ARCTIC PORTAL

Servicing the Arctic

DREKI
AREA

DREKI AREA

Þistilfjöður

Þórshöfn

Finnafjörður

Vopnafjörður

Héraðsflói

The Area:

- No known natural hazards
- Mild climate - little snow
- Scenic landscape
- Land available for development
- Strong Infrastructure
- Excellent harbours with great expansion possibilities
- Good communication facilities - telecom, internet
- Airports, expandable to international standard
- Radarstation on Mt. Gunnólfsvík

The Communities:

- Strong cultural heritage
- Good health service
- Good kindergartens and public schools with qualified staff
- Different recreational opportunities
- Population: Langanesbyggd ca. 550
  Vopnafjardar-hreppur ca. 700

INTRODUCTION

International surveys predict that there are vast undiscovered natural resources in the Arctic, including large oil and gas fields. There are strong indications that there will be increased exploration and utilization of these resources in the near future. Iceland has a strategic location for servicing the Arctic, in particular the Dreki Area and Eastern-Greenland oil fields.

The ice in the Arctic has decreased much faster than predicted, both in cover and thickness. The possibility of opening a direct transport route over the Pole is becoming realistic.

The communities of Langanesbyggð and Vopnafjörður are partners in creating the Dreki Area Service Centre to the Arctic in Finnafjörður, servicing oil and gas exploration and production and shipping in the Arctic, utilizing the excellent physical location in an Arctic context.

A report by the Ministry of Industry of Iceland, published in 2009, emphazises that the physical harbour conditions in Finnafjörður for large vessils are excellent, deap waters, low waves and amble space. The current port in Vopnafjörður fullfills requirements for servicing initial oil and gas exploration in the Dreki Area.

The cost of building an international quality deep water harbour in Finnafjörður, servicing Trans-Arctic shipping, is likely to be fractional to most other areas. Land conditions around the harbour are very good, flat and spacious, with an area of over 2000 hectars.

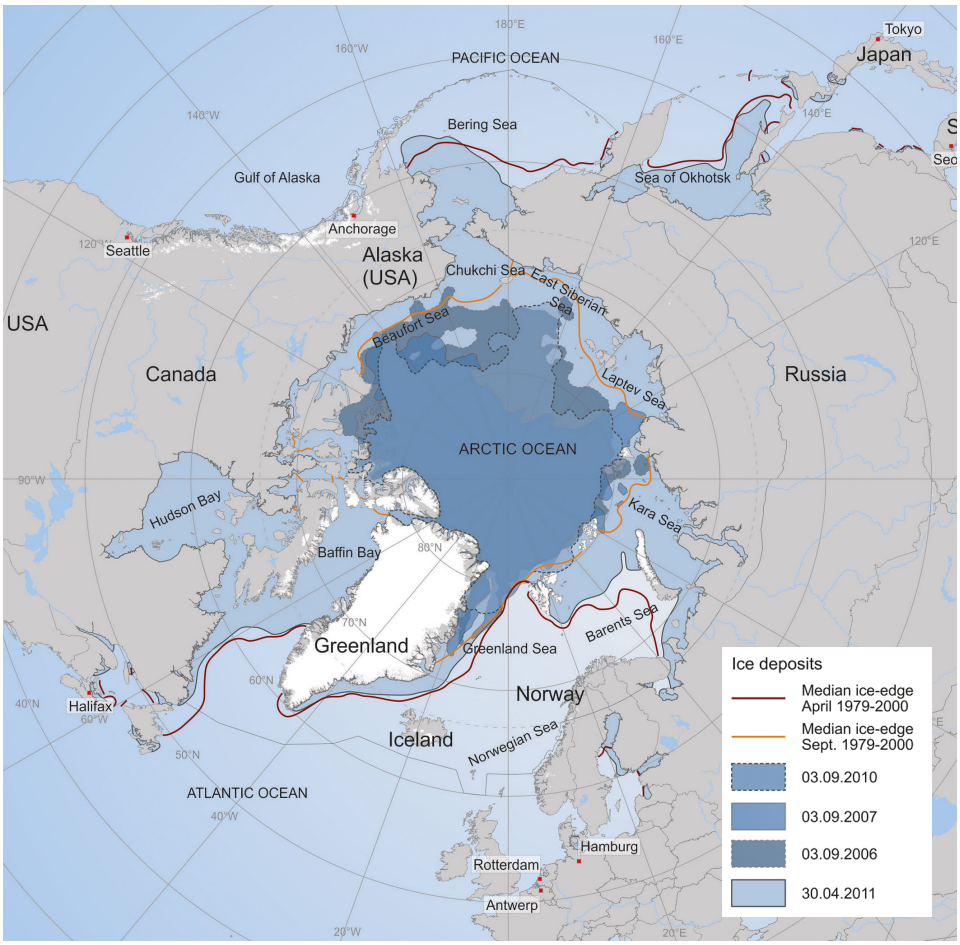
A radar station on top of the mountain above the fjord will help navigation.

Research by the Icelandic Maritime Administration shows that average ocean waves north-east of Iceland are lower than in other regions of the North Atlantic, indicating much better navigation conditions in the Arctic ocean than commonly preceived.

RESOURCES IN THE ARCTIC

Arctic sea ice has been observed to be decreasing in extent and thickness during the second half of the 20th century and early 21st century. Global Climate Model simulations indicate a continuing retreat of sea ice, but also show that the winter sea ice cover will remain. (Arctic Marine Shipping Assessment 2009 Report, 2009)

Reduced sea ice is very likely to increase marine transport and access to resources in the Arctic. The continuing reduction of sea ice is very likely to lengthen the navigation season and increase marine access to the Arctic's natural resources. Seasonal opening of the Northern Sea Route is likely to make trans-arctic shipping during summer feasible within several decades. Increasing ice movement in some channels of the Northwest Passage could though initially make shipping more difficult. Reduced sea ice is also likely to allow increased offshore extraction of oil and gas. Increased movement of ice could though hinder some operation. Sovereignty, security and safety issues, as well as social, cultural and environmental concerns are likely to arise as marina access increases. (Arctic Climate Impact Assessment, 2005)



The development of ice in the arctic from 2006- 2007 and arctic definition.

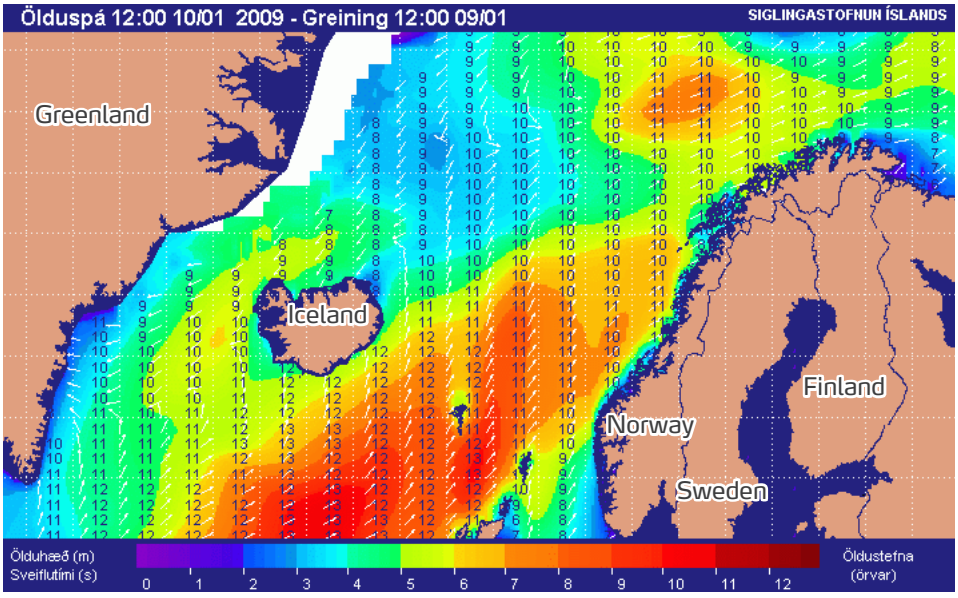
International surveys show that the summer ice is decreasing faster than any forecasts had predicted. The fall of 2010 is likely to surpass the record low from 2007. Similarily the ice is getting thinner. Current info at www.arcticportal.org/climate-and-sea

International transport channels are becoming congested and predictions are that global cargo volume will continue to increase over the next decades. These trends put an increasing importance on Trans-Arctic shipping.

Trans-Arctic shipping

Three main sailing routes are possible for future shipping due to less ice in the Arctic, the North-West passage by Canada, the Central Arctic Shipping Route crossing the Pole, and the Northern Sea Route by Russia (see map). Iceland's location offers a great opportunity for a deep water port for both the Arctic and the Northern Sea routes, servicing Europe and North-America.

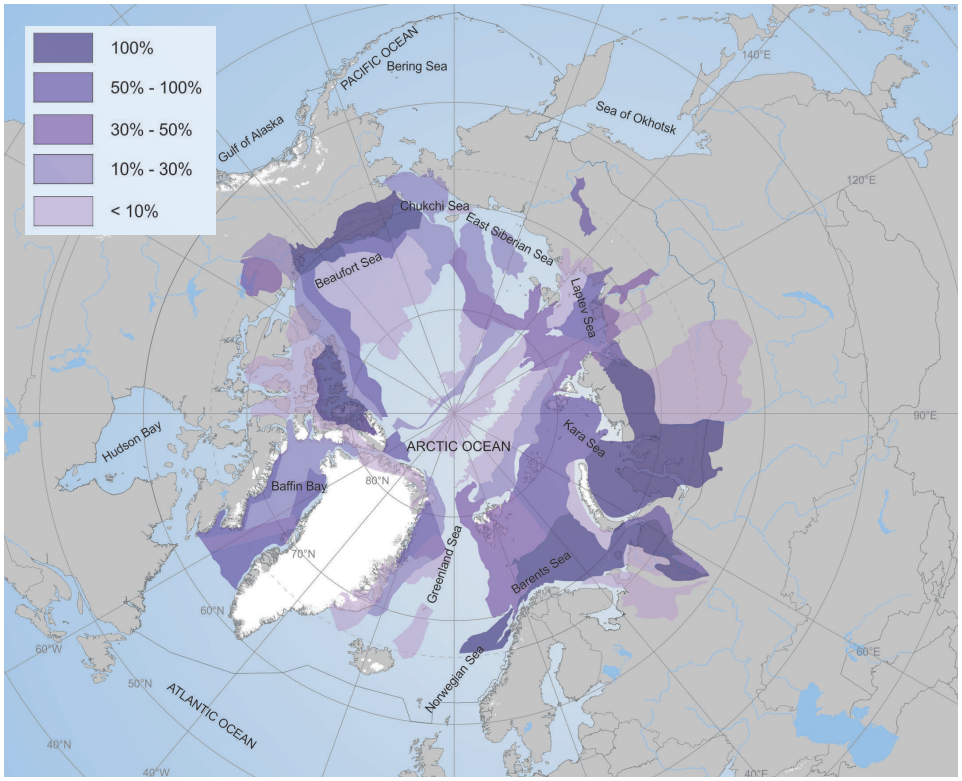
The three proposed main sailing routes.



Example of a wave forecast. (Icelandic Maritime Adm.)

Potential oil and gas fields

In the recent years, the world's attention has turned to the Arctic, not least because of its vast energy resources. Due to the climate change and its significant impact to the Arctic environment resources that have long been unreachable are becoming feasible for exploitation. It is estimated that up to a fifth of the world's undiscovered petroleum resources are to be found in the Arctic. The following map shows the distribution and probability of these potential reserves. The map is built on information from the US Geological Survey (USGS).



Potential oil and gas fields in the Arctic.

Climate and oceanography

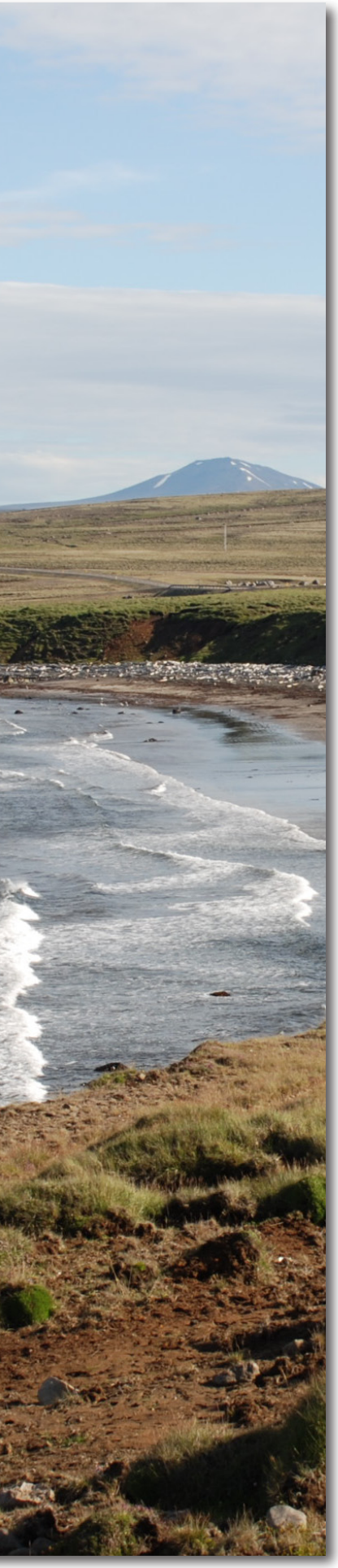
Climate and oceanography are vital factors for shipping and oil production. It affects the cost of the activities and even restricts them. Weather conditions such as high wind speed, waves, icing and fog can cause trouble and need to be considered carefully. It is also important to understand the movement of drift sea ice in regards to wind and ocean currents.

Wind

Iceland is located on a low pressure area which causes some wind when low pressure systems approach. Wind measurements were made for the Jan Mayen area which showed the average wind velocity was most commonly quite moderate. Compared to wind in the Norwegian sea it is generally less severe in Jan Mayen. (Preparations for awarding licences for exploration and production of hydrocarbons, 2006)

Fog

Fog is common in summer with prevailing south-westerly winds around Jan-Mayen. The ice edge is particularly foggy. In winter fog is much less frequent. (Preparations for awarding licences for exploration and production of hydrocarbons, 2006)



Ice

Ice is a risky factor for mariners. It is mainly of two origins i.e. frozen sea surface - sea ice, and ice of land origin - icebergs. Both can be dangerous to shipping and always have an effect on navigation. (Arctic Marine Shipping Assessment 2009 Report, 2009) Major pattern of ice circulation shows that most icebergs have a source along the west and south coast of Greenland. There are strong indications that the central Arctic will be safe to navigate from ice and environmental impact perspective.

Ocean currents.

Drift ice.

SERVICING THE ARCTIC

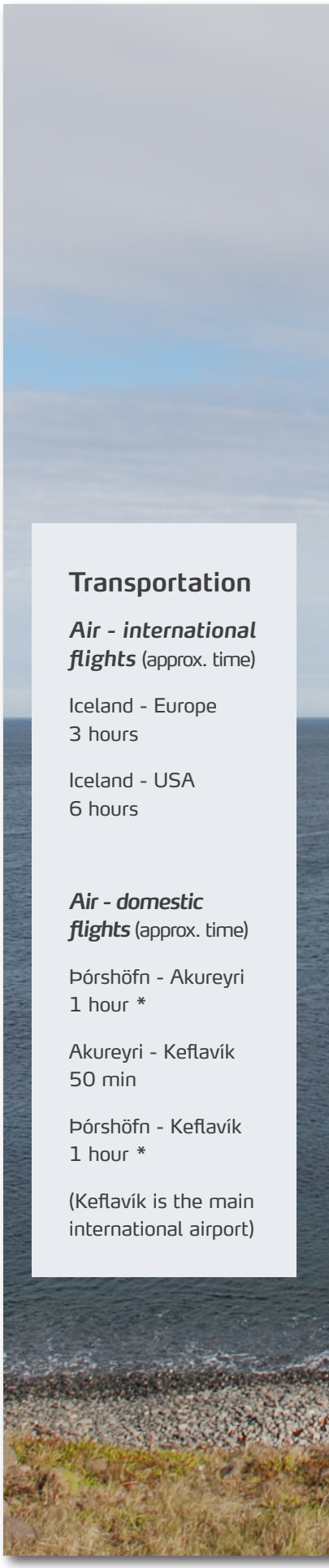
Iceland and The Dreki area communites is an ideal service centre for Trans-Arctic shipping and oil and gas exploration and production in the Arctic region. The Dreki area has:

- strategic location in an Arctic context
- excellent natural conditions for a deep water port in Finnafjörður
- good access to fresh water and electricity
- well educated society in the fields of designing, health-care, service and constructing
- international airports with frequent international connections (see map)
- strategic location for helicopter security and exploration services with emphazis on the Dreki Area to Jan Mayen and the Eastern-Greenland oil fields

Transport time from and within the country.

Conditions for Industry and Port in Finnafjörður are of high quality

- Radar station is located on top of Mt. Gunnólfsvíkurfjall where all air traffic can be detected and guided within 250 miles. The location and communication equipment is highly valuable for increased maritime and air traffic.
- All electricity production in Iceland is renewable energy. Electricity will be brought to the area from the National Power Network via 220 kW connection. Wind and /or sea power stations are a well possible future source.
- Water for industry use is enough as well as groundwater for the local societies.
- Land is plenty in Finnafjörður for industrial activities - over 2000 hectars.
- Initial surveys indicate that material for building, landfill and/or wave breakers can be found on site.
- The area is already a designated industry zone.



Transportation

Air - international flights (approx. time)

Iceland - Europe
3 hours

Iceland - USA
6 hours

Air - domestic flights (approx. time)

Þórshöfn - Akureyri
1 hour *

Akureyri - Keflavík
50 min

Þórshöfn - Keflavík
1 hour *

(Keflavík is the main international airport)

Drive
(approx. distance/ time)

Finnafjörður - Þórshöfn 15 km / 10 min

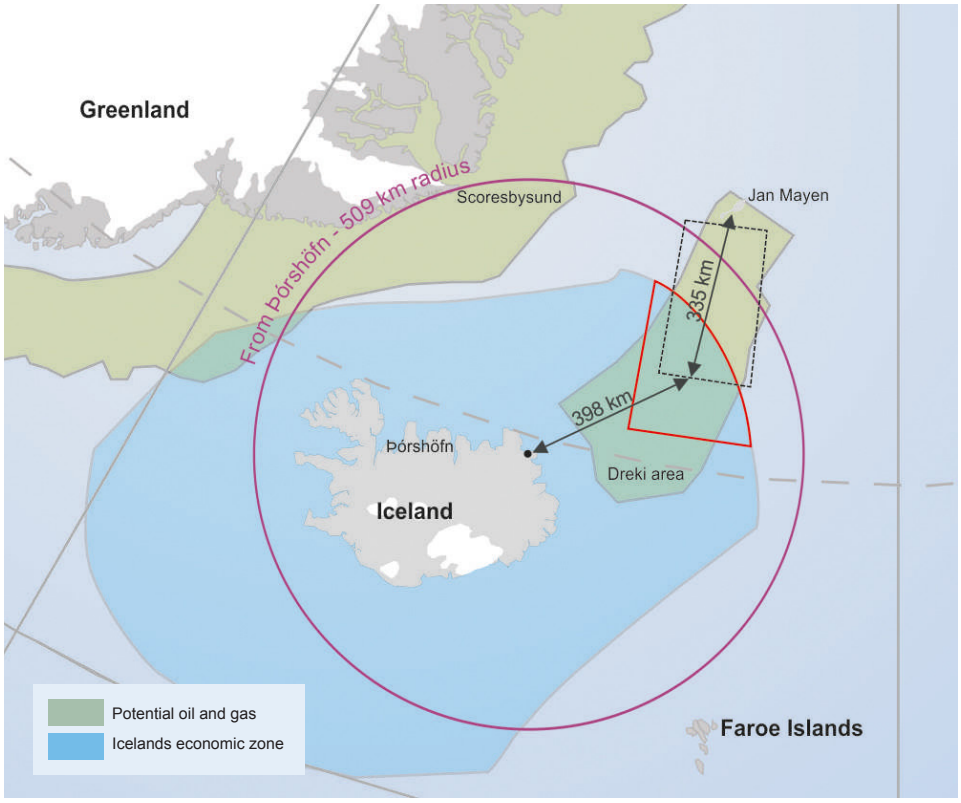
Finnafjörður - Vopnafjörður 50 km / 40 min

Finnafjörður - Egilsstaðir 114 km / 85 min *

Akureyri - Þórshöfn 230 km / 3 hours *

*the shortest way with new flight routes/roads/tunnels

Distances from Finnafjörður to nearest service centres.



Service helicopter flight radius from Þórshöfn airport. Distance back and forth + 30 min. in the air.

Finnafjörður - industry and service centre

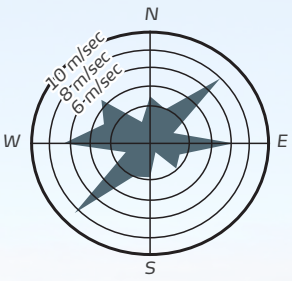
Natural conditions for a deep water port and industrial and service centre are of high quality in Finnafjörður:

- The width of the fjord is about 4,5 km and depth 5,5 km which gives amble space for supertankers and rigs.
- The fjord steeply goes down to 70 m depth with 25 m depth close to the current beach. More than any European or American harbour.
- Large land area around the harbour for industry and service, over 1300 hectars.
- Wave heights are very low due to natural conditions.
- Main wind blows from north-east and south-west in this district. The mountain Gunnólfsvíkurfjall creates a natural shelter within the fjord.
- Weather conditions are good for the oil and gas industry as the seasonal changes are not extreme. Average heat ranges from -1° C in winter to 11° C in summer. Average annual precipitation is between 500-750 mm. Hardly any snow layer during winter nor heat extensions during summer create the perfect condition for year round industry.

Gunnólfsvík / Finnafjörður is already a designated industrial zone.

Sea depth reaches 25 m close to the beach in Finnafjörður. A state-of-the-art radar station is located on top of Mt. Gunnólfsvíkurfjall.

LNG tanker.

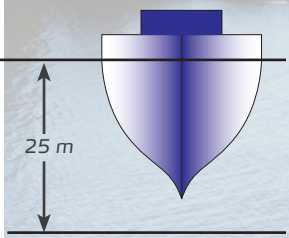


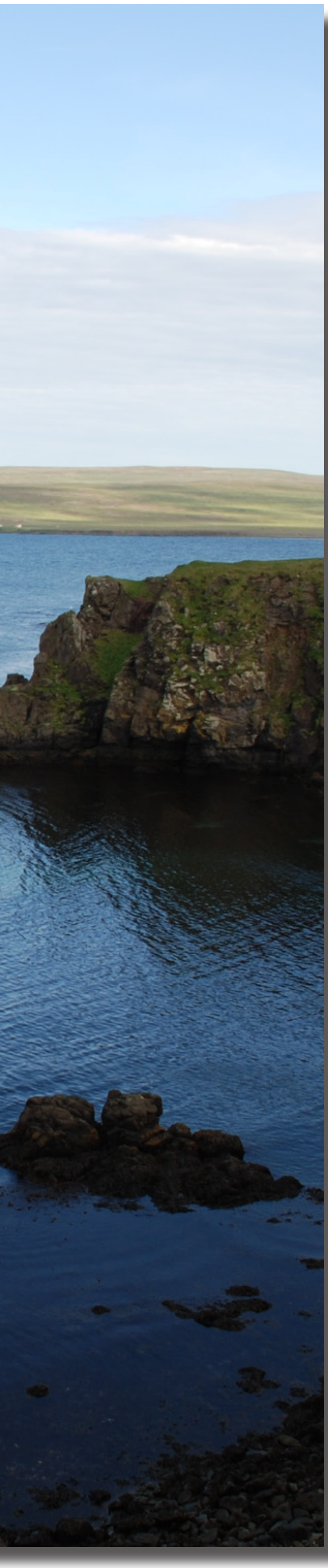
Average windspeed in Finnafjörður in the years 2000-2006

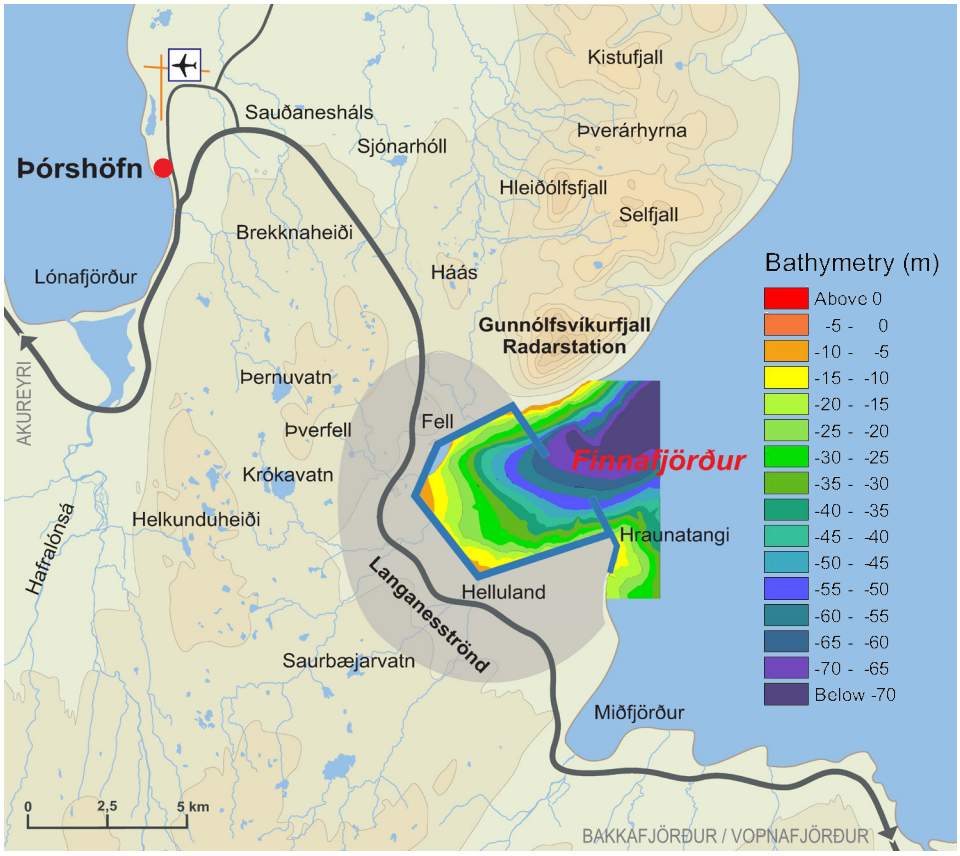
11° C av. summer

-1 ° C av. winter

Average heat in Finnafjörður in the years 2000-2006







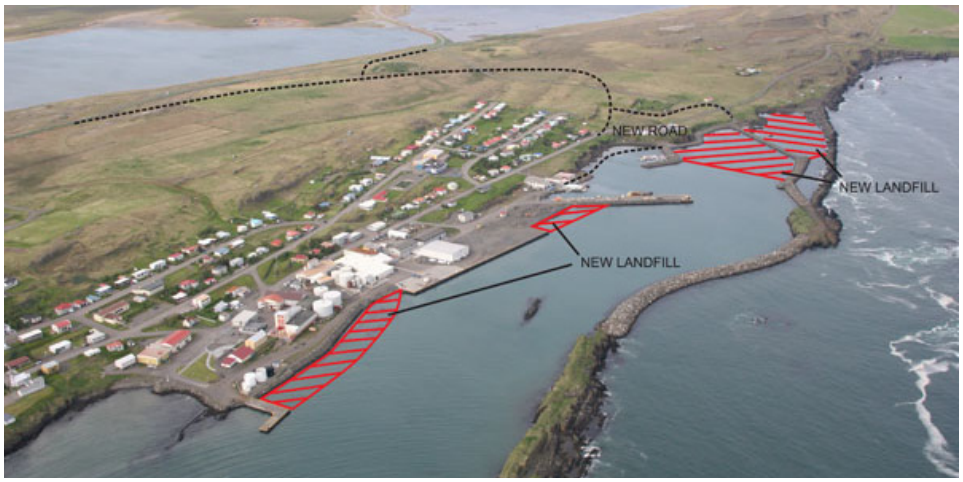
Sea depth in Finnafjörður.

Deep water port in Finnafjörður

The diagram shows the depth of Finnafjörður, steeply going down to over 70 m. The length of harbour docks can surpass 10 km and industrial- and service area can cover more the 1300 hectars of flat land.

Harbour in Vopnafjörður

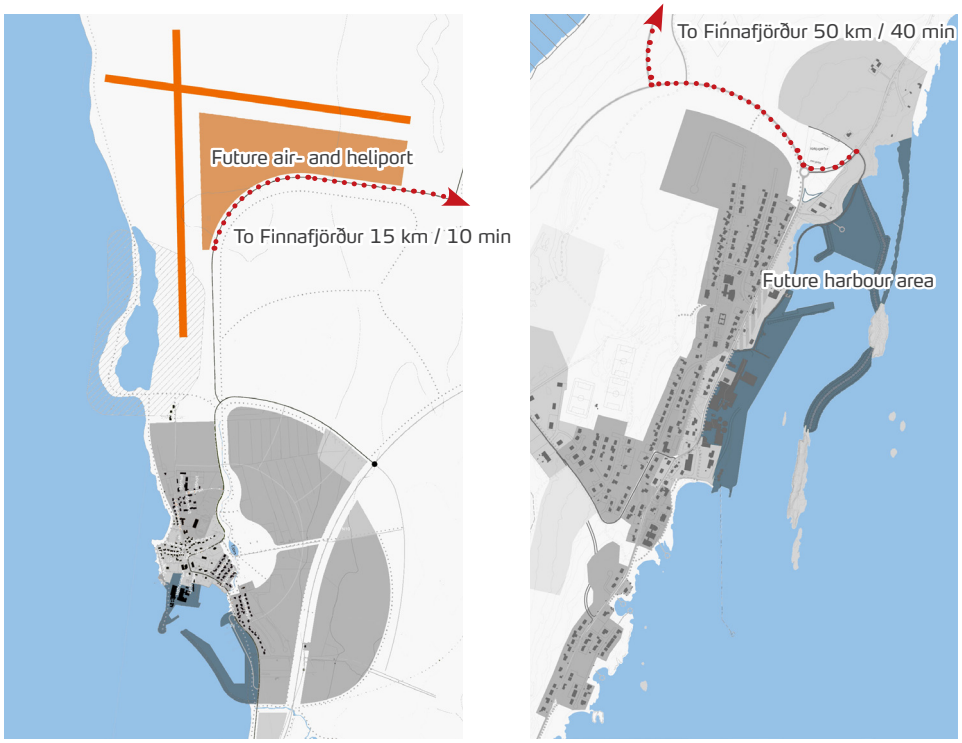
The harbour in Vopnafjörður will be the service centre for initial oil and gas exploration in the Dreki area between Iceland and Jan Mayen. The harbour with a depth of 12 m is excellently sheltered with good facilites for oil exploration activities. Expansion possibilities are very good with good direct connection to the highway system.



Current harbour and future plans for Vopnafjörður.

Airport and heliport in Þórshöfn, Langanesbyggð

- Airports for domestic flights are located both in Þórshöfn and Vopnafjörður. The airport in Þórshöfn will be enlarged with two 2200 m long landing strips, allowing excellent conditions for domestic flights and medium international flights.
- The airport in Þórshöfn is a good heliport and due to its strategic location it is frequently used by the Icelandic Coast Guard. It will be enlarged to serve oil/gas exploration and production north of Iceland and east of Greenland along with all security services.
- Flight conditions at Þórshöfn airport are good as it is in open landscape with limited turbulance, good visibility and excellent navigation facilities.
- Security and health service is of high standard with hospitals located in Akureyri and Reykjavík. Health care centers are in Þórshöfn and Vopnafjörður.
- International airports are in Akureyri and Egilsstaðir. The main international airport in Keflavík, with daily worldwide connections, is an hours flight away.



Future plans for Þórshöfn and Vopnafjörður

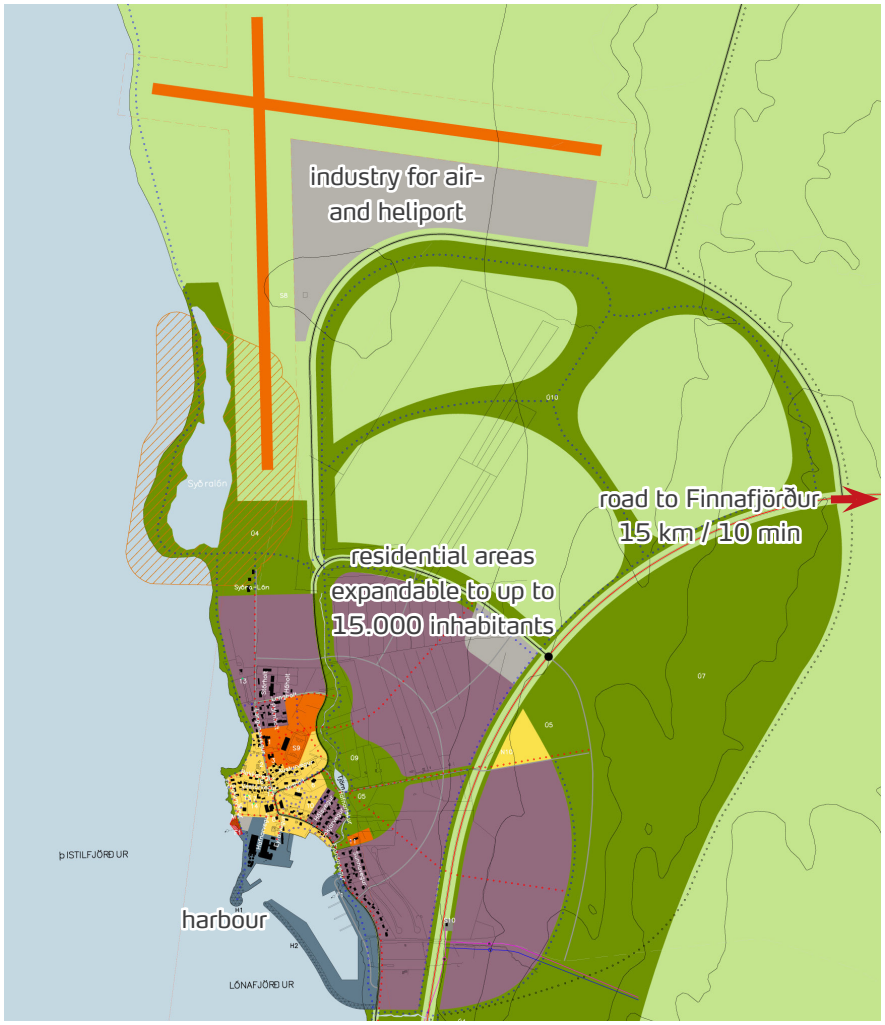
Open landscape in north east Iceland.

Security service

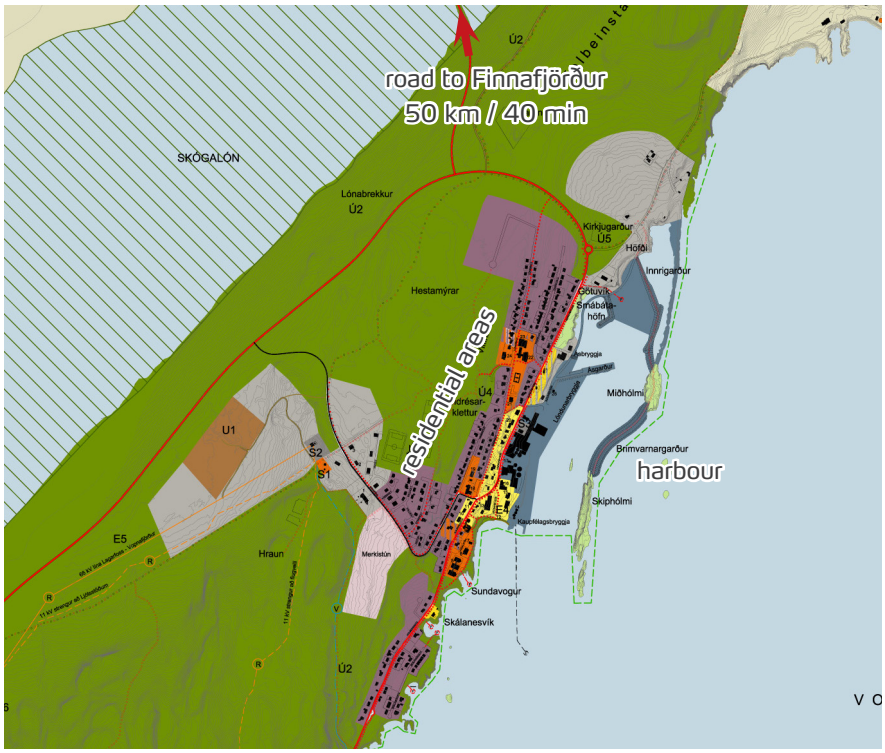
All operators exploring or producing oil/gas are obliged to serve their employees with medical service. They often do that with a third party based on so called search and rescue contracts (SAR).

Act on the Icelandic Coast Guard No. 52, June 14th 2006

Act No. 33/2004 on marine and coastal antipollution measures



Proposed future expantion plan for Þórshöfn.



Masterplan for Vopnafjörður.

Aerial view of Bakkafjörður.

Aerial view of Þórshöfn.

Aerial view of Vopnafjörður.

Bjarnveig Skaftfeld

Hilma Steinarsdóttir

ARCTIC PORTAL
www.arcticportal.org

References

Arctic Climate Impact Assessment. (2005). AMAP; CAFF; IASC. (C. U. Press o. Document Number)

Arctic Marine Shipping Assessment 2009 Report. (2009). Arctic Council; PAMEo. Document Number)

Arctic Offshore Oil and Gas Guidelines. (2009). Arctic Councilo. Document Number)

Iceland in the Arctic. Foreign ministry of Iceland. (2009)

Icelandic Coast Guard; Search and Rescue. from http://www.lhg.is/english/search_and_rescue/

Icelandic Maritime Adm. http://vs.en.sigling.is/pages/1076

Oil exploration in the Dreki area on the Jan Mayen Ridge. (2007). (M. o. I. Iceland o. Document Number)

Preparations for awarding licences for exploration and production of hydrocarbons. (2006). Reykjavík: Sagex AS. (I. M. o. Industry o. Document Number)

Contact

Halldór Jóhannsson
halldor@arcticportal.org

DREKI
AREA

2011
www.drekiarea.is