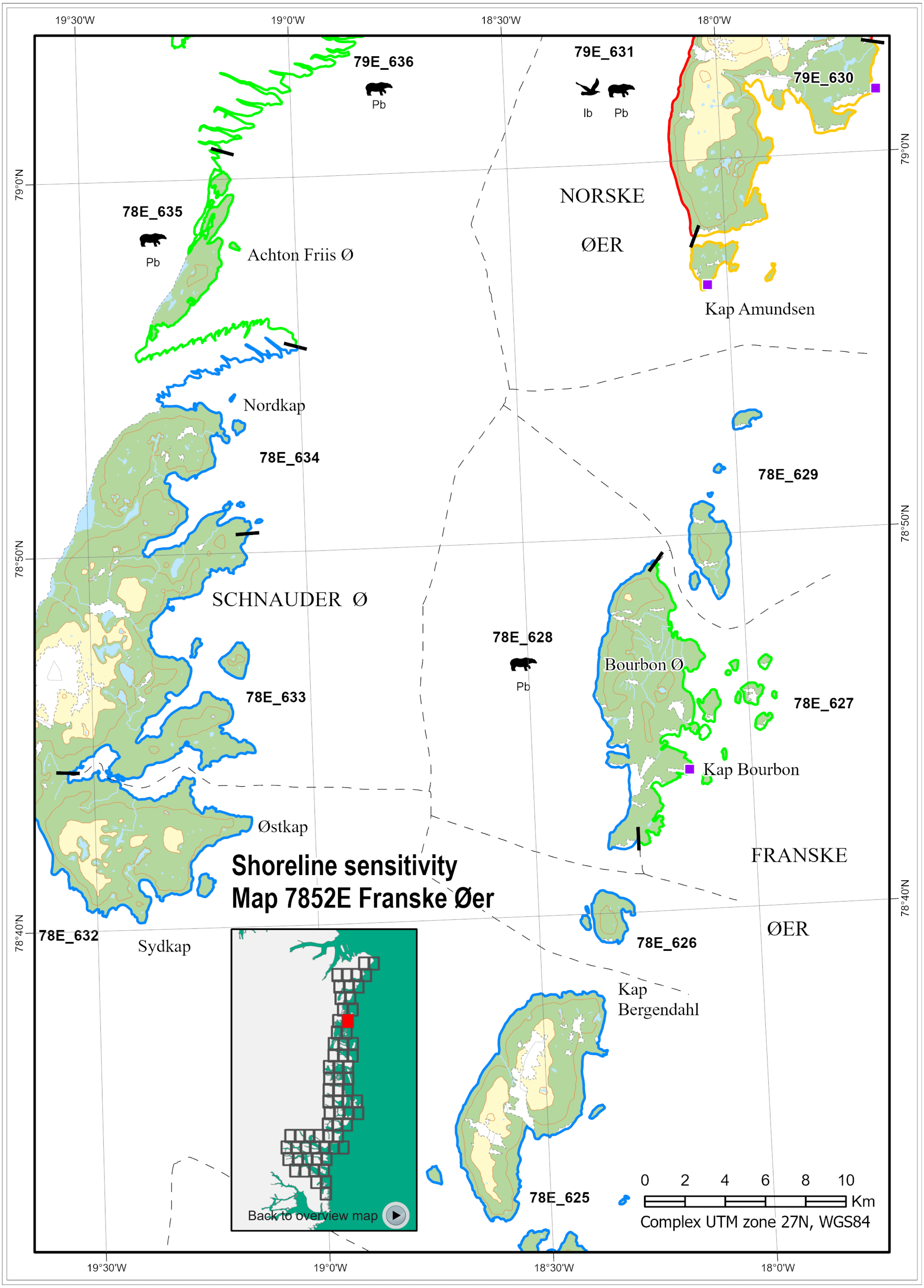
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock and glacier, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 7851E Jøkelbugten
Back to overview map
21°0'W
20°30'W
20°0'W
19°30'W
79°0'N
78°50'N
78°40'N
Gnejsnæs
Kap Zachariae
Zachariae Isstrøm
SCHNAUDER Ø
Nørreland
Pic Gerlache
JØKELBUGTEN
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


19°30'W
19°0'W
18°30'W
18°0'W
79°0'N
78°50'N
78°40'N
79E_636
79E_631
79E_630
78E_635
78E_634
78E_633
78E_632
78E_629
78E_628
78E_627
78E_626
78E_625
Pb
Ib
Achton Friis Ø
NORSKE
ØER
Kap Amundsen
Nordkap
SCHNAUDER Ø
Bourbon Ø
Kap Bourbon
Østkap
FRANSKE
ØER
Sydkap
Kap
Bergendahl
Shoreline sensitivity
Map 7852E Franske Øer
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.55 Map 7852E - Franske Øer

Shoreline sensitivity map

Human use

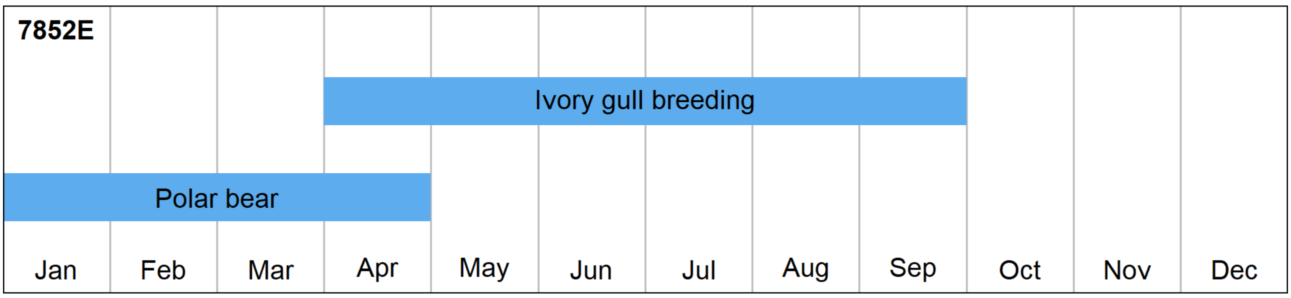
Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Pb78E_628	Known polar bear denning areas
Ib79E_631	1 colony of ivory gulls
Pb79E_631	Known polar bear denning areas
Pb78E_635 - Pb79E_637	Known polar bear denning areas

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
78E_625	13	Low
78E_626	12	Low
78E_627	13	Moderate
78E_628	12	Low
78E_629	12	Low
79E_630	17	High
79E_631	23	Extreme
78E_632	12	Low
78E_633	12	Low
78E_634	13	Low
78E_635	15	Moderate
79E_636	13	Moderate
79E_637	13	Moderate



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible by icebreaker, as they are ice covered throughout the year, only with limited open waters in late summer. Moreover are numerous icebergs present.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are exclusively rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

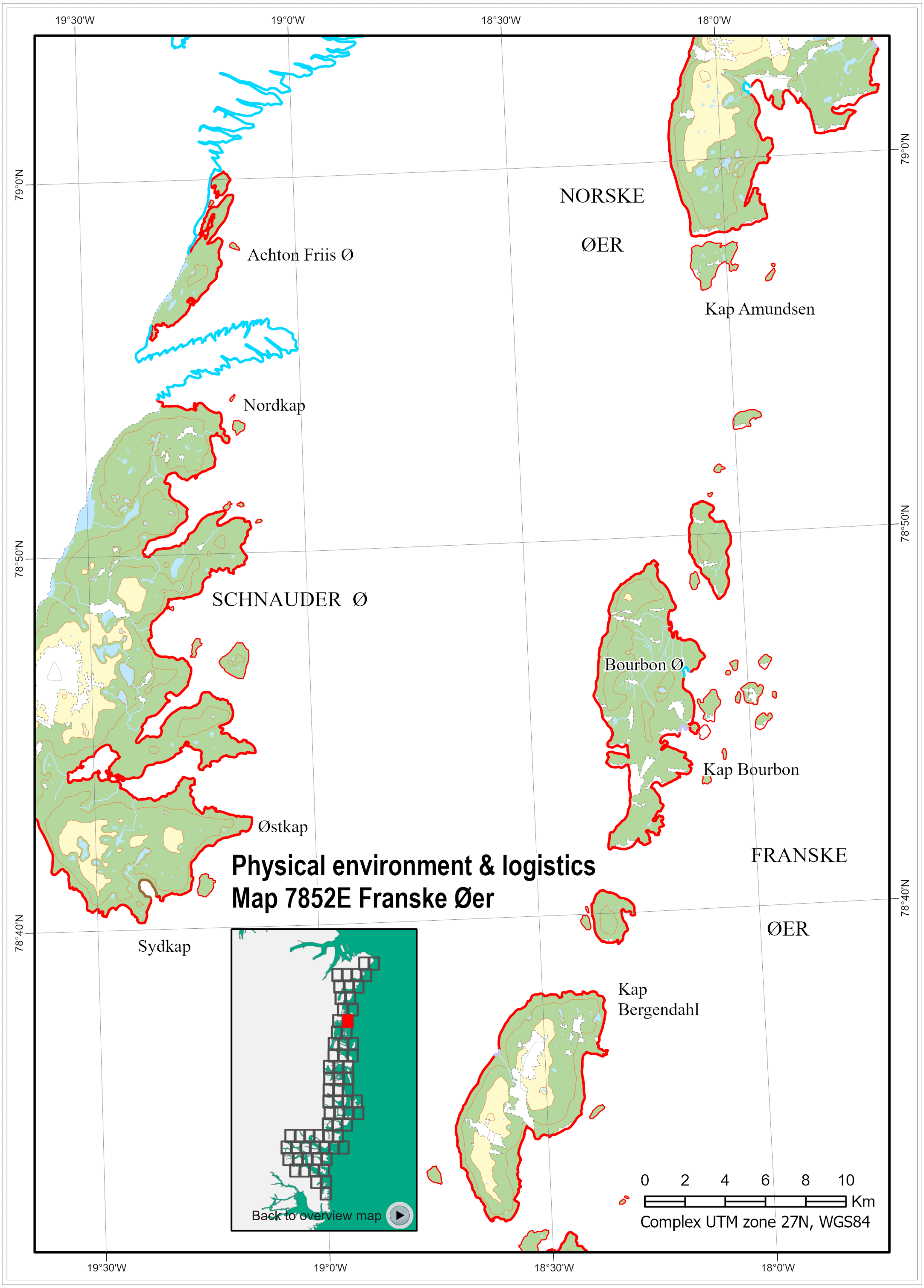
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

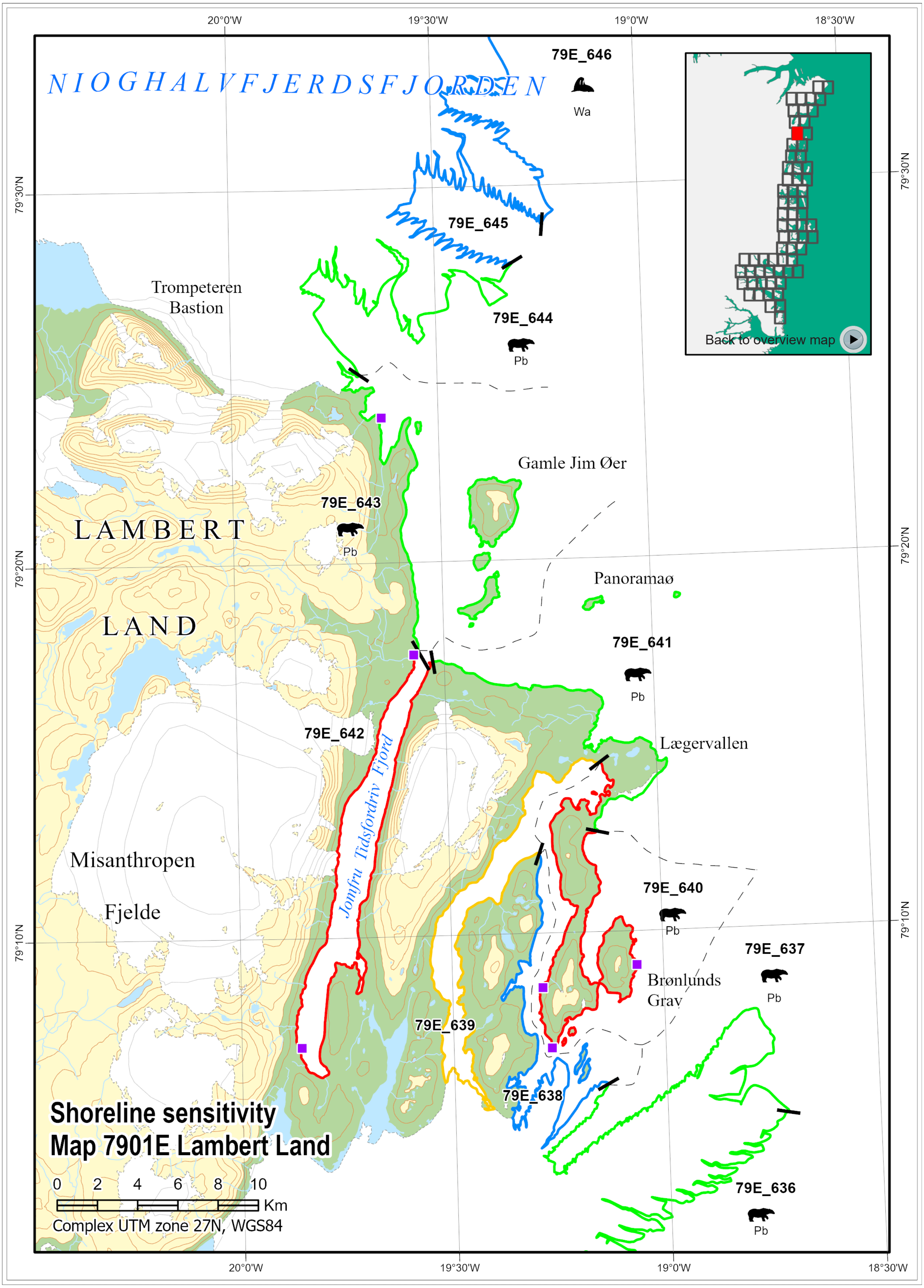
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are exclusively rock and archipelago, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


19°30'W
19°0'W
18°30'W
18°0'W
79°0'N
78°50'N
78°40'N
NORSKE
ØER
Achton Friis Ø
Kap Amundsen
Nordkap
SCHNAUDER Ø
Bourbon Ø
Kap Bourbon
Østkap
FRANSKE
ØER
Physical environment & logistics
Map 7852E Franske Øer
Sydkap
Kap
Bergendahl
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



NIOGHALVFJERDSFJORDEN
79E_646
Wa
79E_645
79E_644
Pb
Trompeteren
Bastion
Gamle Jim Øer
79E_643
Pb
LAMBERT
LAND
Panoramaø
79E_641
Pb
79E_642
Jomfru Tidsfordriv Fjord
Lægervallen
Misanthropen
Fjelde
79E_640
Pb
79E_637
Pb
Brønlunds
Grav
79E_639
79E_638
79E_636
Pb
Back to overview map
20°0'W
19°30'W
19°0'W
18°30'W
79°30'N
79°20'N
79°10'N
Shoreline sensitivity
Map 7901E Lambert Land
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.56 Map 7901E - Lambert Land

Shoreline sensitivity map

Human use

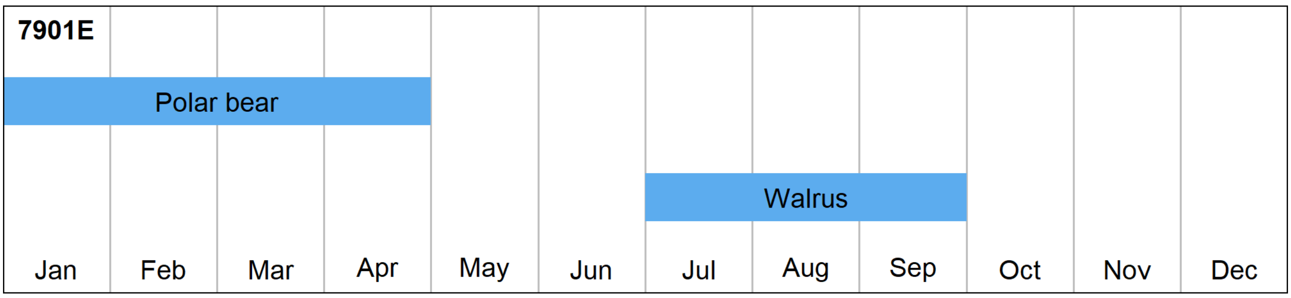
Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Pb79E_636, Pb79E_637	Known polar bear denning areas
Pb79E_640, Pb79E_641	Known polar bear denning areas
Pb79E_643, Pb79E_644	Known polar bear denning areas
Wa79E_646	Walrus foraging

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_636	13	Moderate
79E_637	13	Moderate
79E_638	13	Low
79E_639	17	High
79E_640	26	Extreme
79E_641	13	Moderate
79E_642	22	Extreme
79E_643	14	Moderate
79E_644	13	Moderate
79E_645	11	Low
79E_646	12	Low



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible by icebreaker, as they are ice covered throughout the year, only with limited open waters in late summer. Moreover are numerous icebergs present.

No anchorages are reported for this map area.

Two STOL-airstrips are noted at Brønlunds Grav (only ski strip) and Lærgervallen (Chapter 15).

Shorelines within this area are almost exclusively rock and glacier, with some archipelago, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

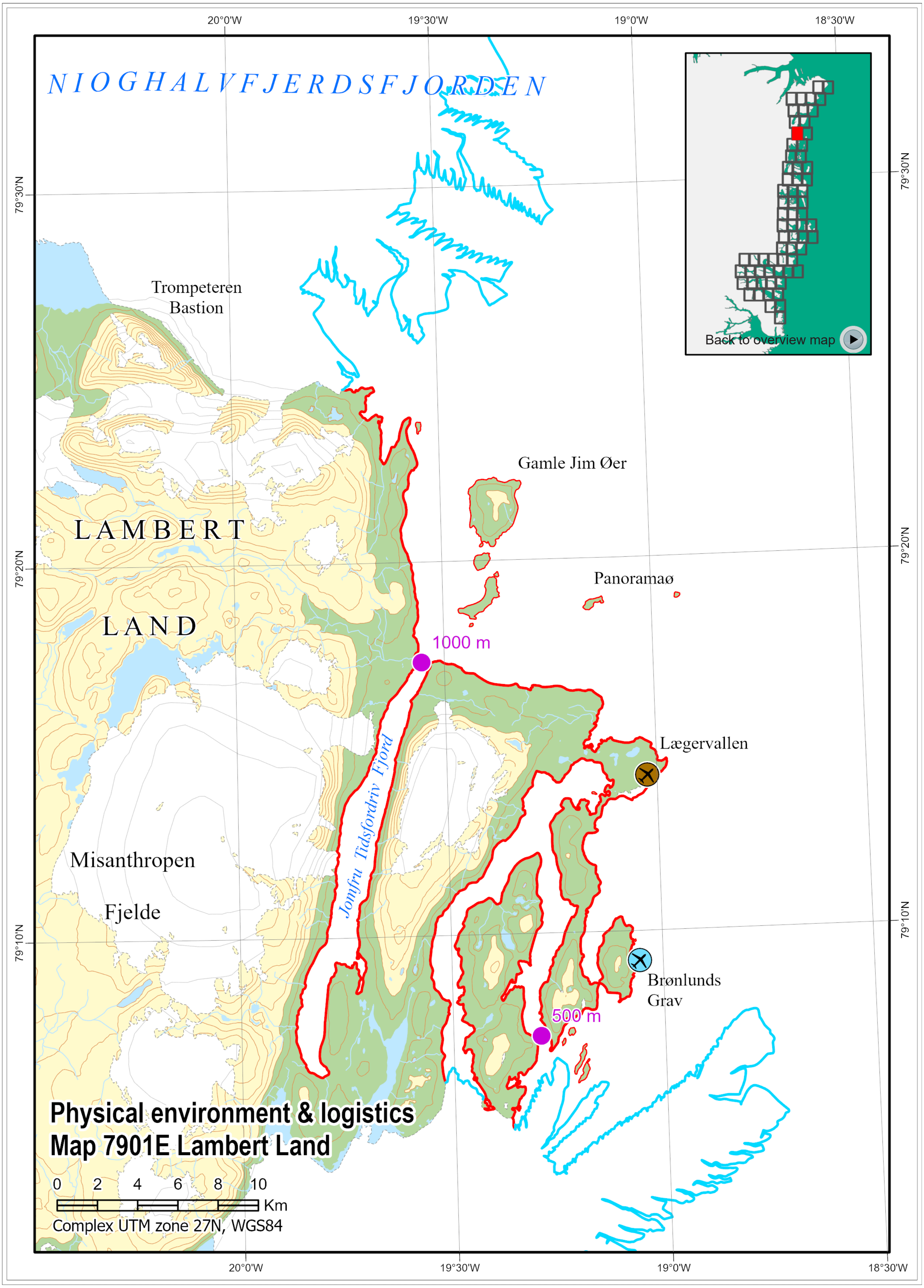
An opportunity for nearshore booming exists at the entrance to Jomfru Tidsfordriv Fjord, where a modest length of exclusion boom could be used at the entrance (est. 1000 m) to protect a large and highly sensitive inshore area. A similar opportunity also exists at the entrance to the fjord 6 km SW of Brønlunds Grav (est. 500 m).

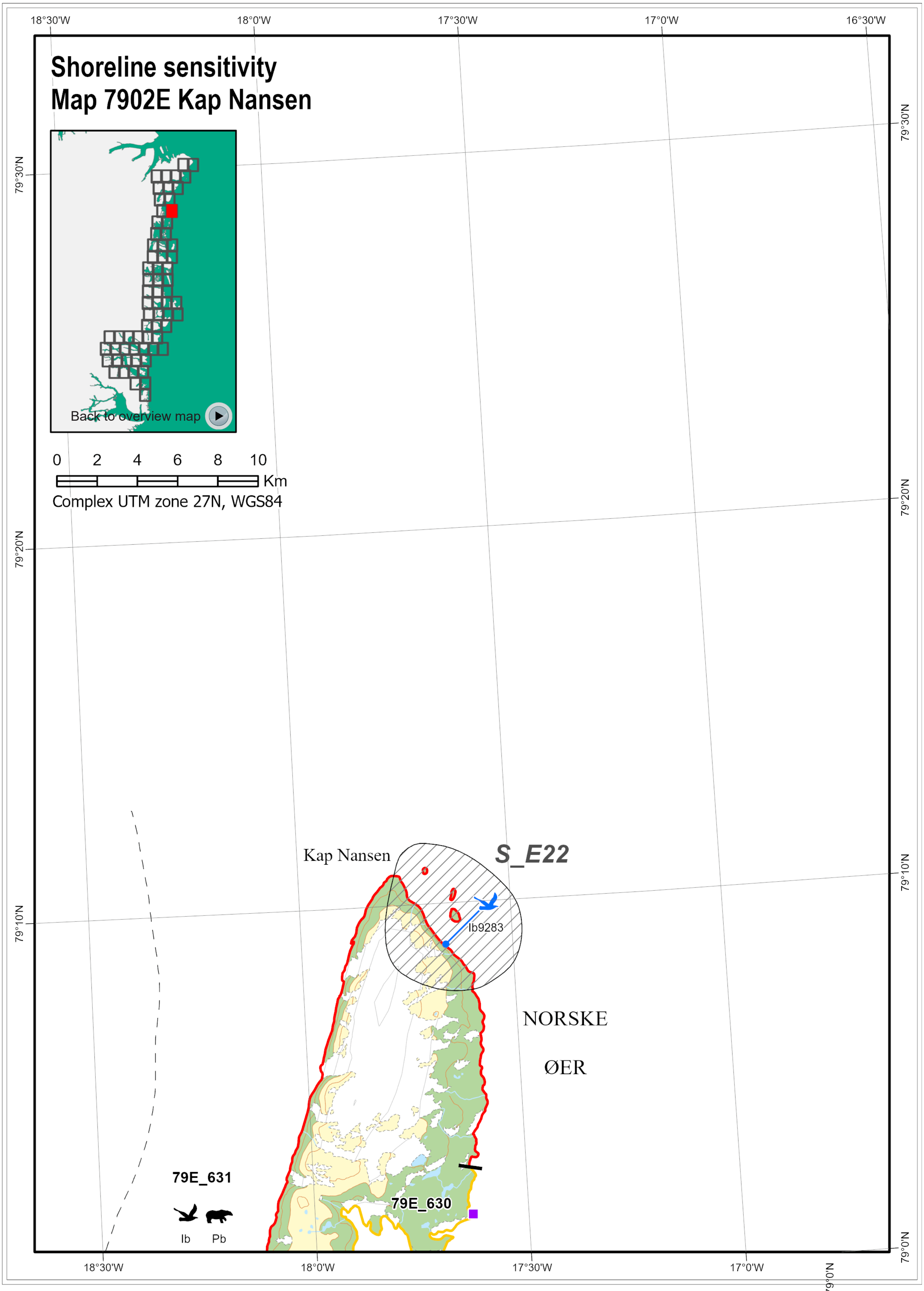
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock, with some archipelago, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


20°0'W
19°30'W
19°0'W
18°30'W
79°30'N
79°20'N
79°10'N
NIOGHALVFJERDSFJORDEN
Back to overview map
Trompeteren
Bastion
Gamle Jim Øer
LAMBERT
LAND
Panoramaø
1000 m
Lægervallen
Jomfru Tidsfordriv Fjord
Misanthropen
Fjelde
Brønlunds
Grav
500 m
Physical environment & logistics
Map 7901E Lambert Land
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84


Shoreline sensitivity
Map 7902E Kap Nansen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
18°30'W
18°0'W
17°30'W
17°0'W
16°30'W
79°30'N
79°20'N
79°10'N
79°0'N
Kap Nansen
S_E22
Ib9283
NORSKE
ØER
79E_631
Ib
Pb
79E_630

8.57 Map 7902E - Kap Nansen

Shoreline sensitivity map

Human use

Occasional tourist cruises, expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

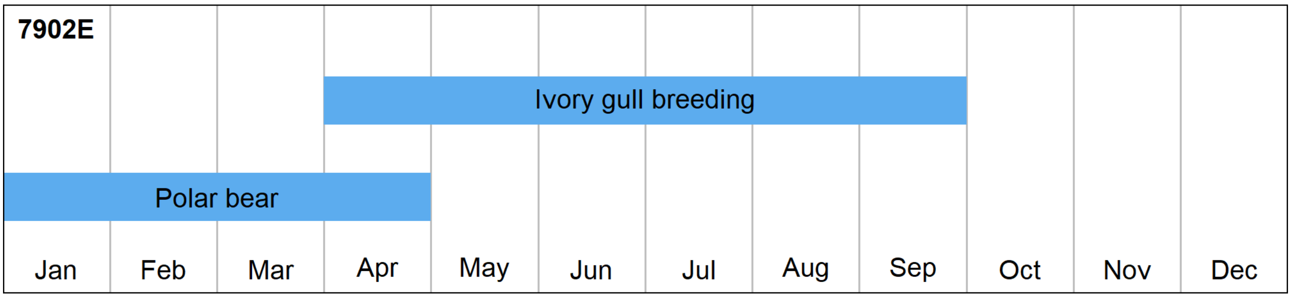
Ib79E_631	1 colony of ivory gulls
Pb79E_631	Known polar bear denning areas

Site specific occurrence: blue icons

Ib9283	Breeding ivory gulls **(S_E22)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_630	17	High
79E_631	23	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible with icebreaker, as they are ice covered throughout the year, only with limited open waters in late summer. Moreover are icebergs present.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are almost exclusively rock, with some archipelago, allowing little opportunity for marine access.

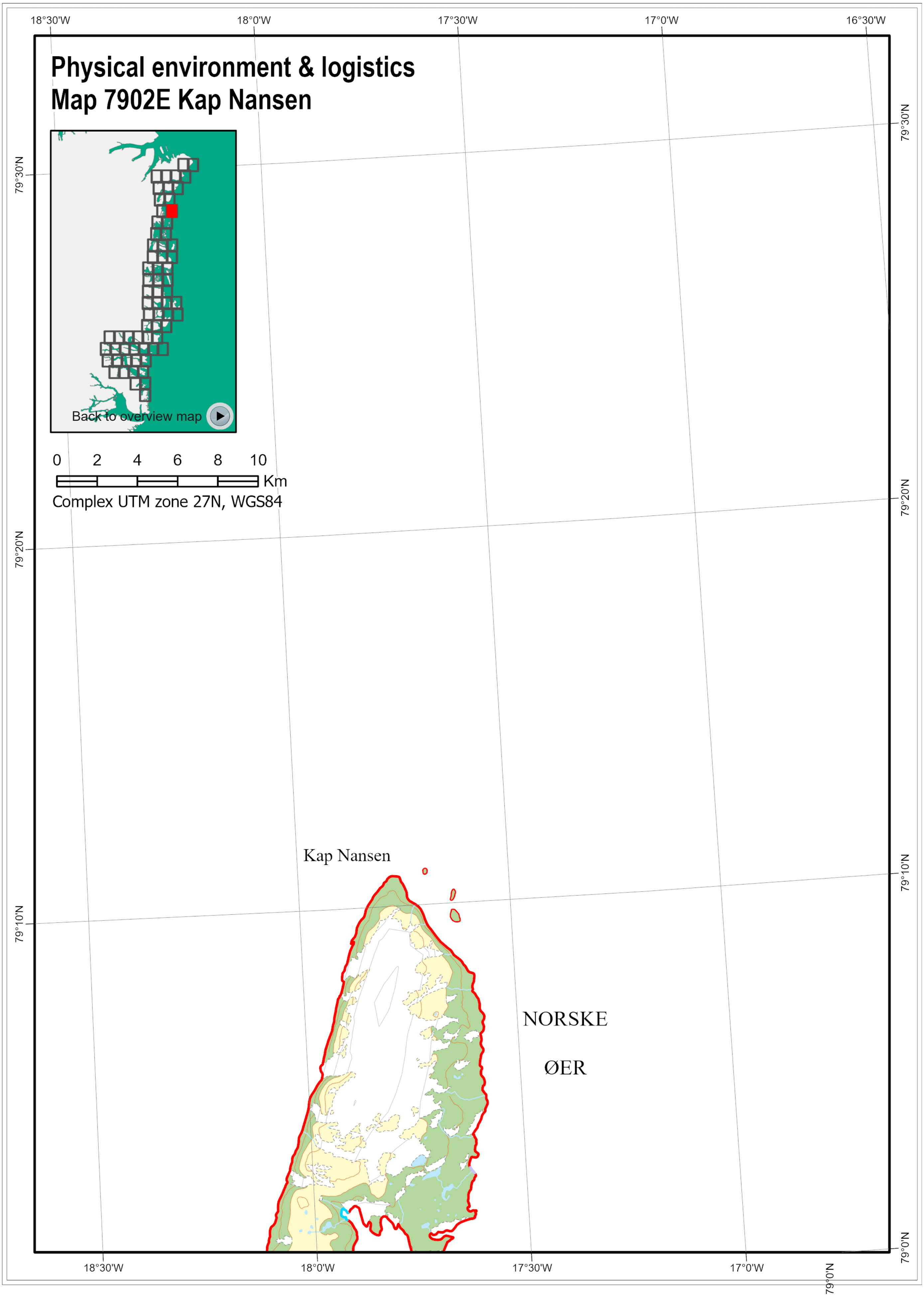
Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

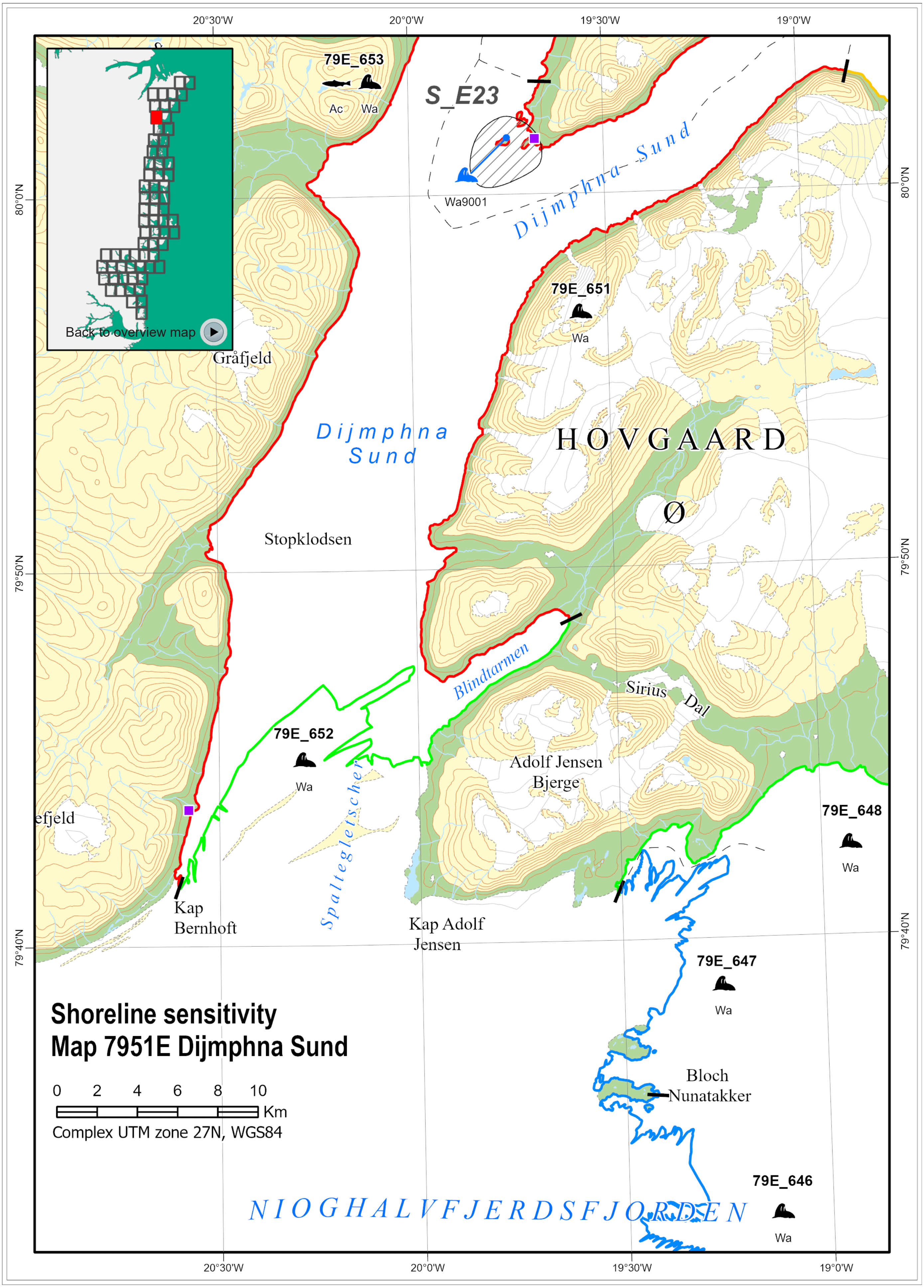
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are almost exclusively rock, with some archipelago glacier with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Safe Havens
There are no potential safe havens identified on this map.


18°30'W
18°0'W
17°30'W
17°0'W
16°30'W
Physical environment & logistics
Map 7902E Kap Nansen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
79°30'N
79°20'N
79°10'N
79°0'N
Kap Nansen
NORSKE
ØER



79E_653
Ac
Wa
S_E23
Wa9001
Dijmphna Sund
79E_651
Wa
Back to overview map
Gråfjeld
Dijmphna Sund
HOVGAARD Ø
Stopklodsen
Blindtarmen
Sirius Dal
79E_652
Wa
Adolf Jensen Bjerge
efjeld
Spaltegletscher
79E_648
Wa
Kap Bernhoft
Kap Adolf Jensen
79E_647
Wa
Shoreline sensitivity
Map 7951E Dijmphna Sund
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
Bloch Nunatakker
79E_646
Wa
NIOGHALVFJERDSFJORDEN
20°30'W
20°0'W
19°30'W
19°0'W
80°0'N
79°50'N
79°40'N

8.58 Map 7951E - Dijmphna Sund

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

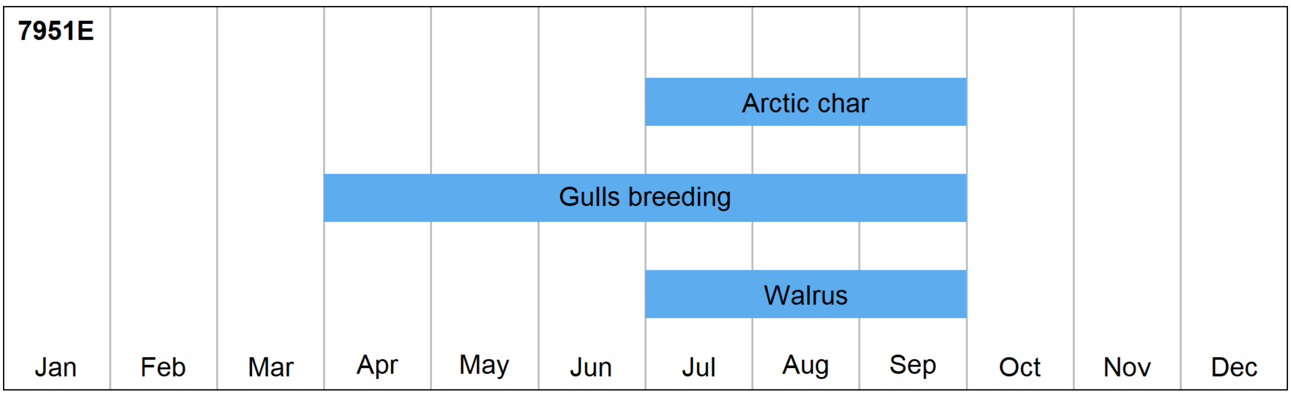
Ac79E_653	Important Arctic char river
Gb80E_650	1 colony of glaucous gulls and 1 colony of black-legged kittiwakes
Wa79E_647 - Wa79E_648	Walrus foraging
Wa80E_650 - Wa80E_655	Walrus haul-out site and foraging

Site specific occurrence: blue icons

Wa9001	Walrus haul-out site **(S_E23)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_646	12	Low
79E_647	12	Low
79E_648	13	Moderate
80E_650	17	High
79E_651	21	Extreme
79E_652	14	Moderate
79E_653	26	Extreme
80E_654	26	Extreme
80E_655	19	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible by icebreakers, as they are ice covered throughout the year except in late summer. Moreover are icebergs present.

No anchorages are reported for this map area.

A STOL-airstrip is noted 5 km W of Posten (Chapter 15).

Shorelines within this area are almost exclusively rock and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

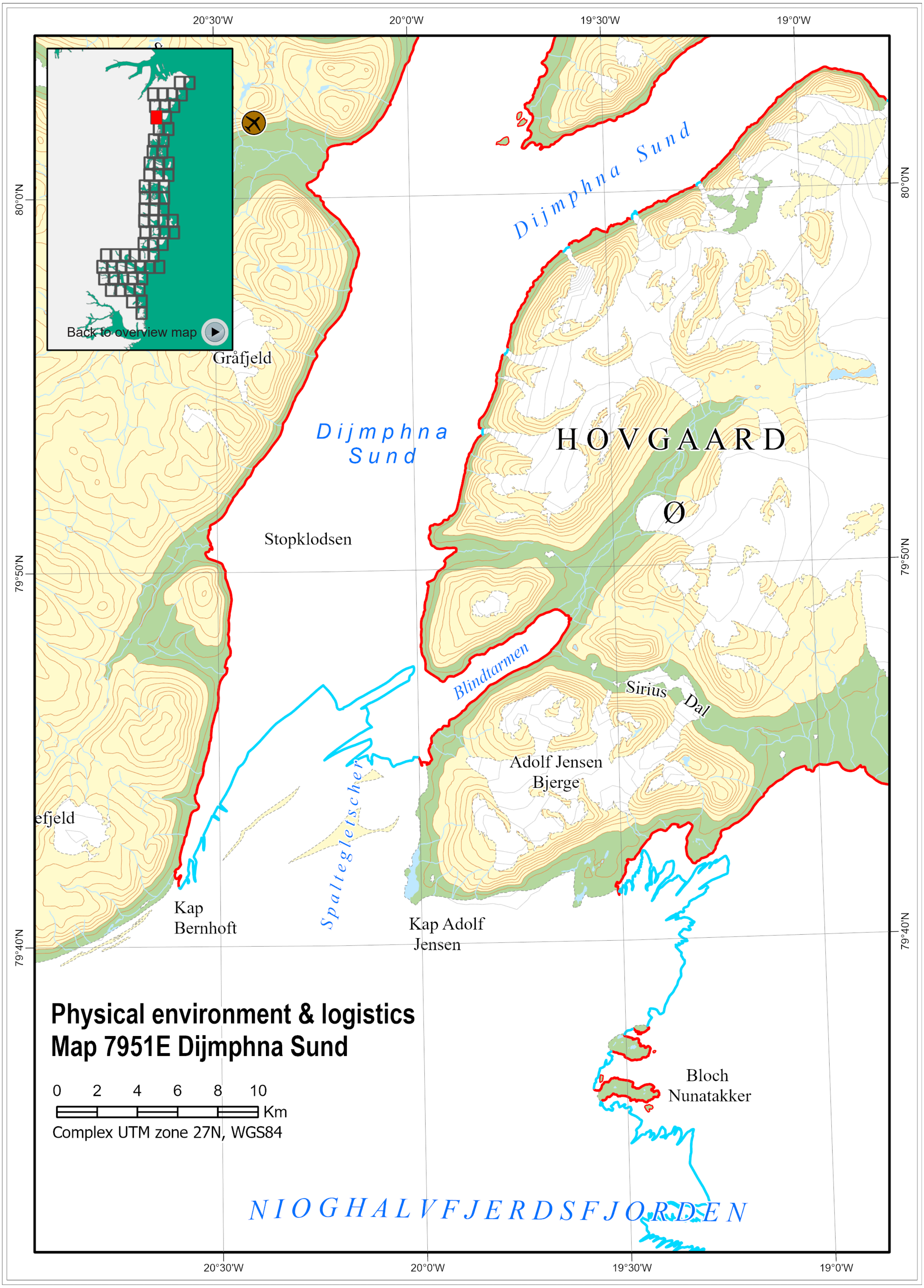
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

+Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

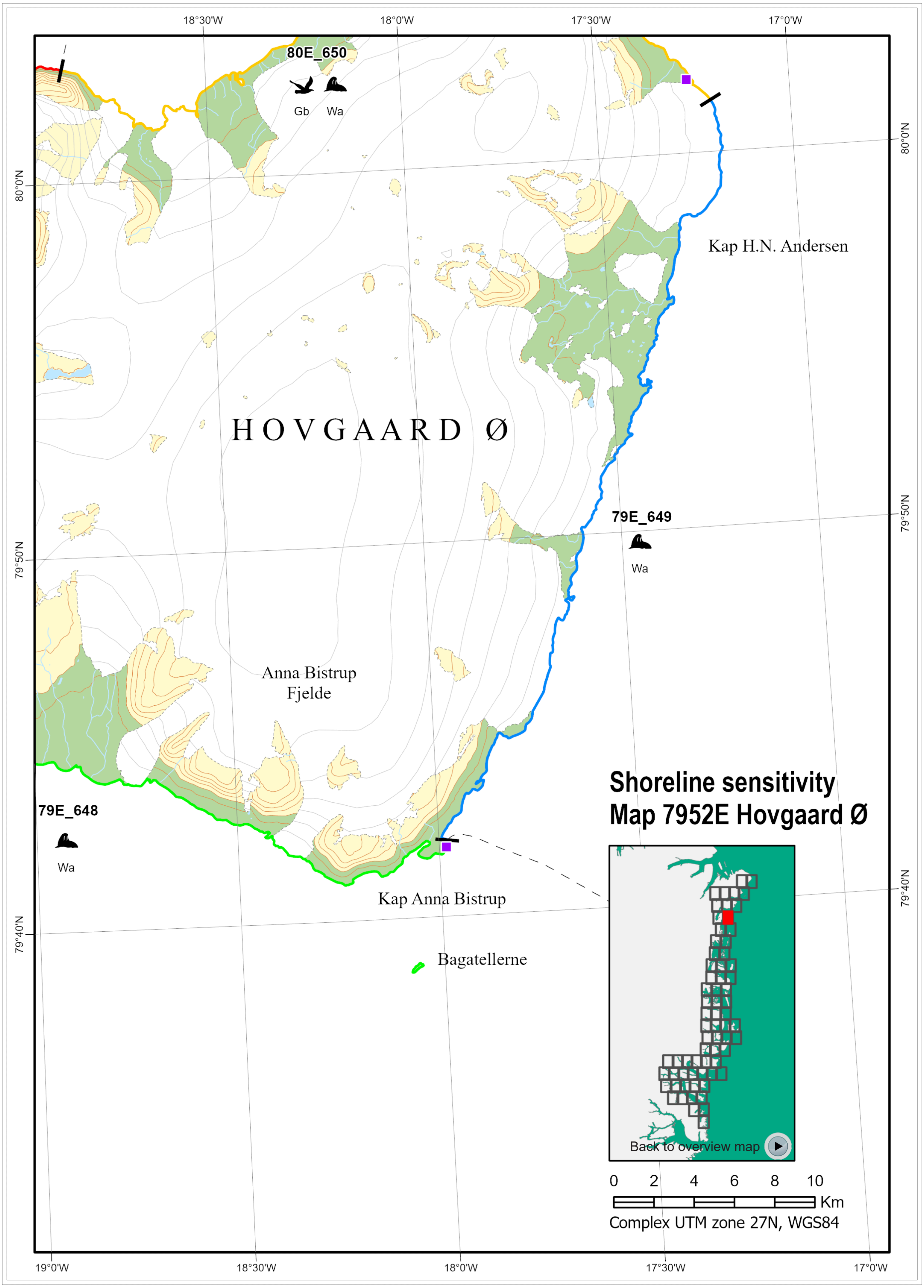
Shorelines within this area are almost exclusively rock, with some glacier with low to moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



20°30'W
20°0'W
19°30'W
19°0'W
80°0'N
79°50'N
79°40'N
Back to overview map
Gråfjeld
Dijmphna Sund
Dijmphna Sund
HOVGAARD Ø
Stopklodsen
Blindtarmen
Sirius Dal
Adolf Jensen Bjerge
efjeld
Spaltegletscher
Kap Bernhoft
Kap Adolf Jensen
Bloch Nunatakker
NIOGHALVFJERDSFJORDEN
Physical environment & logistics
Map 7951E Dijmphna Sund
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84



18°30'W
18°0'W
17°30'W
17°0'W
80°0'N
79°50'N
79°40'N
19°0'W
80E_650
Gb
Wa
Kap H.N. Andersen
HOVGAARD Ø
79E_649
Wa
Anna Bistrup
Fjelde
Shoreline sensitivity
Map 7952E Hovgaard Ø
79E_648
Wa
Kap Anna Bistrup
Bagatellerne
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84

8.59 Map 7952E - Hovgaard Ø

Shoreline sensitivity map

Human use

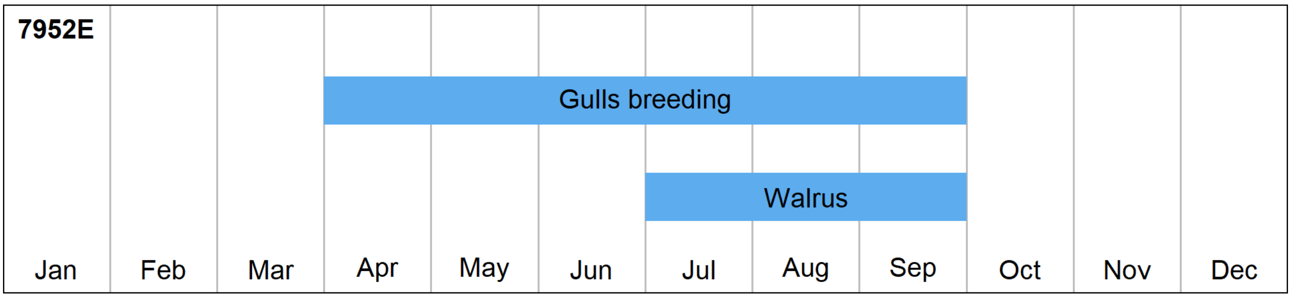
Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Gb80E_650	1 colony of glaucous gulls and 1 colony of black-legged kittiwakes
Wa79E_648 - Wa79E_651	Walrus foraging

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_648	13	Moderate
79E_649	12	Low
80E_650	17	High
79E_651	21	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation.

The ice limit varies from season to season and from year to year; in the average year the area is ice-bound from November to August. Additional dangers to navigation are present here due to icebergs.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

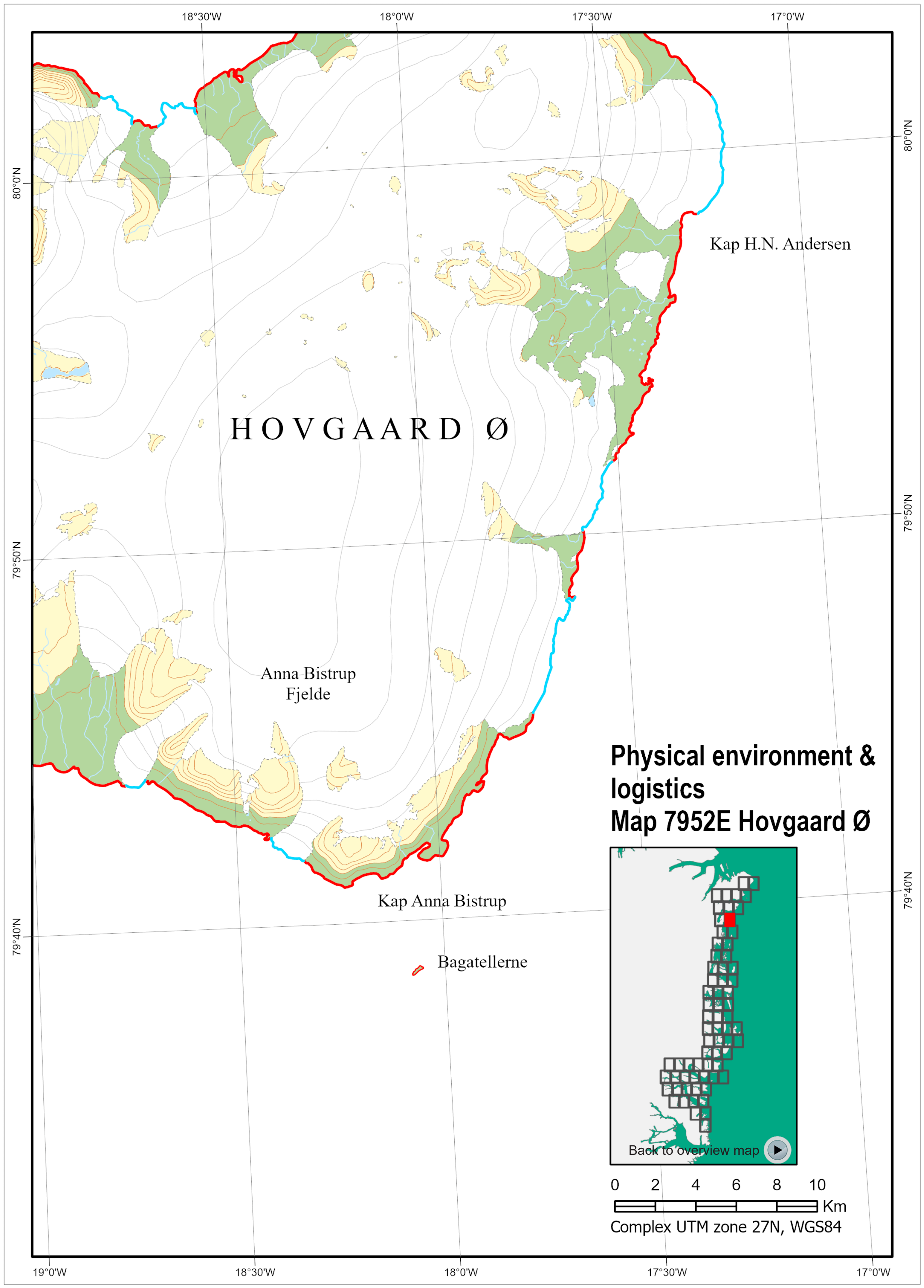
Shorelines within this area are exclusively rock, allowing little opportunity for marine access.

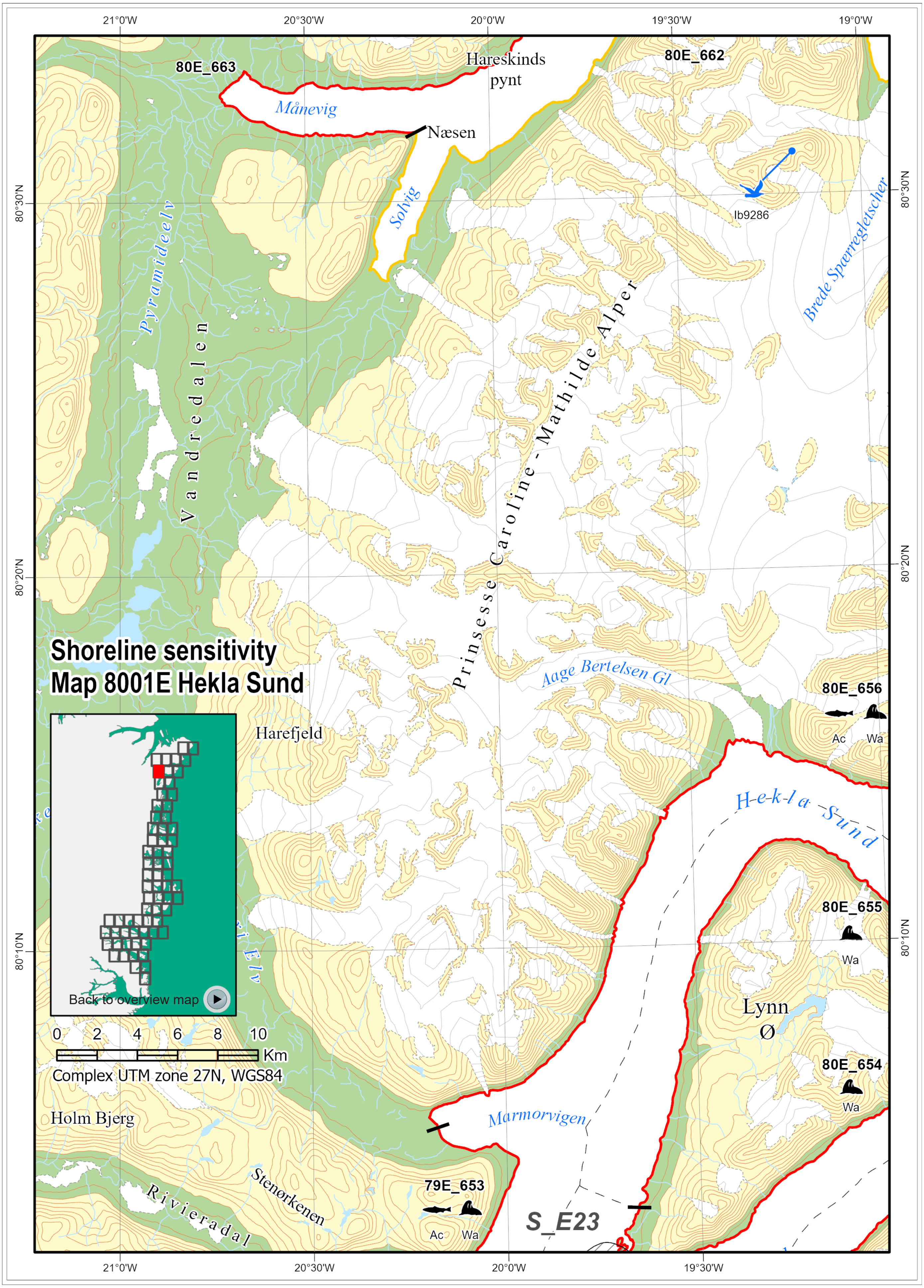
Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Shorelines within this area are exclusively rock, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Safe Havens
There are no potential safe havens identified on this map.


18°30'W
18°0'W
17°30'W
17°0'W
80°0'N
79°50'N
79°40'N
Kap H.N. Andersen
HOVGAARD Ø
Anna Bistrup
Fjelde
Kap Anna Bistrup
Bagatellerne
Physical environment & logistics
Map 7952E Hovgaard Ø
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°0'W
18°30'W
18°0'W
17°30'W
17°0'W



Shoreline sensitivity
Map 8001E Hekla Sund
80E_663
80E_662
80E_656
80E_655
80E_654
79E_653
S_E23
Hareskinds pynt
Månevig
Næsen
Solvig
Pyramideelv
Vandredalen
Prinsesse Caroline - Mathilde Alper
Brede Spærregletscher
Ib9286
Aage Bertelsen Gl
Harefjeld
Hekla Sund
Lynn Ø
Marmorvigen
Holm Bjerg
Stenørkenen
Rivieradal
Ac
Wa
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
21°0'W
20°30'W
20°0'W
19°30'W
19°0'W
80°30'N
80°20'N
80°10'N

8.60 Map 8001E - Hekla Sund

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

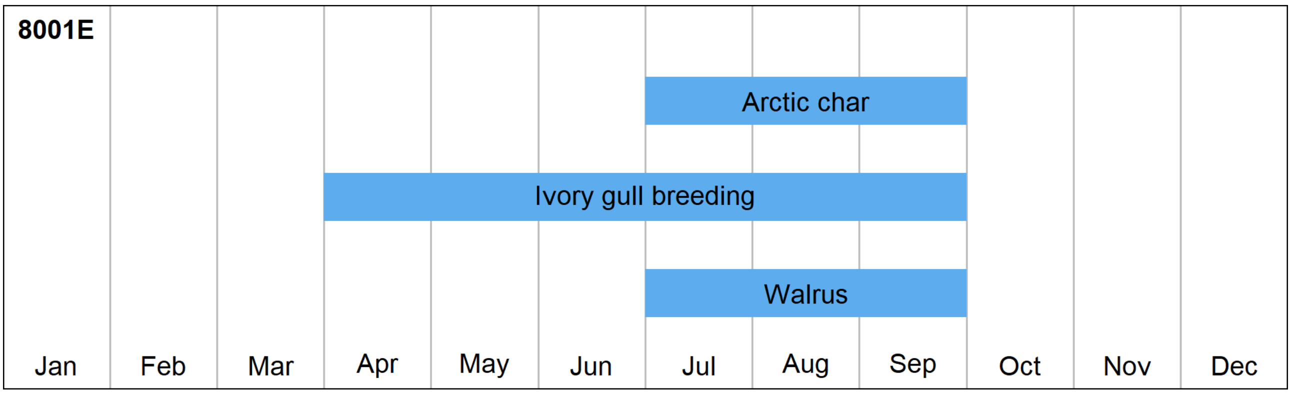
Ac79E_653, Ac80E_656	Important Arctic char river
Wa79E_651	Walrus foraging
Wa79E_653 - Wa80E_656	Walrus foraging

Site specific occurrence: blue icons

Ib9286	Breeding ivory gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_651	21	Extreme
79E_653	26	Extreme
80E_654	26	Extreme
80E_655	19	Extreme
80E_656	23	Extreme
80E_662	16	High
80E_663	29	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer. Moreover are icebergs present.

No anchorages are reported for this map area.

Two STOL-airstrips are noted close W of Posten and one in Vandredalen close W of the head of Månevig (Chapter 15).

Shorelines within this area are predominantly rock, with some talus and alluvial fans allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

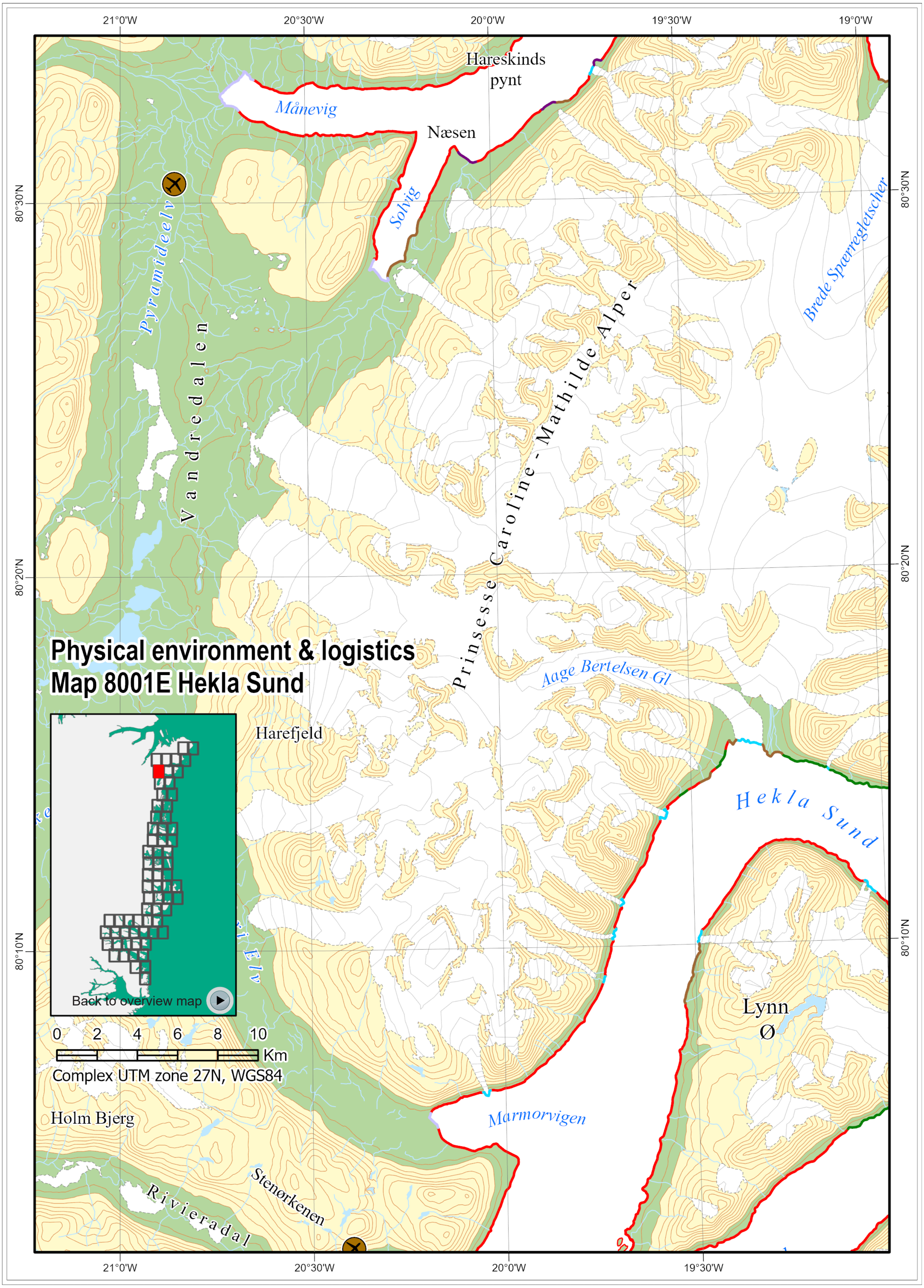
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

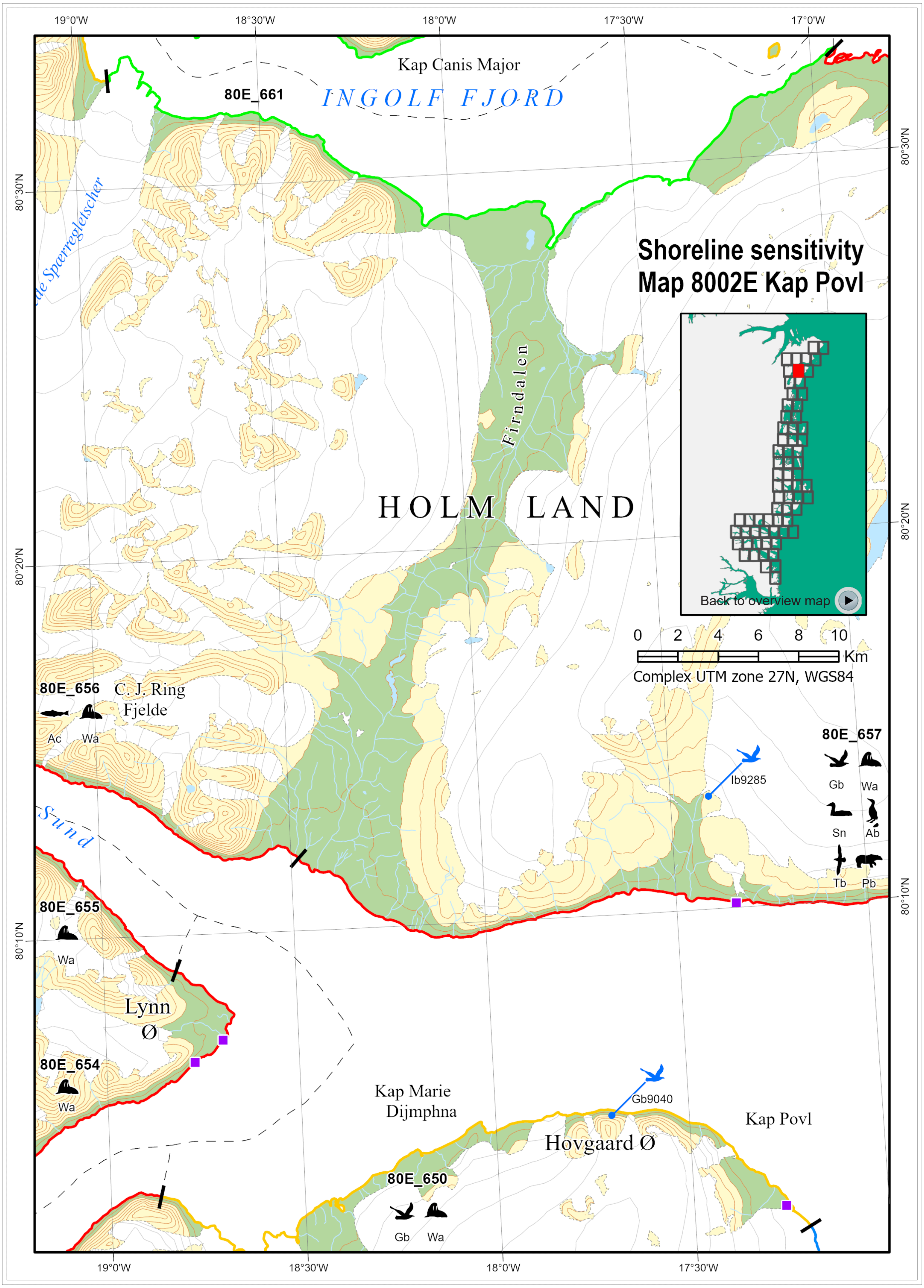
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, with some talus and glacier with low exposure, which will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 8001E Hekla Sund
21°0'W
20°30'W
20°0'W
19°30'W
19°0'W
80°30'N
80°20'N
80°10'N
Hareskinds
pynt
Månevig
Næsen
Solvig
Pyramideelv
Vandredalen
Prinsesse Caroline - Mathilde Alper
Brede Spærregletscher
Aage Bertelsen Gl
Harefjeld
Hekla Sund
Lynn
Ø
Marmorvigen
Holm Bjerg
Stenørkenen
Rivieradal
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84



Shoreline sensitivity
Map 8002E Kap Povl
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
INGOLF FJORD
Kap Canis Major
80E_661
HOLM LAND
Firndalen
80E_656
C. J. Ring Fjelde
Ac
Wa
Sund
80E_655
Wa
Lynn Ø
80E_654
Wa
80E_657
Gb
Wa
Sn
Ab
Tb
Pb
Ib9285
Gb9040
Kap Marie Dijmphna
Hovgaard Ø
Kap Povl
80E_650
Gb
Wa
19°0'W
18°30'W
18°0'W
17°30'W
17°0'W
80°30'N
80°20'N
80°10'N

8.61 Map 8002E - Kap Povl

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

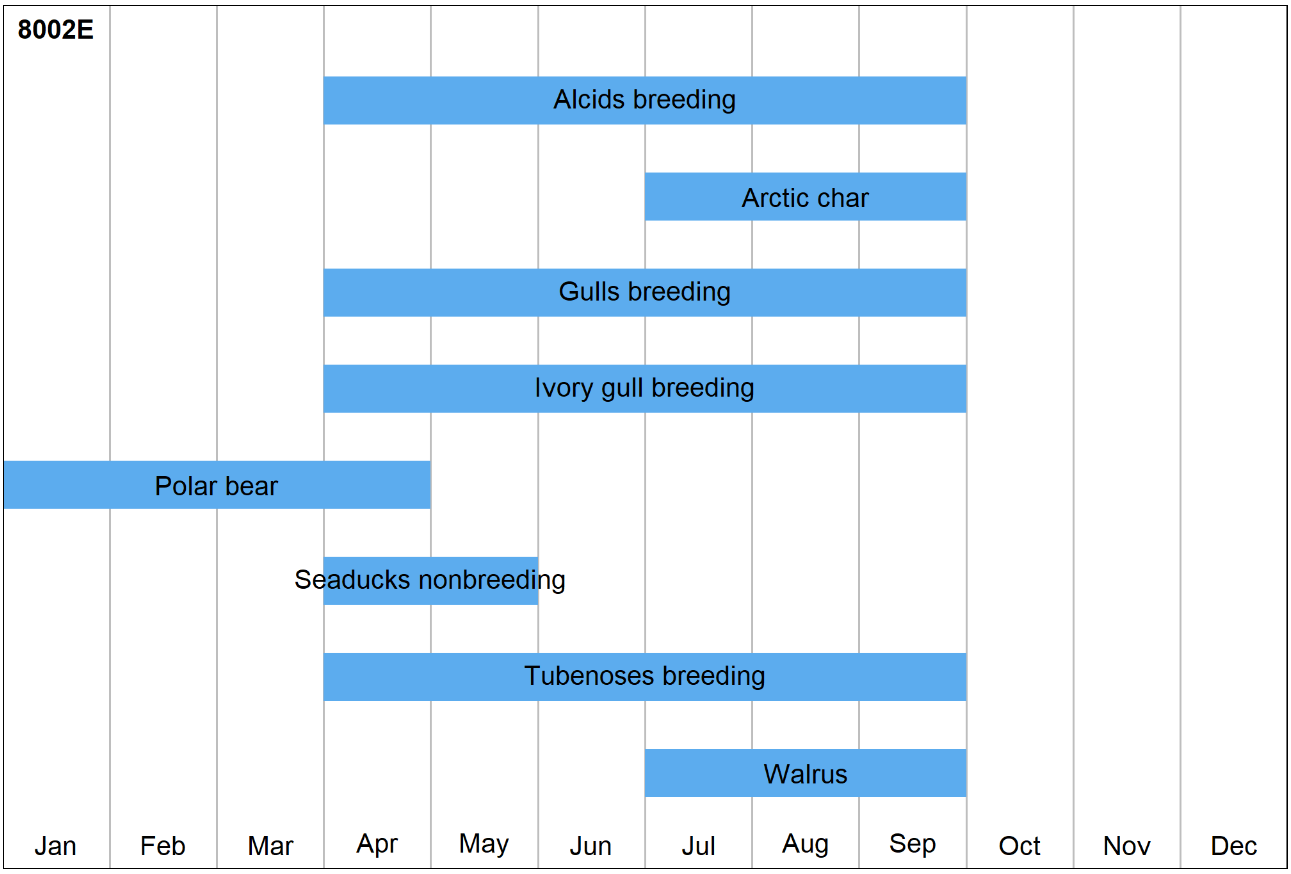
Ib80E_660	1 colony of Ivory gulls
Ab80E_657	2 colonies of black guillemots
Ac80E_656	Important Arctic char river
Gb80E_650	1 colony of glaucous gulls and 1 colony of black-legged kittiwakes
Gb80E_657	2 colonies of glaucous gulls and 1 colony of black-legged kittiwakes
Gb80E_659	1 colony of glaucous gulls and 1 colony of Arctic terns
Pb80E_657	Known polar bear denning areas
Pb80E_659, Pb80E_660	Known polar bear denning areas
Sn80E_659, Sn80E_657	Spring concentrations of common eiders and king eiders
Tb80E_657	2 colonies of northern fulmars
Tb80E_659	1 colony of northern fulmars
Wa79E_649 - Wa79E_651	Walrus foraging
Wa80E_654 - Wa80E_657	Walrus foraging
Wa80E_659	Walrus foraging

Site specific occurrence: blue icons

Gb9040	Breeding glaucous gulls and black-legged kittiwakes
Ib9285,	Breeding ivory gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
79E_649	12	Low
80E_650	17	High
79E_651	21	Extreme
80E_654	26	Extreme
80E_655	19	Extreme
80E_656	23	Extreme
80E_657	28	Extreme
80E_659	30	Extreme
80E_660	17	High
80E_661	14	Moderate
80E_662	16	High
80E_664	14	Moderate


8002E
Alcids breeding
Arctic char
Gulls breeding
Ivory gull breeding
Polar bear
Seaducks nonbreeding
Tubenoses breeding
Walrus
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

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Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer. Moreover are icebergs present.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock, with some talus and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

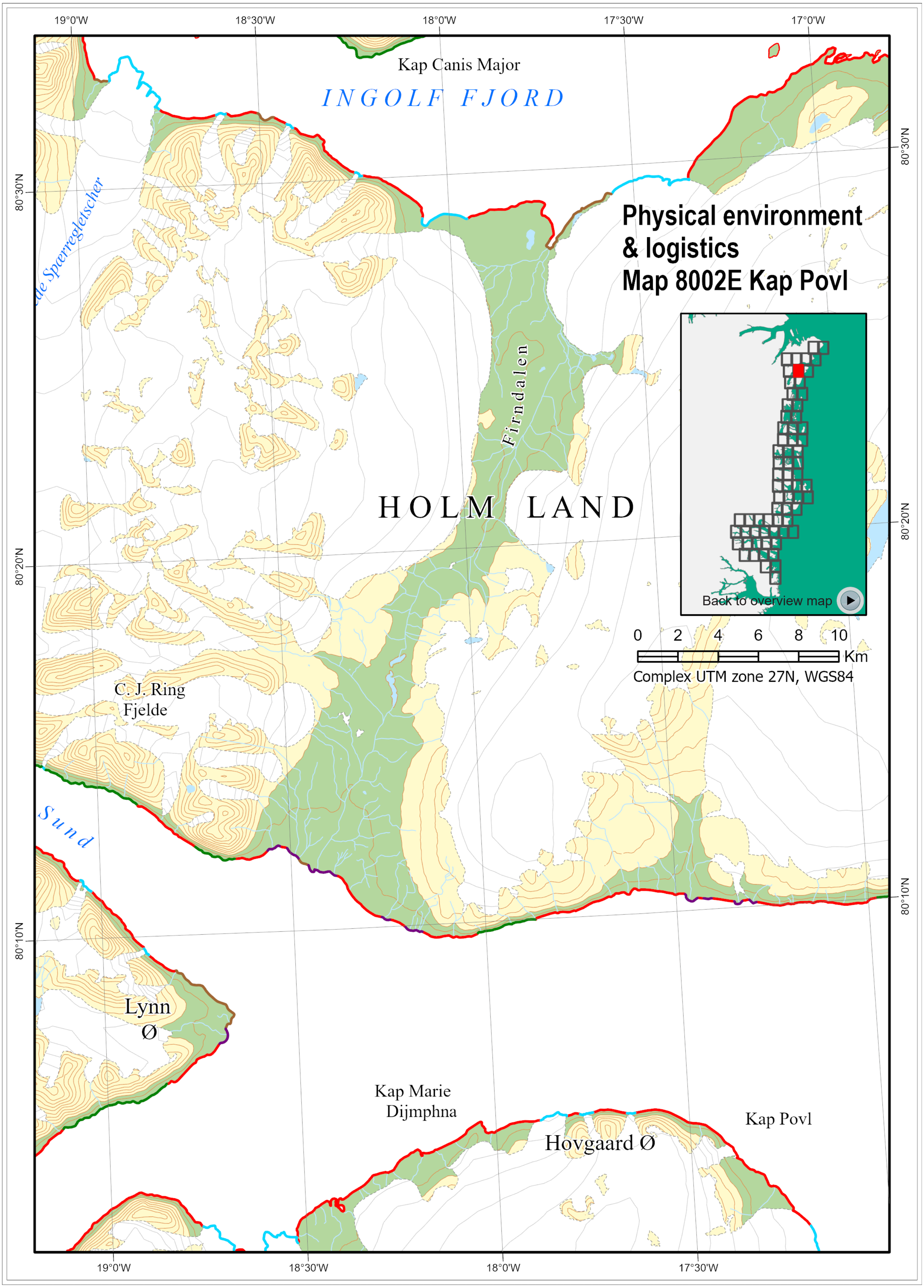
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

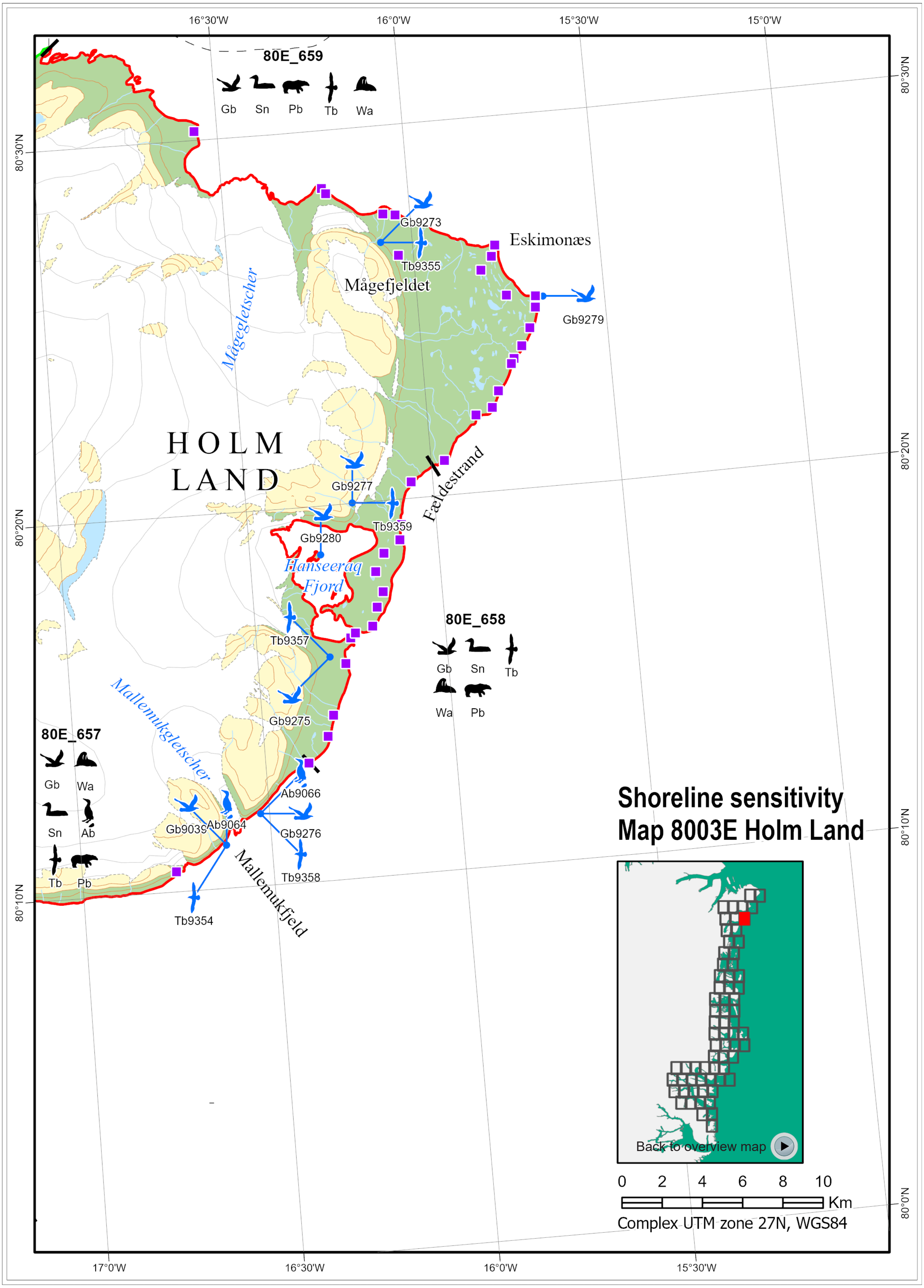
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines shown on this map are predominantly rock with some talus and glacier, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


19°0'W
18°30'W
18°0'W
17°30'W
17°0'W
80°30'N
80°20'N
80°10'N
Kap Canis Major
INGOLF FJORD
de Sparregletscher
Physical environment & logistics
Map 8002E Kap Povl
Back to overview map
Firndalen
HOLM LAND
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
C. J. Ring Fjelde
Sund
Lynn Ø
Kap Marie Dijmphna
Hovgaard Ø
Kap Povl



16°30'W
16°0'W
15°30'W
15°0'W
80°30'N
80°20'N
80°10'N
80°0'N
17°0'W
80E_659
Gb
Sn
Pb
Tb
Wa
Gb9273
Eskimonæs
Tb9355
Mågefjeldet
Gb9279
Mågegletscher
HOLM
LAND
Gb9277
Tb9359
Fældestrand
Gb9280
Hanseeraq
Fjord
80E_658
Tb9357
Gb9275
Mallemukgletscher
80E_657
Ab
Ab9066
Gb9039
Ab9064
Gb9276
Tb9358
Tb9354
Mallemukfjeld
Shoreline sensitivity
Map 8003E Holm Land
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84

8.62 Map 8003E - Holm Land

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

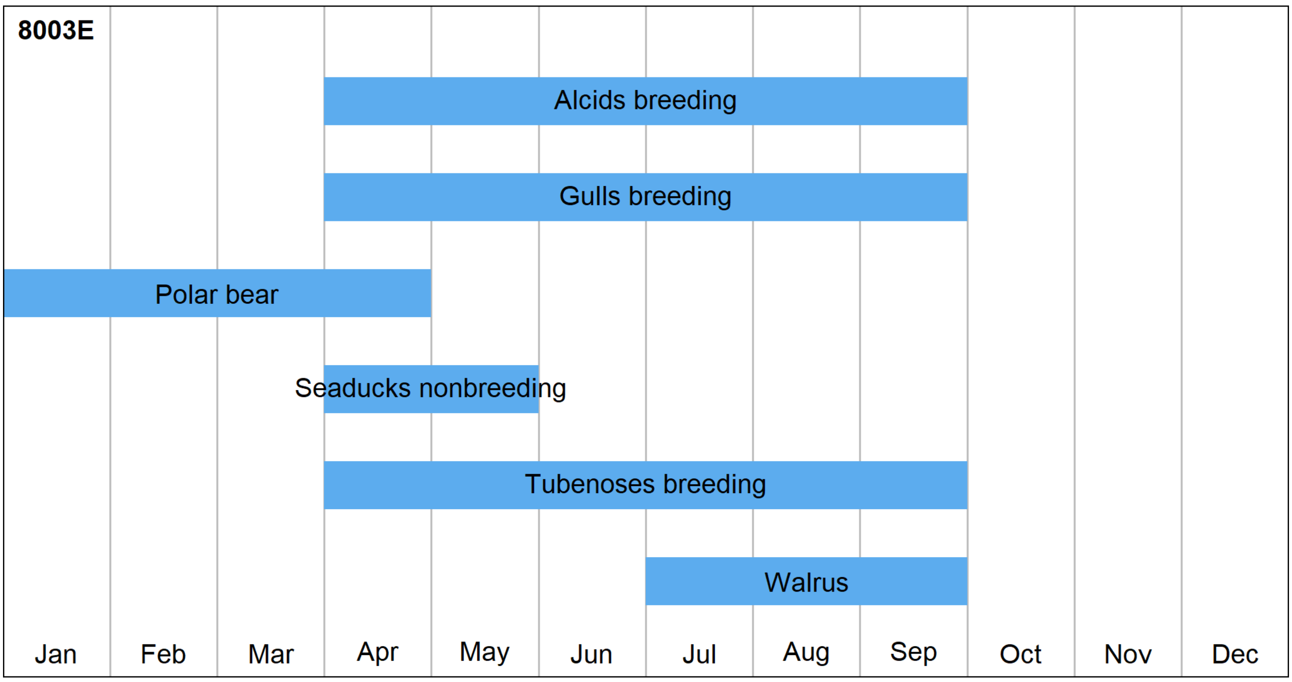
Ab80E_657	2 colonies of black guillemots
Gb80E_659	1 colony of glaucous gulls and 1 colony of Arctic terns
Gb80E_657	2 colonies of glaucous gulls and 1 colony of black-legged kittiwakes
Gb80E_658	2 colonies of glaucous gulls and 1 colony of Arctic terns
Pb80E_657 - Pb80E_659	Known polar bear denning areas
Sn80E_657 - Sn80E_659	Spring concentrations of common eiders and king eiders
Tb80E_657, Tb80E_658	2 colonies of northern fulmars
Tb80E_659	1 colony of northern fulmars
Wa80E_658, Wa80E_657	Walrus irregularly used haul-out and foraging
Wa80E_659	Walrus foraging

Site specific occurrence: blue icons

Ab9064, Ab9066	Breeding black guillemots
Gb9039	Breeding glaucous gulls and black-legged kittiwakes
Gb9273	Breeding glaucous gulls
Gb9275 - Gb9277	Breeding glaucous gulls
Gb9279, Gb9280	Breeding Arctic terns
Tb9354, Tb9355	Breeding northern fulmars
Tb9357 - Tb9359	Breeding northern fulmars

Shoreline sensitivity summary

SEG_ID	**Sensitivity**	**Ranking**
80E_657	28	Extreme
80E_658	34	Extreme
80E_659	30	Extreme
80E_661	14	Moderate



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer. Moreover are icebergs present.

No anchorages are reported for this map area.

Two STOL-airstrips are noted close S of the entrance to Hanseraq Fjord and at Eskimonæs (Chapter 15).

Shorelines shown on this map are predominantly rock with some talus and glacier, glacier allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

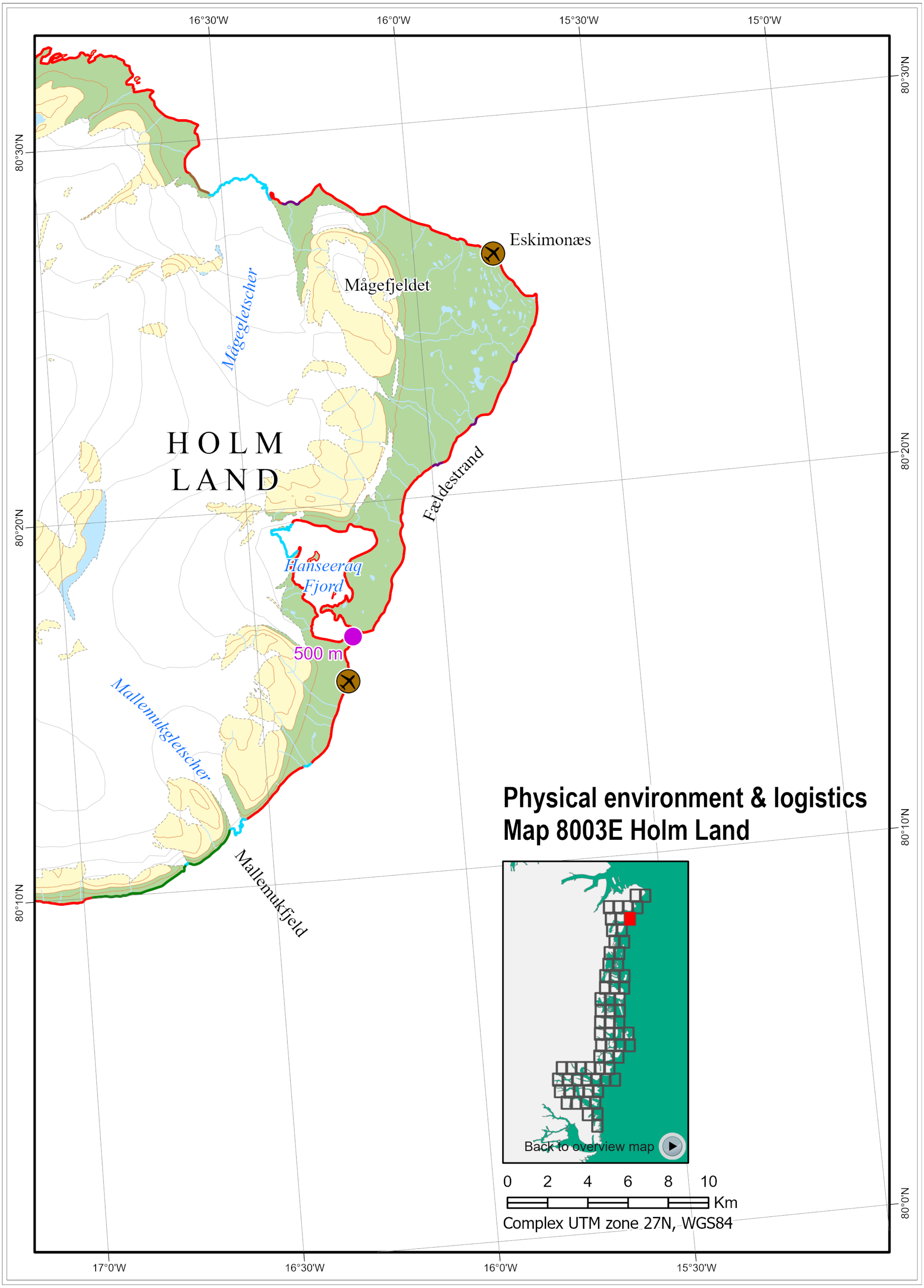
There may be an opportunity for nearshore booming at the entrance to Hanseraq Fjord where a modest length of exclusion boom could be used at the entrance to protect a large and highly sensitive inshore area.

Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

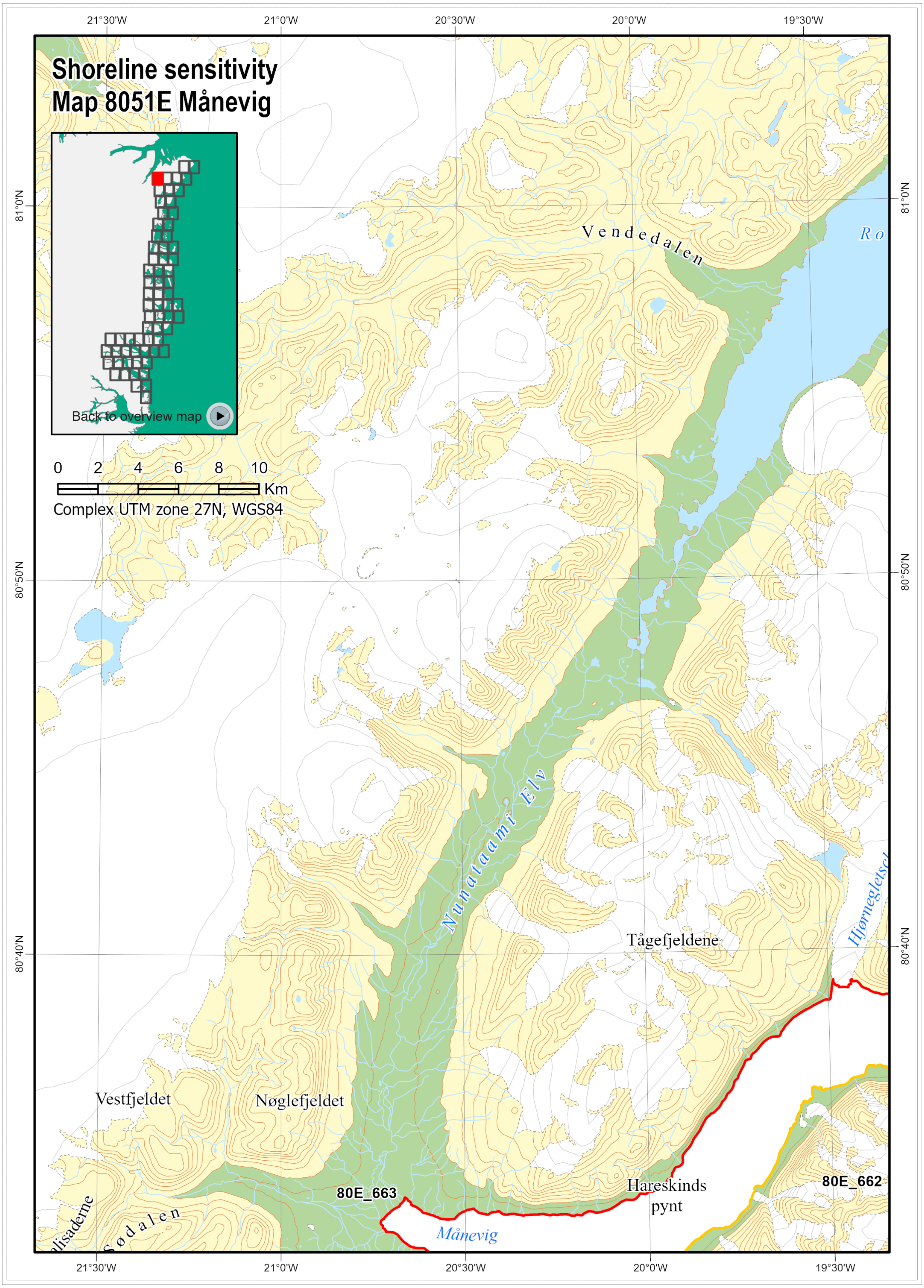
Shorelines shown on this map are predominantly rock with some talus and glacier, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils. Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.



Physical environment & logistics
Map 8003E Holm Land



Shoreline sensitivity
Map 8051E Månevig
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
21°30'W
21°0'W
20°30'W
20°0'W
19°30'W
81°0'N
80°50'N
80°40'N
Vendedalen
Ro
Nunataami Elv
Tågefjeldene
Hjørnegletsc
Vestfjeldet
Nøglefjeldet
80E_663
80E_662
Hareskinds pynt
Månevig
Sødalen

8.63 Map 8051E – Månevig

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
80E_662	16	High
80E_663	29	Extreme

Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

There is a STOL-airstrip on the W shore of Romer Sø (Chapter 15).

Shorelines within this area are almost exclusively rock, with some talus and glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

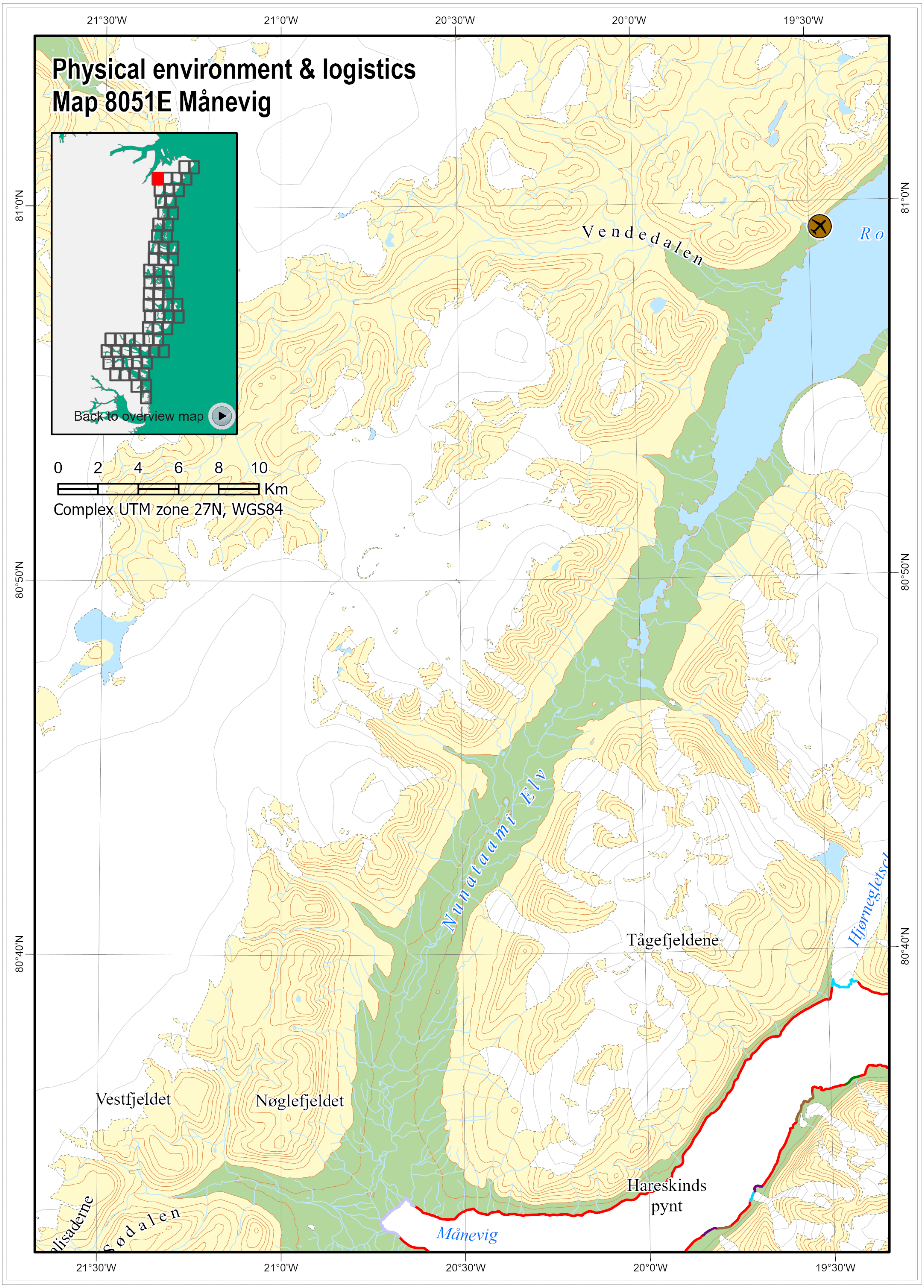
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

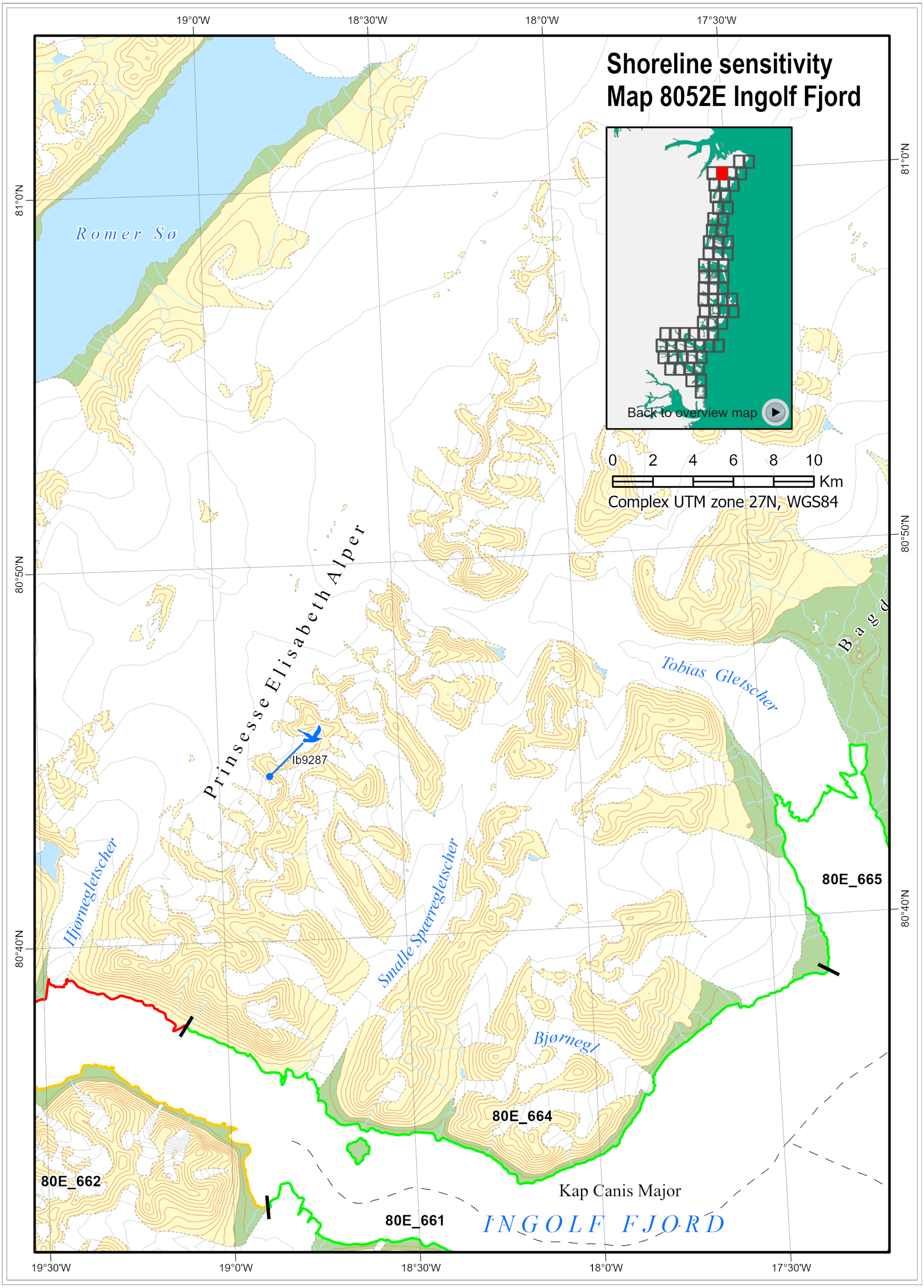
Shorelines with low exposure will require active cleaning efforts if contaminated with oil. All efforts should be made to avoid this occurrence Shorelines within this area are almost exclusively rock, with some talus and glacier, with low moderate exposure, the latter of which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.

Physical environment & logistics
Map 8051E Månevig





Shoreline sensitivity
Map 8052E Ingolf Fjord
Back to overview map
0 2 4 6 8 10 Km
Complex UTM zone 27N, WGS84
19°0'W
18°30'W
18°0'W
17°30'W
19°30'W
81°0'N
80°50'N
80°40'N
Romer Sø
Prinsesse Elisabeth Alper
Ib9287
Tobias Gletscher
Bagd
Hjørnegletscher
Smalle Sperregletscher
Bjørnegl
80E_665
80E_664
80E_662
80E_661
Kap Canis Major
INGOLF FJORD

8.64 Map 8052E - Ingolf Fjord

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

Very little species occurrence is registrered on this map.

Site specific occurrence: blue icons

Ib9287	Breeding ivory gulls

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
80E_661	14	Moderate
80E_662	16	High
80E_663	29	Extreme
80E_664	14	Moderate
80E_665	14	Moderate

8052E											
			Ivory gull breeding	Ivory gull breeding	Ivory gull breeding	Ivory gull breeding	Ivory gull breeding	Ivory gull breeding			
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

There is a STOL-airstrip on the W shore of Romer Sø (Chapter 15).

Shorelines within this area are predominantly rock, talus, and glacier allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

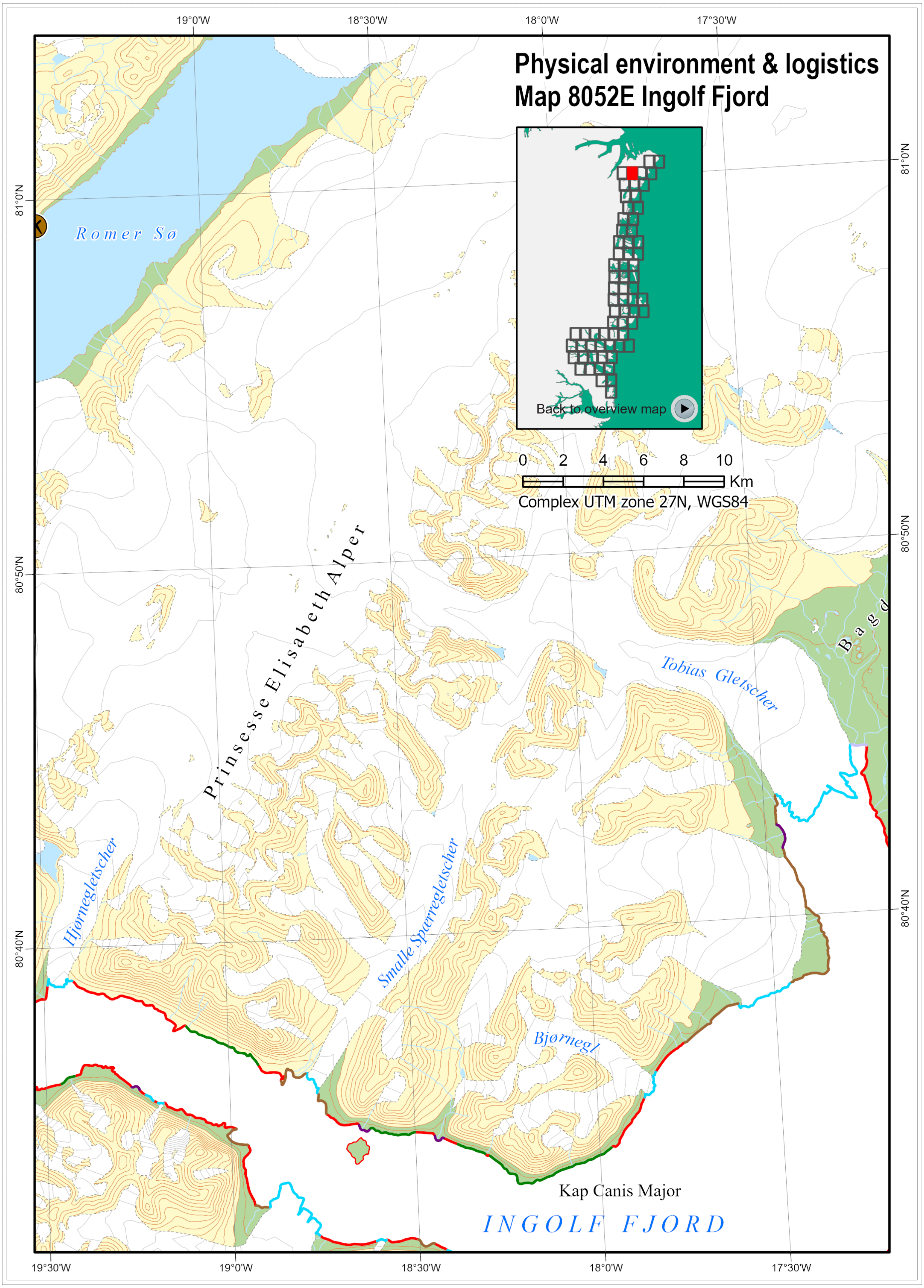
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

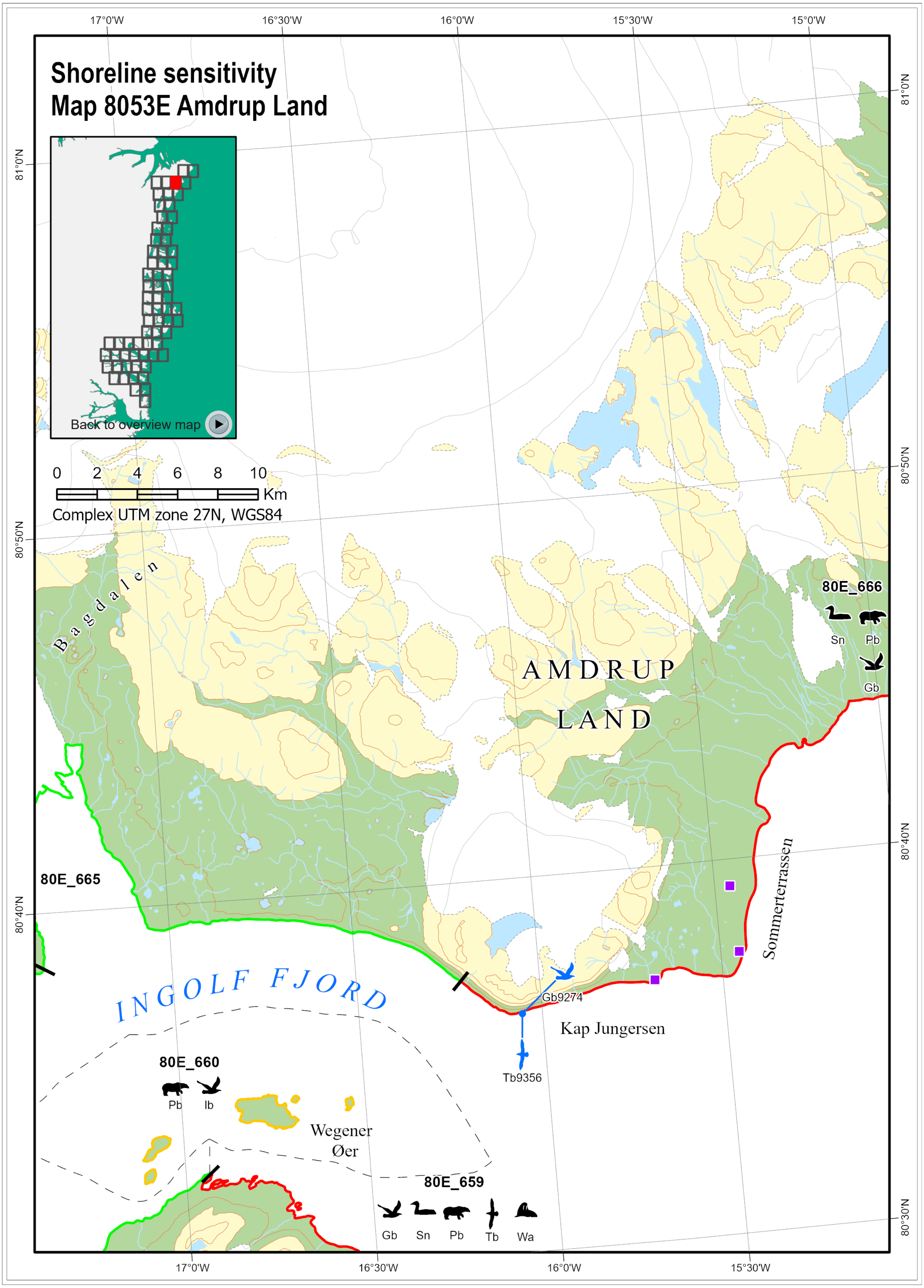
Diversion booming should be attempted at each fjord's entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, talus, and glacier with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 8052E Ingolf Fjord
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
19°0'W
18°30'W
18°0'W
17°30'W
81°0'N
80°50'N
80°40'N
19°30'W
Romer Sø
Prinsesse Elisabeth Alper
Tobias Gletscher
Hjørnegletscher
Smalle Sperregletscher
Bjørnegl
Kap Canis Major
INGOLF FJORD


Shoreline sensitivity
Map 8053E Amdrup Land
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
17°0'W
16°30'W
16°0'W
15°30'W
15°0'W
81°0'N
80°50'N
80°40'N
80°30'N
Bagdalen
AMDRUP
LAND
80E_666
Sn
Pb
Gb
80E_665
Sommerterrassen
INGOLF FJORD
Gb9274
Kap Jungersen
Tb9356
80E_660
Pb
Ib
Wegener
Øer
80E_659
Gb
Sn
Pb
Tb
Wa

8.65 Map 8053E - Amdrup Land

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

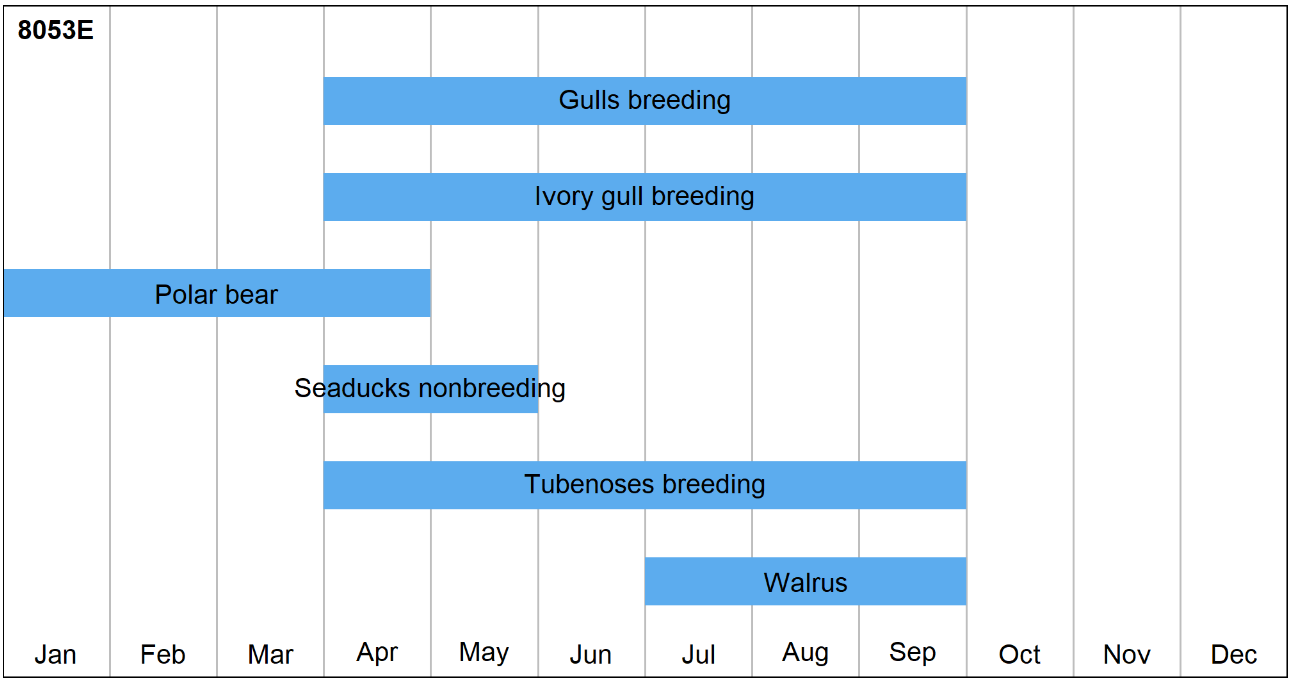
Gb80E_666	1 colony of glaucous gulls
Ib80E_660	1 colony of ivory gulls
Gb80E_659	1 colony of glaucous gulls and 1 colony of Arctic terns
Pb80E_666	Known polar bear denning areas
Pb80E_659, Pb80E_660	Known polar bear denning areas
Sn80E_666, Sn80E_659	Spring concentrations of common eiders and king eiders
Tb80E_659	1 colony of northern fulmars
Wa80E_659	Walrus foraging

Site specific occurrence: blue icons

Gb9274	Breeding glaucous gulls
Tb9356	Breeding northern fulmars

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
80E_659	30	Extreme
80E_660	17	High
80E_661	14	Moderate
80E_664	14	Moderate
80E_665	14	Moderate
80E_666	27	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock, with some glacier, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

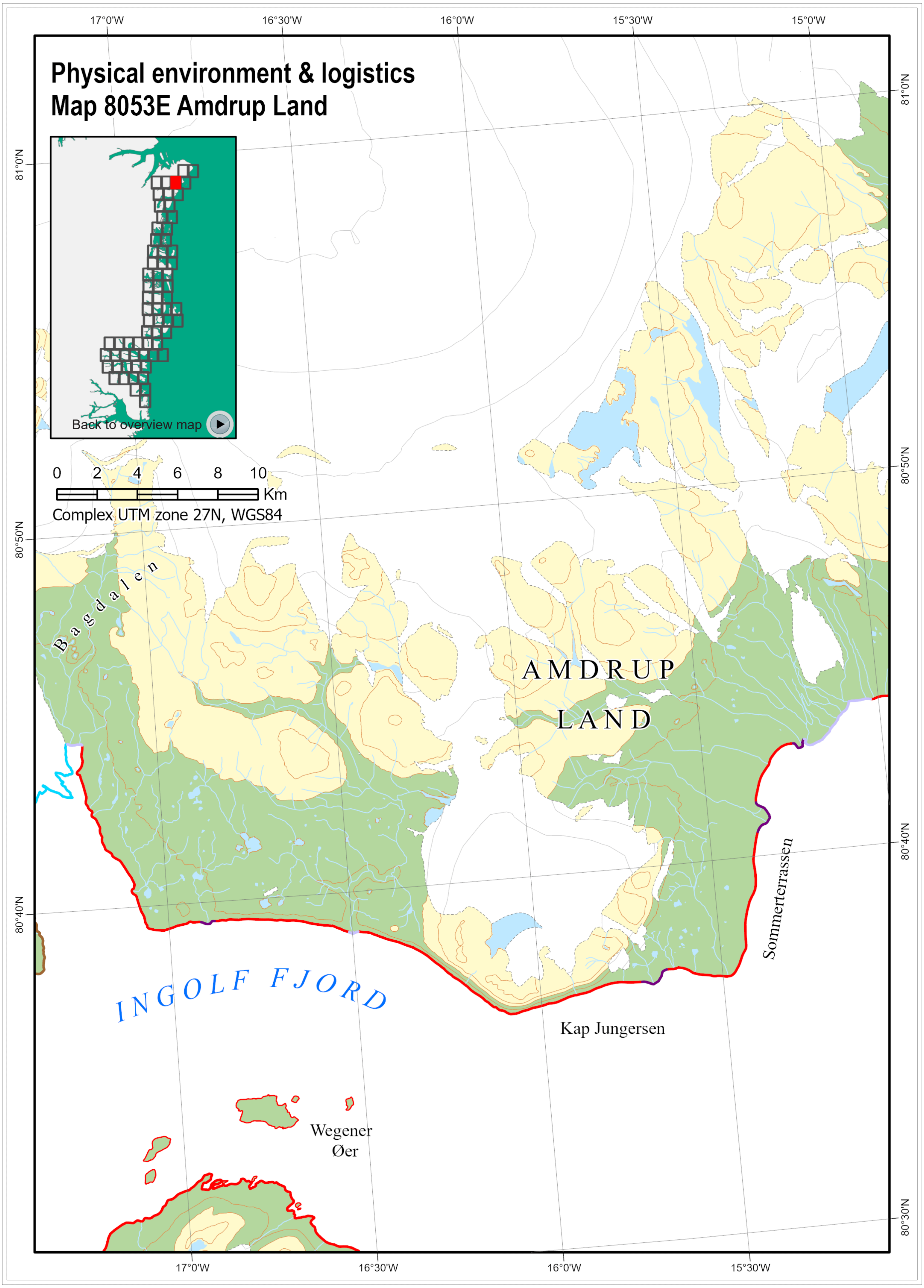
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

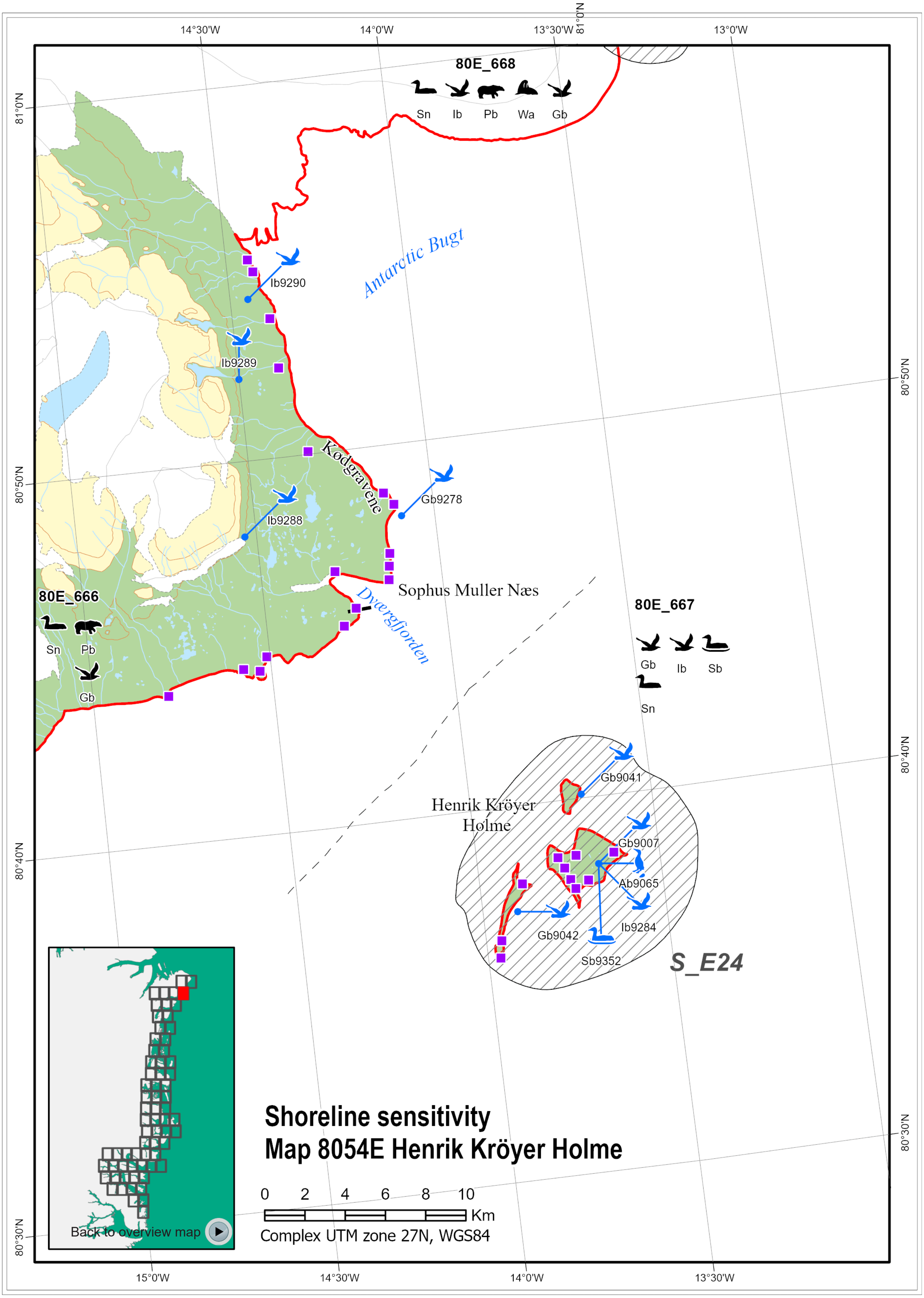
Diversion booming should be attempted at each fjord’s entrance to avoid massive oiling of relatively low-energy inshore areas, but this will be complicated by the excessive length of boom required and the difficulty in anchoring in the deep nearshore waters.

Shorelines within this area are predominantly rock, with some glacier, with moderate to high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 8053E Amdrup Land
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
17°0'W
16°30'W
16°0'W
15°30'W
15°0'W
81°0'N
80°50'N
80°40'N
80°30'N
Bagdalen
AMDRUP LAND
INGOLF FJORD
Kap Jungersen
Sommerterrassen
Wegener Øer



80E_668
Sn
Ib
Pb
Wa
Gb
Antarctic Bugt
Ib9290
Ib9289
Kodgravene
Gb9278
Ib9288
Sophus Muller Næs
Dværgfjorden
80E_666
Sn
Pb
Gb
80E_667
Gb
Ib
Sb
Sn
Gb9041
Henrik Kröyer Holme
Gb9007
Ab9065
Gb9042
Ib9284
Sb9352
S_E24
Back to overview map
Shoreline sensitivity
Map 8054E Henrik Kröyer Holme
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
14°30'W
14°0'W
13°30'W
13°0'W
15°0'W
81°0'N
80°50'N
80°40'N
80°30'N

8.66 Map 8054E - Henrik Kröyer Holme

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

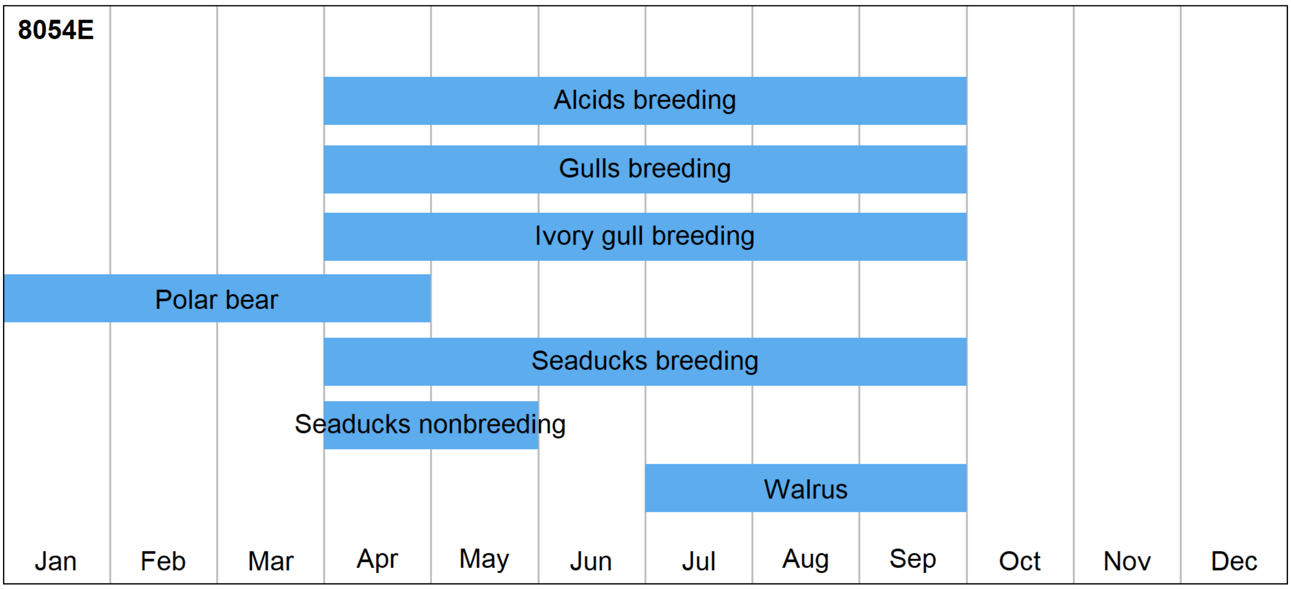
Gb80E_668	1 colony of Arctic terns
Gb80E_666	1 colony of glaucous gulls
Gb80E_667	1 colony of glaucous gulls, 3 colonies of Sabine's gulls and 3 colonies of Arctic terns
Ib80E_667	1 colony of ivory gulls
Ib80E_668	2 colonies of ivory gulls
Pb80E_666, Pb80E_668	Known polar bear denning areas
Sb80E_667	1 colony of common eiders
Sn80E_666 - Sn80E_668	Spring concentrations of common eiders and king eiders
Wa80E_668	Walrus foraging

Site specific occurrence: blue icons

Ab9065	Breeding black guillemots **(S_E24)**
Gb9007	Breeding glaucous gulls, Arctic terns and Sabine's gulls and Ross's gulls **(S_E24)**
Gb9041, Gb9042	Breeding Sabine's gulls and Arctic terns **(S_E24)**
Gb9278	Breeding Arctic terns
Ib9284	Breeding ivory gulls **(S_E24)**
Ib9288 - Ib9290	Breeding ivory gulls
Sb9352	Breeding common eiders **(S_E24)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
80E_666	27	Extreme
80E_667	50	Extreme
80E_668	36	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

Three STOL-airstrips close N of Sophus Müller Næs (two), and one in Henrik Kröyer Holme (Chapter 15).

Shorelines within this area are predominantly rock, moraine with erosional cliff, and glacier, allowing little opportunity for marine access.

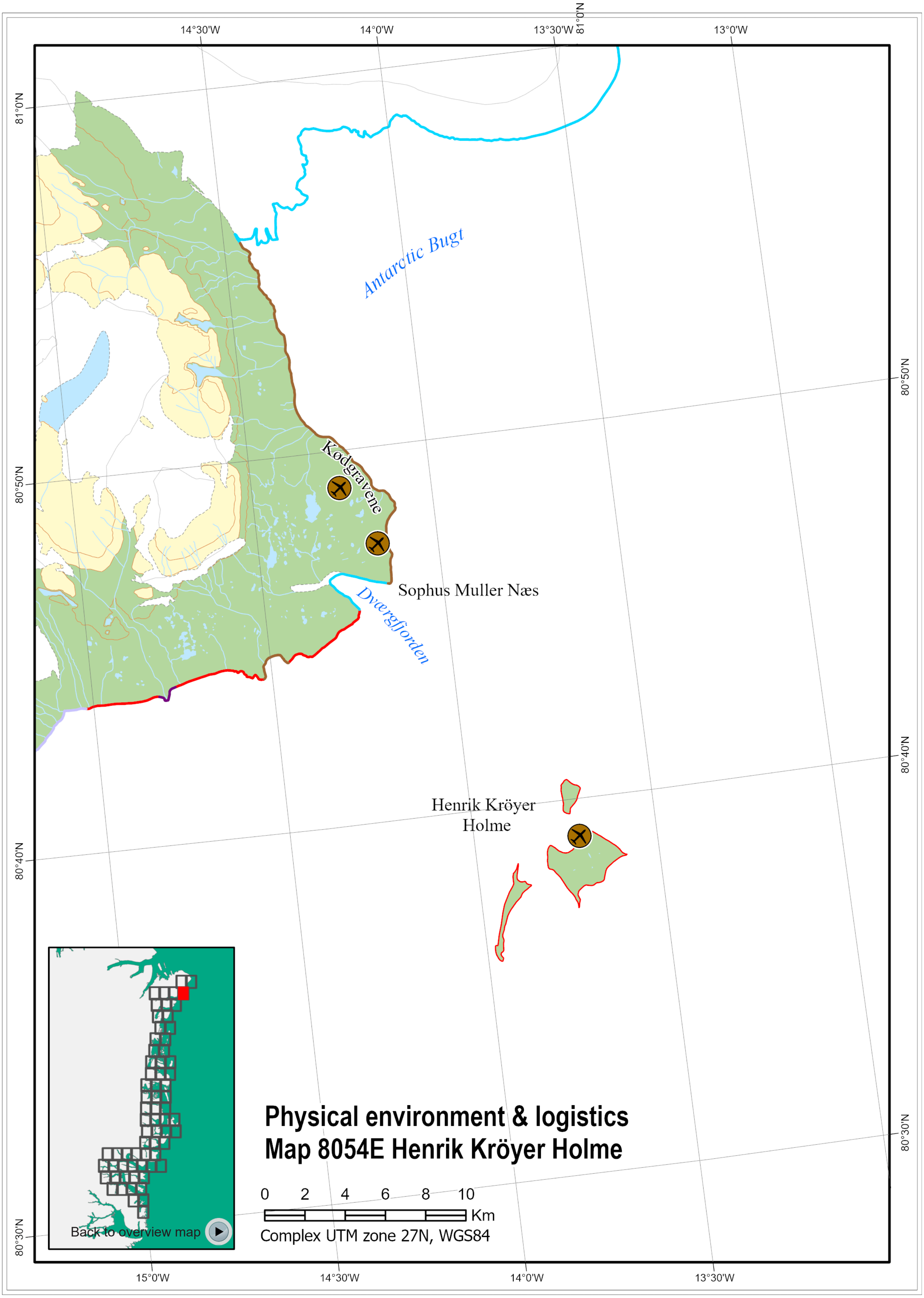
Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

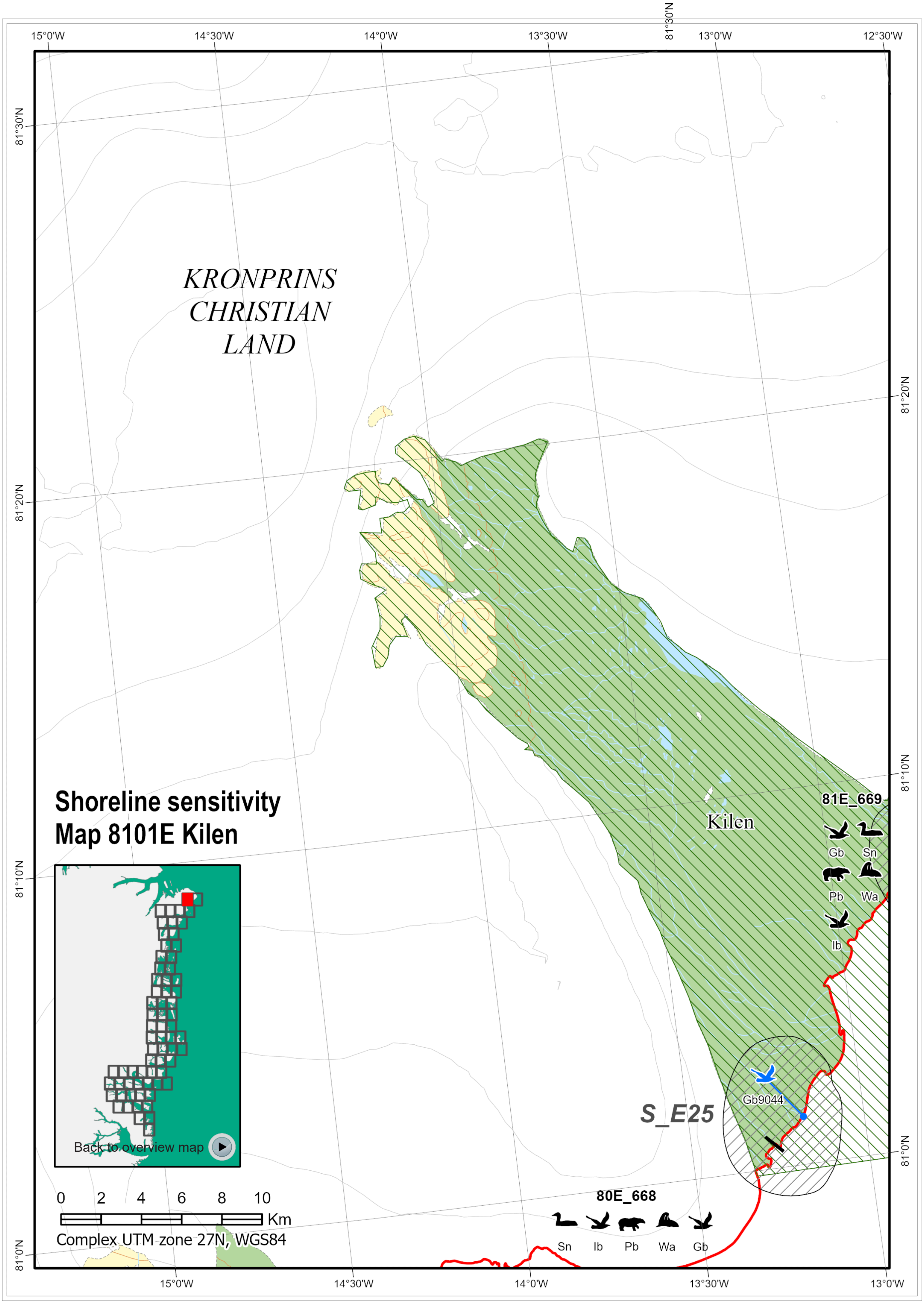
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Shorelines within this area are predominantly rock, moraine with erosional cliff, and glacier, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


Physical environment & logistics
Map 8054E Henrik Kröyer Holme
Antarctic Bugt
Kodgravene
Sophus Muller Næs
Dværgfjorden
Henrik Kröyer
Holme
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
Back to overview map
14°30'W
14°0'W
13°30'W
13°0'W
15°0'W
81°0'N
80°50'N
80°40'N
80°30'N



15°0'W
14°30'W
14°0'W
13°30'W
81°30'N
13°0'W
12°30'W
81°30'N
81°20'N
81°10'N
81°0'N
81°20'N
81°10'N
81°0'N
KRONPRINS CHRISTIAN LAND
Kilen
81E_669
Gb
Sn
Pb
Wa
Ib
Gb9044
S_E25
80E_668
Sn
Ib
Pb
Wa
Gb
Shoreline sensitivity
Map 8101E Kilen
Back to overview map
0
2
4
6
8
10
Km
Complex UTM zone 27N, WGS84
15°0'W
14°30'W
14°0'W
13°30'W
13°0'W

8.67 Map 8101E – Kilen

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

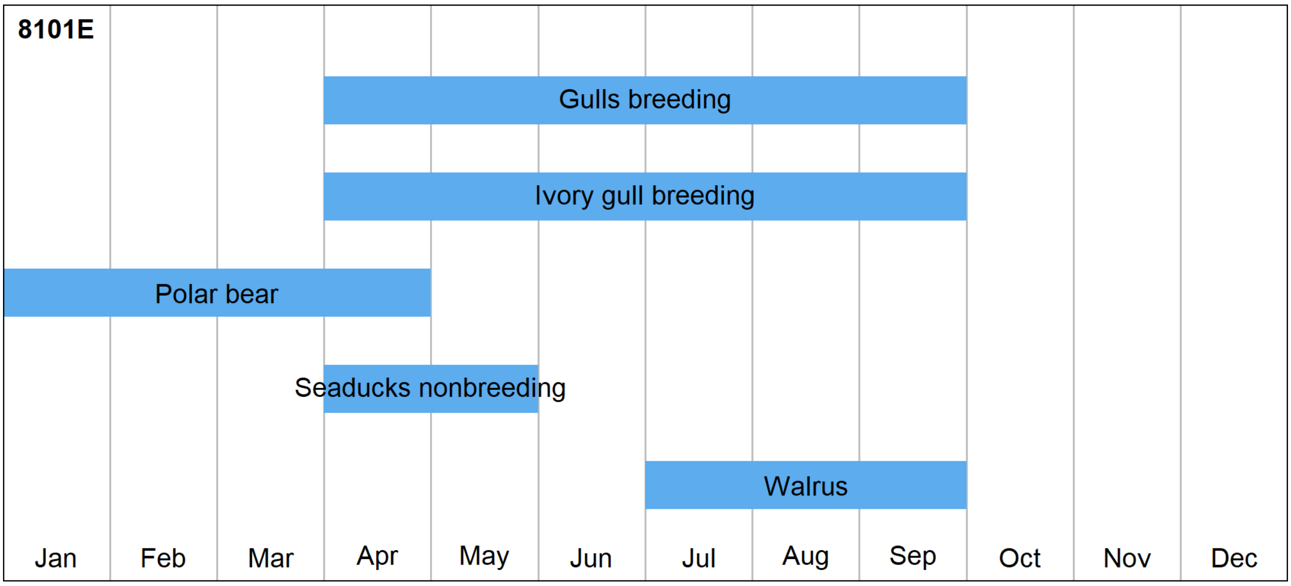
Gb80E_668	1 colony of Arctic terns
Gb81E_669	2 colonies of Arctic terns and 2 colonies of Sabine's gulls
Ib80E_668	2 colonies of ivory gulls
Ib81E_669	1 colony of ivory gulls
Pb80E_668, Pb81E_669	Known polar bear denning areas
Sn80E_668, Sn81E_669	Spring concentrations of common eiders and king eiders
Wa80E_668, Wa81E_669	Walrus irregularly used haul-out site and foraging

Site specific occurrence: blue icons

Gb9044	Breeding Sabine's gulls and Arctic terns **(S_E25)**

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
80E_668	36	Extreme
81E_669	27	Extreme



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

There are no airstrips identified on this map area.

Shorelines within this area are predominantly rock, low beaches and glacier, allowing little opportunity for marine access.

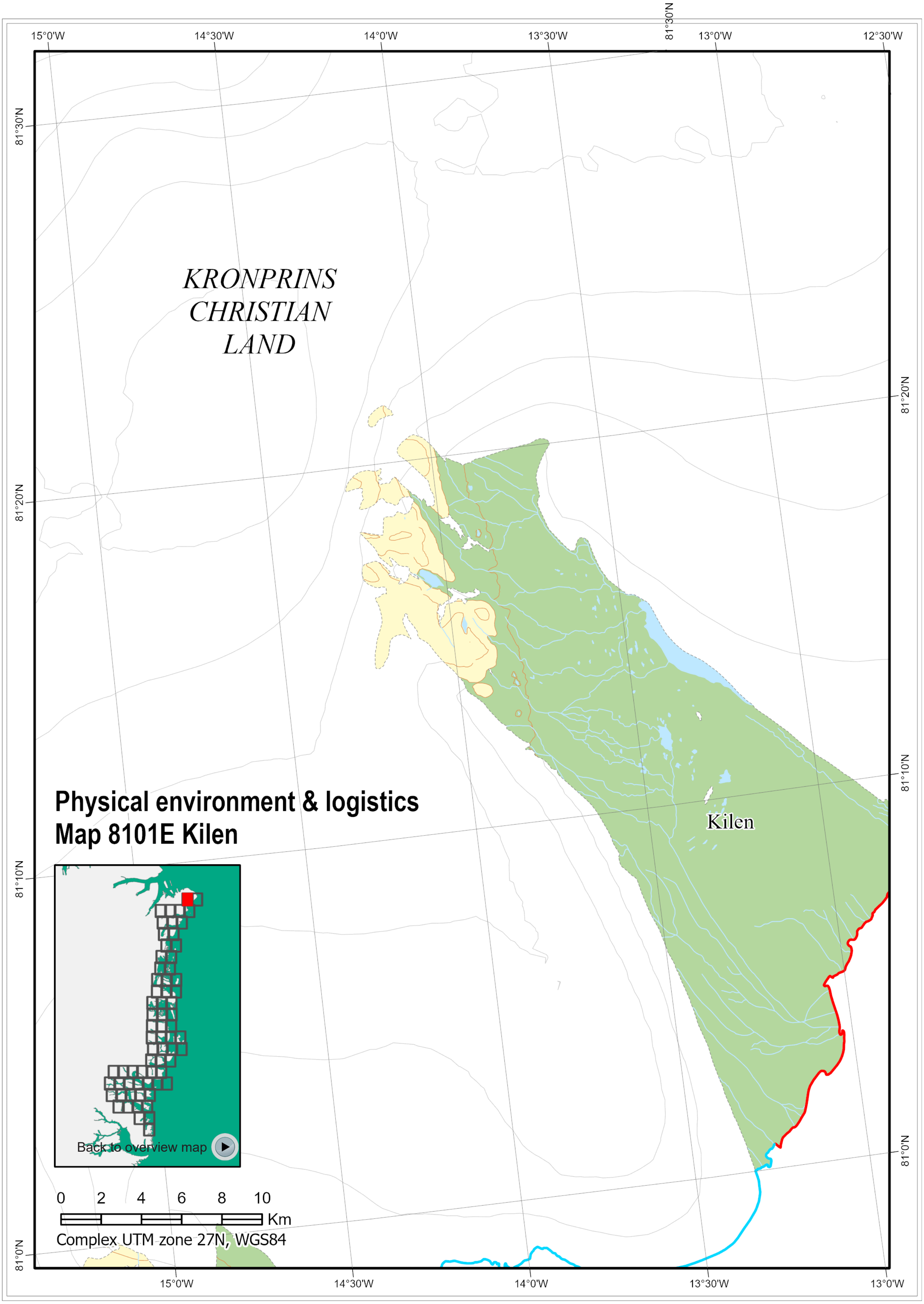
Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

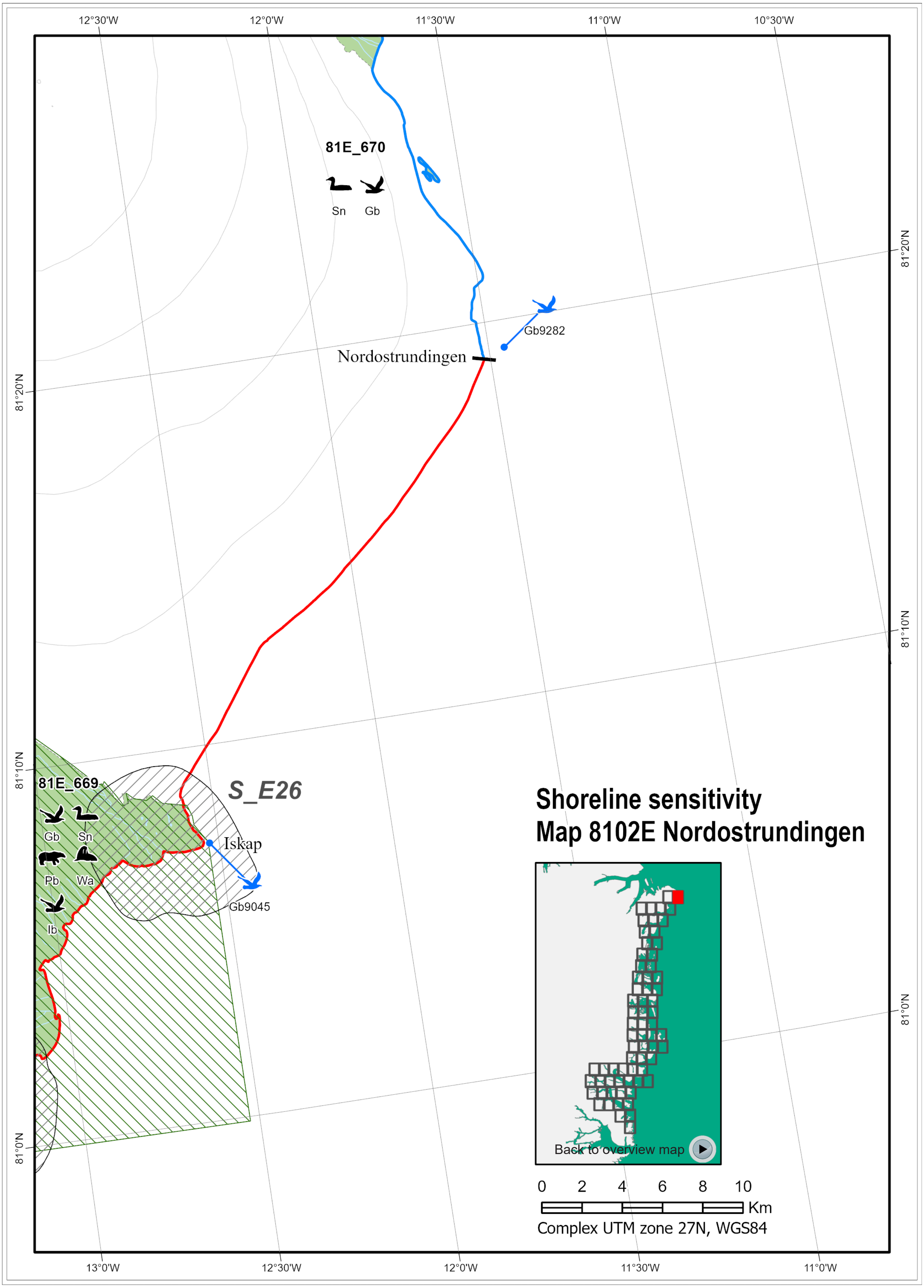
Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Shorelines within this area are predominantly rock and glacier with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Consideration should be given to flushing operations in the protected waters within the fjords. Access and trafficability of these areas are unknown, but it is probable that any cleanup operations would be marine-based given the likely nature of the shoreline.

Safe Havens
There are no potential safe havens identified on this map.


KRONPRINS CHRISTIAN LAND
Kilen
Physical environment & logistics
Map 8101E Kilen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
15°0'W
14°30'W
14°0'W
13°30'W
13°0'W
12°30'W
81°30'N
81°20'N
81°10'N
81°0'N



12°30'W
12°0'W
11°30'W
11°0'W
10°30'W
81°20'N
81°10'N
81°0'N
81E_670
Sn
Gb
Gb9282
Nordostrundingen
81E_669
Gb
Sn
Pb
Wa
Ib
S_E26
Iskap
Gb9045
Shoreline sensitivity
Map 8102E Nordostrundingen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
13°0'W
12°30'W
12°0'W
11°30'W
11°0'W

8.68 Map 8102E – Nordostrundingen

Shoreline sensitivity map

Human use

Occasional expeditions and scientific activities in coastal areas in Jul-Sep.

Species occurrence

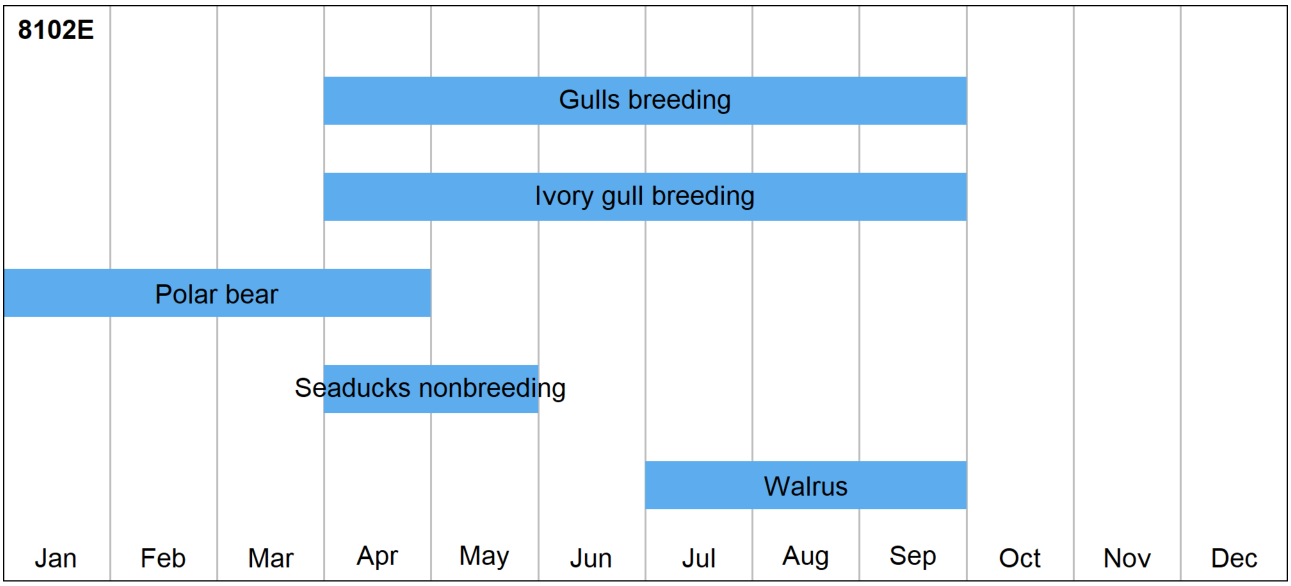
Gb81E_670	1 colony of Arctic terns
Gb81E_669	2 colonies of Arctic terns and 2 colonies of Sabine's gulls
Ib81E_669	1 colony of ivory gulls
Pb81E_669	Known polar bear denning areas
Sn81E_669, Sn81E_670	Spring concentrations of common eiders and king eiders
Wa81E_669	Walrus irregularly used haul-out site and foraging

Site specific occurrence: blue icons

Gb9045	Breeding Sabine's gulls and Arctic terns **(S_E26)**
Gb9282	Breeding Arctic terns

Shoreline sensitivity summary

SEG_ID	Sensitivity	Ranking
81E_669	27	Extreme
81E_670	14	Low



Access
The waters in this map area are uncharted and caution should be exercised. Local knowledge is essential for navigation, but the waters are usually only accessible for icebreakers, as they are ice covered throughout the year except in late summer.

No anchorages are reported for this map area.

A depth of 24 m was reported (1961) to lie about 30 km E of Nordostrundingen.

A STOL-airstrip is noted at Iskap (Chapter 15).

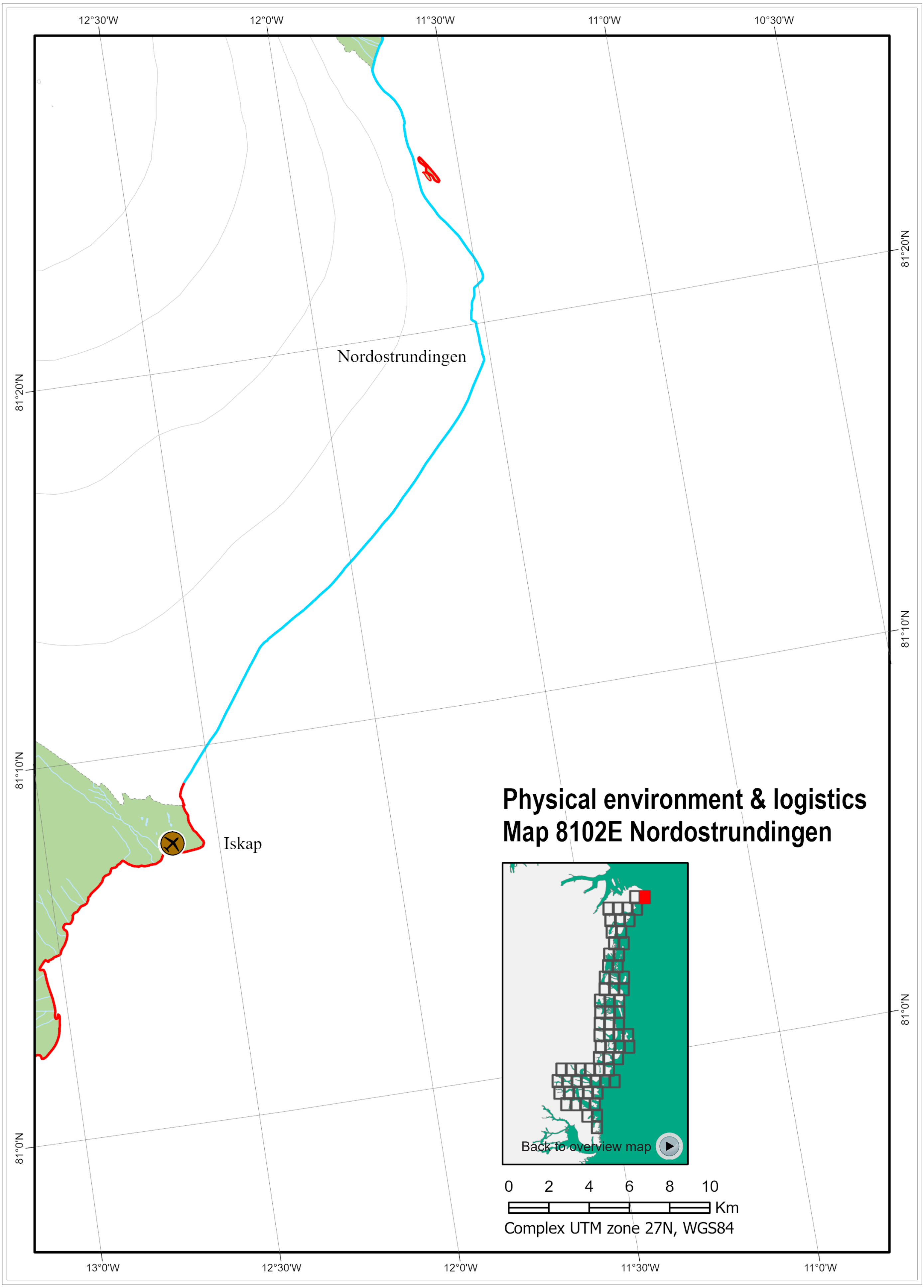
Shorelines within this area are predominantly glacier with some rock, allowing little opportunity for marine access.

Countermeasures
In ice concentrations down to six tenths, in-situ burning of oil in conjunction with tracking oiled ice is recommended. In open water conditions in offshore and nearshore areas, containment for recovery or burning is recommended. Dispersant application should be considered in offshore and nearshore waters to protect waterfowl and to prevent oil from entering inshore areas. Dispersant-use is cautioned against in shallow nearshore waters, which may exist within the fjords on this map: the waters appear to be deep, but as they are uncharted, soundings should be taken to confirm their depth prior to using dispersants.

Offshore countermeasures represent the only practical method of protecting most shoreline areas.

Shorelines within this area are predominantly glacier with some rock, with high exposure, which may not require active cleaning efforts unless heavily contaminated with heavy oils.

Safe Havens
There are no potential safe havens identified on this map.


12°30'W
12°0'W
11°30'W
11°0'W
10°30'W
81°20'N
81°10'N
81°0'N
Nordostrundingen
Iskap
Physical environment & logistics
Map 8102E Nordostrundingen
Back to overview map
0 2 4 6 8 10
Km
Complex UTM zone 27N, WGS84
13°0'W
12°30'W
12°0'W
11°30'W
11°0'W

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10 Appendix A: Shoreline sensitivity ranking

Explanation of the calculations in the table:
Priority index (PI) = Assigned value (AV) x Weighting factor (WF)
Sensitivity value (S) = sum of **Priority indices (PI)**

For biological elements:
Assigned value (AV) = (**Relative sensitivity (RS)** x **Relative abundance (RA)** x **Temporal modifier (TM)** x Oil residency index (ORI)) / Biological resource constant (C)

Bold abbreviations indicate factors, which appear in the columns of the table. The oil residency index (ORI) is given in a row for each segment. The biological resource constant (C) is 35 and the weighting factors (WF) are:

Human use, communities and archaeology	2
Biological resources	1.75
Special status areas	1.5
Oil residency index	1.5

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
70E_408	7101E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.47	2.20		
		Alcids breeding	25	5	0.5	2.62	4.59		
		Alcids nonbreeding	21	5	0.25	1.10	1.93		
		Arctic char	14	1	0.25	0.15	0.26		
		Gulls breeding	17	5	0.5	1.78	3.12		
		Little auk breeding	25	5	0.5	2.62	4.59	21	Extreme
71E_409	7101E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				2.98	4.47		
		Arctic char	14	5	0.25	1.49	2.61		
		Little auk breeding	25	5	0.5	5.32	9.31	20	Extreme
71E_410	7101E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.18	1.77		
		Alcids breeding	25	3	0.5	1.27	2.22		
		Alcids nonbreeding	21	5	0.25	0.89	1.55		
		Arctic char	14	1	0.25	0.12	0.21		
		Gulls breeding	17	2	0.5	0.57	1.00		
		Little auk breeding	25	5	0.5	2.11	3.69	16	Extreme
71E_411	7101E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.36	2.04		
		Alcids nonbreeding	21	5	0.25	1.02	1.79		
		Arctic char	14	1	0.25	0.14	0.24		
		Little auk breeding	25	5	0.5	2.43	4.25	12	Extreme
71E_412	7101E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.60	2.40		
		Alcids breeding	25	5	0.5	2.86	5.01		
		Alcids nonbreeding	21	5	0.25	1.20	2.10		
		Arctic char	14	1	0.25	0.16	0.28		
		Gulls breeding	17	2	0.5	0.78	1.36		
		Little auk breeding	25	5	0.5	2.86	5.01	20	Extreme
71E_413	7101E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				2.10	3.16		
		Alcids breeding	25	4	0.5	3.01	5.26		
		Alcids nonbreeding	21	5	0.25	1.58	2.76		
		Gulls breeding	17	4	0.5	2.04	3.58		
		Little auk breeding	25	5	0.5	3.76	6.57	27	Extreme
71E_414	7101E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				3.98	5.98		
		Arctic char	14	5	0.25	1.99	3.49	13	Low
71E_415	7101E	Human Use				2.00	4.00		

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.25	1.88		
		Arctic char	14	1	0.25	0.13	0.22		
		Polar bear	19	1	0.75	0.51	0.89	7	Low
71E_416	7152E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.42	2.12	8	Low
71E_417	7152E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.78	2.67	14	Low
71E_418	7151E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				0.00	0.00		
		Communities				0.00	0.00		
		Oil Residency Index				2.51	3.76	6	Low
71E_419	7151E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.00	4.50	16	Moderate
71E_420	7151E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.19	1.79		
		Gulls breeding	17	5	0.5	1.45	2.53	23	High
72E_421	7151E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.45	2.18		
		Gulls breeding	17	3	0.5	1.06	1.85	16	Moderate
72E_422	7203E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				4.36	8.72		
		Oil Residency Index				2.57	3.86		
		Arctic char	14	1	0.25	0.26	0.45		
		Gulls breeding	17	5	0.5	3.12	5.47		
		Seaducks breeding	23	4	0.5	3.38	5.92	38	Extreme
72E_423	7202E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.85	1.69		
		Oil Residency Index				2.65	3.97		
		Arctic char	14	1	0.25	0.26	0.46		
		Gulls breeding	17	5	0.5	3.21	5.62		
		Seaducks breeding	23	2	0.5	1.74	3.04	28	Extreme
72E_424	7202E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.88	5.82		
		Arctic char	14	1	0.25	0.39	0.68		
		Gulls breeding	17	5	0.5	4.71	8.24		
		Seaducks breeding	23	2	0.5	2.55	4.46	29	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
72E_425	7201E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.44	6.65	16	Moderate
72E_426	7201E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.45	6.67	16	Moderate
72E_427	7201E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.54	5.31	17	Moderate
72E_428	7201E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.33	6.49	16	Moderate
72E_429	7201E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.61	5.42		
		Arctic char	14	1	0.25	0.36	0.63		
		Gulls breeding	17	2	0.5	1.76	3.07	19	High
72E_430	7252E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.39	5.08		
		Arctic char	14	1	0.25	0.34	0.59		
		Gulls breeding	17	5	0.5	4.11	7.20		
		Seaducks breeding	23	2	0.5	2.23	3.89	28	Extreme
72E_431	7251E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.15	6.22		
		Gulls breeding	17	3	0.5	3.02	5.29	23	High
72E_432	7251E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.43	6.65		
		Gulls breeding	17	5	0.5	5.38	9.42	26	Extreme
72E_433	7251E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.27	6.40		
		Gulls breeding	17	4	0.5	4.15	7.26	23	Extreme
72E_434	7251E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.50	6.75		
		Gulls breeding	17	5	0.5	5.46	9.56	26	Extreme
72E_435	7251E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				5.00	7.50		
		Gulls breeding	17	5	0.5	6.07	10.63	30	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
72E_436	7252E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.02	6.03		
		Gulls breeding	17	3	0.5	2.93	5.12	23	High
72E_437	7253E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Gulls breeding	17	5	0.5	4.86	8.50		
		Seaducks breeding	23	4	0.5	5.26	9.20	33	Extreme
73E_438	7302E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00	18	Moderate
72E_439	7252E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.34	6.51		
		Gulls breeding	17	5	0.5	5.27	9.22	27	Extreme
72E_440	7204E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Seaducks moulting	23	1	0.25	0.16	0.29	11	Low
72E_441	7204E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Alcids breeding	25	1	0.5	0.36	0.63		
		Gulls breeding	17	1	0.5	0.24	0.43		
		Seaducks moulting	23	1	0.25	0.16	0.29	14	Low
72E_442	7203E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.42	2.13		
		Arctic char	14	1	0.25	0.14	0.25		
		Gulls breeding	17	2	0.5	0.69	1.21	15	Low
72E_443	7202E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.99	4.48		
		Arctic char	14	5	0.25	1.49	2.61		
		Gulls breeding	17	5	0.5	3.63	6.35		
		Seaducks breeding	23	4	0.5	3.93	6.87	32	Extreme
72E_444	7202E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.99	5.98		
		Arctic char	14	1	0.25	0.40	0.70		
		Gulls breeding	17	5	0.5	4.84	8.48		
		Seaducks breeding	23	4	0.5	5.24	9.18	34	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
72E_445	7253E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.70	5.55		
		Seaducks moulting	23	1	0.25	0.61	1.06	16	Moderate
72E_446	7204E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.06	1.59		
		Gulls breeding	17	4	0.5	1.03	1.80		
		Seaducks moulting	23	1	0.25	0.17	0.30	13	Extreme
72E_447	7254E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.12	4.69		
		Gulls breeding	17	1	0.5	0.76	1.33		
		Seaducks moulting	23	1	0.25	0.51	0.90	18	Extreme
72E_448	7204E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.08	1.62		
		Gulls breeding	17	1	0.5	0.26	0.46		
		Seaducks moulting	23	1	0.25	0.18	0.31	12	Low
72E_449	7254E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.84	7.25		
		Gulls breeding	17	5	0.5	5.87	10.27		
		Seaducks breeding	23	4	0.5	6.35	11.12		
		Seaducks moulting	23	1	0.25	0.79	1.39	40	Extreme
72E_450	7255E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.07	3.11		
		Gulls breeding	17	5	0.5	2.51	4.40		
		Seaducks moulting	23	1	0.25	0.34	0.60	18	Extreme
72E_451	7254E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.68	2.53		
		Gulls breeding	17	5	0.5	2.04	3.58		
		Seaducks breeding	23	4	0.5	2.21	3.87		
		Seaducks moulting	23	1	0.25	0.28	0.48	22	Extreme
72E_452	7255E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.04	1.56		
		Seaducks moulting	23	1	0.25	0.17	0.30	11	Low
72E_453	7255E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.01	1.52		
		Seaducks moulting	23	1	0.25	0.17	0.29	11	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
72E_454	7255E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.14	1.71		
		Gulls breeding	17	5	0.5	1.38	2.42		
		Seaducks breeding	23	4	0.5	1.49	2.62		
		Seaducks moulting	23	1	0.25	0.19	0.33	17	Moderate
73E_455	7254E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.63	2.45		
		Gulls breeding	17	3	0.5	1.19	2.08		
		Seaducks moulting	23	1	0.25	0.27	0.47	15	Low
73E_456	7253E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.40	3.59		
		Gulls breeding	17	3	0.5	1.75	3.05		
		Seaducks breeding	23	4	0.5	3.15	5.51		
		Seaducks moulting	23	1	0.25	0.39	0.69	22	High
72E_457	7253E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00	18	Moderate
72E_458	7254E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.14	4.71		
		Gulls breeding	17	3	0.5	2.29	4.00		
		Seaducks moulting	23	1	0.25	0.52	0.90	25	High
73E_459	7301E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.29	6.44	16	Moderate
72E_460	7251E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.77	5.65	15	Moderate
73E_461	7301E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.25	6.37	16	Moderate
73E_462	7301E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.95	5.92	15	Low
73E_463	7301E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.98	7.47	19	High

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
73E_464	7302E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.98	5.96		
		Arctic char	14	1	0.25	0.40	0.70	16	Moderate
73E_465	7302E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.96	4.44		
		Arctic char	14	1	0.25	0.30	0.52		
		Gulls breeding	17	5	0.5	3.59	6.28		
		Seaducks breeding	23	1	0.5	0.97	1.70	24	High
73E_466	7303E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.01	1.51		
		Seaducks moulting	23	1	0.25	0.17	0.29	13	Low
73E_467	7302E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.20	6.30		
		Arctic char	14	1	0.25	0.42	0.73		
		Gulls breeding	17	4	0.5	4.08	7.14		
		Seaducks breeding	23	1	0.5	1.38	2.41	28	Extreme
73E_468	7302E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Arctic char	14	1	0.25	0.40	0.70		
		Gulls breeding	17	5	0.5	4.86	8.50	25	Extreme
73E_469	7303E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Arctic char	14	1	0.25	0.10	0.17	11	Low
73E_470	7304E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.24	1.85		
		Gulls breeding	17	5	0.5	1.50	2.63		
		Seaducks breeding	23	5	0.5	2.03	3.55		
		Seaducks moulting	23	1	0.25	0.20	0.36	20	Extreme
73E_471	7303E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Arctic char	14	5	0.25	2.00	3.50	19	High
73E_472	7303E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.00	4.50		
		Arctic char	14	5	0.25	1.50	2.63		
		Gulls breeding	17	3	0.5	2.19	3.82	20	High

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
73E_473	7304E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.00	4.50		
		Seaducks moulting	23	1	0.25	0.49	0.86	15	Low
73E_474	7352E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.35	6.53		
		Arctic char	14	1	0.25	0.44	0.76	17	Moderate
73E_475	7352E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.96	5.94	17	Moderate
73E_476	7352E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				5.00	7.50		
		Arctic char	14	1	0.25	0.50	0.88	20	High
73E_477	7353E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.19	1.78		
		Arctic char	14	5	0.25	0.59	1.04		
		Gulls breeding	17	3	0.5	0.87	1.52		
		Seaducks breeding	23	2	0.5	0.78	1.37	17	Moderate
73E_478	7353E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.43	6.64		
		Arctic char	14	1	0.25	0.44	0.77	19	High
73E_479	7354E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.24	6.36		
		Arctic char	14	1	0.25	0.42	0.74		
		Gulls breeding	17	2	0.5	2.06	3.60	20	High
73E_480	7353E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.02	6.03		
		Arctic char	14	1	0.25	0.40	0.70		
		Gulls breeding	17	3	0.5	2.93	5.12	21	High
73E_481	7304E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.37	5.06		
		Arctic char	14	1	0.25	0.34	0.59		
		Seaducks moulting	23	1	0.25	0.55	0.97	18	Moderate
73E_482	7304E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.68	2.51		
		Gulls breeding	17	2	0.5	0.81	1.42		
		Seaducks moulting	23	1	0.25	0.28	0.48	16	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
73E_483	7305E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Arctic char	14	1	0.25	0.10	0.17		
		Gulls breeding	17	5	0.5	1.21	2.13		
		Seaducks breeding	23	5	0.5	1.64	2.88		
		Seaducks moulting	23	1	0.25	0.16	0.29	18	Extreme
73E_484	7306E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.31	1.96		
		Gulls breeding	17	3	0.5	0.95	1.67		
		Seaducks moulting	23	1	0.25	0.21	0.38	16	Low
73E_485	7356E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.22	1.83		
		Alcids breeding	25	1	0.5	0.44	0.76		
		Gulls breeding	17	5	0.5	1.48	2.60		
		Seaducks breeding	23	5	0.5	2.01	3.51		
		Seaducks moulting	23	1	0.25	0.20	0.35		
		Walrus	18	5	0.25	0.79	1.37	22	High
73E_486	7356E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.44	2.16		
		Alcids breeding	25	1	0.5	0.51	0.90		
		Gulls breeding	17	5	0.5	1.75	3.06		
		Seaducks moulting	23	1	0.25	0.24	0.41		
		Walrus	18	5	0.25	0.93	1.62	18	Moderate
74E_487	7355E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.83	4.25		
		Gulls breeding	17	5	0.5	3.44	6.02		
		Seaducks breeding	23	1	0.5	0.93	1.63		
		Seaducks moulting	23	1	0.25	0.47	0.81		
		Walrus	18	5	0.25	1.82	3.19	27	Extreme
73E_488	7356E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.24	3.35		
		Gulls breeding	17	5	0.5	2.71	4.75		
		Seaducks moulting	23	1	0.25	0.37	0.64		
		Walrus	18	5	0.25	1.44	2.52	31	Extreme
73E_489	7355E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.01	6.01		
		Arctic char	14	5	0.25	2.00	3.51	21	High
73E_490	7355E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Arctic char	14	1	0.25	0.40	0.70		
		Gulls breeding	17	3	0.5	2.91	5.10	21	High

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
74E_491	7355E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.23	3.35	15	Low
74E_492	7401E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.66	5.49	15	Low
74E_493	7401E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.26	6.39	18	Moderate
74E_494	7401E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.29	4.94		
		Gulls breeding	17	4	0.5	3.20	5.59		
		Seaducks moulting	23	1	0.25	0.54	0.95		
		Walrus	18	5	0.25	2.12	3.70	35	Extreme
74E_495	7402E	Human Use				2.00	4.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				1.05	2.11		
		Oil Residency Index				1.17	1.75		
		Alcids breeding	25	1	0.5	0.42	0.73		
		Arctic char	14	1	0.25	0.12	0.20		
		Gulls breeding	17	5	0.5	1.42	2.49		
		Seaducks breeding	23	2	0.5	0.77	1.35		
		Seaducks moulting	23	1	0.25	0.19	0.34		
		Seaducks nonbreeding	23	5	0.25	0.96	1.68		
		Walrus	18	5	0.25	0.75	1.32	33	Extreme
74E_496	7401E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				2.87	5.74		
		Oil Residency Index				4.29	6.44		
		Arctic char	14	1	0.25	0.43	0.75		
		Gulls breeding	17	4	0.5	4.17	7.29		
		Walrus	18	5	0.25	2.76	4.83	39	Extreme
74E_497	7401E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.58	5.37		
		Walrus	18	5	0.25	2.30	4.03	29	Extreme
74E_498	7401E	Human Use				2.00	4.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.08	0.16		
		Oil Residency Index				3.83	5.75		
		Arctic char	14	1	0.25	0.38	0.67		
		Walrus	18	5	0.25	2.46	4.31	28	Extreme
74E_499	7402E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				10.00	15.00		
		Communities				5.00	10.00		
		Oil Residency Index				3.34	5.01		
		Arctic char	14	5	0.25	1.67	2.92		
		Gulls breeding	17	5	0.5	4.06	7.10		
		Seaducks breeding	23	5	0.5	5.49	9.60		
		Seaducks moulting	23	1	0.25	0.55	0.96		
		Walrus	18	5	0.25	2.15	3.76	60	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
74E_500	7402E	Human Use				2.00	4.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				0.00	0.00		
		Communities				0.65	1.31		
		Oil Residency Index				1.07	1.61		
		Arctic char	14	1	0.25	0.11	0.19		
		Gulls breeding	17	5	0.5	1.30	2.28		
		Seaducks breeding	23	5	0.5	1.76	3.09		
		Seaducks moulting	23	1	0.25	0.18	0.31		
		Seaducks nonbreeding	23	5	0.25	0.88	1.54		
		Walrus	18	5	0.25	0.69	1.21	26	Extreme
74E_501	7403E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.68	2.52		
		Seaducks moulting	23	1	0.25	0.28	0.48		
		Seaducks nonbreeding	23	5	0.25	1.38	2.42		
		Walrus	18	5	0.25	1.08	1.89	19	Moderate
74E_502	7403E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.73	2.59		
		Alcids breeding	25	5	0.5	3.09	5.40		
		Gulls breeding	17	5	0.5	2.10	3.67		
		Seaducks breeding	23	3	0.5	1.70	2.98		
		Seaducks moulting	23	1	0.25	0.28	0.50		
		Seaducks nonbreeding	23	5	0.25	1.42	2.48		
		Tubenoses breeding	18	2	0.5	0.89	1.55		
		Walrus	18	5	0.25	1.11	1.94	37	Extreme
74E_503	7453E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.27	3.41		
		Gulls breeding	17	3	0.5	1.66	2.90		
		Seaducks breeding	23	4	0.5	2.99	5.22		
		Seaducks moulting	23	1	0.25	0.37	0.65		
		Seaducks nonbreeding	23	5	0.25	1.87	3.27		
		Walrus	18	5	0.25	1.46	2.56	34	Extreme
74E_504	7453E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.06	1.60		
		Alcids breeding	25	1	0.5	0.38	0.66		
		Gulls breeding	17	4	0.5	1.03	1.81		
		Seaducks moulting	23	1	0.25	0.17	0.31		
		Seaducks nonbreeding	23	5	0.25	0.87	1.53		
		Walrus	18	5	0.25	0.68	1.20	19	Moderate
74E_505	7452E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.10	3.15		
		Arctic char	14	1	0.25	0.21	0.37		
		Seaducks moulting	23	1	0.25	0.35	0.60		
		Seaducks nonbreeding	23	5	0.25	1.73	3.02		
		Walrus	18	5	0.25	1.35	2.36	29	Extreme
74E_506	7452E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.54	5.31		
		Arctic char	14	1	0.25	0.35	0.62		
		Gulls breeding	17	5	0.5	4.30	7.52		
		Walrus	18	5	0.25	2.28	3.98	33	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
74E_507	7452E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.98	5.97	15	Low
74E_508	7452E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.34	3.51		
		Gulls breeding	17	2	0.5	1.14	1.99		
		Seaducks moulting	23	1	0.25	0.38	0.67		
		Walrus	18	5	0.25	1.50	2.63	20	Moderate
74E_509	7452E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.62	6.94		
		Walrus	18	5	0.25	2.97	5.20	22	Moderate
74E_510	7452E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.43	3.65		
		Gulls breeding	17	4	0.5	2.36	4.14		
		Seaducks moulting	23	1	0.25	0.40	0.70		
		Walrus	18	5	0.25	1.56	2.74	21	Moderate
73E_511	7306E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Gulls breeding	17	3	0.5	0.73	1.27		
		Seaducks moulting	23	1	0.25	0.16	0.29	13	Low
74E_512	7451E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.31	6.47	18	Moderate
75E_513	7451E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.16	6.24	16	Low
75E_514	7451E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.16	6.24	16	Low
75E_515	7502E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.41	3.61		
		Gulls breeding	17	5	0.5	2.93	5.12		
		Walrus	18	5	0.25	1.55	2.71	23	High
75E_516	7501E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.20	6.30	16	Low
75E_517	7501E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.80	5.70	15	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
75E_518	7501E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.17	6.26		
		Gulls breeding	17	2	0.5	2.03	3.55	19	Moderate
75E_519	7501E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.04	6.06		
		Gulls breeding	17	5	0.5	4.91	8.59	24	High
75E_520	7502E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				4.07	6.10		
		Gulls breeding	17	5	0.5	4.94	8.64		
		Walrus	18	5	0.25	2.61	4.58	38	Extreme
75E_521	7502E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Arctic char	14	1	0.25	0.10	0.17		
		Gulls breeding	17	2	0.5	0.49	0.85		
		Seaducks moulting	23	5	0.25	0.82	1.44		
		Walrus	18	5	0.25	0.64	1.13	24	High
75E_522	7503E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.71	2.56		
		Arctic char	14	5	0.25	0.85	1.49		
		Gulls breeding	17	1	0.5	0.41	0.73		
		Seaducks moulting	23	5	0.25	1.40	2.45	30	Extreme
75E_523	7453E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.06	1.59		
		Gulls breeding	17	2	0.5	0.51	0.90		
		Seaducks moulting	23	5	0.25	0.87	1.52		
		Seaducks nonbreeding	23	5	0.25	0.87	1.52		
		Walrus	18	5	0.25	0.68	1.19	22	Extreme
75E_524	7453E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.73	5.60		
		Seaducks moulting	23	5	0.25	3.07	5.36		
		Walrus	18	5	0.25	2.40	4.20	25	Extreme
75E_525	7503E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.52	2.28		
		Gulls breeding	17	5	0.5	1.84	3.22		
		Seaducks moulting	23	5	0.25	1.25	2.18		
		Walrus	18	5	0.25	0.98	1.71	19	Moderate
75E_526	7504E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.05	1.58		
		Gulls breeding	17	5	0.5	1.28	2.23		
		Seaducks moulting	23	5	0.25	0.86	1.51		
		Walrus	18	5	0.25	0.68	1.18	22	High

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
75E_527	7504E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.65	2.48		
		Alcids breeding	25	1	0.5	0.59	1.03		
		Gulls breeding	17	2	0.5	0.80	1.41		
		Seaducks moulting	23	5	0.25	1.36	2.38		
		Walrus	18	5	0.25	1.06	1.86	19	Moderate
75E_528	7454E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Seaducks moulting	23	5	0.25	0.82	1.44		
		Seaducks nonbreeding	23	5	0.25	0.82	1.44		
		Walrus	18	5	0.25	0.64	1.13	17	Low
75E_529	7552E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				2.16	3.25		
		Arctic char	14	1	0.25	0.22	0.38		
		Seaducks moulting	23	1	0.25	0.36	0.62		
		Walrus	18	5	0.25	1.39	2.43	24	High
76E_530	7552E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.05	3.07		
		Arctic char	14	1	0.25	0.20	0.36		
		Gulls breeding	17	1	0.5	0.50	0.87		
		Seaducks moulting	23	1	0.25	0.34	0.59		
		Walrus	18	5	0.25	1.32	2.30	17	Moderate
75E_531	7551E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.82	7.23		
		Arctic char	14	1	0.25	0.48	0.84		
		Walrus	18	5	0.25	3.10	5.42	23	High
75E_532	7551E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.25	6.38		
		Arctic char	14	1	0.25	0.43	0.74		
		Walrus	18	5	0.25	2.73	4.79	21	High
76E_533	7552E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.34	3.51		
		Arctic char	14	1	0.25	0.23	0.41		
		Seaducks moulting	23	1	0.25	0.38	0.67		
		Walrus	18	5	0.25	1.50	2.63	19	Extreme
76E_534	7602E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.23	4.84		
		Arctic char	14	1	0.25	0.32	0.56		
		Gulls breeding	17	5	0.5	3.92	6.86		
		Seaducks breeding	23	4	0.5	4.24	7.42		
		Seaducks moulting	23	1	0.25	0.53	0.93		
		Walrus	18	5	0.25	2.07	3.63	36	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
76E_535	7602E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.46	6.69		
		Arctic char	14	5	0.25	2.23	3.90		
		Walrus	18	5	0.25	2.87	5.02	25	High
76E_536	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.47	6.71		
		Arctic char	14	1	0.25	0.45	0.78		
		Walrus	18	5	0.25	2.87	5.03	22	High
76E_537	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.67	7.01		
		Walrus	18	5	0.25	3.00	5.26	22	High
76E_538	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.84	5.76		
		Walrus	18	5	0.25	2.47	4.32	20	Moderate
76E_539	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.88	5.82		
		Walrus	18	5	0.25	2.50	4.37	20	High
76E_540	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.21	6.31		
		Walrus	18	5	0.25	2.71	4.74	21	High
76E_541	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.85	7.27		
		Walrus	18	5	0.25	3.11	5.45	22	High
76E_542	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.60	6.90		
		Walrus	18	5	0.25	2.96	5.17	22	High
76E_543	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.56	2.34		
		Walrus	18	5	0.25	1.00	1.76	14	Low
76E_544	7651E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.74	4.12		
		Gulls breeding	17	3	0.5	2.00	3.50		
		Walrus	18	5	0.25	1.76	3.09	20	High

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
76E_545	7651E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.37	6.55		
		Seaducks moulting	23	1	0.25	0.72	1.26		
		Walrus	18	5	0.25	2.81	4.91	28	Extreme
76E_546	7602E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Arctic char	14	1	0.25	0.40	0.70		
		Seaducks moulting	23	1	0.25	0.66	1.15		
		Walrus	18	5	0.25	2.57	4.50	22	High
76E_547	7602E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.70	7.04		
		Arctic char	14	1	0.25	0.47	0.82		
		Walrus	18	5	0.25	3.02	5.28	25	High
76E_548	7602E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.94	5.91		
		Gulls breeding	17	3	0.5	2.87	5.02		
		Seaducks moulting	23	1	0.25	0.65	1.13		
		Walrus	18	5	0.25	2.53	4.43	26	Extreme
76E_549	7602E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.32	4.98		
		Gulls breeding	17	3	0.5	2.42	4.23		
		Seaducks moulting	23	1	0.25	0.55	0.95		
		Walrus	18	5	0.25	2.13	3.73	23	High
76E_550	7601E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Gulls breeding	17	5	0.5	4.86	8.50		
		Seaducks moulting	23	1	0.25	0.66	1.15		
		Walrus	18	5	0.25	2.57	4.50	36	Extreme
76E_551	7601E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.03	6.04		
		Gulls breeding	17	2	0.5	1.96	3.42		
		Walrus	18	5	0.25	2.59	4.53	23	High
76E_552	7602E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.65	5.47		
		Gulls breeding	17	5	0.5	4.43	7.75		
		Seaducks moulting	23	1	0.25	0.60	1.05		
		Walrus	18	5	0.25	2.34	4.10	34	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
76E_553	7602E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.45	5.17		
		Gulls breeding	17	5	0.5	4.19	7.33		
		Seaducks breeding	23	1	0.5	1.13	1.98		
		Seaducks moulting	23	1	0.25	0.57	0.99		
		Walrus	18	5	0.25	2.22	3.88	29	Extreme
76E_554	7601E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Seaducks moulting	23	1	0.25	0.66	1.15		
		Walrus	18	5	0.25	2.57	4.50	27	Extreme
76E_555	7651E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.47	6.70		
		Gulls breeding	17	4	0.5	4.34	7.60		
		Seaducks moulting	23	1	0.25	0.73	1.28		
		Walrus	18	5	0.25	2.87	5.03	32	Extreme
76E_556	7651E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.14	6.20		
		Gulls breeding	17	4	0.5	4.02	7.03		
		Seaducks moulting	23	1	0.25	0.68	1.19		
		Walrus	18	5	0.25	2.66	4.65	31	Extreme
76E_557	7652E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.25	4.87		
		Arctic char	14	1	0.25	0.32	0.57		
		Gulls breeding	17	5	0.5	3.95	6.90		
		Seaducks moulting	23	1	0.25	0.53	0.93		
		Walrus	18	5	0.25	2.09	3.66	28	Extreme
76E_558	7651E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.10	4.66		
		Arctic char	14	1	0.25	0.31	0.54		
		Gulls breeding	17	5	0.5	3.77	6.60		
		Seaducks moulting	23	1	0.25	0.51	0.89		
		Walrus	18	5	0.25	2.00	3.49	26	Extreme
76E_559	7651E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.78	5.67		
		Arctic char	14	1	0.25	0.38	0.66		
		Gulls breeding	17	1	0.5	0.92	1.61		
		Seaducks moulting	23	1	0.25	0.62	1.09		
		Walrus	18	5	0.25	2.43	4.25	25	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
76E_560	7652E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.35	3.53		
		Arctic char	14	1	0.25	0.24	0.41		
		Gulls breeding	17	5	0.5	2.86	5.00		
		Seaducks moulting	23	1	0.25	0.39	0.68		
		Walrus	18	5	0.25	1.51	2.65	22	High
76E_561	7651E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.08	6.12		
		Arctic char	14	1	0.25	0.41	0.71		
		Gulls breeding	17	5	0.5	4.95	8.67		
		Seaducks moulting	23	1	0.25	0.67	1.17		
		Walrus	18	5	0.25	2.62	4.59	33	Extreme
76E_562	7651E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.70	5.56		
		Arctic char	14	5	0.25	1.85	3.24		
		Gulls breeding	17	4	0.5	3.60	6.30		
		Seaducks moulting	23	1	0.25	0.61	1.06		
		Walrus	18	5	0.25	2.38	4.17	36	Extreme
76E_563	7652E	Human Use				2.00	4.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.98	1.96		
		Oil Residency Index				2.10	3.15		
		Arctic char	14	1	0.25	0.21	0.37		
		Gulls breeding	17	5	0.5	2.55	4.46		
		Seaducks moulting	23	1	0.25	0.34	0.60		
		Walrus	18	5	0.25	1.35	2.36	34	Extreme
76E_564	7653E	Human Use				2.00	4.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				5.00	9.99		
		Oil Residency Index				1.01	1.51		
		Seaducks breeding	23	5	0.5	1.66	2.90		
		Seaducks moulting	23	1	0.25	0.17	0.29	32	Extreme
76E_565	7653E	Human Use				2.00	4.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				4.66	9.33		
		Oil Residency Index				1.05	1.57		
		Gulls breeding	17	5	0.5	1.27	2.23		
		Seaducks breeding	23	2	0.5	0.69	1.21		
		Seaducks moulting	23	1	0.25	0.17	0.30	32	Extreme
76E_566	7652E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.44	5.16		
		Arctic char	14	1	0.25	0.34	0.60		
		Seaducks moulting	23	1	0.25	0.57	0.99		
		Walrus	18	5	0.25	2.21	3.87	26	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
76E_567	7652E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.90	5.84		
		Arctic char	14	1	0.25	0.39	0.68		
		Gulls breeding	17	5	0.5	4.73	8.28		
		Seaducks moulting	23	1	0.25	0.64	1.12		
		Walrus	18	5	0.25	2.50	4.38	34	Extreme
76E_568	7653E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.80	1.61		
		Oil Residency Index				1.08	1.62		
		Alcids breeding	25	2	0.5	0.77	1.35		
		Gulls breeding	17	5	0.5	1.31	2.29		
		Seaducks breeding	23	2	0.5	0.71	1.24		
		Seaducks moulting	23	1	0.25	0.18	0.31	22	Extreme
76E_569	7553E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Gulls breeding	17	5	0.5	1.21	2.13		
		Seaducks moulting	23	1	0.25	0.16	0.29		
		Walrus	18	5	0.25	0.64	1.13	17	Moderate
76E_570	7553E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Seaducks moulting	23	1	0.25	0.66	1.15		
		Walrus	18	5	0.25	2.57	4.50	27	Extreme
76E_571	7603E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.52	6.78		
		Gulls breeding	17	4	0.5	4.39	7.69		
		Seaducks moulting	23	1	0.25	0.74	1.30		
		Walrus	18	5	0.25	2.91	5.09	32	Extreme
76E_572	7603E	Human Use				2.00	4.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Seaducks moulting	23	1	0.25	0.16	0.29		
		Walrus	18	5	0.25	0.64	1.13	16	Moderate
76E_573	7653E	Human Use				2.00	4.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.84	4.27		
		Gulls breeding	17	5	0.5	3.45	6.04		
		Seaducks moulting	23	1	0.25	0.47	0.82		
		Walrus	18	5	0.25	1.83	3.20	26	Extreme
76E_574	7653E	Human Use				2.00	4.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				1.76	3.51		
		Oil Residency Index				1.15	1.72		
		Gulls breeding	17	2	0.5	0.56	0.97		
		Seaducks moulting	23	1	0.25	0.19	0.33	24	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
77E_575	7703E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.02	1.54		
		Gulls breeding	17	2	0.5	0.50	0.87		
		Polar bear	19	1	0.75	0.42	0.73	19	High
77E_576	7702E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.66	2.49		
		Gulls breeding	17	4	0.5	1.61	2.82	15	Moderate
77E_577	7701E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.03	3.05	13	Low
77E_578	7701E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.49	5.24	15	Moderate
77E_579	7701E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.06	4.58	14	Moderate
77E_580	7701E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.97	7.46	19	High
77E_581	7702E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.93	7.39		
		Gulls breeding	17	3	0.5	3.59	6.28	25	Extreme
77E_582	7751E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.30	6.45	18	High
77E_583	7702E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.64	2.46		
		Polar bear	19	1	0.75	0.67	1.17	19	High
77E_584	7702E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00	16	Moderate
77E_585	7702E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.12	1.67	17	High
77E_586	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.70	4.05		
		Gulls breeding	17	1	0.5	0.66	1.15		
		Polar bear	19	1	0.75	1.10	1.93	17	Moderate

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
77E_587	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.85	7.28	17	Moderate
77E_588	7701E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.14	4.71	16	Moderate
77E_589	7701E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.74	4.12	20	High
77E_590	7751E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.80	5.70	21	High
77E_591	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.95	7.42	17	High
78E_592	7751E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.59	3.89	19	High
78E_593	7801E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.50	3.75	19	High
78E_594	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.43	5.14	15	Moderate
78E_595	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.31	4.97	14	Moderate
78E_596	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00	14	Moderate
		Oil Residency Index				2.87	4.30		
78E_597	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50	11	Low
78E_598	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00	11	Low
		Oil Residency Index				1.00	1.50		
77E_599	7753E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50	11	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
77E_600	7753E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.23	4.84	16	Moderate
77E_601	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.16	1.75	11	Low
77E_602	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50	11	Low
77E_603	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.35	6.52	16	Moderate
77E_604	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.87	7.30	17	Moderate
78E_605	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.25	6.37	16	Moderate
78E_606	7751E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.27	4.91		
		Gulls breeding	17	1	0.5	0.79	1.39	16	Moderate
78E_607	7801E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.69	5.53	15	Moderate
78E_608	7801E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00	16	Moderate
78E_609	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.37	6.55	16	Moderate
77E_610	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00	16	Moderate
77E_611	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.67	2.51	12	Low
77E_612	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.18	3.28	13	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
77E_613	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.92	5.88	15	Moderate
77E_614	7752E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.38	2.06	14	Low
78E_615	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.47	2.21	12	Low
78E_616	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50	11	Low
78E_617	7752E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.32	1.98	11	Low
78E_618	7802E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.08	4.62	14	Moderate
78E_619	7802E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.49	2.24	12	Low
78E_620	7801E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.51	5.26		
		Gulls breeding	17	1	0.5	0.85	1.49	16	Moderate
78E_621	7802E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.71	2.56	12	Low
78E_622	7801E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.90	4.35	14	Moderate
78E_623	7802E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.08	1.62	17	High
78E_624	7802E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.09	1.63	13	Low
78E_625	7802E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.05	1.57	13	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
78E_626	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.37	2.06	12	Low
78E_627	7852E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.21	1.81	13	Moderate
78E_628	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Polar bear	19	2	0.75	0.81	1.42	12	Low
78E_629	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.36	2.04	12	Low
79E_630	7852E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00	17	High
		Oil Residency Index				1.01	1.51		
79E_631	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.13	3.20		
		Ivory gull breeding	22	5	0.5	3.35	5.86		
		Polar bear	19	3	0.75	2.60	4.56	23	Extreme
78E_632	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.83	2.74	12	Low
78E_633	7851E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.44	2.15	12	Low
78E_634	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.20	3.30	13	Low
78E_635	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.45	2.17		
		Polar bear	19	3	0.75	1.77	3.09	15	Moderate
79E_636	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Polar bear	19	3	0.75	1.22	2.14	13	Moderate
79E_637	7852E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Polar bear	19	3	0.75	1.22	2.14	13	Moderate

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
79E_638	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.05	3.07	13	Low
79E_639	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.69	7.04	17	High
79E_640	7901E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.75	4.13		
		Polar bear	19	3	0.75	3.36	5.88	26	Extreme
79E_641	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.03	1.55		
		Polar bear	19	3	0.75	1.26	2.20	13	Moderate
79E_642	7901E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.14	6.21	22	Extreme
79E_643	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.27	1.91		
		Polar bear	19	3	0.75	1.55	2.72	14	Moderate
79E_644	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Polar bear	19	3	0.75	1.22	2.14	13	Moderate
79E_645	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50	11	Low
79E_646	7901E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Walrus	18	5	0.25	0.64	1.13	12	Low
79E_647	7951E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.03	1.55		
		Walrus	18	5	0.25	0.66	1.16	12	Low
79E_648	7951E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.27	1.91		
		Walrus	18	5	0.25	0.82	1.43	13	Moderate
79E_649	7952E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Walrus	18	5	0.25	0.64	1.13	12	Low

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
80E_650	7951E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.04	1.56		
		Arctic char	14	1	0.25	0.10	0.18		
		Gulls breeding	17	5	0.5	1.26	2.21		
		Walrus	18	5	0.25	0.67	1.17	17	High
79E_651	7951E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.14	6.21		
		Arctic char	14	1	0.25	0.41	0.72		
		Walrus	18	5	0.25	2.66	4.66	21	Extreme
79E_652	7951E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.69	2.53		
		Walrus	18	5	0.25	1.08	1.90	14	Moderate
79E_653	7951E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.00	6.00		
		Arctic char	14	5	0.25	2.00	3.50		
		Walrus	18	5	0.25	2.57	4.50	26	Extreme
80E_654	7951E	Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.58	5.36		
		Arctic char	14	1	0.25	0.36	0.63		
		Walrus	18	5	0.25	2.30	4.02	26	Extreme
80E_655	7951E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.36	5.05		
		Arctic char	14	1	0.25	0.34	0.59		
		Walrus	18	5	0.25	2.16	3.78	19	Extreme
80E_656	8001E	Human Use				1.00	2.00		
		Archaeological Sites				1.00	2.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				3.38	5.08		
		Arctic char	14	5	0.25	1.69	2.96		
		Walrus	18	5	0.25	2.18	3.81	23	Extreme
80E_657	8002E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.50	2.25		
		Alcids breeding	25	3	0.5	1.60	2.81		
		Gulls breeding	17	5	0.5	1.82	3.18		
		Polar bear	19	3	0.75	1.83	3.20		
		Seaducks nonbreeding	23	5	0.25	1.23	2.15		
		Tubenoses breeding	18	5	0.5	1.92	3.37		
		Walrus	18	5	0.25	0.96	1.68	28	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
80E_658	8003E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.36	2.03		
		Gulls breeding	17	5	0.5	1.65	2.88		
		Polar bear	19	3	0.75	1.66	2.90		
		Seaducks nonbreeding	23	5	0.25	1.11	1.95		
		Tubenoses breeding	18	5	0.5	1.74	3.05		
		Walrus	18	5	0.25	0.87	1.53	34	Extreme
80E_659	8002E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.11	1.66		
		Gulls breeding	17	5	0.5	1.34	2.35		
		Polar bear	19	3	0.75	1.35	2.37		
		Seaducks nonbreeding	23	5	0.25	0.91	1.59		
		Tubenoses breeding	18	3	0.5	0.85	1.50		
		Walrus	18	3	0.25	0.43	0.75	30	Extreme
80E_660	8002E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.63	2.44		
		Ivory gull breeding	22	2	0.5	1.02	1.79		
		Polar bear	19	3	0.75	1.99	3.48	17	High
80E_661	8002E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.94	4.42	14	Moderate
80E_663	8001E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				4.83	7.24		
		Ivory gull breeding	22	1	0.5	1.52	2.65	29	Extreme
80E_664	8002E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.84	4.27	14	Moderate
80E_665	8052E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				2.34	3.51		
		Seaducks moulting	23	1	0.25	0.38	0.67	14	Moderate
80E_666	8053E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.16	1.75		
		Gulls breeding	17	2	0.5	0.57	0.99		
		Polar bear	19	3	0.75	1.42	2.49		
		Seaducks moulting	23	1	0.25	0.19	0.33		
		Seaducks nonbreeding	23	5	0.25	0.96	1.67		
		Tubenoses breeding	18	1	0.5	0.30	0.52	27	Extreme

Area	Map no.	Element	RS	RA	TM	AV	PI	S	Final ranking
80E_667	8054E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				2.00	3.00		
		Alcids breeding	25	1	0.5	0.71	1.25		
		Gulls breeding	17	5	0.5	2.43	4.25		
		Ivory gull breeding	22	5	0.5	3.14	5.50		
		Seaducks breeding	23	5	0.5	3.29	5.75		
		Seaducks moulting	23	1	0.25	0.33	0.58		
		Seaducks nonbreeding	23	5	0.25	1.64	2.88	50	Extreme
80E_668	8054E	Human Use				1.00	2.00		
		Archaeological Sites				5.00	10.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Gulls breeding	17	2	0.5	0.49	0.85		
		Ivory gull breeding	22	4	0.5	1.26	2.20		
		Polar bear	19	3	0.75	1.22	2.14		
		Seaducks moulting	23	1	0.25	0.16	0.29		
		Seaducks nonbreeding	23	5	0.25	0.82	1.44		
		Walrus	18	3	0.25	0.39	0.68	36	Extreme
81E_669	8101E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				10.00	15.00		
		Communities				0.00	0.00		
		Oil Residency Index				1.00	1.50		
		Gulls breeding	17	5	0.5	1.21	2.13		
		Ivory gull breeding	22	4	0.5	1.26	2.20		
		Polar bear	19	3	0.75	1.22	2.14		
		Seaducks moulting	23	1	0.25	0.16	0.29		
		Seaducks nonbreeding	23	5	0.25	0.82	1.44		
		Walrus	18	3	0.25	0.39	0.68	27	Extreme
81E_670	8102E	Human Use				1.00	2.00		
		Archaeological Sites				0.00	0.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.03	1.54		
		Gulls breeding	17	2	0.5	0.50	0.87		
		Seaducks moulting	23	1	0.25	0.17	0.29		
		Seaducks nonbreeding	23	5	0.25	0.84	1.47	14	Low
81E_671		Human Use				1.00	2.00		
		Archaeological Sites				3.00	6.00		
		Special Status Areas				5.00	7.50		
		Communities				0.00	0.00		
		Oil Residency Index				1.39	2.09		
		Gulls breeding	17	5	0.5	1.69	2.96		
		Ivory gull breeding	22	5	0.5	2.19	3.83		
		Seaducks moulting	23	1	0.25	0.23	0.40	25	High

11 Appendix B: Offshore sensitivity ranking

Explanation of the calculations in the table:
Priority index (PI) = Assigned value (AV) x Weighting factor (WF)
Sensitivity value (S) = sum of **Priority indices (PI)**

For biological elements:
Assigned value (AV) = (**Relative sensitivity (RS)** x **Relative abundance (RA)** x **Temporal modifier (TM)** x Marine oil residency index (ORI)) / Biological resource constant (C)

Bold abbreviations indicate factors, which appear in the columns of the table. The marine oil residency index (ORI) is given in a row for each offshore area. The biological resource constant (C) is 35 and the weighting factors (WF) are:

Human use	2
Biological resources	1.75
Special status areas	1.5
Marine oil residency index	1.5

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
18	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	1	1	1.86	3.25	50	Low
19	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				2	4		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	2	1	6.29	11.00	56	Moderate
20	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Ice fauna	20	3	1	8.57	15.00		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	2	1	6.29	11.00	59	Moderate
21	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	81	Extreme
22	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Ice fauna	20	2	1	5.71	10.00		
		Narwhal	13	1	1	1.86	3.25		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	1	1	1.86	3.25		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Surface feeding seabirds	20	1	1	2.86	5.00	66	High
23	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	1	1	1.86	3.25	54	Low
24	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	2	1	6.29	11.00		
		Walrus	16	3	1	6.86	12.00	68	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
25	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	3	1	5.57	9.75		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Walrus	16	2	1	4.57	8.00	88	Extreme
26	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	2	1	5.71	10.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	2	1	6.29	11.00		
		Surface feeding seabirds	20	1	1	2.86	5.00	68	High
27	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25	69	High
28	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	1	1	3.14	5.50	61	Moderate
29	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	2	1	5.71	10.00		
		Narwhal	13	3	1	5.57	9.75		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	1	1	1.86	3.25		
		Walrus	16	2	1	4.57	8.00	68	High
30	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Ice fauna	20	3	1	8.57	15.00		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25	57	Low
31	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25	53	Low

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
32	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	3	1	5.57	9.75		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Walrus	16	1	1	2.29	4.00	75	High
33	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				15	22.5		
		Human Use				0	0		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	2	1	3.71	6.50		
		Walrus	16	5	1	11.43	20.00	113	Extreme
34	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Walrus	16	1	1	2.29	4.00	79	Extreme
35	Winter	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25	60	Moderate
18	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Ice fauna	20	5	1	14.29	25.00		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	1	1	1.86	3.25	65	Low
19	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				2	4		
		Alcids	25	5	1	17.86	31.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	129	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
20	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	4	1	12.57	22.00		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	103	High
21	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	3	1	5.57	9.75		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	5	1	9.29	16.25		
		Seals, whelping/moulting	22	5	1	15.71	27.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	125	High
22	Spring	Marine Oil Residency Index				4	6		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	5.71	10.00		
		Baleen whales	9	1	1	1.03	1.80		
		Ice fauna	20	2	1	4.57	8.00		
		Narwhal	13	1	1	1.49	2.60		
		Other toothed whales	12	1	1	1.37	2.40		
		Polar bear	19	1	1	2.17	3.80		
		Seals	13	3	1	4.46	7.80		
		Seals, whelping/moulting	22	5	1	12.57	22.00		
		Surface feeding seabirds	20	1	1	2.29	4.00	68	Moderate
23	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	4	1	13.14	23.00		
		Seals	13	1	1	1.86	3.25		
		Walrus	16	1	1	2.29	4.00	89	Moderate
24	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	4	1	13.14	23.00		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	4	1	12.57	22.00		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	148	Extreme

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
25	Spring	Marine Oil Residency Index				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	3	1	5.57	9.75		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	4	1	7.43	13.00		
		Seals, whelping/moulting	22	4	1	12.57	22.00		
		Walrus	16	2	1	4.57	8.00	114	High
26	Spring	Marine Oil Residency Index				3	4.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	4.29	7.50		
		Baleen whales	9	5	1	3.86	6.75		
		Ice fauna	20	1	1	1.71	3.00		
		Ivory gull	22	1	1	1.89	3.30		
		Narwhal	13	1	1	1.11	1.95		
		Other toothed whales	12	1	1	1.03	1.80		
		Polar bear	19	1	1	1.63	2.85		
		Seals	13	2	1	2.23	3.90		
		Seals, whelping/moulting	22	3	1	5.66	9.90		
		Surface feeding seabirds	20	1	1	1.71	3.00	48	Low
27	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	1	1	1.86	3.25		
		Walrus	16	2	1	4.57	8.00	106	High
28	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	1	1	1.86	3.25		
		Seals, whelping/moulting	22	2	1	6.29	11.00		
		Surface feeding seabirds	20	1	1	2.86	5.00	94	Moderate
29	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	4	1	11.43	20.00		
		Ivory gull	22	3	1	9.43	16.50		
		Narwhal	13	4	1	7.43	13.00		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	105	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
30	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	2	1	3.71	6.50	84	Low
31	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00	93	Moderate
32	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	4	1	7.43	13.00		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	3	1	8.57	15.00		
		Walrus	16	3	1	6.86	12.00	130	Extreme
33	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				15	22.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	4	1	12.57	22.00		
		Narwhal	13	3	1	5.57	9.75		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	5	1	16.43	28.75		
		Seals	13	3	1	5.57	9.75		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	192	Extreme
34	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	3	1	5.57	9.75		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	116	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
35	Spring	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00	91	Moderate
18	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	3	1	5.57	9.75		
		Non-alcid pursuit divers	20	2	1	5.71	10.00		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	3	1	9.86	17.25		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	1	1	2.29	4.00	125	High
19	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				2	4		
		Alcids	25	5	1	17.86	31.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	1	1	1.86	3.25		
		Non-alcid pursuit divers	20	2	1	5.71	10.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	1	1	2.29	4.00	136	Extreme
20	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	3	1	9.43	16.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	108	Moderate
21	Summer	Marine Oil Residency Index				4	6		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	5.71	10.00		
		Baleen whales	9	4	1	4.11	7.20		
		Ice fauna	20	2	1	4.57	8.00		
		Narwhal	13	1	1	1.49	2.60		
		Other toothed whales	12	2	1	2.74	4.80		
		Polar bear	19	1	1	2.17	3.80		
		Seals	13	2	1	2.97	5.20		
		Seals, whelping/moulting	22	3	1	7.54	13.20		
		Surface feeding seabirds	20	1	1	2.29	4.00		
		Walrus	16	1	1	1.83	3.20	68	Moderate

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
22	Summer	Marine Oil Residency Index				3	4.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	3	1	6.43	11.25		
		Baleen whales	9	1	1	0.77	1.35		
		Narwhal	13	1	1	1.11	1.95		
		Other toothed whales	12	1	1	1.03	1.80		
		Pelagic fish	12	2	1	2.06	3.60		
		Seals	13	1	1	1.11	1.95		
		Seals, whelping/moulting	22	1	1	1.89	3.30		
		Surface feeding seabirds	20	1	1	1.71	3.00	35	Low
23	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	3	1	5.57	9.75		
		Non-alcid pursuit divers	20	2	1	5.71	10.00		
		Polar bear	19	2	1	5.43	9.50		
		Seaducks	23	5	1	16.43	28.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	5	1	11.43	20.00	158	Extreme
24	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	3	1	10.71	18.75		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	2	1	5.43	9.50		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	3	1	5.57	9.75		
		Seals, whelping/moulting	22	2	1	6.29	11.00		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	4	1	9.14	16.00	126	High
25	Summer	Marine Oil Residency Index				4	6		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	5.71	10.00		
		Baleen whales	9	5	1	5.14	9.00		
		Ice fauna	20	2	1	4.57	8.00		
		Narwhal	13	1	1	1.49	2.60		
		Other toothed whales	12	1	1	1.37	2.40		
		Polar bear	19	1	1	2.17	3.80		
		Seals	13	1	1	1.49	2.60		
		Seals, whelping/moulting	22	2	1	5.03	8.80		
		Surface feeding seabirds	20	1	1	2.29	4.00		
		Walrus	16	1	1	1.83	3.20	60	Moderate
26	Summer	Marine Oil Residency Index				3	4.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	4.29	7.50		
		Baleen whales	9	2	1	1.54	2.70		
		Narwhal	13	1	1	1.11	1.95		
		Other toothed whales	12	1	1	1.03	1.80		
		Seals	13	1	1	1.11	1.95		
		Seals, whelping/moulting	22	1	1	1.89	3.30		
		Surface feeding seabirds	20	1	1	1.71	3.00	27	Low

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
27	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Narwhal	13	5	1	9.29	16.25		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	4	1	13.14	23.00		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	5	1	11.43	20.00	156	Extreme
28	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	2	1	3.71	6.50		
		Seals, whelping/moulting	22	1	1	3.14	5.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	3	1	6.86	12.00	108	High
29	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	77	Moderate
30	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	5	1	15.71	27.50		
		Narwhal	13	4	1	7.43	13.00		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	137	High
31	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	3	1	6.86	12.00	103	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
32	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	83	Moderate
33	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				15	22.5		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	5	1	15.71	27.50		
		Narwhal	13	5	1	9.29	16.25		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	2	1	6.57	11.50		
		Seals	13	4	1	7.43	13.00		
		Surface feeding seabirds	20	3	1	8.57	15.00		
		Walrus	16	5	1	11.43	20.00	202	Extreme
34	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	4	1	12.57	22.00		
		Narwhal	13	3	1	5.57	9.75		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	3	1	6.86	12.00	114	High
35	Summer	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	5	1	14.29	25.00		
		Ivory gull	22	4	1	12.57	22.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	1	1	2.29	4.00	95	Moderate
18	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Non-alcid pursuit divers	20	1	1	2.86	5.00		
		Polar bear	19	1	1	2.71	4.75		
		Seaducks	23	2	1	6.57	11.50		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	3	1	8.57	15.00		
		Walrus	16	1	1	2.29	4.00	110	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
19	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				2	4		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	2	1	2.57	4.50		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Non-alcid pursuit divers	20	1	1	2.86	5.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	3	1	8.57	15.00		
		Walrus	16	1	1	2.29	4.00	95	Moderate
20	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	1	1	2.29	4.00	77	Moderate
21	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	2	1	5.71	10.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Other toothed whales	12	2	1	3.43	6.00		
		Polar bear	19	1	1	2.71	4.75		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	67	Moderate
22	Autumn	Marine Oil Residency Index				3	4.5		
		Special Status Areas				0	0		
		Human Use				1	2		
		Alcids	25	3	1	6.43	11.25		
		Baleen whales	9	1	1	0.77	1.35		
		Ivory gull	22	1	1	1.89	3.30		
		Narwhal	13	1	1	1.11	1.95		
		Other toothed whales	12	1	1	1.03	1.80		
		Pelagic fish	12	2	1	2.06	3.60		
		Seals	13	1	1	1.11	1.95		
		Surface feeding seabirds	20	1	1	1.71	3.00	35	Low
23	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	4	1	7.43	13.00		
		Polar bear	19	2	1	5.43	9.50		
		Seaducks	23	4	1	13.14	23.00		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	5	1	11.43	20.00	142	Extreme

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
24	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	2	1	5.43	9.50		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	2	1	5.71	10.00		
		Walrus	16	5	1	11.43	20.00	99	High
25	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	2	1	5.71	10.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	2	1	5.43	9.50		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	88	Moderate
26	Autumn	Marine Oil Residency Index				3	4.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	3	1	6.43	11.25		
		Baleen whales	9	2	1	1.54	2.70		
		Ivory gull	22	1	1	1.89	3.30		
		Narwhal	13	1	1	1.11	1.95		
		Other toothed whales	12	1	1	1.03	1.80		
		Seals	13	1	1	1.11	1.95		
		Surface feeding seabirds	20	1	1	1.71	3.00		
		Walrus	16	1	1	1.37	2.40	33	Low
27	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				10	15		
		Human Use				2	4		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	5	1	9.29	16.25		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	2	1	6.57	11.50		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	143	Extreme
28	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	3	1	3.86	6.75		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	4	1	12.57	22.00		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	108	High

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
29	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	2	1	7.14	12.50		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	2	1	5.71	10.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	85	Moderate
30	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				1	2		
		Baleen whales	9	1	1	1.29	2.25		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	1	1	3.14	5.50		
		Narwhal	13	5	1	9.29	16.25		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	1	1	3.29	5.75		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	117	High
31	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	3	1	9.43	16.50		
		Narwhal	13	1	1	1.86	3.25		
		Polar bear	19	5	1	13.57	23.75		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	3	1	6.86	12.00	99	High
32	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	89	Moderate
33	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				15	22.5		
		Human Use				1	2		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	5	1	6.43	11.25		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	3	1	9.43	16.50		
		Narwhal	13	5	1	9.29	16.25		
		Polar bear	19	5	1	13.57	23.75		
		Seaducks	23	2	1	6.57	11.50		
		Seals	13	2	1	3.71	6.50		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	5	1	11.43	20.00	164	Extreme

Area	Season	Element	RS	RA	TM	AW	PI	S	Final ranking
34	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				5	7.5		
		Human Use				0	0		
		Alcids	25	1	1	3.57	6.25		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	2	1	3.71	6.50		
		Other toothed whales	12	1	1	1.71	3.00		
		Polar bear	19	3	1	8.14	14.25		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	2	1	4.57	8.00	96	Moderate
35	Autumn	Marine Oil Residency Index				5	7.5		
		Special Status Areas				0	0		
		Human Use				0	0		
		Baleen whales	9	4	1	5.14	9.00		
		Ice fauna	20	3	1	8.57	15.00		
		Ivory gull	22	2	1	6.29	11.00		
		Narwhal	13	1	1	1.86	3.25		
		Other toothed whales	12	1	1	1.71	3.00		
		Seals	13	1	1	1.86	3.25		
		Surface feeding seabirds	20	1	1	2.86	5.00		
		Walrus	16	1	1	2.29	4.00	61	Low

12 Appendix C: Methods and documentation

12.1 Introduction

In the chapters 4, 5 and 6, the methods and data used in the present atlas project were outlined on an overall level. However, technical details and data documentation were not included in these chapters and are presented here.

12.2 The parameters of the Greenland oil spill sensitivity application

Below is a list of the parameter settings in the Greenland oil spill sensitivity application (Mosbech et al. 2004), used for the sensitivity index calculations of shoreline segments and offshore areas in this atlas.

Assigned Values (AV) to shoreline and offshore areas:

Community score (CM), range*	0–10
Special status area (SSA) score	5 per SSA area
Human use (HU), range**	0–5
Archaeological sites (AS), range**	0–5
Animal relative abundance (RA), range**	0–5 per species group
Oil residency index (ORI), range	1-5

* Calculated in GIS, using a 10 km buffer zone around each permanently inhabited place. The index value is proportional to the length of shoreline segments included within this buffer zone. Communities also include permanently manned stations.

** Range from 0 (no importance) to 5 (extreme importance).

Weighting factors:

Human use, communities and archaeology	2
Biological resources	1.75
Special status areas	1.5
Oil residency index	1.5

Application constants:

Biological resource constant (shoreline)	35
Biological resource constant (offshore)	35
Maximum ORI value	5

With these settings the average contributions (in terms of PI-values) to the final sensitivity values of the shoreline segments are: biological occurrences 22.5%, human use 10.8%, oil residency index 20.4%, archaeological sites 8.5%, communities 1% and special status areas (Ramsar sites, national parks) 36.6%. However, this is a simplification since the oil residency index value is also a factor in the calculation of the PI-value for biological occurrences, and thus has a higher relative contribution to the final sensitivity value than indicated here. Compared to previous atlases, special status areas account for a large part of the final sensitivity score in the current atlas. This is due to the national park in Northeast Greenland, which covers most shoreline segments in the atlas. However, this contribution acts as a constant and therefore has little influence on the relative sensitivity rankings of the shoreline segments (see below).

The final ranking of shoreline segments into the four oil spill sensitivity classes "low", "moderate", "high" and "extreme" was based on a neighborhood analysis, comparing each shoreline segment's sensitivity value to those of all segments within a 250 km radius. For this reason, the sensitivity value domains have slight overlaps (Table 1). For a detailed description of the sensitivity ranking procedure of both shoreline segments and offshore areas see Chapter 12.6 in this appendix.

Table 1. Statistics of the four sensitivity classes.

Sensitivity class	PI value domain	No. Segments	Length (km)
Low	5.76 - 17	56	2,650.80
Moderate	12.84 - 21.64	68	3,200.46
High	16.3 - 25.11	54	2,659.84
Extreme	12.32 - 60.35	86	4,310.74

12.3 Geomorphological information

The objective of performing a geomorphological classification is two-fold. The first goal is to provide the physical environment and logistics section of the atlas (Chapter 8) with useful information regarding potential oil spill mitigation, and an illustration of the nature of the coast. The second objective is to determine an ORI (oil residency index) value for each shoreline segment, which is an important component in the oil spill sensitivity calculation (Chapter 4.3).

The geomorphology of the Northeast Greenland coast between 71° N and 81.5° N has been classified according to shore type, sediment type and exposure. The classification covers the coastline from central Liverpool Land to Nordostrundingen. The total shoreline length is c. 12,595 km on the 1:250,000 scale topographic map.

12.3.1 Methods

The classification is based on a mixture of information from topographic maps (1:250,000), geological maps in 1:500,000 and 1:2,500,000, and Landsat 8 (15m resolution) and Sentinel 2 (30m resolution) imagery from 2018. The coastal classification is mainly based on the methods outlined in the proposal 'West Greenland Coastal Atlas for Environmental Protection. A Proposal to the Danish Energy Agency' produced by AXYS in July 1999 (Mosbech et al. 2005).

The overall process consisted of the following steps:

1. A revision of the coastline from the 1:250,000 scale topographic map for the changes in extent of marine terminating glaciers. This mapping also identified all shores of the type "glacier coast". A Landsat 8 and Sentinel 2 satellite imagery composite from August – September 2018 was used for this.
2. An identification and delineation of primarily the loose deposits as mapped in the geological maps. Secondarily, the bedrock type was identified.
3. Areas classified as "undifferentiated deposits" in the geological maps were split into sedimentary shore types based on topographic information and satellite imagery.
4. The remaining hard rock areas were classified into "rocky coast", "archipelago" and "talus" according the complexity of the coastline, presence of small islands, and interpretation of Landsat and Sentinel satellite imagery.

The shore types resulting from the classification are listed in Table 2. Based on these, the shoreline was divided into shore type segments. A shore type is a repeatable category of coastal geomorphology, which indirectly indicates the coastal sediment type. No specific lower segment length was applied, but in practical terms this has led to a lower segment limit of c. 200 meters. The segments were marked and classified directly on the revised digital shoreline of the 1:250,000 scale topographic map.

Table 2. Classification of shore types in Northeast Greenland. Numbering based on a system with 17 different types, here reduced to only 11 types.

Shore type	Shore type no.	Characteristics
Rocky coast	1	– Coast developed in bedrock of varying morphology, elevation and gradient. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur. – The occurrence of abraded inter–tidal platforms is indicated by the gradient.
Archipelago	3	– Several smaller islands, normally developed in solid rock. – Rocky coasts and pocket beaches might occur, but have only been classified individually if the perimeter of the island exceeds 6 kilometers.
Glacier coast	4	– Glacier ice reach the tidal zone, tidal glacier.
Moraine	5	– Shore developed in unconsolidated glacial sediments. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur. – The occurrence of abraded intertidal platforms are indicated by the gradient.
Alluvial fan	7	– Shore developed in alluvial fan. – Narrow beach with sediment consisting of boulders, cobbles, pebbles, gravel and sand might occur. – The occurrence of intertidal platforms is indicated by the gradient.
Talus	9	– Shore developed in talus (colluvial fan) of varying gradient. – Narrow beach with coarse sediment consisting of boulders, cobbles and pebbles might occur.
Beach	11	– Long, linear depositional beaches of well–sorted sand, gravel, pebbles, cobbles or boulders. – Beach ridge plains often occur landwards the beach.
Barrier beach	13	– Coastal environment consisting of coastal barriers and lagoons with beaches, dunes, salt marsh and tidal flats. – Spits often occur near tidal inlets. – Wash–over fans might occur on barriers. – Beaches consisting of well–sorted sand, gravel, pebbles or cobbles.
Delta	16	– Low gradient intertidal platform developed by fluvial sediments in front of a river valley. – Braided river channels often occur within the inter–tidal zone. – Sediment normally fine grained ranging from clay to fine sand.
Not classified	17	– The shore has not been classified due to lack of air photo information (cloud cover, shadow, etc.)

The coastal substrate type of the shore type segments have been derived based on a reclassification of the shore types (see Tables 3 and 4).

Table 3. Substrate classification of shore types in Northeast Greenland between 71° N and 81.5° N.

Substrate class	Substrate, general	Substrate, specific	Shore description
1	Ice	Ice	Glacial ice within the intertidal zone
2	Rock	Rock	Bedrock within the intertidal zone
3	Rock and sediment	Rock and coarse sediment	A combination of bedrock and coarse sediment including boulders, cobbles and pebbles, either as veneers over the bedrock or as small pocket beaches interspersed with bedrock
4		Rock and fine sediment	A combination of bedrock and fine sediment including mud, sand or mixtures of sand and boulders, cobbles or pebbles. Sediments most likely to occur as small pocket beaches interspersed with bedrock
5	Sediment	Coarse sediment	Boulders, cobbles and pebbles. Collectively referred to as 'gravel'. Includes 'shingle-type' beaches
6		Fine sediment	Mud, clay, sand and combinations of sand and gravel

Table 4. Substrate types derived from shore types.

Shore type (cf. Table 2)	Substrate type (substrate class, cf. Table 3)
Moraine (5)	Fine sediment (6)
Alluvial fan (7)	Fine sediment (6)
Delta (16)	Fine sediment (6)
Talus (9)	Coarse sediment (5)
Beach (11)	Fine sediment (6)
Archipelago (3)	Rock (2)
Rocky coast (1)	Rock and coarse sediment (3)
Glacier coast (4)	Ice (1)

Classification of exposure

For each shore type segment, an exposure class has been attributed. The classification of exposure has been performed as a grid analysis with a cell size of 1000 meters and UTM zone 27 as the orthogonal coordinate systems. The basis for the classification has been the distance to coast in the 8 main directions (N, NE, E, SE, S, SW, W and NW). The distance threshold has been set to 150 km. Definitions of the exposure classes are shown in Table 5.

For maximum open water periods less than 8 weeks, the exposure class was lowered by 1 (though resulting values < 1 were rounded up to 1). The length of the open water period for each shore type segment was calculated based on the segment's coverage by fast ice polygons on mid-month sea ice charts 2015–2019 from the Danish Meteorological Institute (Greenland_WA dataset).

Figure 1 shows how the exposure classes are distributed along the coast.

Figure 1. Exposure of the shorelines in the atlas region.

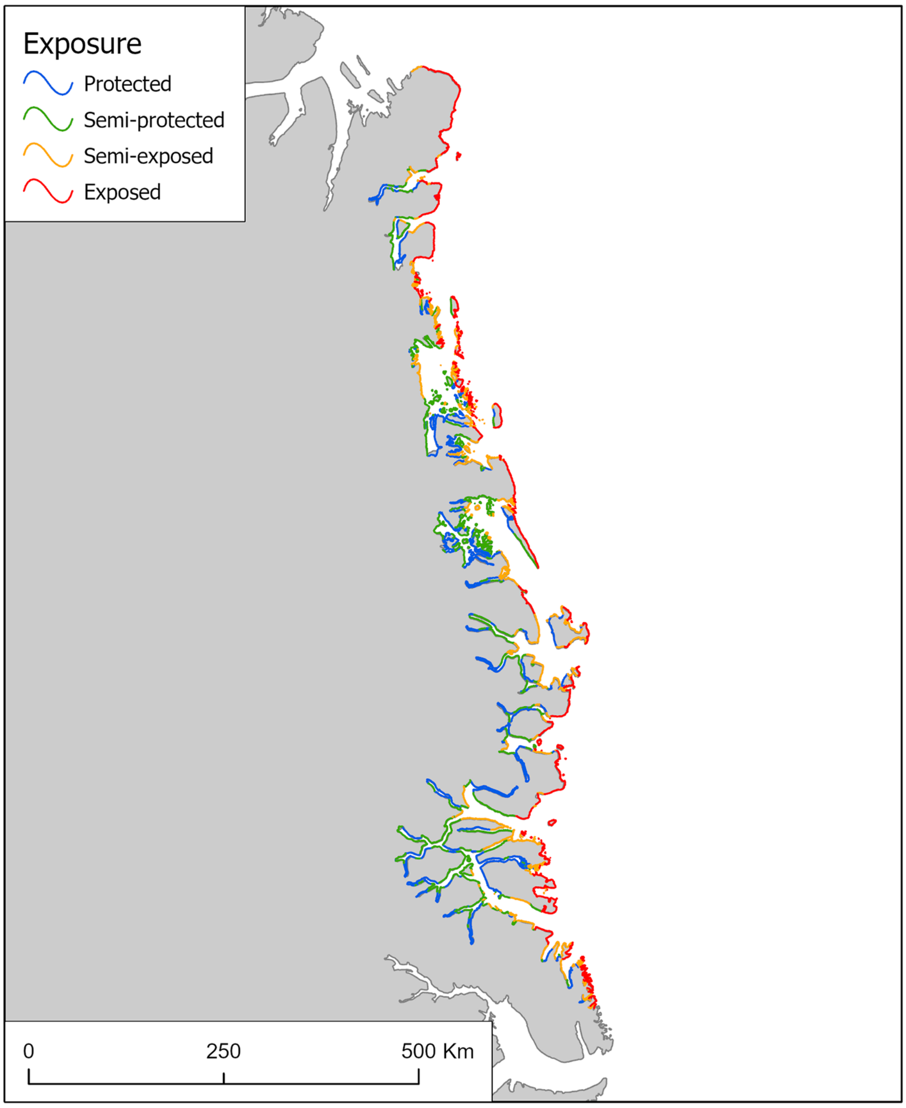


Table 5. Exposure classification for Northeast Greenland coasts between 71° and 81.5° N. Fetch is defined as is the length of water over which a given wind has blown without obstruction.

Exposure class	Exposure	Definition
1	Protected	Maximum distance in any direction 4 km AND The mean distance of all directions less than 2 km
2	Semi-protected	Not fulfilling any criteria for the other categories (remaining shorelines)
3	Semi-exposed	Distance of min. 150 km from one of the main fetch directions OR Mean distance of all main fetch directions greater than 10 km.
4	Exposed	Distances min 150 km from at least two of the main fetch directions

Table 6. Basic oil residency index (ORI) ranking based on a combination of shore type and exposure.

Shore type / Exposure class	Protected	Semi-protected	Semi-exposed	Exposed
Moraine (5)	4	3	1	1
Alluvial fan (7)	4	3	1	1
Talus (9)	5	4	1	1
Beach (11)	4	3	1	1
Archipelago (3)	5	4	2	2
Rocky coast (1)	5	4	2	1
Glacier coast (4)	1	1	1	1

Classification of slope

Based on the digital elevation model from GIMP (Howat et al. 2015), a slope layer was calculated in ArcGIS in a 30m resolution. The mean slope for each shore type segment was calculated within a 60 meter buffer on either side of the shore type segment polylines. Based on the resulting mean slope, the shore type segments were classified as flat, inclined or steep (Table 7).

Table 7. Slope classes.

Slope class	Mean slope
Steep	>= 15%
Inclined	<15% and >= 2%
Flat	<2%

Deriviation of oil spill residency (ORI) values for the shore type segments

For each shore type segment, an oil spill residency (ORI) index value between 1 and 5 was derived based on the combination of the shore type and the exposure class. This value enters the sensitivity calculation. Table 6 shows the basic relation between shore type, exposure class and the resulting ORI value. After this basic classification, a number of ORI modifiers were applied to account for shoreline slope and some special shore types considered to have longer residence times. These shoreline ORI modifiers were as follows:

ORI slope modifiers:

Steep (slope >= 15%): ORI -1
Flat (slope < 2 %): ORI +1

ORI shore type modifiers:

Archipelagos: ORI +1
Barrier beach: ORI +1
Delta: ORI +1

After applying the ORI modifiers, resulting ORI values > 5 were rounded down to 5, and resulting ORI values < 1 were rounded up to 1.

Aggregation of shore type segments into shoreline segments

Finally, the shore type segments were aggregated into shoreline segments of approx. 50 km (+/- 10 km) length, which form the basic analytical units in the shoreline sensitivity analysis. The aggregation was done by hand with the aim of keeping the resulting shoreline segments homogenous with respect to geomorphology, exposure and steepness. The ORI of each shoreline segment was calculated as a weighted average of the ORI values of the constituent shore type segments, using their proportional lengths as weights.

Deriviation of oil spill residency (ORI) values for offshore areas

In the offshore oil spill sensitivity analysis, the ORI index is based on sea ice cover rather than coastal geomorphology. The presence of dynamic pack ice with floes and ice edges will act to restrict oil movement and thus significantly increase the potential oil residence time. The offshore ORI have been defined with values increasing from 3 to 5 based on the length of the open water period. Within each offshore area, the length of the open water period was determined in the following way: For each month, the size of the area with a sea ice concentration of more than 15% was determined based on mean monthly sea ice concentration maps for the period 1979 - 2019 (Stroeve & Meier 2018). If that area covered less than 50% of the offshore area in question, the month was classified as being part of the open water period. Having determined the open water period for each offshore area, seasonal offshore ORI values were attributed as specified below.

ORI for offshore areas:

0-50% of season within the open water period	5
51-90% of season within the open water period	4
91-100% of season within the open water period	3

12.3.2 Shore type statistics

Based on the 1:250,000 scale topographic map, the total length of the coastline is c. 12,595 km, of which c. 1222 km are archipelagos and c. 11,373 km are mainland coasts and larger islands.

The distribution of segments on shore type, exposure categories and slope classes are given in Tables 8 -10. In terms of shoreline length, the ‘Rocky coast’ is the dominant shore type (53%) and ‘Protected’ is the dominant exposure type (31.4%). Together, the ‘Rocky coast’ and ‘Archipelago’ shore types constitute 62.7% of the total investigated shoreline.

Table 8. Shore type statistics.

Shore type	No. of stretches	Km	%
1	737	6673.92	52.99
3	519	1222.27	9.70
4	128	899.98	7.15
5	120	456.89	3.63
7	268	538.58	4.28
9	258	2122.45	16.85
11	5	15.54	0.12
13	38	163.08	1.29
16	161	502.25	3.99
17	7	20.67	0.16
Total	**2241**	**12594.98**	**100**

Table 9. Exposure statistics.

Exposure class	Km	%
1 – Protected	3952.94	31.39
2 – Semi-protected	3416.25	27.12
3 – Semi-exposed	2672.39	21.22
4 – Exposed	2575.18	20.45
Total	**12594.98**	**100.00**

Table 10. Slope statistics

Slope class	Length (km)	%
Steep	4041.11	32.09
Inclined	8230.18	65.34
Flat	345.48	2.74

12.4 Information on biological resources

12.4.1 Introduction

This section provides a detailed description of the different species/species groups constituting the biological input to the sensitivity calculations. Focus is on:

- which species are included in the different species groups in the shoreline and offshore analysis;
- how the relative abundance (RA) values for the different species/species groups were derived for the shoreline segments and the offshore areas;
- which data the assigned RA values are based on.

12.4.2 Shoreline analysis

The analysis of shoreline sensitivity included 12 species groups (Table 11). Their relative oil spill sensitivity values (RS) are detailed in Chapter 4, Table 1, and this section will focus on how their relative abundance values (RA; scale 0-5) were derived, and on which data they are based. Many more species of birds, marine mammals and fish/shellfish occur in the region. These are, however, of less importance, they occur widespread without any known concentration areas, they are not particularly exposed to oil in case of a spill in the region or the information available is too limited to be included. Finally, it must be stressed that the knowledge on the biology and ecology of the region is limited compared to West Greenland, and there are many data gaps awaiting study.

Table 11. Overview of the species and species groups included in the shoreline analysis.

Species group	Species included	Data source for relative abundance (RA) values
Alcids breeding	Colonies of breeding Atlantic puffins, black guillemots,	Boertmann et al. 2009, 2010, 2020b, Boertmann & Nielsen 2010
Gulls breeding	Colonies of breeding glaucous gulls, Arctic terns, black-legged kittiwakes and Sabine's gulls.	Boertmann et al. 2009, 2010, 2020b Boertmann & Nielsen 2010
Ivory gull breeding	Colonies of breeding ivory gulls	Boertmann et al. 2009, 2010, 2020b, Boertmann & Nielsen 2010
Little auk breeding	Colonies of breeding little auks	Boertmann et al. 2009, 2010, 2020b
Seaducks breeding	Colonies of breeding common eiders	Boertmann et al. 2009, 2010, 2020b
Tubenoses breeding	Colonies of breeding northern fulmars	Boertmann et al. 2009, 2010, 2020b
Alcids nonbreeding	Spring concentrations of little auks and thick-billed murres	Boertmann et al. 2020a
Seaducks moulting	Common eider and king eider moulting areas	Boertmann et al. 2020a
Seaducks non-breeding	Spring concentrations of common eiders and king eiders	Boertmann et al. 2020a
Arctic char	Arctic char	Boertmann et al. 2020a, Petersen1993
Polar bear	Polar bear denning sites	Boertmann et al. 2020a
Walrus	Regularly and irregularly used walrus haul-out sites and foraging areas	Boertmann et al. 2020a

Breeding seabirds

All the species groups in Table 11 that contain the word "breeding" in the title refer to the occurrence of seabird breeding colonies along the shorelines. The information on breeding seabirds in the atlas derives from a database of seabird breeding colonies covering the entire Greenland, the so-called Greenland Seabird Colony Register (Boertmann et al. 2010). This database holds all historic records (based on published data) and is continuously updated when new colony surveys are conducted by DCE, GINR and others (see e.g. Boertmann et al. 2020b). The updates include both discoveries of new colony sites, and re-counts of already known colonies to check if the numbers of birds breeding there have changed. The extract for the current atlas includes all known colonies of the seabird species listed in Table 11, and for each colony we used the most recent count of high quality (e.g. aircraft based surveys are often inferior to boat based surveys). For all species, breeding numbers originally expressed in pairs (or nests) have been transformed to individuals (no. of pairs or nests * 1.7).

The relative abundance values (RA) for a species groups involving breeding seabirds were attained through a step-wise process, which was conducted for both East Greenland sensitivity atlases at the same time. First, for each of the species making up the species group, the number of birds breeding along each shoreline segment was calculated. For a given shoreline segment, this often involved adding up the numbers from several different colonies (e.g. two black guillemot colonies along a segment). Then, the breeding numbers of the species on the shoreline segments were turned into ranks (1-5), based on their placement within a percentile distribution (divided in 20% intervals), involving all segments in both East Greenland sensitivity atlases with birds of that species present (breeding numbers > 0). If for a given segment, the number of birds breeding fell within the lowest 20% of all segments with breeding numbers > 0, the rank was set to 1. If for a given segment, the number of birds breeding fell within the top 20% of all segments with breeding numbers > 0, the rank was set to 5, and so forth. This was done for each species making up a species group, and subsequently, for each segment, the sub-species ranks were added up to attain the relative abundance (RA) value of the species group. In cases, where the species ranks added up to a value greater than five, the value was rounded down to RA=5. Table 12 gives an overview of how the species were ranked, including the breeding population numbers corresponding to the 20% percentile interval cut-off values. As can be seen from the table, some species were not wide-spread enough to complete the automatic 20% percentile ranking, and in these cases the ranking was done by expert judgement. This was also the case for species, where counting the number of birds in the colonies are almost impossible, due to hidden nest and very large breeding populations (little auks).

In terms of seasonality, all seabirds are assumed to breed from April to September.

Table 12. Overview of how the number of breeding seabirds of the different species along the shoreline segments were ranked. On the shoreline segments, relative abundance values (RA) of the species groups were calculated as the sum of the ranks of the constituent species, rounded down to five.

Species group	Species	Range (indv.)	Rank
Alcids breeding	Atlantic puffin	All colonies	5
	Black guillemot	1 – 5	1
		6 – 19	2
		20 – 40	3
		47 – 175	4
		193 – 622	5
Lille auk breeding	Little auk	All colonies	5
Gulls breeding	Glaucous gull	1	1
		2 – 4	2
		5 – 10	3
		11 – 20	4
		21 – 120	5
	Arctic tern	1 – 8	1
		10 – 20	2
		24 – 57	3
		59 – 165	4
		175 – 1051	5
	Black-legged kittiwake	4 - 21	1
		29 – 50	2
		60 – 120	3
		128 – 230	4
		475 – 1257	5
	Sabine’s gull	All colonies	5
Ivory gull breeding	Ivory gull	1 – 8	1
		10 – 10	2
		18 – 18	3
		23 – 168	4
		203 – 574	5
Seaducks breeding	Common eider	2 – 9	1
		11 – 17	2
		18 – 18	3
		20 – 48	4
		49 – 1530	5
Tubenoses breeding	Northern fulmar	33 – 89	1
		105	2
		110	3
		113	4
		240 – 1201	5

Other seabird groups
Areas where high concentrations of little auks and thick-billed murres have been located in spring (April – May) based on aerial surveys are included as "Alcids non-breeding". All coastal segments intersecting such an area have been assigned RA = 5 for "Alcids non-breeding".

In August and September concentrations of moulting king eiders and common eiders (grouped as "Seaducks moulting") occur in the area. These concentration areas are mainly found from Kong Oscars Fjord to Danmarkshavn, as well as at Nordostrundingen and Henrik Kröyer Holme (Boertmann et al. 2020a). All coastal segments intersecting such areas have been assigned RA = 5 for "Seaducks moulting".

In spring (April – May) large concentrations of common eiders and king eiders occur along the coasts of the polynyas (Boertmann et al. 2020a). All segments intersecting these areas have been assigned RA = 5 for the species group "Seaducks non-breeding".

Fish
In the shoreline analysis, Arctic char is included with the mouth of the rivers, where they winter and spawn (based on data from Boertmann et al. 2020a). Every segment with such a river outlet is assigned RA = 5 for Arctic char, and all segments intersecting a 25 km radius of the river outlet is assigned RA = 1 for Arctic char. The season of occurrence is set to range from July to September.

Polar bear
Polar bears establish maternity dens within the atlas-region (Boertmann et al. 2020a). Such dens have been observed in the northern part, where the shoreline segments located near Skærfjorden are assigned RA = 1 for polar bear. Further north, where denning has been observed more frequently, the shoreline segments from Nioghalfjerdsfjorden and northwards are assigned RA = 3 for polar bear.

Walrus
In the atlas area, walruses are known to have several haul-out sites. Some of these are used regularly, and some are used less frequently. All segments located within 50 km of a regularly used haul-out site are assigned RA = 5 for walrus. All segments within 25 km of an irregularly used haul-out site are assigned RA = 3 for walrus, if not already assigned RA = 5 due to proximity to a regularly used haul-out site. Only the regularly used haul-out sites figure on the maps as site-specific occurrences (blue icons).

12.4.3 Offshore analysis

The offshore oil spill sensitivity analysis was conducted as one big analysis, covering both atlas areas in East Greenland. In terms of biological resources, the offshore analysis included 15 species groups (Table 13). The relative oil spill sensitivity values (RS) of these species groups are detailed in Chapter 4, and the present section will therefore focus on how we derived their relative abundance values (RA; scale 0-5) in the different offshore areas during the four seasons of the year.

Table 13. List of the 15 species groups in the offshore oil spill sensitivity analysis, including information on which species are considered in the different groups, and the main data source used in deriving relative abundance (RA) values for the different offshore areas during the four seasons of the year.

Species group	Species included	Data source for relative abundance (RA) values
Alcids	Atlantic puffin, black guillemot, common murre, little auk, razorbill, thick-billed murre	Boertmann et al. 2020a (Boertmann 2014, Boertmann et al. 2020b, Norwegian SEATRACK-data (Link))
Baleen whales	Blue whale, bowhead whale, fin whale, humpback whale, minke whale, North Atlantic right whale, sei whale	Boertmann et al. 2020a
Bottom fish	Atlantic cod, Greenland halibut, redfish	Fishery data from GINR
Ice fauna	Sea ice associated fauna, particularly polar cod	Sea ice data from NSIDC, Stroeve & Meier 2018
Ivory gull	Ivory gull	Boertmann et al. 2020a (Boertmann et al. 2020b, Gilg et al. 2010)
Narwhal	Narwhal	Boertmann et al. 2020a (Boertmann et al. 2020b)
Non-alcid pursuit divers	Great cormorant, red-breasted merganser, red-throated diver	Boertmann et al. 2020a (Boertmann et al. 2020b)
Other toothed whales	Atlantic white-sided dolphin, harbour porpoise, killer whale, long-finned pilot whale, northern bottlenose whale, sperm whale, white-beaked dolphin	Boertmann et al. 2020a
Pelagic fish	Capelin (Iceland population), mackerel, herring	Fishery data from GINR
Polar bear	Polar bear	Boertmann et al. 2020a
Seaducks	Common eider, king eider	Boertmann et al. 2020a (Boertmann et al. 2020b)
Seals	Bearded seal, harbour seal, harp seal, hooded seal, ringed seal	Boertmann et al. 2020a
Seals, whelping/moulting	Harp seal, hooded seal	Boertmann et al. 2020a
Surface feeders	Arctic tern, black-legged kittiwake, glaucous gull, great black-backed gull, great shearwater, Iceland gull, lesser black-backed gull, Northern fulmar, Ross gull, Sabines gull	Boertmann et al. 2020a (Boertmann et al. 2020b, Norwegian SEATRACK-data (Link))
Walrus	Walrus	Boertmann et al. 2020a

As can be seen from Table 13, the RA values of most species groups in the offshore analysis were based on data from Boertmann et al. 2020a (important references drawn on in Boertmann et al. 2020a are in turn given in brackets). Specifically, we used input data from the GIS overlay analysis presented in Chapter 8 of that publication (Johansen et al. 2020). For that analysis, seasonal distribution maps of 59 species/ecosystem components were prepared, based on information presented in the report and other recently published data. Each seasonal distribution map, demarked by a species specific start and end date, has a spatial resolution of 1x1 km and covers all marine areas off East Greenland. The cell values of the seasonal maps reflect both the relative abundance of the species in the cell at that time of year, and the importance of the species relative to the other species included in the analysis (see Christensen et al. 2015; 2016; in prep for a detailed description).

To derive RA values for the offshore analysis based on these data, we did the following: For every species group, we calculated a GIS sum-overlay of the seasonal map layers of the species included in the group (see "Species included" in Table 13) for every 15 days throughout the year. Per species group, we then averaged the 15d sum-overlays within the four seasons of the year used in the offshore oil spill sensitivity analysis. This resulted in one distribution map (with species weighted relative abundance values) per species group per season. For each species group and season, we then calculated the average cell value within the 35 offshore areas used in the oil spill sensitivity analyses of the two East Greenland atlases. Finally, to arrive at RA values on a scale of 0 – 5, the average cell values of the 35 offshore areas were ranked per species group and season according to the classification scheme listed in Table 14.

Table 14. Classification scheme used for deriving relative abundance (RA) values for the different species groups in the different offshore areas during the four seasons of offshore oil spill sensitivity analysis, based on input data from Boertmann et al. 2020a.

Offshore area average cell value	Relative abundance (RA)
0	0
Within 0 – 50 percentile of OS areas with average cell values > 0	1
Within 50 – 70 percentile of OS areas with average cell values > 0	2
Within 70 - 85 percentile of OS areas with average cell values > 0	3
Within 85 – 95 percentile of OS areas with average cell values > 0	4
Within 95 – 100 percentile of OS areas with average cell values > 0	5

Thus, if for a given season and species group, the average cell value of the offshore area is zero, RA = 0 (species group absent in the area during the season in question). If, for a given season and species group, the average cell value of the offshore area falls within the 50% of offshore areas with the lowest average cell values (above zero), RA = 1. If, for a given season and species group, the average cell value of the offshore area falls within the top 5% of offshore areas with the highest average cell values (above zero), RA = 5, etc.

Using this formal, automated procedure, 1680 relative abundance values (12 species groups x 35 offshore areas x 4 seasons) were directly derived from the input data for the overlay analysis presented in Boertmann et al. 2020a. All these values were subsequently mapped (per species group and season) and subjected to an extensive manual quality control. In that process, approx. 35% of the RA values were adjusted. However, the average change in RA values from the automated output to the manually adjusted values was only approx. -0.36.

The relative abundance values for the species groups "Bottom fish" and "Pelagic fish" were based on fishery data compiled by Greenland Institute of Natural Resources. For each of these species groups, the total biomass of the catch between 2014 and 2019 of the included species was determined for each of the 35 offshore areas. Then, to achieve RA values on a scale 0-5, the biomasses of the offshore areas were ranked using a percentile scheme identical to the one listed in Table 14. For "Bottom fish", the calculated RA-values were assumed to be valid all four seasons (stationary species). For "Pelagic fish", the calculated RA-values were only applied in Summer and Autumn, whereas RA values of all offshore areas were set to zero during Winter and Spring (migratory species).

The species group "Ice fauna" is meant to represent the different life forms associated with the sea ice, in particular the distribution of the ecological key species, Polar cod. As data on the latter is partial at best, we decided to base

RA values on sea ice cover data instead. Thus, based on the dataset "Sea Ice Trends and Climatologies from SMMR and SSM/I-SSMIS, Version 3" from National Snow & Ice Data Center (Stroeve & Meier 2018), with the average monthly sea ice concentration 1979-2019, we delimited the area within which the average sea ice concentration is greater than or equal to 15%. This was done separately for each of the four seasons in offshore analysis. Then, for each season and offshore area, we calculated the degree of overlap in % between the offshore area and the "≥15% ice cover polygon", and attributed RA based on the classification scheme listed in Table 15.

Table 15. Classification scheme used for defining relative abundance (RA) values for the species group "Ice fauna", based on the overlap between the offshore area in question, and the "≥15% ice cover polygons" for the four season of the offshore oil spill sensitivity analysis.

Seasons	Overlap between OS area and "≥15% ice cover polygon"	Relative abundance (RA)
Autumn, Winter	Overlap = 0%	0
	0% < Overlap ≤ 50%	1
	50% < Overlap < 100%	2
Spring, Summer	Overlap = 0%	0
	0% < Overlap ≤ 25%	1
	25% < Overlap ≤ 50%	2
	50% < Overlap ≤ 75%	3
	75% < Overlap < 100%	4
	Overlap = 100%	5

12.5 Information on human use

In both the shoreline and offshore oil spill sensitivity analysis, human use is factored into the calculations with an integer score (named HU) ranging between 0 (no human use) and 5 (extensive human use), similar to the relative abundance (RA) scores of the biological resources. This section describes how the HU scores were derived for individual shoreline segments and offshore areas, including the data on which they are based.

12.5.1 Human use in shoreline analysis

There is very little human use along the shorelines covered by the current atlas. The atlas area is located approx. 60 km north of the northernmost town on the Greenland East Coast (Ittoqqortoormiit), and most of the land areas are included in the Northeast Greenland National Park.

Occasional tourist cruises, expeditions and scientific activities take place in the coastal areas of the national park, mainly during summer when the waters are relatively ice-free and can be travelled by boat. Thus, all shoreline segments intersecting the Northeast Greenland National Park polygon have been attributed the HU score 1, with a season of use ranging from July 1 to September 30 (the open water period).

Within the parts of the Northeast Greenland National Park covered by the atlas, there are three permanently settled places, namely Mestersvig (military outpost), Daneborg (military outpost and headquarters of the Sirius Patrol) and Danmarkshavn (weather station). Close to Daneborg is also the Zackenberg Research Station, where environmental monitoring and research takes place every summer. All shoreline segments intersecting a buffer of 15 km around the permanently settled places and the research station have been attributed the HU score 2, with a season of use ranging from January 1 to December 31 (all year).

In the 1980'ies, hunters from Ittoqqortoormiit would occasionally travel by dog sledge as far north as Daneborg on late winter/spring hunting trips for polar bear (Born 1983). However, the GPS-tracking study of hunters from Ittoqqortoormiit, presented in Flora et al. (2019, Greenlandic version, see Flora et al. 2020), revealed no tracks north of Storefjord in the southernmost part of the atlas area. Four of the hunters that participated in the GPS-tracking study were interviewed in Nuuk in December 2019, and they explained that long-range hunting trips into the Northeast Greenland National Park are no longer undertaken. They considered Carlsberg Fjord to be the northernmost area regularly used by inhabitants from Ittoqqortoormiit for hunting, fishing and recreational activities, including trips with tourist. Thus, all shoreline segments from the southernmost end of the atlas area, up to and including Carlsberg Fjord, were attributed the HU score 2, with a season of use ranging from March 1 to October 31 (the dog sledge and motorboat seasons combined).

Having attributed all of the above mentioned HU values, only four shoreline segments, located between Carlsberg Fjord and Mestersvig, remained unclassified. They were subsequently given the HU value 1, due to being located in relative proximity to Mestersvig and the outskirts of the hunting range of Ittoqqortoormiit hunters. Season of use was set to July 1 to September 30, corresponding to the open water period.

12.5.2 Human use in the offshore analysis

As already mentioned several times before, the offshore oil spill sensitivity analysis was conducted as one large analysis, covering both East Greenland atlas areas. Human use in the offshore areas of East Greenland relates mostly to commercial fishery activities, and fishery data were therefore used as a first step towards deriving HU values.

Based on fishery data compiled by Greenland Institute of Natural Resources, the total catch (in tons) between 2014 and 2019 of the commercially important species capelin, Atlantic cod, Greenland halibut, mackerel, northern shrimp, redfish and herring were calculated in each of the 35 offshore areas covering East Greenland. We then converted the catch in each offshore area into an approximate monetary value, using the species-specific trade price listed in Table 16.

Table 16. Approximate trade price of the commercially important fish species in East Greenland, based on average trade prices 2015-2018 from Statistics Greenland (https://stat.gl/).

Species	Approx. DKK per kg
Greenland halibut	25
Northern shrimp	19
Herring	11
Redfish	10
Atlantic cod	9
Mackerel	6
Capelin	3

Finally, to arrive at preliminary HU values on a scale of from 0 to 5, the monetary values of the fishery in the 35 offshore areas were ranked according to the classification scheme listed in Table 17. Thus, for all offshore areas, where the monetary value of the commercial fishery 2014-19 was 0, preliminary HU was set to 0. If the monetary value of the commercial fishery in an offshore area was among the 50% of offshore areas with the lowest monetary value (above zero), preliminary HU was set to 1. If the monetary value of the commercial fishery in an offshore area was within the top 5% of offshore areas with the highest monetary value (above zero), preliminary HU was set to 5, etc.

Table 17. Classification scheme used for deriving preliminary human use (HU) values for the 35 offshore areas in East Greenland, based on the monetary value of the commercial fishery in the areas during 2014-19.

Monetary value of commercial fishery within offshore area 2014-19	Preliminary human use (HU) value
0	0
Within 0 – 50 percentile of OS areas with monetary value > 0	1
Within 50 – 70 percentile of OS areas with monetary value > 0	2
Within 70 - 85 percentile of OS areas with monetary value > 0	3
Within 85 – 95 percentile of OS areas with monetary value > 0	4
Within 95 – 100 percentile of OS areas with monetary value > 0	5

The preliminary HU values of the offshore areas, derived exclusively from fishery data, were subsequently complemented and adjusted based on other human use data from East Greenland.

Firstly, HU values were increased in offshore areas, where Flora et al. (2019) (for Greenlandic version see Flora et al. 2020) documented resource use by hunters from Ittoqqortoormiit and the Tasiilaq area, during a GPS mapping study of hunting patterns. Thus, HU was increased to 5 in OS 8 and 15. These offshore areas border the two main settlement (and tourist) areas in East Greenland, and were used extensively by the hunters that participated in the GPS mapping project. HU values were also increased in OS 10, 14 and 19, but only to 3, 4 and 3, respectively, as these areas constitute more peripheral parts of the hunting range, and are only visited seasonally by hunters as well as tourist.

Secondly, HU values were increased from 0 to 1 in all offshore areas bordering the Northeast Greenland National Park (OS 18, 23, 27, 30, 33), because tourist cruises, expeditions and scientific activities occasionally take place here in coastal areas, mainly during summer. A few places in the Northeast Greenland National Park are permanently inhabited (military outposts and weather station), or used for recurring environmental monitoring and research (Zackenberg Research Station). Here, HU values of bordering offshore areas were additionally increased from 1 to 2 (OS 18, 23, 27).

Thirdly, the HU values of OS 29 and 32 were increased from 0 to 1, because of occasional Svalbard-based tourist cruises during spring.

Finally, the fishery based HU values of OS 17 and 23 were lowered by one rank to 4 and 0, respectively. In the former case, because the HU value is based only on fishery, and albeit large, the fishery in the area is very variable between years (mainly mackerel and herring); and in the latter case, because the few fishery recordings from the area were considered to originate from coordinate errors in the data reporting from the fishery vessels.

If the HU value of an offshore area is > 0, a short description of the human use is provided, as is a delimitation of the season of use (start date, end date). The description of use and the season of use are based on the same data sources as the HU values. In determining the season of use, we have always used the maximum season across all human use activities in the area.

12.6 Sensitivity ranking procedures

The oil spill sensitivity calculations result in one numeric sensitivity value (S) for each shoreline segment and four numeric sensitivity values for each offshore area (one for each season) (see appendix A and B). However, to ease the interpretation of the maps in Chapters 7 and 8, the oil spill sensitivity of the shoreline segments and offshore areas were ranked into the four classes Extreme, High, Moderate and Low. This ranking was done using a neighborhood approach. The numeric sensitivity value of each shoreline segment/offshore area was compared to the sensitivity values of all shoreline segments/offshore areas that intersect a buffer of 250 km around the shoreline segment/offshore area being ranked.

A shoreline segment was given the rank:
- Extreme, if it was among the 75-100% highest scoring segments within the 250 km buffer (the top 25%), or if it intersects a Selected Area (see Chapter 14.7).
- High, if it was among 50-75% highest scoring segments within the 250 km buffer.
- Moderate, if it was among 25-50% highest scoring segments within the 250 km buffer.
- Low, if it was among 0-25% highest scoring segments within the 250 km buffer (the bottom 25%).

An offshore area was given the rank:
- Extreme, if it was among the 75-100% highest scoring areas within the 250 km buffer during the given season (the top 25%).
- High, if it was among 45-75% highest scoring areas within the 250 km buffer during the given season.
- Moderate, if it was among 15-45% highest scoring areas within the 250 km buffer during the given season.
- Low, if it was among 0-15% highest scoring areas within the 250 km buffer during the given season (the bottom 15%).

The use of this procedure means that the ranking of shoreline segments and offshore areas is area relative/local. The ranking indicates how oil spill sensitive a given shoreline segment/offshore area is compared to other shoreline segment/offshore areas within c. 500-1000 km. This ensures that the sensitivity ranking captures local differences in sensitivity and is not dominated by large-scale patterns, e.g. latitudinal biodiversity gradients.

When the shoreline segments of the current atlas were ranked, segments from both the Northeast and Southeast Greenland Sensitivity Atlases were included in the ranking procedure. This ensures a seamless and smooth transition between the two atlases in terms of shoreline sensitivities. However, due to its age (2004), shoreline segments from the South Greenland Oil Spill Sensitivity Atlas were not included in the analysis.

When the offshore areas of the current atlas were ranked, offshore areas from both of the East Greenland sensitivity atlases and all the West Greenland sensitivity atlases were considered in the ranking procedure. The latter areas were included because the West Greenland offshore sensitivity analysis was updated in 2011. However, due to differences between East and West Greenland in the definition of species groups etc., the seasonal average sensitivity of West Greenland offshore areas was scaled to the same mean as East Greenland offshore areas prior to including them in the ranking.

12.7 Selected areas

Brief description of the selected areas referred to in Chapter 4.4:
S_E12 on maps 7101E and 7152E: Steep coasts with numerous breeding colonies of little auks other seabirds.

S_E13 on maps 7202E, 7203E and 7253E: Several small islands with breeding colonies of Arctic terns, Sabine's gulls and common eiders.

S_E14 on maps 7254E, 7255E, 7304E and 7305E: Narrow strait with many small island and breeding colonies with Arctic terns and common eiders.

S_E15 on maps 7304E and 7305E: Two small islands with breeding colonies of Arctic terns, Sabine's gulls and common eiders.

S_E16 on map 7306E: Bay with low coasts and a small low island with breeding colonies of Arctic terns and common eiders.

S_E17 on maps 7402E and 7403E: Low island with breeding colonies of Arctic terns, Sabine's gulls and common eiders, and a regularly used walrus haul-out site.

S_E18 on maps 7403E, 7453E: Small island with steep coasts with breeding colonies of black-legged kittiwakes, black guillemots and perhaps Atlantic puffins. Important site with archaeological remains.

S_E19 on maps 7453E and 7503E: Regularly used walrus haul-out site on low coast.

S_E20 on maps 7602E and 7603E: Regularly used walrus haul-out site on low coast.

S_E21 on map 7653E: Low rocky island with breeding colonies of Arctic terns, black-legged kittiwakes, Sabine's gulls and common eiders.

S_E22 on map 7902E: Steep cliff with a very large breeding colony of ivory gulls.

S_E23 on maps 7951E and 8001E: Regularly used walrus haul-out site on low coast.

S_E24 on map 8054E: Group of low islands with important breeding sites for seabirds: common eider, Arctic tern, Sabine's gull, ivory gull and occasionally Ross's gull.

S_E25 on maps 8054E, 8101E and 8102E: Low coast with breeding colonies of Arctic terns and Sabine's gulls.

S_E26 on maps 8101E and 8102E: Low coast with breeding colonies of Arctic terns and Sabine's gulls.

12.8 Archaeology and history

12.8.1 Settlement in Greenland

Greenland has been populated for two long periods, which together span ca. 4,400 years. The oldest period is from ca. 2400 BCE to 200 CE; the recent period is from ca. 1000 CE until the present day. The settlement strategy of the various cultures, the visibility of the features, and the utilisation of the resources of the country have left their mark on the landscape.

The atlas area covers the east coast of Greenland between approx. 71° N and 81.5° N. The straight line distance is 1200 km, but the coastline is much longer due to indented shores, fjords, islands, sounds etc. In the area, there are some 490 archaeological and historic sites, i.e. localities containing man-made structures, which are registered in the central database of Nunatta Katersugaasivia Allagatteqarfialu/the Greenland National Museum & Archives (NKA) and which are, therefore, subject to the terms of the Conservation Act (see below). Of the 490 known sites, the vast majority are positioned immediately by the coast.

The natural conditions within the mapped coastal stretch vary greatly from north to south and from the outer coast to the inner fjord lands. Islands, peninsulas and narrow strips of land between the inland ice sheet and the sea consist of alpine areas and lowlands along the coasts and in valleys, and in the more low-lying and sheltered parts with more or less continuous vegetation. Such areas, with subsistence potential for muskoxen or caribou, have also attracted Inuits through the ages. But marine areas with predictable open waters (e.g. polynyas) have also attracted the people of East Greenland and large aggregations of ruins have been found at such sites (e.g. Hvalros Ø and Île de France)

In the summer, the open waters usually have drifting ice floes and icebergs. In the winter, the sea near the coasts is covered with solid fast ice, except at the polynyas. These conditions provide very different possibilities for settlement, for transport and for access to resources, depending on the traditions and cultural preconditions.

All Inuit immigrations to East Greenland came through the Avanersuaq (Thule) region and people subsequently spread along the north and east coast of Greenland or along the west coast.

Around year 1000 CE, Icelandic farmers (“the Norse Greenlanders”) settled in south Greenland, and with Hans Egede’ s establishment of the mission station “Håbets Koloni” (“Hope Colony”) in 1721, the foundation was laid for the Colonial Period and the later development of modern Greenland. However, the Norse settlement did not include East Greenland.

In northeast Greenland, the oldest part of the paleo-inuit period in Greenland comprised the cultural periods Independence I and Independence II, from ca. 2400 BCE to 200 CE.

In the course of the thirteenth century, the last massive Inuit wave arrived from Alaska. Via Canada, the people of the Thule culture crossed Smith Sound to the Avanersuaq area. From there, they quickly spread all over the country. The Thule people were whalers and sealers. The umiaq (‘women’s boat’), kayak and dog-sledges gave them great mobility and the potential for incorporating whaling in their way of living. Around 1500 CE, the Norse

Greenlanders had gone and the Thule people had settled along the entirety of the Greenland coasts. In the following centuries, there were great migrations of people along the coasts and an incipient concentration of the population in particular regions and large settlements. The Thule people died out in Northeast Greenland during the 1800s, while an almost isolated population remained in Southeast around the present day town of Tasiilaq. In 1925, the village Scoresbysund (Ittoqqortoormiit) was established immediately south of the region covered by this atlas.

There are also a number of historic sites, mainly comprised of trapper stations and huts (Figure 16), expedition houses and a few remains from World War II.

12.8.2 Which items of archaeological and historical interest are included?

All known coastal archaeological and historical find-sites (minus colonial trading posts, abandoned weather stations, settlements and the like) are included in this atlas, but only the basic site information is included. Detailed information about the individual sites can, if needed for example in case of an oil spill, be obtained from the Greenland National Museum & Archives, Box 145, DK-3900 Nuuk or by e-mail: nka@natmus.gl.

12.8.3 The Conservation Act

If a man-made feature predates the year 1900, it is protected by the terms of "Inatsisartutlov nr. 11 af 19. maj 2010 om fredning og anden kulturarvsbeskyttelse af kulturminder" ("The Conservation Act"). The Greenland National Museum & Archives administers this act and is responsible for the registration of antiquities.

12.8.4 Description of the data

History
For more than 200 years, information on archaeological sites in Greenland has been collected. The oldest reports concern Norse remains in West Greenland; and only after 1900 serious interest in the indigenous population of the country arose. Actual archaeological investigation of the prehistory of the Inuit began in the 1930s.

In the 1950s the first systematic archaeological investigations were conducted at Sermermiut near Ilulissat in West Greenland. There, for the first time, stratigraphic deposits were found from the three Inuit periods: the Saqqaq culture, the Dorset culture and the Thule culture. Today Sermermiut is part of an area designated as a World Heritage Site under the auspices of UNESCO.

With the transfer of the conservation and museum acts to the Greenland Home Rule Government in 1981, the collected knowledge of antiquities in Greenland was systematised in the form of card indices, overview maps, conservation numbers etc. This knowledge has been regularly developed and updated by surveys and other ways of gathering information about the antiquities. This material has since been entered into a database, which is subject to on-going expansion and quality assurance and which provides the data included in the present atlas.

The data

Information concerning the individual sites is a mixture of experts' inspections in older and more recent times and various pieces of information from past and present. It is a mixture of high quality site information and less good and poor information. The latter categories may also include information that has not yet been verified by specialists. Information that seem credible and which can be localised is included in this atlas. The settlement type has typically been inferred from the feature types. Place-names have been used to shed light on the activities in the area in question.

Data quality

For most of the coastal sites we have no information on their position in terms of elevation above sea level. In some cases this has been estimated on the basis of other available information and/or personal experience. All coastal sites with no information on elevation above sea level are treated in this atlas as being in the risk zone for oil spills, i.e. Group 2, until proved otherwise.

The more recent surveys in the area have given rise to two typical comments in the database:

a) the site could no longer be found
b) the site no longer exists

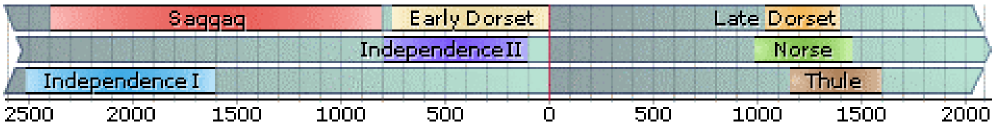
The first of these indicates that the site is not at the position indicated, but that it may exist somewhere else nearby, or that it may have been eroded away. Sites with such information have been retained as fully valid items in this atlas, since the littoral zone may have unverified remains, or there may be features/remains close by which have not yet been registered.

The second comment means that we have positive knowledge that there was once a feature or features at the place but that they have now disappeared. This may have happened for example as a result of coastal erosion or construction activities. Sites listed with such information have been retained as fully valid items in this atlas, since the beach zone may still have remains or traces of the features originally observed.

In a number of cases there is uncertainty about the precise geographical position of the site. On the original physical maps of the antiquities each 'antiquity circle' covers an area with a diameter of 500 meters. The transfer of 'points' from physical maps to a digital map has only increased the precision if more recent GPS coordinates have been obtained.

In the section 12.8.5 "Archaeological sensitivity assessment" there is an account of the principles underlying the assessment of the individual sites. See also Table 18 and Table 19.

Table 18. Explanation of the classification and terms used in the atlas.

Identification	Each archaeological site entered in the Nunniffiit database (Greenland Archive of Antiquities) has a conservation number. When a report on a new find is received, the site is assigned a conservation number and entered in the Nunniffiit database.
Datings	
Periods of cultural history	For each site in the Nunniffiit database there is an account of when or in what periods the individual features were used – that is, which periods of cultural history are represented. Distinctions are made between Inuit, Norse and European origin. If we only know that there are ruins on the location with no dating we use the overall category "Unknown".
Inuit	The timeline below shows the Inuit cultural periods that are known in Greenland and their chronological placing. If no accurate dating has been possible, one must refer to the next level above. The remains from the Independence cultures are found in North and Northeast Greenland.  The paleo-inuit period is considered as lasting until the end of "Late Dorset". With "Thule" begins the neo-inuit period, which lasts until 1800 CE.
Norse	The period from the landnam (pioneering settlement) of Eric the Red until the collapse of the Norse society, i.e. ca. 985–1450 CE.
Whaling	European cultural traces dated within the period ca. 1450 – 1721 CE, the latter being the year when the Danish colonisation of Greenland began.
Colonial	The period from 1721 until 1900 CE.
Recent	All cultural remains more recent than 1900 CE. If there are recent features at an archaeological site, this is noted in the Nunniffiit database, even if they are not subject to the protection of the Conservation Act. No distinction is made here between Inuit and European features.

The general terms for site types given in table 19 are used in the Nunniffiit database. More detailed information on the feature types and other signs of activity at the individual sites have been entered in the database if they are available.

Table 19. Archaeological site types. The general terms for site types given below are used in the Nunniffiit database.

Site type
Settlement, • Summer • Winter • Other season
Assembling camp
Camp for capelin-fishery
Sea-hunting camp
Muskox hunting camp
Base camp
Overnight camp
Caribou hunting camp
Camp for catching arctic char
Gravesite or graveyard
Hunting system
Cache
Mineral utilization • Pit or exposed mineral • Mine Cairn
Town

Village
Expedition base camp
Trapper station
Fishery station
Sheep farm
Trading post
Churchyard
Missionary station
Wintering camp
Fox farm
Recent camp site
Train-oil production
Norse farm
Isolated norse building
Isolated norse structure
Other
Indeterminable structure

12.8.5 Archaeological sensitivity assessment

General assessment
Most of the coastal Inuit settlements were established close to the sea and just above the present-day high water line.

Because of the sinking of the land and/or the rising of the sea, many sites may today lie very close to – or even below – the current high water line. These will therefore be particularly sensitive in the event of an oil spill:

- Directly, because contamination will in several ways mean a deterioration of the scientific documentation value of the cultural deposits:
  - the preservation conditions for organic material will become considerably poorer
  - the possibility of conducting analyses and scientific dating will be rendered impossible.
- Indirectly, because oil spill response measures or other land based actions would be difficult to implement without causing substantial physical damage to the coastal ruins and culture layers.

Many of the registered cultural remains are very difficult to recognize in the terrain, even for the trained eye. The sensitivity assessment of the archaeological sites must therefore only be regarded as a guideline. It is assumed that in the event of a spill, archaeological expertise will be involved in the planning of the response measures and in the practical implementation of the response plans.

The assessment of sensitivity is based both on factual knowledge of the relevant local cultural history of the region and on qualified opinion. Since the atlas covers all the known coastal sites, these are all – in principle – at risk in the event of land based activities on the coasts in connection with an oil spill.

Criteria for the assessment
The criteria applied are in principle the same as were used for the sensitivity assessment of the antiquities in the five Oil Spill Sensitivity Atlases covering entire West Greenland (Mosbech et al. 2000, 2004, Stjernholm et al. 2011, Clausen et al. 2012, 2016). The differences lie on the one hand in a more rig-

orous linguistic approach to the criteria and on the other in the transfer of all "coastal sites on which there is at present no more detailed information" from Group 1 to Group 2, until we have evidence that suggest a site should be in one of the other groups.

The sensitivity of the items of archaeological interest is expressed on an ascending scale from 1 to 3:

1) Sites considered not likely to be affected by an oil spill.

2) Sites considered likely to be directly affected by an oil spill.

3) Sites of special importance which require special status in the event of an oil spill or other activities in connection with raw material exploration and extraction.

Group 1 comprises sites situated more than 20 meters above sea level, or remains of features considered to be of very little importance as historical documentation, because they are very poorly preserved. In principle, the features in this group could be threatened by land based activities, for example in connection with oil spill response.

Group 2 comprises a) all coastal archaeological sites deemed to represent historical source value, b) sites considered to have recreational value or sightseeing value, and c) sites which can be localised, but about which there is at present no further information. In principle, the features in this group could be threatened by land based activities, for example in connection with oil spill response.

Group 3 meets the criteria for Group 2, items a) and b), but these sites also contain additional information, especially in scientific respects. The basis of this evaluation may be the result of archaeological investigations, historical source material or the like. The sightseeing value or the local population's use of the locality in question may also be included as criteria. In principle, the features in this group could be threatened by land based activities, for example in connection with oil spill response.

In the shoreline sensitivity index calculation, each segment is assigned a value for archaeological sites between 0 and 5 (AS), summarizing the oil spill sensitivity of the sites along the segment. AS was derived by attributing a score to each site based on its allocation in the three above mentioned sensitivity groups (0 to Group 1 sites, 3 to Group 2 sites and 5 to Group 3 sites). Then, for each segment, the scores of the sites along the segment were summed, and an AS value was assigned according to the following key:

Sum of site scores	< 1	AS = 0
Sum of site scores	1-9	AS = 1
Sum of site scores	10-25	AS = 3
Sum of site scores	> 25	AS = 5

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13 Appendix D: Place names

This appendix alphabetically lists all place names used on the shoreline sensitivity maps and the physical environment and logistics maps (Chapter 8). The table includes a reference to the maps on which the place names are shown, and the coordinates of the place names on the map.

Place name	Maps	Latitude	Longitude
A. Stelling Sund	7602E	76° 21.78’ N	020° 25.27’ W
A.P. Olsen Land	7451E	74° 38.83’ N	021° 53.94’ W
Aage Bertelsen Gl	8001E	80° 17.51’ N	019° 43.37’ W
Achton Friis Ø	7852E	78° 57.93’ N	018° 59.36’ W
Ad.S. Jensen Land	7601E, 7602E	76° 09.16’ N	020° 21.31’ W
Adam af Bremen Dal	7255E	72° 49.44’ N	022° 26.63’ W
Adolf Jensen Bjerge	7951E	79° 44.54’ N	019° 39.47’ W
Agassiz Dal	7301E	72° 55.10’ N	027° 40.96’ W
Aggersborg	7203E	72° 04.11’ N	023° 54.66’ W
Agnete Sø	7552E	75° 37.77’ N	020° 11.33’ W
Alabama	7504E	75° 17.60’ N	017° 44.72’ W
Albrecht Bugt	7452E, 7453E	74° 36.57’ N	019° 47.94’ W
Aletschhorn	7351E	73° 34.55’ N	027° 22.87’ W
Alpebjerg	7302E	73° 27.56’ N	025° 32.60’ W
Alpefjord	7201E	72° 15.17’ N	025° 25.03’ W
Ambolten	7802E	78° 18.33’ N	019° 12.79’ W
Amdrup Land	8053E	80° 45.37’ N	015° 45.96’ W
Andreas Lundager Ø	7602E, 7652E	76° 32.13’ N	020° 58.25’ W
Andrée Land	7351E, 7352E	73° 41.34’ N	025° 57.40’ W
Anita Ø	7254E, 7255E	72° 40.43’ N	022° 42.53’ W
Ankerbjergselv	7354E	73° 41.65’ N	022° 50.30’ W
Anna Bistrup Fjelde	7952E	79° 46.42’ N	018° 18.35’ W
Annekssøen	7701E	77° 18.91’ N	021° 07.71’ W
Antarctic Bugt	8054E	80° 54.93’ N	013° 58.93’ W
Antarctic Havn	7203E	72° 01.75’ N	023° 05.58’ W
Antarctic Sund	7302E	73° 07.03’ N	025° 34.06’ W
Antiklinalbugt	7252E	72° 48.30’ N	025° 09.12’ W
Arbenz Kolle	7252E	72° 45.26’ N	025° 24.04’ W
Arbino Bjerg	7251E	72° 47.15’ N	027° 12.19’ W
Archer Øer	7203E	72° 13.31’ N	023° 35.70’ W
Ardencaple Fjord	7502E	75° 20.43’ N	021° 01.81’ W
Arthur Dal	7301E	73° 02.69’ N	026° 58.23’ W
Arundel Ø	7356E	73° 44.99’ N	020° 08.43’ W
Arwidsson Ø	7202E	72° 23.51’ N	025° 07.87’ W
Assutsund	7702E, 7752E	77° 32.70’ N	020° 10.71’ W
Aucellabjerg	7402E	74° 30.58’ N	020° 23.64’ W
Aucellapasset	7402E, 7452E	74° 31.31’ N	020° 27.88’ W
Badlanddal	7355E	73° 35.14’ N	021° 48.35’ W
Bagatellerne	7952E	79° 38.81’ N	017° 54.49’ W
Bagdalen	8053E	80° 48.16’ N	017° 07.15’ W
Bagfjorden	7651E	76° 36.52’ N	022° 19.04’ W
Basaltkap	7402E	74° 08.27’ N	020° 25.54’ W
Basaltpynt	7204E, 7255E	72° 32.06’ N	022° 06.57’ W

Place name	Maps	Latitude	Longitude
Basaltsø	7255E	72° 43.41' N	022° 30.81' W
Basaltø	7402E	74° 20.84' N	020° 23.39' W
Baselbjerget	7452E	74° 51.76' N	020° 26.12' W
Bass Rock	7454E	74° 42.64' N	018° 10.66' W
Bastian Bugt	7452E	74° 56.08' N	020° 03.86' W
Bavnen	7451E	74° 48.60' N	021° 36.25' W
Begtrup Vig	7204E	72° 25.39' N	022° 17.72' W
Benjamin Dal	7302E	73° 21.49' N	025° 46.30' W
Berg Fjord	7653E	76° 34.18' N	018° 58.61' W
Bersærkerbræ	7202E	72° 09.97' N	024° 34.22' W
Berzelius Bjerg	7202E, 7252E	72° 27.90' N	025° 08.72' W
Bessel Fjord	7551E, 7552E	75° 58.59' N	020° 43.51' W
BesselFjord	7552E, 7602E	76° 02.08' N	020° 03.06' W
Betulahavn	7451E, 7501E	75° 00.96' N	022° 03.33' W
Bjørnegl	8052E	80° 37.08' N	018° 04.40' W
Bjørneø	7353E	73° 33.54' N	024° 39.95' W
Blindtarmen	7101E, 7951E	79° 47.28' N	019° 49.05' W
Bloch Nunatakker	7951E	79° 36.06' N	019° 18.13' W
Blokken	7353E	73° 48.02' N	024° 34.15' W
Blomsterbugt	7303E	73° 19.17' N	025° 21.71' W
Blosseville Bjerg	7401E	74° 15.01' N	022° 12.56' W
Blyklippen	7202E	72° 10.89' N	024° 09.97' W
Blyryggen	7203E	72° 08.07' N	023° 56.50' W
Blåbærdalen	7452E	74° 51.18' N	020° 56.59' W
Blæsebræ	7801E	78° 13.08' N	021° 27.91' W
Bontekoe Ø	7306E	73° 07.06' N	021° 20.61' W
Borgfjorden	7651E	76° 36.57' N	021° 46.65' W
Borggletscher	7301E	73° 03.57' N	026° 40.36' W
Borgøen	7305E	73° 07.67' N	022° 33.77' W
Botanikerbugt	7303E	73° 01.70' N	024° 34.69' W
Bourbon Ø	7852E	78° 46.60' N	018° 14.14' W
Boxøerne	7801E	78° 04.84' N	020° 09.67' W
Bramsen Bjerg	7401E	74° 16.98' N	021° 32.05' W
Bratskæret	7652E	76° 38.69' N	020° 33.52' W
Brede Spærreg- letscher	8001E, 8002E	80° 28.43' N	019° 02.57' W
Bredebræ	7651E	76° 37.98' N	022° 27.65' W
Bredefjord	7551E	75° 34.83' N	021° 45.42' W
Bredgletscher	7204E	72° 18.92' N	022° 43.39' W
Broch Øer	7305E	73° 03.08' N	022° 31.77' W
Brogetdal	7353E	73° 45.61' N	024° 48.33' W
Brunknøs	7501E	75° 16.94' N	022° 05.35' W
Bræfjorden	7601E	76° 25.98' N	022° 12.34' W
Bræøerne	7651E	76° 44.61' N	022° 04.81' W
Brønlunds Grav	7901E	79° 08.36' N	018° 57.20' W
C. Drøst Ø	7751E	77° 36.51' N	020° 30.79' W
C. J. Ring Fjelde	8002E	80° 16.34' N	018° 51.25' W
C. Silfverberg Ø	7752E	77° 35.11' N	020° 11.99' W
C.F. Mourier Fjord	7702E	77° 20.67' N	020° 12.45' W
C.H. Ostenfeldland	7501E, 7502E	75° 10.87' N	020° 55.64' W

Place name	Maps	Latitude	Longitude
Caledoniaø	7201E	72° 25.00’ N	025° 56.09’ W
Cambridge Bugt	7255E	72° 48.68’ N	022° 01.63’ W
Campbell Sund	7101E	71° 18.00’ N	021° 43.40’ W
Canongletscher	7501E	75° 27.60’ N	022° 38.24’ W
Carl Heger Ø	7601E	76° 29.27’ N	021° 24.47’ W
Carlshavn	7356E	73° 45.45’ N	020° 22.65’ W
Celsius Bjerg	7304E	73° 09.10’ N	023° 16.12’ W
Clark Bjerg	7403E	74° 22.66’ N	019° 14.83’ W
Claudius Clavus Bjerge	7151E	71° 53.37’ N	023° 11.67’ W
Clavering Ø	7401E, 7402E	74° 15.73’ N	020° 45.52’ W
Claveringstrædet	7403E, 7453E	74° 31.53’ N	019° 04.21’ W
Copeland Fjord	7401E	74° 14.78’ N	022° 01.68’ W
Craig Øer	7204E	72° 23.09’ N	022° 23.37’ W
Dahl Skær	7402E	74° 09.18’ N	020° 13.98’ W
Daneborg	7402E	74° 18.99’ N	020° 09.07’ W
Daniel Bruun Land	7651E	76° 47.00’ N	021° 37.91’ W
Danmarkshavn	7653E	76° 46.07’ N	018° 32.99’ W
Dannevirke	7203E	72° 11.72’ N	023° 48.02’ W
Danske Øer	7802E	78° 10.44’ N	018° 21.71’ W
Dansketinden	7202E	72° 07.20’ N	024° 49.22’ W
Davy Sund	7152E, 7204E	72° 01.36’ N	022° 20.44’ W
Deltadal	7203E	72° 06.30’ N	023° 53.69’ W
Depotnæsset	7752E, 7753E	77° 34.09’ N	018° 48.69’ W
Depotskæret	7553E, 7603E	76° 01.53’ N	019° 41.12’ W
Dickson Fjord	7251E	72° 49.01’ N	027° 09.03’ W
Didrik Pining Bjerge	7151E	71° 40.38’ N	023° 26.56’ W
Dijmphna Sund	7951E	80° 00.36’ N	019° 30.53’ W
Djævlekløften	7351E	73° 32.16’ N	026° 24.68’ W
Djævleøen	7602E	76° 23.57’ N	020° 23.26’ W
Dolomitpynt	7353E	73° 32.18’ N	024° 37.68’ W
Dombjerg	7452E	74° 34.25’ N	020° 52.52’ W
Dove Bugt	7652E, 7653E	76° 37.02’ N	019° 20.73’ W
Dronning Augusta Dal	7403E	74° 26.01’ N	019° 28.00’ W
Dronning Margrethe II Land	7502E, 7552E	75° 36.61’ N	020° 53.11’ W
Drømmebugten	7204E	72° 11.25’ N	022° 35.66’ W
Dusén Fjord	7303E, 7304E	73° 14.05’ N	023° 57.73’ W
Dværgfjorden	8054E	80° 45.25’ N	014° 08.59’ W
Dybendal	7354E	73° 47.97’ N	022° 44.39’ W
Dødemandsbugten	7402E	74° 05.95’ N	020° 53.10’ W
Edward Ø	7651E, 7652E	76° 36.14’ N	021° 02.93’ W
Ehrenberg Fjeld	7401E	74° 26.50’ N	021° 57.70’ W
Eigil Elv	7401E	74° 19.75’ N	021° 40.06’ W
Eigtvedsund	7552E	75° 56.75’ N	020° 07.89’ W
Ejnar Mikkelsen Gletscher	7551E	75° 40.04’ N	022° 26.29’ W
Eleonore Bugt	7302E, 7303E	73° 25.15’ N	025° 24.94’ W
Ella Ø	7252E, 7253E	72° 50.46’ N	024° 58.65’ W
Ellemandsbjerge	7204E	72° 28.16’ N	022° 11.00’ W
Endeløs	7352E	73° 42.57’ N	025° 37.89’ W

Place name	Maps	Latitude	Longitude
Engdalen	7301E	73° 12.90’ N	027° 16.42’ W
Eremitdal	7352E	73° 48.76’ N	026° 11.78’ W
Eskimonæs	7402E, 8003E	80° 26.57’ N	015° 37.81’ W
Falskebugt	7453E	74° 33.37’ N	019° 22.88’ W
Fangersund	7601E	76° 16.44’ N	021° 17.97’ W
Favre Bjerg	7354E	73° 56.42’ N	023° 13.28’ W
Finsch Øer	7356E, 7402E	74° 02.61’ N	021° 09.23’ W
Firndalen	8002E	80° 24.00’ N	017° 50.66’ W
Fladebugt	7403E, 7702E	77° 14.12’ N	019° 13.21’ W
Fladedal	7303E	73° 07.33’ N	024° 35.97’ W
Flakkebjerge	7203E	72° 21.35’ N	023° 06.47’ W
Fleming Fjord	7151E	71° 44.41’ N	022° 50.75’ W
Fligely Fjord	7452E	74° 52.02’ N	020° 38.97’ W
Flyversø	7751E, 7752E	77° 45.71’ N	020° 26.05’ W
Forsblad Fjord	7201E	72° 24.75’ N	025° 38.50’ W
Foster Bugt	7306E	73° 13.87’ N	021° 22.38’ W
Franske Øer	7852E	78° 40.33’ N	017° 54.50’ W
Freeden Bugt	7454E, 7504E	75° 00.64’ N	017° 57.17’ W
Freycinet Bjerg	7255E	72° 46.70’ N	022° 17.95’ W
Fritz Johansen Ø	7601E, 7602E	76° 19.18’ N	021° 14.19’ W
Frosnebugt	7504E	75° 06.53’ N	017° 42.89’ W
Frænkelland	7301E	73° 16.15’ N	027° 05.73’ W
Fulach Gl	7251E	72° 54.98’ N	027° 00.38’ W
Furesø	7201E	72° 01.55’ N	026° 14.45’ W
Fyrretyvekilometer-næsset	7653E	76° 56.23’ N	018° 23.27’ W
Fældestrand	8003E	80° 19.79’ N	015° 59.89’ W
Gael Hamke Bugt	7356E, 7402E	74° 05.01’ N	020° 25.52’ W
Gamle Jim Øer	7901E	79° 22.55’ N	019° 10.67’ W
Gamma Ø	7752E	77° 48.91’ N	019° 38.87’ W
Gauss Halvø	7354E	73° 35.67’ N	023° 28.05’ W
Gefion Havn	7602E	76° 23.91’ N	020° 53.22’ W
Gemmedal	7351E	73° 39.83’ N	027° 02.92’ W
Geographical Society Ø	7253E, 7254E, 7255E	72° 51.82’ N	022° 22.24’ W
Geologfjord	7352E	73° 50.96’ N	025° 34.17’ W
Germania Havn	7453E	74° 33.20’ N	018° 50.91’ W
Germania Land	7653E, 7702E, 7703E	77° 04.18’ N	018° 31.00’ W
Giesecke Bjerg	7401E	74° 30.20’ N	021° 44.11’ W
Giesecke Bjerge	7305E	73° 23.63’ N	022° 10.19’ W
Glommen	7356E	73° 33.19’ N	020° 47.08’ W
Gnejsdal	7351E	73° 37.94’ N	026° 23.31’ W
Gnejsnæs	7851E	79° 01.40’ N	020° 56.17’ W
Godfred Hansen Ø	7602E	76° 27.62’ N	020° 54.86’ W
Godthåb Golf	7401E	74° 07.34’ N	021° 51.33’ W
Granatdal	7401E	74° 11.06’ N	021° 26.31’ W
Granatskæret	7652E	76° 35.42’ N	020° 34.98’ W
Grandjean Fjord	7451E, 7501E, 7502E	75° 05.18’ N	020° 58.45’ W
Grantafjord	7401E	74° 18.53’ N	022° 12.43’ W
Grejsdalen	7352E	73° 35.11’ N	025° 44.30’ W

Place name	Maps	Latitude	Longitude
Grossglockner	7451E	74° 42.79' N	022° 23.79' W
Gråfjeld	7951E	79° 55.75' N	020° 25.94' W
Grønnebjerge	7254E	72° 40.59' N	023° 26.84' W
Grønnedal	7402E	74° 13.97' N	020° 31.36' W
Gullygletscher	7201E, 7202E	72° 06.19' N	025° 17.33' W
Gulmann Sund	7356E	73° 53.82' N	020° 14.44' W
Gunnar Andersson Land	7303E, 7304E	73° 17.65' N	023° 47.31' W
Gunner Andersen Sø	7602E	76° 07.10' N	020° 13.05' W
Gåsebugt	7204E	72° 12.25' N	022° 07.84' W
Gåseøen	7254E	72° 48.34' N	022° 58.72' W
H.G. Backlund Fjord	7702E	77° 29.47' N	020° 16.41' W
Hagen Ø	7752E	77° 57.55' N	019° 45.67' W
Hallebjergene	7401E	74° 12.69' N	021° 48.45' W
Hammar Ø	7253E	72° 32.81' N	024° 33.41' W
Hammeren	7303E, 7802E	78° 17.74' N	019° 33.33' W
Hansa Bugt	7453E	74° 37.30' N	018° 47.87' W
Hanseeraq Fjord	8003E	80° 18.14' N	016° 18.69' W
Hansen Havn	7401E	74° 09.79' N	022° 19.29' W
Harefjeld	8001E	80° 15.83' N	020° 33.30' W
Hareskindspynt	8001E, 8051E	80° 33.50' N	019° 57.18' W
Hasdal	7252E	72° 40.26' N	025° 19.99' W
Hawley Ø	7253E	72° 31.95' N	024° 15.43' W
Haystack	7553E	75° 44.10' N	019° 16.60' W
Heimland Havn	7453E	74° 33.58' N	019° 06.25' W
Hekla Sund	8001E	80° 13.75' N	019° 12.01' W
Hellefjord	7651E, 7652E	76° 51.19' N	021° 02.75' W
Henrik Kröyer Holme	8054E	80° 39.88' N	013° 57.97' W
Herschell Bjerg	7403E	74° 17.22' N	019° 42.73' W
Hertugen af Orléans Land	7751E	77° 46.75' N	022° 02.27' W
Hjelmbjergene	7304E, 7305E	73° 21.33' N	023° 02.18' W
Hjørnegletscher	8051E, 8052E	80° 41.50' N	019° 22.09' W
Hochstetter Forland	7503E	75° 18.93' N	019° 39.43' W
Hochstetterbugten	7453E	74° 49.63' N	019° 03.17' W
Hohe Kugel	7452E	74° 42.21' N	020° 53.15' W
Hold With Hope	7356E	73° 43.48' N	020° 47.83' W
Holland Ø	7356E	73° 35.69' N	020° 15.85' W
Holm Bjerg	8001E	80° 05.56' N	021° 04.29' W
Holm Bugt	7202E, 7203E, 7253E	72° 30.67' N	024° 09.03' W
Holm Land	8002E, 8003E	80° 21.40' N	016° 32.79' W
Home Forland	7356E	73° 49.80' N	020° 30.69' W
Hovedet	7203E	72° 14.31' N	023° 43.38' W
Hovgaard Ø	7951E, 7952E, 8002E	80° 03.95' N	017° 44.06' W
Hudson Land	7354E	73° 53.05' N	023° 13.83' W
Hvalros Ø	7403E, 7453E	74° 30.52' N	018° 51.54' W
Hvalrosodden	7652E	76° 53.86' N	020° 02.69' W
Hvide Støvhorn	7251E	72° 47.82' N	026° 54.42' W
Hvidevæggen	7302E	73° 17.49' N	025° 38.62' W
Højedal	7201E	72° 24.95' N	026° 27.15' W

Place name	Maps	Latitude	Longitude
Immikkeerterajii / Menander Øer	7202E	72° 22.86’ N	024° 19.13’ W
Immikkeertikajiit Martik	7152E	71° 34.44’ N	021° 43.82’ W
Inderbredningen	7601E	76° 18.91’ N	021° 29.24’ W
Inderfjord	7101E	71° 15.77’ N	021° 52.01’ W
Ingolf Fjord	8002E, 8052E, 8053E	80° 37.88’ N	016° 47.58’ W
Isfjeldsund	7601E, 7651E	76° 32.22’ N	021° 25.78’ W
Isfjord	7301E, 7351E	73° 28.49’ N	027° 15.58’ W
Iskap	8102E	81° 07.25’ N	012° 25.97’ W
Ismarken	7251E	72° 26.80’ N	026° 49.69’ W
Ispassagen	7301E, 7302E	73° 04.29’ N	026° 34.16’ W
Jackson Ø	7356E	73° 55.07’ N	020° 08.12’ W
Japetus Bjerg	7204E	72° 14.02’ N	022° 45.49’ W
Jeannet Bjerg	7252E, 7253E	72° 40.05’ N	025° 05.09’ W
Jelsdal	7252E	72° 32.59’ N	025° 35.67’ W
Johnstrup Bjerg	7303E	73° 01.06’ N	025° 12.93’ W
Joinville Ø	7702E	77° 29.59’ N	019° 51.62’ W
Jomfru Tidsfordriv Fjord	7901E	79° 12.98’ N	019° 41.79’ W
Jordanhill	7401E	74° 07.59’ N	022° 23.12’ W
Julut Dal	7303E	73° 05.91’ N	024° 25.76’ W
Junctiondal	7302E	73° 16.16’ N	025° 59.22’ W
Jägmästarens Ø	7202E	72° 27.47’ N	024° 51.84’ W
Jægerdal	7203E	72° 06.22’ N	023° 38.15’ W
Jægersund	7602E	76° 18.43’ N	020° 37.77’ W
Jøkelbugten	7851E	78° 35.79’ N	020° 17.80’ W
Kalvedal	7351E	73° 32.24’ N	026° 44.17’ W
Kalven	7356E, 7652E	76° 54.49’ N	020° 27.76’ W
Kangerterajitta Ilinnera	7101E	71° 06.63’ N	022° 35.07’ W
Kangerterajitta Itterterilaa / Carlsberg Fjord	7101E	71° 29.42’ N	022° 20.90’ W
Kangertivit Anginersaat	7101E	71° 04.64’ N	021° 59.15’ W
Kap Copeland	7503E	75° 20.06’ N	019° 00.84’ W
Kap Adolf Jensen	7951E	79° 40.27’ N	019° 56.26’ W
Kap Alf Trolle	7553E	75° 55.10’ N	018° 27.15’ W
Kap Alfred	7252E	72° 50.55’ N	025° 30.99’ W
Kap Allen	7152E	71° 40.98’ N	021° 56.14’ W
Kap Amundsen	7852E	78° 55.95’ N	017° 55.64’ W
Kap Amélie	7702E	77° 30.51’ N	019° 07.32’ W
Kap Anna Bistrup	7952E	79° 40.49’ N	018° 00.01’ W
Kap Arendts	7553E	75° 59.46’ N	018° 39.02’ W
Kap Arnakke	7403E	74° 11.16’ N	020° 00.67’ W
Kap Bayard	7251E	72° 46.33’ N	026° 29.27’ W
Kap Beijer	7251E, 7252E	72° 46.00’ N	026° 14.22’ W
Kap Bennet	7306E	73° 23.26’ N	021° 29.86’ W
Kap Bergendahl	7852E	78° 37.65’ N	018° 14.30’ W
Kap Berlin	7453E	74° 41.39’ N	019° 21.81’ W
Kap Bernhoft	7951E	79° 40.79’ N	020° 32.25’ W

Place name	Maps	Latitude	Longitude
Kap Beurmann	7553E, 7603E	76° 02.89’ N	019° 39.23’ W
Kap Biot	7152E	71° 54.69’ N	022° 27.28’ W
Kap Bismarck	7653E	76° 41.94’ N	018° 22.07’ W
Kap Borlase Warren	7403E	74° 15.55’ N	019° 14.81’ W
Kap Bornholm	7653E	76° 44.48’ N	018° 50.13’ W
Kap Bourbon	7852E	78° 43.66’ N	018° 00.12’ W
Kap Bremen	7452E	74° 58.90’ N	019° 52.04’ W
Kap Broer Ruys	7307E, 7356E	73° 32.31’ N	020° 16.32’ W
Kap Brown	7152E	71° 47.95’ N	022° 21.74’ W
Kap Buch	7502E	75° 08.15’ N	020° 25.08’ W
Kap Buchenau	7453E	74° 43.94’ N	018° 37.80’ W
Kap Buddicom	7101E	71° 04.59’ N	021° 35.62’ W
Kap Børgen	7504E	75° 26.07’ N	017° 57.61’ W
Kap Canis Major	8002E, 8052E	80° 32.93’ N	017° 57.08’ W
Kap Carl Ritter	7603E	76° 07.48’ N	019° 37.17’ W
Kap Christian	7653E	76° 35.86’ N	018° 31.97’ W
Kap Daly	7501E, 7502E	75° 27.14’ N	021° 19.12’ W
Kap David Gray	7453E, 7454E	74° 56.97’ N	018° 25.66’ W
Kap Desbrowe	7454E	74° 38.02’ N	018° 12.89’ W
Kap Dufva	7253E	72° 41.24’ N	024° 38.02’ W
Kap Ehrenberg	7401E	74° 26.51’ N	021° 40.71’ W
Kap Elisabeth	7253E	72° 54.70’ N	024° 43.29’ W
Kap Ellen	7701E, 7702E	77° 22.50’ N	020° 28.53’ W
Kap Eva	7401E	74° 09.83’ N	022° 08.74’ W
Kap Fletcher	7152E	71° 37.17’ N	022° 00.80’ W
Kap Franklin	7305E	73° 14.87’ N	022° 05.49’ W
Kap Gladstone	7101E, 7152E	71° 31.79’ N	021° 54.99’ W
Kap Godfred Hansen	7101E	71° 26.70’ N	021° 36.37’ W
Kap Graah	7304E	73° 14.74’ N	023° 08.26’ W
Kap Greville	7101E, 7152E	71° 30.46’ N	022° 06.18’ W
Kap H.N. Andersen	7952E	79° 57.37’ N	017° 03.38’ W
Kap Hamburg	7452E	74° 41.94’ N	019° 58.32’ W
Kap Harry	7253E	72° 46.21’ N	024° 48.05’ W
Kap Hartlaub	7454E	74° 41.88’ N	018° 13.03’ W
Kap Hedlund	7252E	72° 43.85’ N	026° 06.02’ W
Kap Helgoland	7653E	76° 43.83’ N	019° 13.23’ W
Kap Hendil	7351E	73° 28.98’ N	027° 23.52’ W
Kap Hewitt	7101E	71° 24.52’ N	021° 35.56’ W
Kap Humboldt	7304E, 7305E	73° 04.98’ N	022° 57.53’ W
Kap Ingrid	7752E	77° 37.57’ N	020° 17.11’ W
Kap Isabella	7752E	77° 50.83’ N	019° 10.39’ W
Kap James	7356E	73° 52.66’ N	020° 19.09’ W
Kap Jarmer	7651E	76° 38.56’ N	022° 09.12’ W
Kap Jones	7101E	71° 07.16’ N	021° 38.71’ W
Kap Jungersen	8053E	80° 35.79’ N	015° 48.75’ W
Kap Klinkefues	7502E	75° 16.80’ N	020° 33.08’ W
Kap Knut Søderstrøm	7251E	72° 43.50’ N	026° 24.53’ W
Kap Koefoed	7802E	78° 29.34’ N	018° 14.85’ W
Kap Kolthoff	7353E	73° 43.58’ N	024° 07.62’ W
Kap Kraus	7356E	73° 46.94’ N	020° 13.47’ W

Place name	Maps	Latitude	Longitude
Kap Lagerberg	7253E	72° 31.44’ N	024° 45.77’ W
Kap Li	7702E	77° 21.36’ N	019° 44.80’ W
Kap Louise	7752E	77° 42.78’ N	019° 04.07’ W
Kap Mackenzie	7255E	72° 53.96’ N	021° 47.27’ W
Kap Marie Dijmphna	8002E	80° 05.32’ N	018° 12.73’ W
Kap Marie Valdemar	7703E	77° 15.46’ N	018° 10.10’ W
Kap Mary	7402E, 7403E	74° 09.36’ N	020° 06.48’ W
Kap Maurer	7453E	74° 51.50’ N	019° 38.21’ W
Kap McClintock	7255E	72° 40.75’ N	021° 49.23’ W
Kap Mohn	7302E	73° 11.71’ N	025° 49.08’ W
Kap Montpensier	7753E	77° 51.84’ N	017° 26.89’ W
Kap Moorsom	7204E	72° 10.58’ N	022° 00.88’ W
Kap Mosle	7452E, 7502E	75° 02.82’ N	020° 19.86’ W
Kap Mæchel	7202E	72° 24.68’ N	025° 12.40’ W
Kap Mérite	7802E	78° 14.50’ N	018° 42.41’ W
Kap Nansen	7902E	79° 11.43’ N	017° 52.83’ W
Kap Negri	7502E	75° 03.39’ N	020° 32.84’ W
Kap Neumayer	7453E	74° 41.38’ N	018° 47.58’ W
Kap Niels	7601E	76° 23.03’ N	021° 30.97’ W
Kap Oetker	7401E	74° 15.26’ N	021° 55.13’ W
Kap Oswald Heer	7553E	75° 33.33’ N	019° 15.39’ W
Kap Ovibos	7353E	73° 32.63’ N	024° 19.00’ W
Kap Palander	7255E	72° 37.61’ N	022° 24.45’ W
Kap Pansch	7504E	75° 09.99’ N	017° 19.16’ W
Kap Parry	7204E	72° 23.66’ N	021° 52.88’ W
Kap Payer	7302E	73° 11.76’ N	026° 27.71’ W
Kap Peschel	7602E	76° 15.34’ N	019° 54.26’ W
Kap Petersen	7303E	73° 23.67’ N	025° 12.63’ W
Kap Philip Broke	7454E	74° 55.09’ N	017° 31.97’ W
Kap Philippe	7753E	77° 35.74’ N	017° 36.15’ W
Kap Povl	8002E	80° 04.30’ N	017° 16.21’ W
Kap Reinhardt	7502E	75° 16.66’ N	020° 47.99’ W
Kap Rink	7503E	75° 07.29’ N	019° 33.43’ W
Kap Robert	7251E	72° 50.61’ N	026° 39.57’ W
Kap Ruth	7401E	74° 06.16’ N	022° 06.69’ W
Kap Récamier	7702E	77° 23.49’ N	019° 49.07’ W
Kap Schumacher	7452E	74° 40.26’ N	019° 59.93’ W
Kap Seaforth	7151E	71° 48.83’ N	022° 50.54’ W
Kap Simpson	7204E	72° 07.57’ N	022° 07.75’ W
Kap Skt. Jacques	7753E	77° 36.61’ N	018° 18.23’ W
Kap Smith	7101E	71° 14.67’ N	021° 35.11’ W
Kap Steensby	7653E	76° 53.83’ N	018° 16.40’ W
Kap Stop	7651E	76° 37.38’ N	021° 40.16’ W
Kap Stosch	7401E	74° 04.12’ N	021° 43.72’ W
Kap Stufenberg	7453E, 7454E	74° 36.44’ N	018° 28.00’ W
Kap Sussi	7504E	75° 19.24’ N	017° 42.86’ W
Kap Syenit	7203E	72° 03.61’ N	023° 03.25’ W
Kap Tattershall	7101E	71° 11.77’ N	021° 35.00’ W
Kap Tramnitz	7453E, 7503E	75° 01.10’ N	019° 00.51’ W
Kap Tyrrell	7152E	71° 46.00’ N	022° 07.46’ W

Place name	Maps	Latitude	Longitude
Kap Ullidtz	7601E	76° 15.56’ N	021° 38.11’ W
Kap Wardlaw	7152E	71° 44.27’ N	021° 48.54’ W
Kap Weber	7303E, 7353E	73° 29.92’ N	024° 37.07’ W
Kap Wijkander	7305E	73° 09.58’ N	022° 46.84’ W
Kap Wynn	7403E	74° 28.71’ N	018° 55.21’ W
Kap Young	7204E	72° 15.65’ N	021° 58.25’ W
Kap Zachariae	7851E	78° 59.07’ N	020° 17.32’ W
Karl Jakobsen Bugt	7303E	73° 02.85’ N	024° 50.36’ W
Karl Pynt	7502E	75° 14.95’ N	020° 05.82’ W
Karupelv	7254E	72° 32.25’ N	023° 46.86’ W
Kavalerfjorden	7601E, 7651E	76° 32.38’ N	021° 59.44’ W
Kejser Franz Joseph Fjord	7301E, 7302E, 7303E, 7304E	73° 23.94’ N	023° 35.57’ W
Kempe Fjord	7252E	72° 45.76’ N	025° 58.06’ W
Kilen	8101E	81° 09.36’ N	013° 15.99’ W
Kirschdalen	7253E	72° 33.83’ N	024° 54.63’ W
Kista Ø	7254E	72° 44.76’ N	022° 55.20’ W
Kjerulf Fjord	7301E	73° 01.94’ N	027° 22.67’ W
Klitdal	7101E	71° 13.90’ N	022° 28.59’ W
Klosterbjerge	7201E	72° 15.34’ N	025° 57.63’ W
Klægbugt	7751E	77° 36.97’ N	020° 41.86’ W
Knasten	7355E	73° 43.09’ N	021° 38.96’ W
Knebel Vig	7204E	72° 17.22’ N	022° 17.21’ W
Knudshoved	7356E	73° 44.58’ N	020° 30.71’ W
Knækelven	7301E	73° 10.13’ N	027° 36.59’ W
Knæksø	7551E	75° 51.28’ N	022° 10.34’ W
Knøsen	7752E	77° 52.96’ N	019° 24.46’ W
Koefoed-Hansen Bræ	7701E, 7751E	77° 32.01’ N	021° 52.63’ W
Kong Oscar Fjord	7203E	72° 17.85’ N	023° 32.89’ W
Kongsholmen	7702E	77° 25.73’ N	020° 01.74’ W
Kronprins Christian Land	8101E	81° 24.43’ N	014° 27.37’ W
Kuhn Ø	7452E	74° 50.87’ N	020° 10.60’ W
Kulhus	7502E, 7503E	75° 12.07’ N	019° 56.92’ W
Kødgravene	8054E	80° 49.30’ N	014° 12.34’ W
Lacroix Bjerge	7301E, 7351E	73° 27.29’ N	026° 54.87’ W
Lady Øer	7752E	78° 00.23’ N	020° 13.32’ W
Lagfjeld	7353E	73° 37.32’ N	023° 54.76’ W
Lakseelv	7353E	73° 43.31’ N	024° 34.75’ W
Lambert Land	7901E	79° 19.72’ N	020° 10.83’ W
Langeholmen	7702E	77° 27.44’ N	020° 01.87’ W
Langsø	7552E	75° 48.95’ N	020° 49.48’ W
Langåren	7305E	73° 04.00’ N	022° 37.51’ W
Lauge Koch Vig	7502E	75° 16.71’ N	020° 03.87’ W
Lemmingbugt	7253E	72° 51.80’ N	024° 48.84’ W
Lerbugt	7402E	74° 26.13’ N	020° 53.30’ W
Licht Ø	7602E	76° 27.46’ N	020° 26.73’ W
Lille Koldewey	7653E	76° 37.21’ N	018° 32.05’ W
Lille Pendulum	7453E, 7454E	74° 40.11’ N	018° 27.48’ W
Lille Snenæs	7652E	76° 54.37’ N	019° 50.83’ W

Place name	Maps	Latitude	Longitude
Lille Sødal	7402E	74° 20.27’ N	020° 09.60’ W
Lillebælt	7653E	76° 40.67’ N	018° 47.52’ W
Lindeman Fjord	7452E	74° 39.12’ N	020° 50.63’ W
Lindhardt Ø	7601E, 7651E	76° 31.55’ N	022° 09.75’ W
Liverpool Land	7101E	71° 14.50’ N	022° 08.61’ W
Loch Fyne	7355E	73° 49.47’ N	021° 48.50’ W
Louise Gl	7351E	73° 32.66’ N	027° 25.04’ W
Lugano Bjerg	7251E	72° 47.66’ N	027° 26.75’ W
Lumskebugten	7252E	72° 53.01’ N	025° 38.13’ W
Lyell Land	7252E	72° 37.63’ N	025° 36.95’ W
Lynn Ø	8001E, 8002E	80° 07.81’ N	018° 53.41’ W
Lægervallen	7901E	79° 14.94’ N	018° 53.10’ W
Læsø	7255E	72° 35.52’ N	022° 17.23’ W
Mackenzie Bugt	7306E	73° 26.26’ N	021° 27.31’ W
Malia Havn	7255E	72° 40.91’ N	022° 36.74’ W
Mallemukfjeld	8003E	80° 09.79’ N	016° 30.70’ W
Mallemukgletscher	8003E	80° 14.40’ N	016° 45.72’ W
Marabugt	7253E	72° 49.02’ N	024° 48.69’ W
Margeries Dal	7303E	73° 08.33’ N	024° 59.19’ W
Margrethedal	7305E	73° 19.62’ N	022° 36.43’ W
Maria Ø	7253E	72° 57.21’ N	024° 53.11’ W
Marmorvigen	8001E	80° 05.59’ N	019° 55.50’ W
Maroussia	7653E	76° 39.90’ N	018° 29.73’ W
Melch Dal	7251E	72° 54.66’ N	026° 49.54’ W
Mellemfortet	7802E	78° 25.08’ N	019° 36.94’ W
Mellemland	7801E	78° 21.01’ N	021° 20.32’ W
Mesters Vig	7203E	72° 08.56’ N	023° 45.96’ W
Mestersvig	7203E	72° 14.88’ N	024° 00.28’ W
Micardbu	7703E	77° 07.97’ N	018° 05.78’ W
Midterholmen	7652E	76° 44.63’ N	020° 51.25’ W
Minger Bjerg	7301E	72° 58.35’ N	027° 00.02’ W
Misanthropen Fjelde	7901E	79° 11.50’ N	020° 15.22’ W
Mobu Dal	7354E	73° 37.86’ N	023° 35.42’ W
Mols Bjerge	7204E, 7255E	72° 31.19’ N	022° 35.54’ W
Moskusokseelv	7402E	74° 10.34’ N	020° 38.24’ W
Moskusoksefjeld	7353E	73° 37.67’ N	024° 43.12’ W
Moskusoksefjord	7354E	73° 41.05’ N	023° 24.30’ W
Moskusokseland	7354E	73° 49.09’ N	023° 29.44’ W
Mountnorris Fjord	7204E	72° 21.50’ N	022° 07.37’ W
Murchison Bjerge	7202E	72° 17.86’ N	025° 09.52’ W
Murgangssø	7251E, 7302E	72° 57.08’ N	026° 21.61’ W
Myggbukta	7306E	73° 29.47’ N	021° 39.15’ W
Mågefjeldet	8003E	80° 25.75’ N	016° 04.60’ W
Mågegletscher	8003E	80° 25.15’ N	016° 28.46’ W
Mågenæs	7451E	74° 58.24’ N	021° 42.60’ W
Målebjerg	7351E	73° 35.04’ N	027° 06.86’ W
Månedal	7254E	72° 42.92’ N	023° 13.56’ W
Månevig	8001E, 8051E	80° 32.53’ N	020° 29.74’ W
Mønstedhus	7553E	75° 43.66’ N	019° 40.01’ W
Mørkefjord	7651E, 7652E	76° 56.22’ N	020° 37.79’ W

Place name	Maps	Latitude	Longitude
Nanok Ø	7602E	76° 20.45’ N	020° 31.10’ W
Nanortalikdal	7302E	73° 01.53’ N	025° 47.27’ W
Narhvalsund	7252E, 7253E	72° 44.41’ N	024° 56.03’ W
Nathorst Fjord	7152E	71° 41.34’ N	022° 25.89’ W
Neild Bugt	7101E	71° 22.33’ N	021° 46.86’ W
NielsHansen Næs	7502E, 7503E	75° 07.90’ N	019° 55.84’ W
Niggli Spids	7301E, 7302E	73° 15.94’ N	026° 36.15’ W
Nioghalvfjerdsfjorden	7901E, 7951E	79° 32.86’ N	019° 49.57’ W
Noa Dal	7303E	73° 19.23’ N	025° 06.81’ W
Nordenskiöld Bugt	7504E	75° 14.61’ N	017° 55.90’ W
Nordenskiöld Ø	7255E	72° 39.34’ N	022° 32.84’ W
Nordfjord	7353E	73° 40.92’ N	024° 17.51’ W
Nordhoek Bjerg	7355E	73° 49.39’ N	022° 08.80’ W
Nordkap	7852E	78° 53.93’ N	019° 03.70’ W
Nordmarken	7751E	77° 46.11’ N	020° 55.80’ W
Nordostrundingen	8102E	81° 19.46’ N	011° 45.41’ W
Nordredepot Ø	7801E	78° 12.86’ N	020° 17.44’ W
Noret	7203E	72° 13.10’ N	023° 49.61’ W
Norske Øer	7852E, 7902E	79° 06.09’ N	017° 23.49’ W
Norsketinden	7202E	72° 09.13’ N	024° 54.62’ W
Nunataami Elv	8051E	80° 41.69’ N	020° 29.68’ W
Nyhavn	7203E	72° 16.09’ N	023° 51.15’ W
Næsen	8001E	80° 31.85’ N	020° 06.18’ W
Nøglefjeldet	8051E	80° 36.12’ N	020° 56.96’ W
Nørlund Alper	7354E, 7355E, 7401E	74° 01.82’ N	022° 37.38’ W
Nørlund Land	7551E	75° 41.01’ N	021° 43.25’ W
Nørre	7801E	78° 23.20’ N	021° 19.21’ W
Nørre Orienteringsø	7653E	76° 49.85’ N	019° 31.84’ W
Nørrefjord	7101E	71° 05.88’ N	022° 06.73’ W
Nørreland	7851E	78° 41.16’ N	021° 14.41’ W
Nørresund	7602E, 7652E	76° 31.48’ N	020° 52.40’ W
Odin Dal	7451E	74° 49.27’ N	021° 22.59’ W
Oksedal	7203E	72° 04.78’ N	023° 48.69’ W
Okselandet	7701E	77° 13.80’ N	021° 26.94’ W
Orienteringsøerne	7652E, 7653E	76° 45.40’ N	019° 32.43’ W
Orléans Sund	7752E	77° 46.66’ N	019° 48.51’ W
Palisaderne	8051E	80° 32.64’ N	021° 34.51’ W
Palnatoke Bjerg	7452E	74° 35.00’ N	020° 32.42’ W
Panoramaø	7901E	79° 19.42’ N	019° 02.37’ W
Paralleldal	7304E, 7354E	73° 30.16’ N	023° 22.46’ W
Pariserøerne	7802E	78° 27.89’ N	018° 47.06’ W
Payer Land	7401E	74° 24.87’ N	022° 09.11’ W
Payer Tinde	7302E	73° 08.42’ N	026° 21.33’ W
Pendulum Øer	7453E	74° 42.78’ N	018° 56.02’ W
Pendulumstrædet	7453E	74° 38.05’ N	018° 36.73’ W
Penthievre Fjord	7752E	77° 35.25’ N	019° 41.79’ W
Permklippen	7203E	72° 10.66’ N	023° 38.09’ W
Peters Bugt	7502E	75° 19.08’ N	020° 13.47’ W
Petersbugthytten	7502E	75° 20.50’ N	020° 05.96’ W
Pic Gerlache	7851E	78° 36.90’ N	021° 16.66’ W

Place name	Maps	Latitude	Longitude
Pictet Bjerge	7203E	72° 04.28' N	023° 21.50' W
Pladen	7652E	76° 51.42' N	020° 00.08' W
Polhem Dal	7252E	72° 30.63' N	025° 21.26' W
Polyphavn	7101E	71° 14.17' N	021° 40.96' W
Port Arthur	7651E, 7652E	76° 46.34' N	021° 13.97' W
Pothorst Bjerge	7151E	71° 35.35' N	023° 36.87' W
Prinsesse Caroline-Mathilde Alper	8001E	80° 20.31' N	020° 00.16' W
Prinsesse Elisabeth Alper	8052E	80° 47.46' N	018° 48.29' W
Pustervig	7652E	76° 55.73' N	020° 55.71' W
Pyramideelv	8001E	80° 28.29' N	020° 54.00' W
Randenæs	7201E	72° 26.25' N	025° 42.79' W
Ravnebjerg	7355E	73° 35.59' N	021° 21.33' W
Rebild	7253E	72° 50.09' N	024° 04.21' W
Rechnitzer Land	7601E	76° 18.72' N	021° 53.73' W
Renbugten	7302E	73° 19.34' N	026° 26.91' W
Rendalen	7351E	73° 29.38' N	026° 47.83' W
Renskæret	7653E	76° 40.50' N	018° 32.07' W
Revet	7401E	74° 21.24' N	021° 49.35' W
Rhedin Fjord	7251E	72° 37.80' N	026° 21.77' W
Richardpynt	7253E	72° 53.54' N	024° 42.29' W
Ringøen	7652E	76° 44.62' N	020° 35.59' W
Rivieradal	7951E, 8001E	80° 02.95' N	020° 47.90' W
Robertson Ø	7304E, 7305E	73° 03.21' N	022° 59.53' W
Rollier Bjerge	7151E	71° 56.58' N	022° 53.94' W
Romer Sø	8052E	80° 59.04' N	019° 12.73' W
Roon Bugt	7602E	76° 18.48' N	020° 23.00' W
Roseneathbugt	7553E	75° 40.98' N	019° 22.94' W
Rosio	7703E	77° 17.98' N	018° 20.48' W
Rubjerg Knude	7254E	72° 42.65' N	023° 31.22' W
Rudi Bugt	7401E	74° 23.29' N	021° 45.91' W
Rumpen	7303E	73° 17.12' N	024° 47.66' W
Ruth Ø	7253E, 7303E	72° 59.73' N	024° 53.24' W
Röhss Fjord	7251E	72° 44.08' N	026° 37.28' W
Rødebjerg	7303E	73° 04.53' N	024° 17.08' W
Rødeø	7652E	76° 42.36' N	020° 50.39' W
Sabine Ø	7453E	74° 35.49' N	018° 55.98' W
Sanddal	7801E	78° 04.45' N	021° 24.83' W
Sandgletscher	7201E	72° 11.53' N	025° 54.53' W
Sandøen	7402E	74° 15.06' N	020° 07.57' W
Saussure Massiv	7354E	73° 55.43' N	023° 00.92' W
Schaffhauserdalen	7201E	72° 17.29' N	025° 50.60' W
Scheele Bjerg	7302E	73° 09.00' N	025° 58.89' W
Schnauder Ø	7851E, 7852E	78° 48.73' N	019° 02.39' W
Schéele Bjerg	7202E, 7203E	72° 09.85' N	024° 09.63' W
Scott Keltie Øer	7254E, 7255E	72° 46.38' N	022° 43.52' W
Sefström Gletscher	7201E	72° 03.90' N	025° 22.58' W
Segelsällskapet Fjord	7202E	72° 25.47' N	024° 59.17' W
Segldal	7203E	72° 06.40' N	023° 32.26' W

Place name	Maps	Latitude	Longitude
Sengstacke Bugt	7504E	75° 20.38’ N	018° 14.04’ W
Shannon	7503E, 7504E	75° 08.16’ N	018° 17.63’ W
Shannon Sund	7503E	75° 07.54’ N	019° 10.56’ W
Sidselsøen	7353E	73° 58.45’ N	024° 14.03’ W
Sillerendedal	7452E	74° 37.43’ N	020° 19.05’ W
Sirius Dal	7951E	79° 46.58’ N	019° 22.17’ W
Skeldal	7202E	72° 14.35’ N	024° 17.00’ W
Skillegletscher	7402E	74° 20.75’ N	020° 58.30’ W
Skjoldungebræ	7202E	72° 15.45’ N	024° 42.69’ W
Skærfjorden	7702E	77° 23.68’ N	019° 14.73’ W
Slettedalen	7452E	74° 34.88’ N	020° 59.82’ W
Slien	7101E	71° 10.50’ N	021° 48.66’ W
Slædeøen	7602E, 7603E	76° 14.28’ N	019° 46.75’ W
Smalle Spærreg-letscher	8052E	80° 41.49’ N	018° 23.89’ W
Smallefjord	7501E	75° 27.80’ N	021° 47.91’ W
Snedrivegletscher	7201E	72° 18.25’ N	026° 10.20’ W
Snehætten	7252E	72° 39.02’ N	026° 02.88’ W
Snenæs	7653E	76° 48.59’ N	019° 22.81’ W
Snestormdal	7352E	73° 52.34’ N	026° 06.99’ W
Snævringen	7254E	72° 43.97’ N	022° 58.79’ W
Sofia Sund	7253E, 7303E, 7304E	73° 02.82’ N	023° 39.34’ W
Solitærbugt	7252E, 7253E	72° 53.93’ N	025° 04.26’ W
Solvig	8001E	80° 29.86’ N	020° 14.15’ W
Sommerterrassen	8053E	80° 38.84’ N	015° 19.83’ W
Sonklargl	7302E	73° 07.10’ N	026° 06.48’ W
Sophus Muller Næs	8054E	80° 45.89’ N	013° 55.92’ W
Soranerbræen	7601E	76° 05.75’ N	022° 06.38’ W
Sorte Hjørne	7352E	73° 39.98’ N	025° 10.40’ W
Sortebjerg	7202E, 7203E	72° 05.93’ N	024° 06.99’ W
Sorteelv Gletscher	7202E	72° 19.38’ N	024° 37.11’ W
Spaltegletscher	7352E, 7951E	79° 42.69’ N	020° 11.51’ W
Spejderhatten	7351E	73° 44.45’ N	027° 04.02’ W
Stakkeløbet	7602E	76° 28.46’ N	020° 41.72’ W
Stakken	7602E	76° 30.13’ N	020° 40.80’ W
Stensund	7101E	71° 20.52’ N	021° 44.05’ W
Stenørkenen	7951E, 8001E	80° 03.42’ N	020° 33.89’ W
Stigbøjlen	7802E	78° 13.39’ N	019° 03.82’ W
Stille Ø	7356E	73° 58.06’ N	021° 04.23’ W
Stopklodsen	7951E	79° 50.89’ N	020° 16.20’ W
Storborgen	7501E, 7551E	75° 32.10’ N	022° 03.27’ W
Stordal	7355E	73° 49.29’ N	022° 28.96’ W
Store Bælt	7603E	76° 09.10’ N	019° 13.73’ W
Store Finsch	7356E, 7402E	74° 02.31’ N	020° 53.70’ W
Store Koldewey	7603E	76° 22.93’ N	018° 49.75’ W
Store Sødal	7401E, 7402E	74° 30.50’ N	021° 20.47’ W
Storefjord	7101E	71° 06.04’ N	021° 46.30’ W
Storgletscher	7202E	72° 01.82’ N	024° 57.31’ W
Stormkap	7653E	76° 47.96’ N	018° 58.97’ W
Stormlandet	7752E	77° 38.88’ N	019° 22.23’ W

Place name	Maps	Latitude	Longitude
Stormnæs	7653E	76° 47.81' N	019° 09.20' W
Storøen	7802E	78° 04.19' N	019° 01.06' W
Strindberg Land	7352E, 7353E	73° 50.07' N	024° 45.97' W
Strømmen	7355E	73° 54.17' N	021° 53.58' W
Strømnæs	7251E	72° 41.84' N	026° 45.25' W
Strømsund	7651E	76° 42.39' N	021° 19.27' W
Strømtangen	7355E	74° 00.24' N	022° 07.04' W
Suess Land	7252E, 7301E, 7302E	73° 00.96' N	026° 17.57' W
Suomi Bjerg	7251E	72° 46.37' N	026° 51.30' W
Svampebugt	7401E	74° 08.78' N	021° 36.13' W
Svejstrup Dal	7451E	74° 46.36' N	021° 42.76' W
Svenskenæs	7302E	73° 13.72' N	026° 18.44' W
Svinhufvud Bjerge	7203E	72° 27.57' N	023° 32.65' W
Sydgavlen	7752E, 7802E	78° 02.10' N	019° 39.03' W
Sydkap	7852E	78° 39.56' N	019° 21.02' W
Sydlige Gneisnæs	7603E	76° 11.82' N	018° 24.33' W
Sydvejen	7951E	79° 57.95' N	020° 39.25' W
Sydvestpynten	7353E	73° 35.95' N	024° 06.41' W
Sylbugten	7602E	76° 25.44' N	020° 47.28' W
Syltoppene	7202E	72° 19.72' N	024° 31.43' W
Syttendemajfjorden	7602E	76° 12.94' N	020° 53.32' W
Syttenkilometer-næsset	7653E	76° 48.38' N	018° 13.07' W
Sæfaxi Elv	8001E	80° 10.63' N	020° 41.26' W
Sælsøen	7652E, 7701E, 7702E	77° 02.74' N	020° 28.31' W
Sødalen	8051E	80° 32.78' N	021° 22.83' W
Sønderfjord	7101E	71° 03.54' N	021° 53.12' W
Sønderland	7751E	77° 57.61' N	021° 50.76' W
Søndermarken	7701E	77° 19.23' N	020° 37.19' W
Søndersund	7602E	76° 22.59' N	020° 59.00' W
Søndre Orienteringsø	7652E	76° 42.80' N	019° 53.48' W
Søstjernen	7255E, 7305E	73° 01.59' N	022° 12.79' W
Tagbjergene	7354E	73° 59.68' N	023° 18.96' W
Taggletscher	7402E	74° 11.67' N	021° 13.77' W
Teodolit Skær	7702E	77° 25.18' N	019° 45.82' W
Teufelkap	7602E	76° 23.08' N	020° 13.75' W
Teufelsschloss	7302E	73° 23.07' N	025° 31.70' W
Th. Thomsen Land	7451E, 7452E	74° 56.18' N	020° 52.92' W
Theodolitplateau	7401E	74° 22.04' N	021° 33.42' W
Thomas Thomsen Næs	7703E	77° 13.60' N	018° 02.48' W
Thora Ø	7254E	72° 41.48' N	022° 47.74' W
Thun Søerne	7301E	72° 58.94' N	026° 39.46' W
Tobias Dal	7356E	73° 45.84' N	021° 07.41' W
Tobias Gletscher	8052E	80° 46.53' N	017° 35.81' W
Torben Bergman Bjerg	7353E, 7354E	73° 46.82' N	023° 48.07' W
Toretinde	7355E	74° 00.09' N	022° 26.77' W
Traill Ø	7253E, 7254E	72° 37.69' N	023° 17.16' W
Traill-iup Immikkeertivi / Haslum Øer	7203E	72° 27.37' N	023° 55.58' W

Place name	Maps	Latitude	Longitude
Trangsund	7602E	76° 16.43' N	020° 43.75' W
Trekantgletscher	7201E	72° 07.47' N	025° 39.20' W
Trinity Gletscher	7451E	74° 41.39' N	021° 48.87' W
Troldehaven	7752E, 7753E	77° 54.82' N	018° 45.03' W
Trompeteren Bastion	7901E	79° 27.21' N	020° 04.78' W
Trums Ø	7552E	75° 58.51' N	020° 05.74' W
Trækpasset	7603E	76° 10.26' N	018° 39.14' W
Tunnelelv	7202E, 7203E	72° 12.30' N	024° 05.74' W
Tvillingerne	7602E	76° 20.46' N	020° 57.91' W
Tyrolerdal	7451E	74° 39.26' N	022° 16.40' W
Tyrolerfjord	7401E, 7402E	74° 27.69' N	021° 05.41' W
Tågefjeldene	7356E, 8051E	80° 40.32' N	019° 55.43' W
Tårnfjeld	7351E	73° 44.33' N	026° 30.63' W
Udkiggen	7301E	73° 02.74' N	027° 45.42' W
Uglehøjene	7306E	73° 30.22' N	020° 53.97' W
Ulla Ø	7502E	75° 06.22' N	020° 54.58' W
Ulvedal	7305E	73° 29.51' N	022° 22.52' W
V Spærregletscher	7251E, 7252E	72° 53.58' N	026° 18.72' W
V. Clausen Fjord	7701E	77° 27.71' N	020° 38.89' W
Valhal	7501E	75° 04.92' N	022° 22.34' W
Vandredalen	8001E	80° 24.13' N	020° 48.15' W
Vega Sund	7253E, 7254E, 7255E	72° 37.34' N	022° 06.85' W
Vendedalen	8051E	80° 59.19' N	019° 58.05' W
Vestersletten	7305E	73° 23.25' N	021° 51.41' W
Vestfjeldet	8051E	80° 36.16' N	021° 24.22' W
Vestmar Bjerg	7402E	74° 14.81' N	021° 16.57' W
Vikingebræ	7201E, 7202E	72° 10.64' N	025° 15.05' W
Vindseløen	7652E	76° 48.46' N	020° 18.55' W
Vinterøer	7304E	73° 13.87' N	023° 05.70' W
Visp	7354E	73° 56.52' N	023° 38.46' W
Vædderhornet	7652E	76° 53.56' N	020° 39.02' W
Wahlenberg	7251E	72° 30.99' N	027° 16.96' W
Wegener Øer	8053E	80° 33.40' N	016° 34.48' W
Weinschenck Ø	7751E	77° 52.76' N	021° 13.60' W
Whittard Bjerg	7354E	73° 49.94' N	022° 43.88' W
Wollaston Forland	7403E	74° 28.50' N	019° 47.18' W
Wordie Bugt	7401E	74° 03.68' N	022° 21.08' W
Ymer Ø	7303E, 7304E	73° 08.06' N	023° 46.41' W
Young Sund	7402E	74° 23.53' N	020° 21.13' W
Zachariae Isstrøm	7851E	78° 55.51' N	020° 53.03' W
Zackenberg	7402E	74° 29.24' N	020° 47.97' W
Zackenberg Bugt	7402E	74° 26.62' N	020° 35.83' W
Zoologdalen	7303E	73° 19.37' N	024° 17.88' W
Åkerblom Ø	7202E, 7253E	72° 30.28' N	024° 33.80' W
Ålborg Fjord	7152E	71° 39.18' N	022° 01.91' W
Århus Bugt	7152E	71° 44.18' N	022° 05.50' W
Æbeltoft Vig	7204E	72° 30.07' N	022° 09.69' W
Île de France	7753E	77° 42.96' N	017° 44.97' W
Ø Spærregletscher	7252E	72° 52.72' N	026° 09.14' W
Øresund	7653E	76° 42.56' N	018° 41.39' W

Place name	Maps	Latitude	Longitude
Ørsted Dal	7151E	71° 47.44’ N	023° 07.87’ W
Østernæs	7254E	72° 49.74’ N	023° 12.65’ W
Østersletten	7356E	73° 37.36’ N	020° 46.98’ W
Østkap	7852E	78° 42.66’ N	019° 04.39’ W

14 Appendix E: Anchoring sites

This appendix lists all anchoring sites displayed on the physical environment and logistics maps in Chapter 8. The table is organized by map number, and if a particular anchoring site is located in the overlap zone between several maps, it is repeated in the table for each map.

The anchoring sites originate from several sources (see column "Sources" in table below):

- East Greenland (EGL) Pilot: Danish Geodata Agency (2020): Greenland Pilot – Sailing Directions for East Greenland. https://eng.gst.dk/media/9096/greenland-pilot-sailing_directions-for-east-greenland_1st-edition_updated-to-skr-26-2020.pdf
- Greenland (GL) Harbour Pilot: Danish Geodata Agency: Greenland Harbour Pilot – Information about cities, settlements and stations (continously updated webpage; last consulted Apr 20th 2021). https://www.gronlandskehavnelods.dk/?&lang=ENG
- G250R/GTK: The Topographic Map of Greenland 1:250.000, digital map in raster (G250R) and vector format (GTK). Copyright Asiaq – Greenland Survey, Nuuk.
- SL Ross: Anchoring sites identified by SL Ross Environmental Research Ltd. as part of their contribution to the physical environment and logistics section of this report.

Analog nautical charts from the Danish Geodata Agency were also systematically consulted, but contained very few anchoring sites, and none that were not already covered by the other sources.

When plotting the coordinates of anchoring sites given in the East Greenland Pilot Pilot, it was evident that the geographic precision was limited (most sites are given only to the precision of whole minutes). However, in most cases, it was possible to refine the position of the site from the description provided in the East Greenland Pilot, and many sites were therefore moved short distances to positions better fitting the description. This is the reason why the table contains both the original coordinates provided in the East Greenland Pilot (columns "Lat (source)" and "Lon (source)"), and the refined coordinates we use on the physical environment and logistics maps (columns "Lat (map)" and "Lon (map)").

<u>DCE and GINR take no responsibility for the anchoring sites, neither in terms of their exact location, nor in terms of their suitability</u>. We urge users of the atlas only to view the listed anchoring sites as an indication, and to consult the detailed information in original sources if planning to use a site.

Map	Name (DK)	Name (GRL)	Lat (source)	Lon (source)	Sources	Lat (map)	Lon (map)
7101E	Carlsberg Fjord	Kangerterajitta Itterterilaa	71° 29' N	022° 32' W	EGL Pilot, SL Ross	71° 27.6912 N	022° 30.7384 W
7151E	Antarctic Havn		72° 01' N	023° 10' W	EGL Pilot, SL Ross	72° 01.2473 N	023° 09.9279 W
7151E	Fleming Fjord		71° 50.8' N	022° 44' W	EGL Pilot, SL Ross	71° 50.8000 N	022° 44.0000 W
7151E	Fleming Fjord 2				EGL Pilot	71° 38.5151 N	023° 05.8087 W
7152E	Nathorst Fjord		71° 44' N	022° 26' W	EGL Pilot	71° 43.7524 N	022° 26.2227 W
7202E	Åkerblom Ø, NE-side				EGL Pilot	72° 29.6186 N	024° 34.8322 W
7202E	Åkerblom Ø V				EGL Pilot	72° 29.5320 N	024° 39.8700 W
7202E	Kap Mæchel/Arwidsson Ø				G250R/GTK, EGL Pilot, SL Ross	72° 23.0474 N	025° 14.1392 W
7202E	Menander Øer	Immikkeerterajii	72° 20' N	024° 20' W	EGL Pilot, G250R/GTK	72° 19.8363 N	024° 17.3019 W
7203E	Antarctic Havn		72° 01' N	023° 10' W	EGL Pilot, SL Ross	72° 01.2473 N	023° 09.9279 W
7203E	Archer Øer				EGL Pilot, SL Ross	72° 11.8316 N	023° 41.6077 W
7203E	Holm Bugt		72° 30' N	024° 05' W	EGL Pilot, SL Ross	72° 30.0000 N	024° 05.0000 W
7203E	Mesters Vig		72° 10' N	023° 43' W	EGL Pilot	72° 09.5305 N	023° 42.8897 W
7203E	Nyhavn (Mestersvig)		72° 16' N	023° 57' W	EGL Pilot, SL Ross, GL Harbour Pilot	72° 15.9025 N	023° 54.3598 W
7204E	Drømmebugten		72° 13' N	022° 34' W	EGL Pilot	72° 12.5152 N	022° 31.4209 W
7252E	Narhvalsund		72° 48' N	025° 19' W	EGL Pilot	72° 48.0000 N	025° 19.0000 W
7252E	Solitærbugt (Ella Ø)		72° 53' N	025° 05' W	EGL Pilot, SL Ross, GL Harbour Pilot	72° 53.0296 N	025° 05.7686 W
7253E	Åkerblom Ø, NE-side				EGL Pilot	72° 29.6186 N	024° 34.8322 W
7253E	Åkerblom Ø, W-side				EGL Pilot	72° 29.5320 N	024° 39.8700 W
7253E	Holm Bugt		72° 30' N	024° 05' W	EGL Pilot, SL Ross	72° 30.0000 N	024° 05.0000 W
7253E	Maria Ø		72° 58' N	024° 51' W	EGL Pilot	72° 57.8935 N	024° 49.8071 W
7253E	Solitærbugt (Ella Ø)		72° 53' N	025° 05' W	EGL Pilot, SL Ross, GL Harbour Pilot	72° 53.0296 N	025° 05.7686 W
7254E	Sverreborg		72° 50.3' N	022° 57' W	EGL Pilot	72° 50.2999 N	022° 56.9999 W
7255E	Laplace Øer		73° 00' N	022° 12' W	EGL Pilot	73° 00.0000 N	022° 11.9999 W
7255E	Malia Havn		72° 42' N	022° 36' W	EGL Pilot, SL Ross	72° 41.6914 N	022° 37.6380 W
7255E	Søstjernen		73° 01.5' N	022° 19' W	EGL Pilot	73° 01.8012 N	022° 19.6362 W
7301E	Kjerulf Fjord				G250R/GTK	73° 06.1832 N	027° 21.1938 W
7302E	Antarctic Sund				EGL Pilot	73° 09.8986 N	025° 42.4823 W
7302E	Antarctic Sund 2				EGL Pilot	73° 07.7488 N	025° 42.8817 W
7302E	Renbugten		73° 20' N	026° 30' W	EGL Pilot	73° 20.5703 N	026° 28.6891 W
7303E	Blomsterbugten		73° 20' N	025° 20' W	EGL Pilot	73° 19.9999 N	025° 19.9999 W
7303E	Botanikerbugt				SL Ross	73° 02.2478 N	024° 39.5369 W
7303E	Dusén Fjord				EGL Pilot, SL Ross	73° 19.0175 N	024° 51.9156 W
7303E	Eleonore Bugt		73° 27' N	025° 25' W	EGL Pilot	73° 26.4870 N	025° 23.6300 W
7303E	Kap Weber				EGL Pilot	73° 30.4018 N	024° 39.5788 W
7304E	Kap Graah				EGL Pilot	73° 14.8358 N	023° 13.9190 W
7304E	Kap Humboldt		73° 06' N	023° 00' W	EGL Pilot, SL Ross	73° 05.8557 N	022° 59.2066 W
7304E	Robertson Ø		73° 03.7' N	023° 06' W	EGL Pilot	73° 04.3764 N	023° 05.8956 W

Map	Name (DK)	Name (GRL)	Lat (source)	Lon (source)	Sources	Lat (map)	Lon (map)
7304E	Vinterøer				EGL Pilot, SL Ross	73° 12.8280 N	023° 08.1480 W
7305E	Borgøen		73° 05’ N	022° 36’ W	EGL Pilot	73° 05.4043 N	022° 35.2259 W
7305E	Kap Humboldt		73° 06’ N	023° 00’ W	EGL Pilot, SL Ross	73° 05.8557 N	022° 59.2066 W
7305E	Margrethedal		73° 18’ N	022° 41’ W	EGL Pilot	73° 18.0000 N	022° 40.9999 W
7305E	Søstjernen		73° 01.5’ N	022° 19’ W	EGL Pilot	73° 01.8012 N	022° 19.6362 W
7306E	Bontekoe Ø		73° 08’ N	021° 20’ W	EGL Pilot	73° 08.6042 N	021° 18.9790 W
7306E	Mackenzie Bugt		73° 29’ N	021° 32’ W	EGL Pilot, SL Ross	73° 28.8360 N	021° 31.9400 W
7353E	Kap Weber				EGL Pilot	73° 30.4018 N	024° 39.5788 W
7354E	Moskusoksefjord				EGL Pilot, SL Ross	73° 42.9275 N	023° 36.0575 W
7355E	Loch Fyne		74° 01’ N	021° 59’ W	EGL Pilot, SL Ross	74° 00.0837 N	021° 58.1812 W
7355E	Moskusoksefjord, inner part				EGL Pilot	73° 35.9788 N	022° 28.1884 W
7355E	Wordie Bugt		74° 03’ N	022° 15’ W	EGL Pilot	74° 02.0366 N	022° 18.6085 W
7356E	Arundel Ø		73° 46’ N	020° 05’ W	EGL Pilot	73° 46.8679 N	020° 05.0861 W
7356E	Carlshavn		73° 46’ N	020° 22’ W	EGL Pilot	73° 44.1206 N	020° 23.6408 W
7356E	Grytvika		73° 43’ N	020° 30’ W	EGL Pilot	73° 43.3483 N	020° 29.1194 W
7356E	Jackson Ø		73° 53’ N	020° 05’ W	EGL Pilot	73° 53.1697 N	020° 04.6362 W
7356E	SE-side of Lille Finsch		73° 59.2’ N	021° 07’ W	EGL Pilot	73° 59.0856 N	021° 06.8071 W
7401E	Copeland Fjord		74° 13’ N	022° 02’ W	EGL Pilot	74° 20.3295 N	021° 53.7621 W
7401E	Grantafjord		74° 19’ N	022° 02’ W	EGL Pilot	74° 17.5785 N	022° 20.0572 W
7401E	Hansen Havn		74° 10’ N	022° 16’ W	EGL Pilot	74° 10.0000 N	022° 16.0000 W
7401E	Rudis Bugt		74° 24’ N	021° 45’ W	EGL Pilot	74° 23.9579 N	021° 47.9580 W
7401E	Wordie Bugt		74° 03’ N	022° 15’ W	EGL Pilot	74° 02.0366 N	022° 18.6085 W
7402E	Daneborg		74° 18.2’ N	020° 14’ W	EGL Pilot, GL Harbour Pilot	74° 18.1580 N	020° 14.3415 W
7402E	Dødemandsbugten		74° 06.5’ N	020° 52’ W	EGL Pilot, SL Ross	74° 06.5000 N	020° 52.0000 W
7402E	Eskimonæs Østhavn		74° 05’ N	021° 16’ W	EGL Pilot, SL Ross	74° 05.4807 N	021° 15.5835 W
7402E	Eskimonæs, Vesthavn				EGL Pilot	74° 05.9280 N	021° 18.4859 W
7402E	Kap Berghaus		74° 16,5’ N	020° 09’ W	EGL Pilot	74° 16.2211 N	020° 01.6549 W
7402E	Lille Sødal		74° 20’ N	020° 15’ W	EGL Pilot, SL Ross	74° 19.9999 N	020° 14.9999 W
7402E	N-side of Store Finsch		74° 04’ N	020° 55’ W	EGL Pilot	74° 04.0000 N	020° 55.0000 W
7402E	Tyrolerfjord		74° 26.5’ N	020° 47’ W	EGL Pilot	74° 26.0461 N	020° 53.9129 W
7402E	W of Dahl Skær		74° 09’ N	020° 21’ W	EGL Pilot	74° 09.0000 N	020° 20.9999 W
7402E	Zackenberg Bugt		74° 28’ N	020° 39’ W	EGL Pilot, SL Ross, GL Harbour Pilot	74° 27.5036 N	020° 40.4311 W
7403E	Germania Havn		74° 32’ N	018° 50’ W	EGL Pilot, SL Ross	74° 32.1882 N	018° 49.7075 W
7403E	Griper Red		74° 32.5’ N	018° 53’ W	EGL Pilot	74° 32.1399 N	018° 54.2429 W
7403E	Herschellhus Fangststation		74° 14’ N	019° 43’ W	EGL Pilot	74° 14.2708 N	019° 43.4885 W
7403E	Hvalros Ø		74° 31’ N	018° 45’ W	EGL Pilot	74° 31.0543 N	018° 43.7794 W
7403E	Kap Berghaus		74° 16,5’ N	020° 09’ W	EGL Pilot	74° 16.2211 N	020° 01.6549 W
7403E	Kap Borlase Warren		74° 15’ N	019° 25’ W	EGL Pilot, SL Ross	74° 15.2072 N	019° 25.2807 W
7451E	Betula Havn		75° 01.5’ N	022° 00’ W	EGL Pilot	75° 01.0361 N	021° 59.4920 W
7451E	Inner Tyroler Fjord				EGL Pilot	74° 35.6600 N	022° 04.6021 W
7452E	Bastian Bugt				SL Ross	74° 56.2952 N	020° 06.2582 W
7452E	Fligely Fjord		74° 47’ N	020° 34 W	EGL Pilot	74° 46.5266 N	020° 34.1199 W

Map	Name (DK)	Name (GRL)	Lat (source)	Lon (source)	Sources	Lat (map)	Lon (map)
7452E	Kap Bremen		74° 59' N	019° 58' W	EGL Pilot	74° 58.2496 N	019° 57.3682 W
7452E	Lindeman Fjord				EGL Pilot	74° 39.1243 N	020° 44.5468 W
7453E	Falskebugt		74° 33.5' N	019° 18' W	EGL Pilot	74° 33.5642 N	019° 19.1931 W
7453E	Germania Havn		74° 32' N	018° 50' W	EGL Pilot, SL Ross	74° 32.1882 N	018° 49.7075 W
7453E	Griper Red		74° 32.5' N	018° 53' W	EGL Pilot	74° 32.1399 N	018° 54.2429 W
7453E	Hansa Bugt		74° 38' N	018° 46' W	EGL Pilot	74° 38.0000 N	018° 46.0000 W
7453E	Heimland Havn		74° 32.8' N	019° 12' W	EGL Pilot, SL Ross	74° 33.2713 N	019° 10.1089 W
7453E	Hvalros Ø		74° 31' N	018° 45' W	EGL Pilot	74° 31.0543 N	018° 43.7794 W
7453E	Kap David Gray		74° 58.5' N	018° 28' W	EGL Pilot, SL Ross	74° 58.3686 N	018° 22.5916 W
7453E	Kap Maurer		74° 52' N	019° 44' W	EGL Pilot, SL Ross	74° 50.9825 N	019° 43.2369 W
7453E	Kap Stufenberg		74° 38' N	018° 31' W	EGL Pilot	74° 37.2626 N	018° 29.8563 W
7453E	Sabine Ø, E-side		74° 36.5' N	018° 45' W	EGL Pilot	74° 36.2090 N	018° 44.4479 W
7454E	Freeden Bugt		74° 56' N	017° 40' W	EGL Pilot	74° 57.6151 N	017° 41.4869 W
7454E	Kap David Gray		74° 58.5' N	018° 28' W	EGL Pilot, SL Ross	74° 58.3686 N	018° 22.5916 W
7454E	Kap Stufenberg		74° 38' N	018° 31' W	EGL Pilot	74° 37.2626 N	018° 29.8563 W
7501E	Betula Havn		75° 01.5' N	022° 00' W	EGL Pilot	75° 01.0361 N	021° 59.4920 W
7502E	Jarners Kulmine		75° 12' N	020° 01' W	EGL Pilot	75° 11.9708 N	020° 01.5791 W
7502E	Jónsbu		75° 19.5' N	020° 24' W	EGL Pilot, SL Ross	75° 18.6821 N	020° 22.6909 W
7503E	Nanok		75° 09' N	019° 46' W	EGL Pilot, SL Ross	75° 08.1299 N	019° 45.2086 W
7504E	Alabama Havn		75° 15.5' N	018° 04' W	EGL Pilot	75° 15.4809 N	018° 05.5216 W
7551E	Gåseholmhytten		75° 58' N	021° 53' W	EGL Pilot, SL Ross	75° 58.0994 N	021° 50.4483 W
7553E	Roseneathbugt		75° 43' N	019° 30' W	EGL Pilot, SL Ross	75° 43.0000 N	019° 29.9999 W
7602E	Alf Bruuns Red		76° 04' N	019° 58' W	EGL Pilot, SL Ross	76° 03.5383 N	019° 56.7652 W
7602E	Besselfjord Station		76° 04' N	020° 03' W	EGL Pilot	76° 03.4574 N	020° 02.4380 W
7602E	Gefion Havn		76° 23' N	020° 56' W	EGL Pilot, SL Ross	76° 22.8470 N	020° 53.0528 W
7652E	Hvalrosodden		76° 55' N	020° 05' W	EGL Pilot, SL Ross	76° 54.4042 N	020° 04.2931 W
7652E	Mørkefjord		76° 56' N	020° 20' W	EGL Pilot	76° 55.1605 N	020° 17.8282 W
7652E	Mørkefjord 2				SL Ross	76° 55.4144 N	020° 37.3009 W
7652E	Port Arthur		76° 45' N	021° 10' W	EGL Pilot	76° 46.5743 N	021° 10.3216 W
7653E	Absalon Havn		76° 40' N	018° 53' W	EGL Pilot	76° 39.6446 N	018° 47.0381 W
7653E	Berg Fjord		76° 35' N	019° 06' W	EGL Pilot, SL Ross	76° 34.9538 N	018° 52.8223 W
7653E	Dagmar Havn		76° 41' N	018° 56' W	EGL Pilot	76° 41.2891 N	018° 51.2058 W
7653E	Danmarkshavn		76° 46.2' N	018° 45.5' W	EGL Pilot, GL Harbour Pilot	76° 45.7160 N	018° 41.2855 W
7653E	E of Kap Helgoland		76° 43' N	019° 04' W	EGL Pilot	76° 43.0509 N	019° 10.9595 W
7653E	Øksebladet				SL Ross	76° 44.7528 N	018° 26.4758 W
7653E	Snenæs		76° 49' N	019° 22' W	EGL Pilot	76° 48.9893 N	019° 18.4337 W
7653E	Sonja Havn		76° 36.6' N	018° 40.5' W	EGL Pilot	76° 36.5080 N	018° 41.0366 W
7753E	Kap Skt Jacques				EGL Pilot, SL Ross	77° 35.9447 N	018° 16.8921 W

15 Appendix F: Landing sites

This appendix lists all landing sites for air planes/helicopters displayed on the physical environment and logistics maps in Chapter 8. The table is organized by map number, and if a particular landing site is located in the overlap zone between several maps, it is repeated in the table for each map.

The landing sites are divided into several different types (see column "Type"):
- Civil airport (facilities for both planes and helicopters)
- Military airport (facilities for both planes and helicopters)
- Gravel strip (rough strip appropriate for e.g. Twin Otter type planes with tundra wheels)
- Skiway (skiway on snow appropriate for e.g. Twin Otter type planes with skis)
- Heliport (marked helipad with facilities)
- Helipad (marked helipad without facilities)
- Tele site helipad (helicopter landing site regularly used by Tele Greenland for network maintenance)
- Spot landing (helicopter landing site used on one or several occasions in relation to e.g. mineral exploration)

All sites with a value in the column named "Id" are kindly provided by Air Greenland, who uses these numbers to identify the sites. For these sites, the information in all columns stems directly from Air Greenland. "GPS" indicates whether the coordinates of the site are measured by GPS. "Length (m)" gives the approx. length of gravel strips in meters. "C-130" indicates whether Lockheed C-130 Hercules planes can land at the site. "Hut" indicates if huts are present at the site, typically old hunter's cabins. "Description" gives a short account of the site.

Two of the sites provided by Air Greenland ("Id" s46 and s48; name marked with * in table) clearly had wrong coordinates (gravel strips that plotted in the sea). For these sites, coordinates have been corrected based on knowledge of the place (s46), and coordinates of the place name used for the site by Air Greenland (s48).

All sites without a value in the "Id" column are compiled by GINR, drawing on information from e.g. Tele Greenland.

<u>DCE and GINR take no responsibility for the landing sites, neither in terms of their exact location, nor in terms of their suitability</u>. We urge users of the atlas only to view the listed landings sites as an indication, and to consult appropriate authorities (e.g. Air Greenland) if planning to use a site.

Map	Id	Name	Type	Latitude	Longitude	GPS	Length (m)	C-130	Hut	Description
7101E	s65	Carlsberg Fjord	Gravel strip	71° 27.37’ N	22° 34.22’ W	Yes				Grown, graval strip near coast, unmarked
7151E	s62	Horse Dal	Gravel strip	71° 46.22’ N	23° 22.21’ W	Yes	400			200 m fine graval, rest rough grown strip near lake, unmarked
7151E	s63	Øster Dal	Gravel strip	71° 44.46’ N	23° 34’ W	Yes				NO direction, unmarked
7201E	s60	Furesø	Gravel strip	72° 2.18’ N	26° 22’ W	No	280			Even and good sand strip. Marked with red tablets
7202E	s58	Stauning Alper	Skiway	72° 6.14’ N	24° 44.44’ W	Yes				Only ski way, cracks around, altitude 3.800 feet
7202E	s57	Stauning Alper	Skiway	72° 6.2’ N	24° 55.1’ W	Yes				Only ski way, glacier, plinth between high mountains, altitude 6.800 feet
7203E	s59	Deltadal	Gravel strip	72° 5.18’ N	23° 58’ W	No	300			Even, grown graval strip made by Nordmine
7203E	s55	Holm Bugt	Gravel strip	72° 30.11’ N	23° 59.93’ W	Yes	300			Even grown gravel strip, marked. 17,1 NM from Mestersvig
7203E	s56	Mestersvig	Military airport	72° 14.18’ N	23° 55’ W	Yes	1500	Yes	Yes	Open most of the year
7252E	s53	Ella Ø	Gravel strip	72° 52.54’ N	25° 7.35’ W	Yes	300		Yes	Rough, grown clay + graval strip. Tricky wet
7253E	s53	Ella Ø	Gravel strip	72° 52.54’ N	25° 7.35’ W	Yes	300		Yes	Rough, grown clay + graval strip. Tricky wet
7253E	s55	Holm Bugt	Gravel strip	72° 30.11’ N	23° 59.93’ W	Yes	300			Even grown gravel strip, marked. 17,1 NM from Mestersvig
7253E	s54	Kirschdalen	Gravel strip	72° 32.09’ N	24° 40.1’ W	Yes	250		Yes	Little rough, grown clay + gravel strip
7302E	s50	Polarheimen	Skiway	73° 11.03’ N	25° 58.25’ W	Yes			Yes	Clean ice, with ski or wheels
7303E	s52	Karl Jakobsen Bugt	Gravel strip	73° 5.38’ N	24° 36.48’ W	No	300			Rough clay strip, 7 km. From coast
7303E	s51	Ymers Ø	Gravel strip	73° 5.6’ N	24° 36.69’ W	Yes	400			Rough clay strip, tricky wet. Unmarked. Not good
7305E	s49	Kap Franklin	Skiway	73° 16.49’ N	22° 8.23’ W	Yes			Yes	Only ski way
7306E	s48	Brandeelv*	Gravel strip	73° 27.07’ N	21° 7.72’ W	No	240			Gravel strip east of Myggbugta, little waves. Close to sea
7306E	s46	Myggbukta*	Gravel strip	73° 29.56’ N	21° 33.98’ W	Yes	280		Yes	Grown, even strip + gravel strip, tricky when wet
7306E	s47	Sjoaelv	Gravel strip	73° 27.5’ N	21° 20’ W	Yes	120			Dainty gravel strip
7352E	s45	Grejsdalen	Gravel strip	73° 35.31’ N	26° 3.05’ W	Yes	250			Even sand + grown strip. Altitude 1.850 feet
7353E	s41	Strindberg Land	Gravel strip	73° 42.35’ N	24° 30.51’ W	Yes	190		Yes	Hard, rough gravel strip
7355E	s42	Loch Fyne	Skiway	73° 40.58’ N	21° 51.35’ W	Yes			Yes	Only ski way
7355E	s43	Storedal	Gravel strip	73° 40.03’ N	22° 3.82’ W	Yes	380			Rather even, grown clay strip. Tricky early summer and wet
7356E	s40	Fosdalen	Gravel strip	73° 54’ N	20° 47’ W	Yes	350			Sand beach, even and good, bird cliff west of strip
7356E	s44	Lugna Elv	Gravel strip	73° 38.33’ N	20° 27.98’ W	Yes	300		Yes	Hard, even, good gravel strip
7401E	s34	Revet	Gravel strip	74° 21.6’ N	21° 48.04’ W	Yes	300			Sand strip with little waves
7402E	s36	Daneborg	Military airport	74° 18.02’ N	20° 13.45’ W	Yes	500		Yes	Good even gravel strip. X-strip 03/21 200 meters
7402E	s35	Lille Sødal	Gravel strip	74° 20.24’ N	20° 14’ W	No	240			Rather uneven gravel strip with slope to sea, marked
7402E	s33	Zackenberg	Gravel strip	74° 27.95’ N	20° 36.7’ W	Yes	300		?	Grown sand strip. Little slope from center to 08
7402E	s32	Zackenberg	Gravel strip	74° 28.15’ N	20° 33.55’ W	Yes	400		Yes	Even and good hard strip. X-strip
7403E	s38	Blæsedalen, east	Gravel strip	74° 15.7’ N	19° 50.83’ W	Yes	300			Hard, even, good gravel strip, unmarked

Map	Id	Name	Type	Latitude	Longitude	GPS	Length (m)	C-130	Hut	Description
7403E	s37	Blæsedalen, west	Gravel strip	74° 16.02’ N	19° 52.75’ W	Yes	450		Yes?	Hard, even, good gravel strip, unmarked
7451E	s27	Odin Dal	Gravel strip	74° 57.18’ N	21° 35’ W	No	250		?	Even strip with fine gravel, banks near both ends
7452E	s31	Albrecht Bugt	Gravel strip	74° 35.56’ N	19° 52.2’ W	Yes	200		Yes	Grown, heavy clay strip, slope to 20. Stricky when wet
7452E	s28	Fligely Fjord	Gravel strip	74° 49.24’ N	20° 44.24’ W	No	215			Heavy loose sand + gravel strip 09/27 200 m. 17/25 190 m. (GGU)
7452E	s29	Fligely Fjord, (Kuhn Ø)	Gravel strip	74° 48.56’ N	20° 39.29’ W	Yes	250		Yes	Even sand strip
7452E	s30	Lindeman Fjord	Gravel strip	74° 38.26’ N	20° 46.22’ W	Yes	250		Yes	Hard rather rough gravel strip. End 25 clammy and soft
7502E	s22	Peter Bugt	Gravel strip	75° 18.39’ N	20° 0.86’ W	Yes	190			UNMARKED, loose gravel strip, hill in center
7503E	s25	Hochstetter Forland	Gravel strip	75° 8.65’ N	19° 43.25’ W	Yes	200		?	Rough gravel and grown, tricky.
7503E	s24	Kap Rink	Gravel strip	75° 12.57’ N	19° 28.24’ W	Yes	260		Yes	Very good grown, even and gravel strip
7504E	s23	Alabama	Skiway	75° 17.3’ N	17° 50’ W	Yes			Yes	Only ski way, Alabama hut on Shannon
7504E	s26	Shannon	Gravel strip	75° 8.4’ N	17° 28.11’ W	Yes	300		Yes	Very rough, bad gravel strip. Foggy
7551E	s20	Bessel Fjord	Gravel strip	75° 58’ N	21° 54.24’ W	No	180			Grown but hard strip, slope to sea
7553E	s21	Mønstedhus	Gravel strip	75° 42.03’ N	19° 33.35’ W	Yes	200		Yes	Very rough gravel and sand strip. Cross wind
7601E	s15	Rechnitzer Land	Gravel strip	76° 19.48’ N	21° 39.66’ W	Yes	220		Yes	Rather rough gravel strip. Wind changing fast
7602E	s16	Hvalrosodden	Skiway	76° 16.33’ N	20° 6.25’ W	Yes			Yes	Landing on clean ice with ski or wheels. Old hunters hut
7602E	s18	Påskenæsset	Gravel strip	76° 8.5’ N	19° 48.14’ W	Yes	220		Yes	Hard rough gravel strip, slope to N+E, stones
7603E	s18	Påskenæsset	Gravel strip	76° 8.5’ N	19° 48.14’ W	Yes	220		Yes	Hard rough gravel strip, slope to N+E, stones
7603E	s17	Store Koldeway Ø	Gravel strip	76° 10’ N	18° 34.5’ W	Yes	160			Even gravel strip. Hill at W end. Tricky in wind from N+S
7603E	s19	Store Koldeway Ø	Gravel strip	76° 4.1’ N	18° 37.4’ W	Yes	300			Even gravel strip, little soft. Little hill at S end
7651E	s14	Kap Stop	Skiway	76° 38.77’ N	21° 38.38’ W	Yes			Yes	Only ski way
7652E	s10	Hvalrosodden	Gravel strip	76° 55.48’ N	20° 9.48’ W	No	300			Rather even clay strip on wet bank of river
7652E	s09	Hvalrosodden	Gravel strip	76° 57.24’ N	20° 7.24’ W	No	330			Hard and rather rough gravel strip
7653E	s12	Danmarkshavn	Gravel strip	76° 46.24’ N	18° 39.47’ W	Yes	400		Yes	Even, good gravel strip
7653E	s11	Syltekrukken	Gravel strip	76° 51’ N	18° 47.24’ W	No	600			Grown, even strip, tricky when wet, altitute 1.100 feet
7701E	s08	Sælsøen	Gravel strip	77° 6.5’ N	20° 41.25’ W	No	200			Dry gravel strip. First 100 meters on 24 very even
7702E	s05	Kap Amelie	Skiway	77° 32.07’ N	19° 7.6’ W	Yes			Yes	Only ski way. Usually clean ice
7752E	s05	Kap Amelie	Skiway	77° 32.07’ N	19° 7.6’ W	Yes			Yes	Only ski way. Usually clean ice
7801E	s04	Søndre Mellemløb	Gravel strip	78° 3.83’ N	21° 26.37’ W	Yes	300			Uneven, loose sand and gravel strip. Tricky when wet
7802E	s03	Hammeren	Skiway	78° 18.43’ N	19° 29.07’ W	Yes			Yes	Only ski way
7901E	e35	Brønlunds Grav	Skiway	79° 9.18’ N	19° 3.48’ W	Yes				Only ski strip
7901E	e34	Lambert Land	Gravel strip	79° 14.13’ N	19° 1.53’ W	Yes	200		Yes	Very rough and stoned strip, 3 red stones on NW site

Map	Id	Name	Type	Latitude	Longitude	GPS	Length (m)	C-130	Hut	Description
7951E	e31	Hekla Sund	Gravel strip	80° 2' N	20° 24' W	No	250			Hard and rather rough gravel strip with waves, marked
8001E	e31	Hekla Sund	Gravel strip	80° 2' N	20° 24' W	No	250			Hard and rather rough gravel strip with waves, marked
8001E	e27	Vandre Dalen	Gravel strip	80° 30.5' N	20° 51.35' W	Yes	220			Even and good sand strip, OK when wet, overrun in both ends
8003E	e28	Eskimonæs	Gravel strip	80° 26.32' N	15° 47.36' W	Yes	400		Yes	Even and good gravel strip, big stones in N end
8003E	e29	Hanseraq Fjord	Gravel strip	80° 15.25' N	16° 16.14' W		200			Good gravel strip, marks at ends
8051E	e21	Romer Sø	Gravel strip	80° 59.29' N	19° 28.28' W	Yes	300		Yes	Hard, very rough gravel, stone, strip
8054E	e25	Henrik Kröyer Holme	Gravel strip	80° 38.99' N	13° 42.9' W	Yes	190		Yes	Rough gravel strip
8054E	e23	Sophus Müller Næs	Gravel strip	80° 48.99' N	14° 15.46' W	Yes	220			Rough gravel strip
8054E	e24	Sophus Müller Næs	Gravel strip	80° 47.4' N	14° 10.25' W	Yes	250			Rough gravel strip, 6 red marks
8102E	e20	Kilen	Gravel strip	81° 7.5' N	12° 38.24' W	Yes	250			Same as above, down at sea, very fogy
8102E	e19	Kilen	Gravel strip	81° 7.5' N' N	12° 38.4' W	Yes	250		Yes	Rather even gravel strip

ENVIRONMENTAL OIL SPILL SENSITIVITY ATLAS FOR NORTHEAST GREENLAND (71°-81.5° N)

This Environmental Oil Spill Sensitivity Atlas has been prepared to provide oil spill response planners and responders with tools to identify resources at risk, establish protection priorities and identify appropriate response and clean-up strategies. It covers the shoreline and the offshore areas of Northeast Greenland between 71° N and 81.5° N. The coastal zone is divided into 264 shoreline segments and the offshore zone into 18 areas. A sensitivity index value is calculated for each segment/area based on the occurrence of biological resources, human use, cultural heritage sites, protected areas and coast types/sea ice conditions. Based on the index value, each segment/area is subsequently ranked into one of four oil spill sensitivity classes. Besides this general ranking, a number of smaller, so-called “selected areas” are identified. They are of particular significance, they are especially vulnerable to oil spills, and they have a size making oil spill response operations possible. The shoreline sensitivity ranking is depicted on 68 maps (in scale 1:250,000), which also show the different occurrences contributing most to the sensitivity, and the selected areas. Coast types, logistical elements relevant for response operations, and proposed response methods along the coasts are shown on another 68 maps. The oil spill sensitivity of the offshore zone is depicted on four maps, one for each season.

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