Finnish Transport and Communications Agency

Sailing Directions for Finnish waters

Part 1 – General Information

Finnish Hydrographic Office / Traficom

20.12.2021

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1 General information

The Sailing directions for Finnish waters is a Nautical Publication published by The Finnish Transport and Communications Agency (Traficom). Traficom is the national authority in approval and safety matters, including hydrographic services. Traficom is responsible for production of Nautical Charts and Nautical Publications. This publication aims to guide the mariner and provide general information to support information given in the printed and electronic charts.

1.1 New editions and updates

Notices to Mariners are used to inform users of new editions and updates to this publication. Preliminary and Temporary Notices to Mariners are normally not reflected in this publication, and users are advised to separately obtain the list of Temporary and Preliminary notices in force. Notices to Mariners normally simply indicate the need for users to obtain a new version of a publication. In cases where discrepancy exist between the nautical chart and a publication, priority shall be given to the information in the updated and corrected nautical chart.

1.2 Overview of related publications and services

1.2.1 Sailing directions for Finnish waters - Part 1 - General information

This volume contains general information and instructions. Further information and updated versions for download are found online. https://fiho.fi/lnk/sd/en

1.2.2 Sailing directions for Finnish waters - Part 2 - Main approach channels

Part 2 contains channel design data of the main approaches. These volumes are published by area, following the introduction of nautical charts in Baltic Sea Chart Datum 2000 (N2000).

The table shows published and planned volumes of the Sailing directions for Finnish waters - Part 2. Gray color indicate planned volumes. For an updated list of currently published publications see; https://fiho.fi/lnk/sd/en

- *Part 2.1.1 - Main approach channels - Gulf of Finland, East*
- *Part 2.1.2 - Main approach channels - Gulf of Finland, West*
- *Part 2.2.1 - Main approach channels - Archipelago Sea*
- *Part 2.2.2 - Main approach channels - Aland Sea*
- *Part 2.3.1 - Main approach channels - Sea of Bothnia*
- *Part 2.3.2 - Main approach channels - The Quark*
- Part 2.3.3 - Main approach channels - Bay of Bothnia 12/2021
- *Part 2.4.1 - Main approach channels - Inland waterways*

1.2.3 The Finnish List of Lights

Lists of Lights are available as downloadable PDF-publications. The publication is divided into sections in order to facilitate both usage and updating. General information is found in a separate publication. The tables of lights are separated

into different publications for coastal areas and inland waterways. Further information and updated versions; https://fiho.fi/lnk/ll/en

1.2.4 Notices to Mariners

Notices to mariners are available online. Also PDF-booklets are issued every 10 days. http://fiho.fi/lnk/tm/en

1.2.5 Chart product catalogue

The chart product catalogue provides information of the available nautical printed and electronic S-57 ENC charts, and the chart datum of each chart. The online chart product catalogue is available at; https://fiho.fi/lnk/chcat/en

1.2.6 Online access and fiho.fi permalinks

The domain *fiho.fi* is used to create short and permanent links to various internal and external resources. The fiho.fi permalink does not indicate that the actual resource behind the link is monitored or validated by Traficom.

2 Concepts, terms and definitions

Due to a substantial amount of international and national standards, conventions, and practices, some terms might have several applications. Main sources of reference include the International Hydrographic Organization (IHO) Hydrographic Dictionary S-32 and / or The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) International Dictionary of Marine Aids to Navigation.

2.1 Concepts related to Nautical charts, publications and services

2.1.1 Nautical charts and publications

The concept of nautical charts and publications is based on the SOLAS convention and other international standards. The structure, symbology and content of nautical charts and publications follow international conventions, standards and recommendations as far as possible.

Chart symbology is based on the international standard S-4 of the International Hydrographic Organization (IHO). Electronic navigational charts (ENC) are produced in accordance with the international standard S-57, IHO Transfer Standard for Digital Hydrographic Data. The standard sets out the technical requirements for electronic navigational charts.

In Finland, the Finnish Transport and Communications Agency produces the nautical charts. Additionally to nautical charts, also nautical publications to support these are produced. Publications include Sailing directions, List of Lights and Notices to Mariners.

2.1.2 Other publications and external services

Only the most relevant information is reproduced in this publication. In many cases, information present in external services and publications is simply presented, with a link to the actual information provided. These services and publications are usually available online as PDF. The original publisher is responsible for the correctness and updating of these externally linked publications.

2.2 Concepts related to channels

Concepts related to channels are based on and further described in the instructions: ***Principles and application of channel depths in Finland*** published 11/2021. https://fiho.fi/lnk/chdepth/en and **Fairway terminology**, published 11/2021. https://fiho.fi/lnk/chtrm/en.

Since 11/2021, the term "authorized draught" is withdrawn and replaced by the term "design draught". Any draught indicated on a nautical chart, even if using the international symbol for authorized draught, shall in Finland be understood as the design draught as described below.

2.2.1 DESIGN DRAUGHT

FI: mitoitussyväys, SV: dimensionerat djupgående

The design draught of a channel refers to the planned (static) draught at which the vessel, for which the channel was designed, normally can use the channel. The design draught is given in reference level (chart datum), and the difference between the actual water level and chart datum is taken into account as an increase or reduction in the design draught indicated for the channel. The design draught does

not guarantee that any vessel in any circumstances and conditions could use the channel without risk of grounding.

2.2.2 (GROSS) UNDERKEEL CLEARANCE

FI: varavesi, SV: djupmarginal

The gross underkeel clearance (Gross UKC) of a channel refers to the additional depth planned for the channel in addition to its design draught. The gross underkeel clearance of the channel is the sum of the motion allowance planned for the channel and the net underkeel clearance. Correspondingly, gross underkeel clearance is the difference between the channel's safe clearance depth and its design draught. The gross underkeel clearance may vary in different sections of the channel.

2.2.3 SAFE CLEARANCE DEPTH

FI: varmistettu vesisyvyys, haraustaso, SV: kontrollerat vattendjup, ramat djup

The safe clearance depth of a channel refers to the depth to which it has been secured that the channel is clear. Areas with safe clearance depths are normally secured by surveys conducted using either a multibeam echo sounder or a mechanical sweep.

2.2.4 MOTION ALLOWANCE

FI: liikevara, SV: rörelsemarginal

The motion allowance of a channel refers to the planned additional depth of the channel in addition to the design draught, reserved for vessel motion.

2.2.5 DYNAMIC DRAUGHT

FI: dynaaminen syväys, SV: dynamiskt djupgående

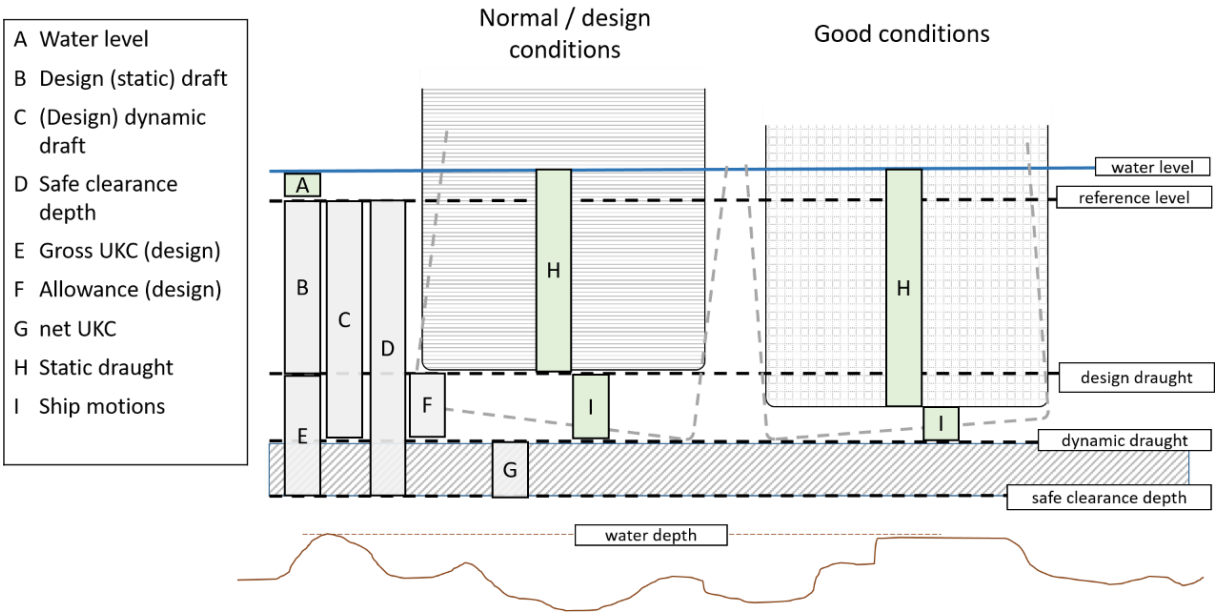
The dynamic draught of a channel refers to the level the vessel's keel may reach when the vessel moves in the channel. (static draught + motion allowance).

2.2.6 NET UNDERKEEL CLEARANCE

FI: kölivara, SV: kölmarginal

Net underkeel clearance (net UKC) refers to the minimum distance between the vessel's keel and the channel's safe clearance depth that should always remain under the vessel's keel while the vessel is underway. The net underkeel clearance is the difference between the channel's safe clearance depth and the dynamic draught. The net underkeel clearance is specified for merchant shipping lanes in connection with channel design. The minimum value of net underkeel clearance in coastal merchant shipping lanes is 0.5m, and in the merchant shipping lanes in inland waters and in shallow channels, it is 0.3m.

Concepts related to channels



3 Charts and charting

3.1.1 Chart datums

Due to the small size of the Baltic sea, the Finnish coastline is not affected by tide. The traditional vertical chart datum for nautical charts has long been Mean Sea Level (MSL). Theoretical mean sea level (MSL) is sometimes referred to as theoretical mean water (MW). Based on a mutual agreement within the Baltic Sea Hydrographic Comission (BSHC), a transition to the Finnish implementation (N2000) of the common Baltic Sea Chart Datum (BSCD2000) is initiated in 2021. The first nautical charts using chart datum BSCD2000 (N2000) are published for the Bay of Bothnia 12/2021. It is estimated that all charts are re-published with chart datum BSCD2000 (N2000) by the end of 2026. Additional information; https://fiho.fi/lnk/n2000/en

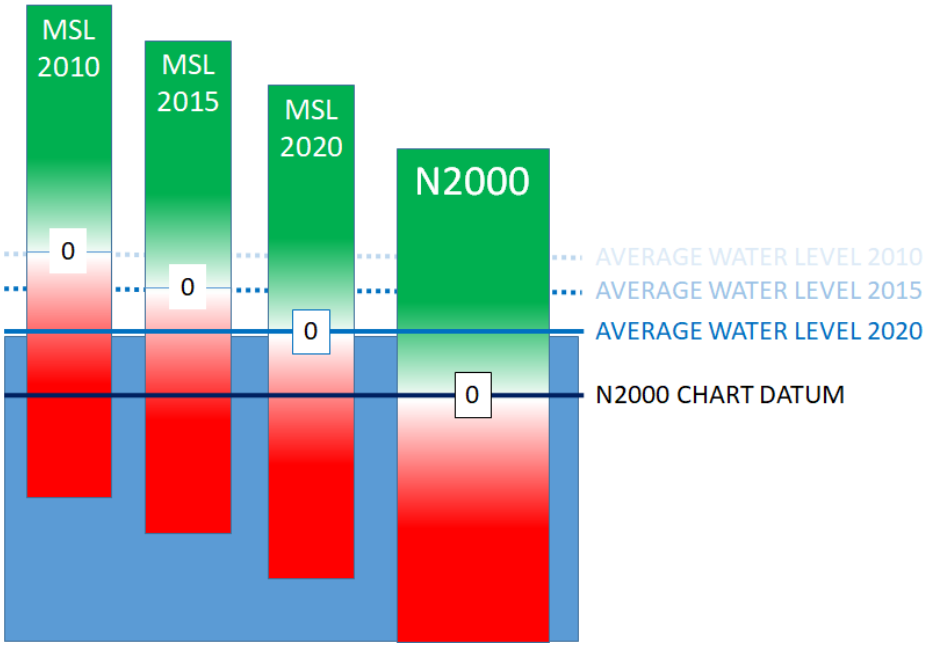
3.1.2 Vertical reference systems and chart datum

The vertical reference system (sometimes also referred to as height system) N2000 is based on the Third Levelling of Finland (1978–2006). It is a Finnish realization of the common European height system, and its datum is derived from NAP (Normaal Amsterdams Peil). The countries around the Baltic Sea use a collective name of the system, which is Baltic Sea Chart Datum 2000, or abbreviation BSCD2000.

Theoretical mean water, also known as theoretical mean sea level (MSL), is an estimate for the long-term expectation value of sea level, made for practical purposes. Land uplift, global sea level rise, as well as changes in the Baltic Sea water balance are taken into account. Because of these changes, the theoretical mean sea level is not a constant. The rate of change of the theoretical mean sea level from year to year is not constant either. The Finnish Meteorological Institute confirms the height of the theoretical mean sea level annually.

Nautical charts using MSL as chart datum usually contain data from different years, without specifying the actual year of each measurement. Although the annual change is insignificant over a few years, an increase in uncertainty is introduced over decades.

Starting from 15 September 2021, The Finnish Meteorological Institute gives the sea levels in both MSL and N2000 for each coastal tide-gauge (Mareograph). The actual difference (offset) between the sea levels given in MSL and N2000 will change between stations over time.



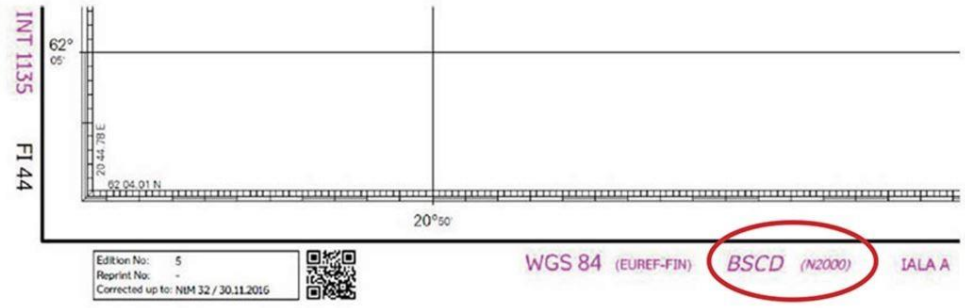
The Mean Sea Level (MSL) represents the average water level during a given year. For the Finnish coastline, in 2021 the difference between BSCD (N2000) Chart datum and the average water level is approximately 10 - 20cm.

3.1.3 Transition period and chart datum recognition

It is important for the user to know the chart datum of a specific chart. This might pose special challenges during the transition period. The user can use following tools to check the chart datum of a particular chart.

3.1.3.1 Printed charts

The chart datum is visible on all printed charts. All N2000 charts will have a statement of chart datum in the upper left corner. *"Soundings and heights in meters and referred to Baltic Sea Chart Datum 2000 (N2000)."* Additionally the lower left corner will contain the text *BSCD (N2000)* and the right upper corner the text *BSCD*.



3.1.3.2 S-57 ENC charts

Due to restrictions in the S-57 standard, indication of the new chart datum in S-57 ENC is not straightforward. All charts will have attributes *Vertical Datum (VDAT)* and *Sounding Datum (SDAT)* set to value 3 (= Mean Sea Level), as internationally agreed within BSHC. As this is not an explicit indication of whether the chart datum refers to MSL or BSCD2000 (N2000), additional information is given on BSCD2000 (N2000) ENCs using a *Nautical Publication Information (M_NPUB)* feature. On BSCD2000 (N2000) ENCs there is a chart-wide *M_NPUB* feature with attribute *Information (INFORM)* indicating the chart datum to be BSCD2000 (N2000). The absence of such a feature indicates that the chart has MSL as the chart datum.

3.1.3.3 S-101 ENC- charts and other S-100 based products

In the future, the next generation ENC product specification S-101 and other S-100 based product specifications will have direct support for chart datum BSCD2000.

3.1.3.4 Online catalogue, all charts

Chart datum for all current charts, can be checked online using the online catalogue; https://fiho.fi/lnk/chcat/en

4 Lights, Buoys and Beacons

The maritime buoyage system follows recommendations by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA). Finland belongs to Region A, where a combined cardinal and lateral system is applied. The system is also applied to spar buoys, buoys and edge marks. The mark types include cardinal marks, lateral marks, isolated danger marks, safe water marks and special mark. Further information on Aids to navigation is provided in the Finnish List of Lights.

5 Fairways and public channels

According to the provisions of the Water Act (587/2011), a public channel is a channel designated as a public channel. Traficom confirms the design draught and the safe clearance depth for each public channel, and provides channel data essential for navigation in nautical charts and nautical publications. Public channels are divided into 6 classes, based on the traffic these channels are planned to serve. Classification includes Merchant fairways (classes 1 and 2) and Shallow fairways (classes 3, 4, 5 and 6).

MAIN CLASS		CLASS	Description	Main use
Merchant fairway	A fairway built and maintained primarily for merchant shipping. In this context, merchant shipping refers to coastal shipping that pays a fairway fee. Also the Saimaa deep fairway is considered a merchant fairway.	**1**	Nationally or regionally significant major merchant shipping routes on which the majority of waterborne freight flows pass.	Class 1 channels can be used in all visibility conditions. Winter traffic on ice-strengthened vessels or with the support of icebreaking assistance is possible.
		2	Mainly locally relevant merchant shipping lane or parallel or gateway to the main lane.	The use of class 2 channels in dark or in poor visibility conditions may be limited. The fairway has not been designed for winter navigation.
Shallow fairways	Fairways built and maintained primarily for recreational boating or for non-merchant commercial traffic.	**3**	Lanes serving fishing vessels, barge traffic, timber rafting and regionally significant passenger traffic.	
		4	Main fairway for boating, forming a route between areas.	
		5	Fairway for boating.	
		6	Boating route.	

5.1 Fairway related data

Finnish fairway design is based on national guidelines. These national guidelines follow, as far as practicable, the International guidelines by the World Association for Waterborne Transport Infrastructure (PIANC). The most important fairway-data is provided and maintained in nautical charts and publications, provided by Traficom. Additional data is provided by fairway authorities. The availability of additional data is usually indicated in the nautical publications.

Fairway design is based on a given vessel, for which passage should be possible in most normal conditions. This vessel is called the designvessel. The designvessel is usually referred to by its main dimensions, including Length, Breadth, Draught and

the block Coefficient (bC). The static draught of the designvessel also becomes the *design draught* of the fairway. Each fairway consists of several parts, usually due to the different need for allowance in the (less sheltered) outer and (more sheltered) inner parts of the fairway. Each part of the fairway usually has unique *safe clearance depth* and *design speed*. The recommended minimum safety margin (net UKC), based on fairway design is 0.5m for the coastal merchant fairways.

For each fairway part, the basic values **safe clearance depth, design draught** and **net UKC** are given. The other values can be calculated as indicated in the list below.

- (Gross) UKC = safe clearance depth - Design draught
- Motion allowance = (Gross) UKC - net UKC
- Dynamic draught = Design draught + Motion allowance

For fairway parts, usually a **design speed** is also given. The design speed indicates the maximum speed the design vessel can use without exceeding the allowance of the fairway, due to excessive squat. **Design draught**, **design speed** and other **design vessel characteristics** are values used for fairway-design.

Safe clearance depth and design draft shall always be corrected for current water level.

5.2 Provision of fairway related information in Nautical Charts and Nautical Publications

5.2.1 Data is provided in nautical charts and publications

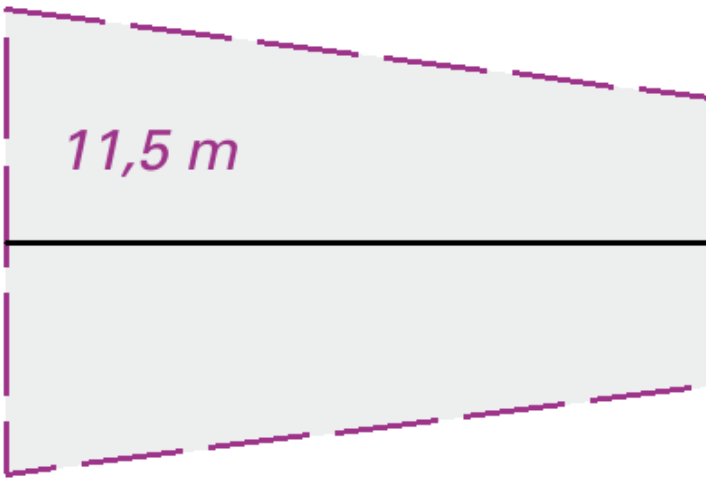
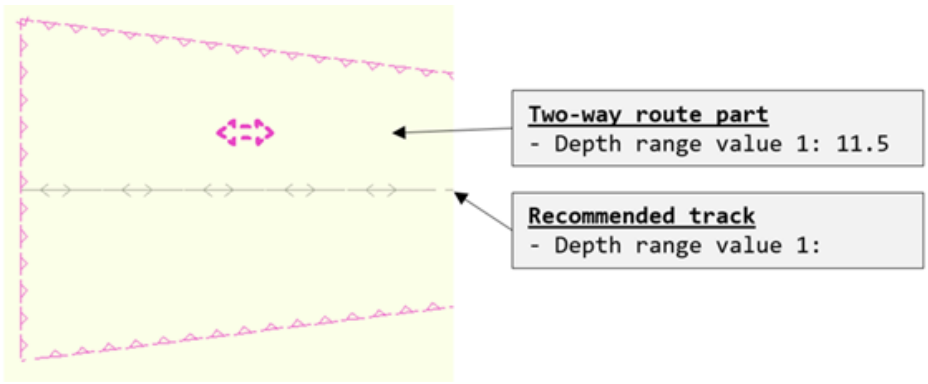
Fairway information for Merchant fairways (classes 1 and 2) is too complex to be displayed in full on the nautical chart. The nautical chart contains minimum depth information. Additional information, to support the nautical chart, including design draught, Gross- and net UKC is provided in nautical publications. The design draught shall always be corrected for current water level.

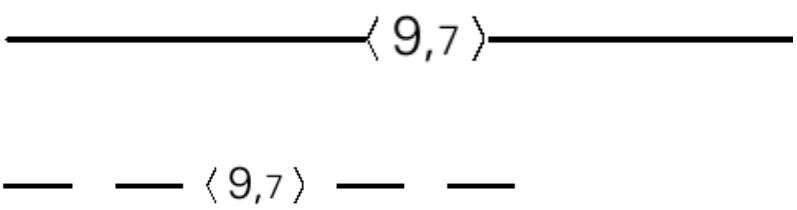
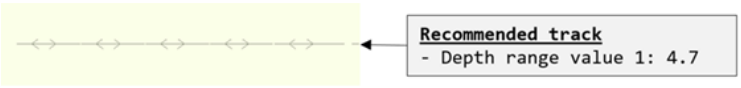
The main source of information for shallow channels (classes 3,4,5 and 6) is the nautical chart. Each fairway has a design draught, which is indicated on the charts. The design draught is indicated in chart datum, and shall always be corrected for current water level.

5.2.2 Fairway data in the N2000 charts

These are charts published in N2000 chart datum. The principle is that the chart contains either minimum depth or design draught. Minimum depths are included for merchant fairway classes 1-2, and design draught for fairway classes 3-6. For fairway classes 1-2, additional fairway data is published in the Sailing Directions for Finnish waters, part 2. In the S-57 ENC, a link to the additional data is also inserted into the *Information (INFORM)* attribute of the relevant features.

Fairway class	**VL1-2 (Merchant shipping)**
Data in nautical chart	minimum depth (= safe clearance depth)
Data in nautical publication	design draught, design speeds, design vessel dimensions and bC. Minimum net UKC, allowance, (Gross) UKC based on design.

Data display in printed chart	
Data attributes in S-57 ENC	
	Two-way route part (TWRTPT) Depth range value 1 (DRVAL1): minimum depth Information (INFORM): *For information, see http://fiho.fi/fwy/AXXXXXX* Recommended track (RECTRC) Depth range value 1: Information (INFORM): *For information, see http://fiho.fi/fwy/TXXXXXX*
Fairway class	**VL3-5 (Local transport, fishing, boating)** **VL6 (Boating routes)**
Data in nautical chart	design draught (shown as maximum authorized draught)
Data in nautical publication	-

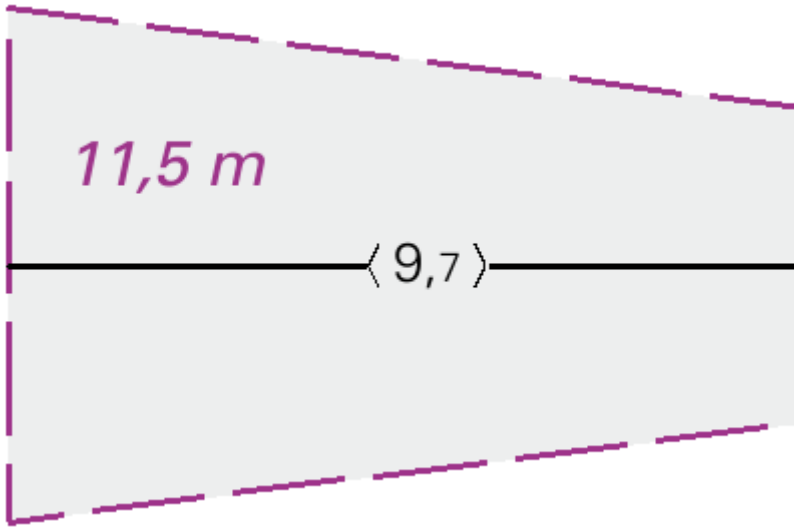
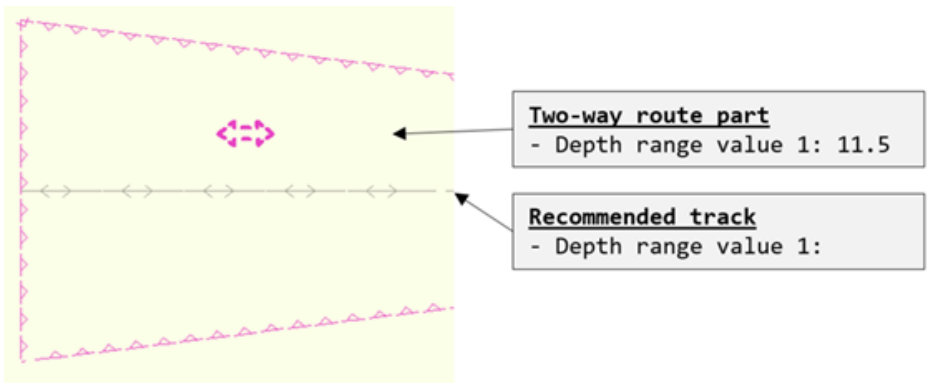
Data display in printed chart	
Data attributes in S-57 ENC	
	Recommended track (RECTRC) Depth range value 1 (DRVAL1): design draught (shown as maximum authorized draught)

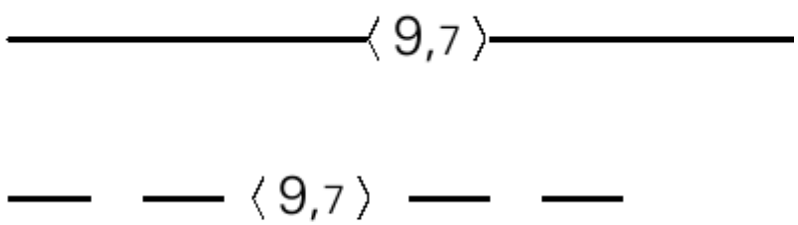
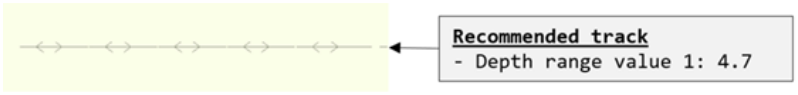
5.2.3 Fairway data in the MSL charts

Until gradually phased out and replaced by BSCD2000 (N2000) charts, MSL charts remain in use and new editions may be published. On printed charts issued in November 2021 or later, and on ENCs, fairway data is presented as described here. On printed charts issued earlier than November 2021, the presentation is slightly different with swepth depth indicating the equivalent of minimum depth.

For backwards compatibility, the design draught information is included additionally to the minimum depth for fairway classes 1 and 2. In the S-57 ENC, the design draught is inserted into the INFORM attribute of the relevant features.

Fairway class	**VL1-2 (Merchant shipping)**
Data in nautical chart	minimum depth (= safe clearance depth), design draught
Data in nautical publication	-

Data display in printed chart	
Data attributes in S-57 ENC	
	Two-way route part (TWRTPT) Depth range value 1 (DRVAL1): minimum depth Information (INFORM): *Design draught xx.x m* Recommended track (RECTRC) Depth range value 1 (DRVAL1): Information (INFORM): *Design draught xx.x m*
Fairway class	**VL3-5 (Local transport, fishing, boating)** **VL6 (Boating routes)**
Data in nautical chart	design draught
Data in nautical publication	-

Data display in printed chart	
Data attributes in S-57 ENC	
	Recommended track Depth range value 1 (DRVAL1): design draught

5.2.4 Fairway data in Nautical publications

The following additional fairway-specific data is given in part 2 of the ***Sailing Directions for Finnish waters***. Such data is published only for fairways in classes 1 and 2 after the fairway is published on a chart using N2000 as chart datum.

Data	**Explanation**	**Instructions for use by the mariner**
Minimum depth (Safe clearance depth)	Provided by the fairway authority, swept or surveyed.	The minimum (charted) depth must be corrected for current water level.
Design draught	Provided by the fairway authority, based on design defaults.	Design draught is provided for reference, and must be corrected for current water level.
Design speed	Provided by the fairway authority, based on design defaults.	Design data is provided for reference. Vessel squat and manoeuvrability is affected by speed.
net UKC	Based on fairway design defaults.	The net UKC is a margin for manoeuvrability and safety, that shall always remain under the keel.
(Gross) UKC	Minimum depth (Safe clearance depth) - Design draught = (Gross) UKC	Design data is provided for reference.
Allowance (for vessel movements)	Gross UKC - net UKC = Allowance	Design data is provided for reference.

Dynamic (design) draught	Design draught + Allowance = Dynamic (design) draught	Dynamic (design) draught is provided for reference, and must be corrected for current water level.
Design vessel dimensions	Provided by the fairway authority	Design data is provided for reference.
Design vessel bC (block coefficient)	Provided by the fairway authority.	Design data is provided for reference. The block coefficient affects squat.
Average water level in N2000	Provided by the Meteorological Institute. Only relevant for chart datum N2000, as average water level each year in MSL is always 0 by definition of the height system.	This value can be used to estimate the local average water level in N2000. This value is roughly equivalent to the local difference between MSL of the given year and N2000 reference levels.

6 Navigation

6.1 General information on Underkeel Clearance in the Baltic Sea

This chapter contains information extracted from the **Baltic Sea Clean Shipping Guide 2017**, produced by The Baltic Marine Environment Protection Commission, also known as the Helsinki Commission (HELCOM). HELCOM is an intergovernmental organisation and a regional sea convention in the Baltic Sea area. The guide contains information for mariners on environmental and safety of navigation measures in the Baltic Sea. The full guide is available through the HELCOM website https://helcom.fi/media/publications.

6.1.1 The Baltic Sea

The shallow Baltic Sea requires also special caution when calculating ships' Under Keel Clearance (UKC). Coastal states or port authorities may establish mandatory or recommended requirements for minimum UKC or maximum draught. The master is responsible for estimating the minimum UKC during the entire voyage from berth to berth, including those areas where the services of a pilot will be used. To assist the master with this requirement the Company, as defined in the ISM Code, could provide the master with written UKC guidance. The master and the relevant pilot should discuss and agree the voyage plan including the anticipated UKC.

Approaches to UKC determination commonly include three main elements:

- the static draught
- ship's movement related factors and
- a safety margin component including uncertainties.

The determination of UKC should be done as part of the detailed voyage plan, as is described in IMO Resolution A.893(21) "Guidelines for voyage planning". Detailed UKC calculations should be made to all areas with restricted depth. Calculations should take into consideration the characteristics of the area. Calculations should ensure safe conduct of the ship during transits, bearing in mind the ship's steering ability, manoeuvring characteristics, speed, and any other operational constraints that may be applicable due to the ship's UKC. Water depth should be estimated as the depth as charted on the navigational chart and corrected according to a correction value. The relevant data should be obtained through common channels of information to mariners and local warnings, i.e.: any pertinent information found in the sailing directions or local Notice to Mariners.

At least the following factors should be taken into consideration:

- The ship's draught
- Chart datum
- Water level at the calculated time for passing the area
- Weather at the calculated time for passing the area
- Squat at estimated speed
- Characteristics of the sea bed/ other sea bed related factors
- Prevailing current
- Expected waves
- Effect of possible icing on draught of the ship
- Local navigational warnings (e.g. change of water depth)
- Water density
- Ice conditions
- Hull form

6.1.2 UKC information and pilotage

The ship's draught, depth of the transit route, and the anticipated UKC should be part of the information exchange with the ship's pilot. UKC calculations should be presented to the pilot along with the voyage plan. Such considerations should preferably be documented by available means. Transits through shallow areas are to be considered in detail with reference to UKC. The pilot should be consulted for any additional information that may affect the minimum depth of the transit route.

6.2 General information on Underkeel Clearance in Finland

This chapter contains information extracted from the instruction ***Principles and application of channel depths in Finland*** published 11/2021, by The Finnish Transport and Communications Agency (Traficom). The instruction includes draught concepts associated with channels, and the principles for interpreting these concepts. The full instruction is available online. https://fiho.fi/lnk/chdepth/en

The instruction by Traficom contains general principles, but is not a comprehensive operational guideline. Additionally vessels must assure compliancy with company own UKC guidance and any applicable restrictions set up by local pilots, fairway- and harbour authorities. A discussion is initiated between the following organizations, in order to further harmonize terminology and requirements and establish best practices for channel use. Information in this section will be updated accordingly.

6.2.1 The Finnish Transport and Communications Agency (Traficom)

The Finnish Transport and Communications Agency (Traficom) is the national authority in approval and safety matters, including Hydrographic services (production of nautical charts and nautical publications). As the authority in charge of waterway maintenance, Traficom publishes general guidelines and principles related to channels and their use.

https://traficom.fi/en/

6.2.2 The Finnish Transport Infrastructure Agency (Vayla)

The Finnish Transport Infrastructure Agency (Vayla) is responsible for fairway design and maintenance of the public waterways. Vayla is also responsible for maintaining national guidelines for fairway design.

https://vayla.fi/en/

6.2.3 Finnpilot

Finnpilot Pilotage Ltd is a special assignment company entirely owned by the State of Finland. The company has the exclusive statutory right to carry out pilotage activities nationally.

https://finnpilot.fi/en/

6.2.4 Fintraffic

Fintraffic´s Vessel Traffic Services (VTS) provides vessel traffic services to merchant shipping and other marine traffic and maintains safety radio operations in cooperation with the other organizations and local harbour masters.

https://www.fintraffic.fi/en/

6.2.5 UKC calculation guidelines and best practices

6.2.5.1 Design draught

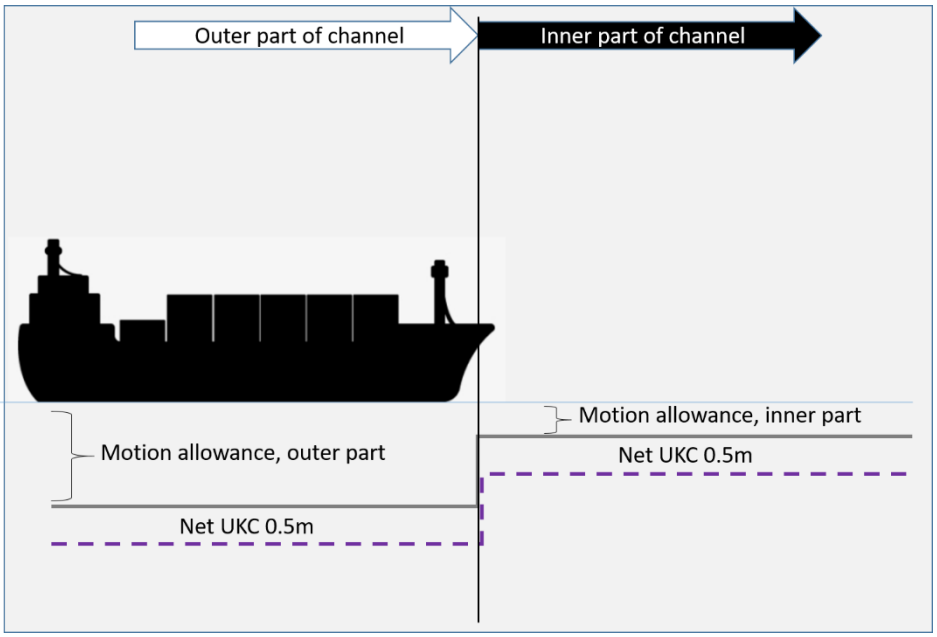
Each fairway has an established design draught. The design draught indicates the size of vessel the channel was designed for, and is provided either in a nautical chart or nautical publication. The design draught is related to a reference level (chart datum) and shall always be corrected for current or estimated water level before practical implementation. If no other knowledge or data is available for a detailed UKC-calculation, a vessel should use a static draught not exceeding the design draught of the channel, as corrected for current water level. Anyway, using a static draught less than the design draught of a channel does not guarantee a safe passage, especially in severe conditions. It is always the responsibility of the master of the vessel to decide on the safe draught, taking all available information into account.

6.2.5.2 Harbour basins

Established design drafts might not be available for all harbour-areas. In these cases, only the safe clearance depth of the area is indicated in the nautical chart or nautical publication.

6.2.5.3 Requirement for detailed UKC- calculation

The net underkeel clearance (net UKC) refers to the underkeel clearance that must remain under the vessel's keel at all times, when the increased draught caused by the vessel's motions is deducted from the gross underkeel clearance (net underkeel clearance = gross underkeel clearance - motion allowance). The net underkeel clearance also corresponds to the difference between the safe clearance depth and dynamic draught. The minimum net underkeel clearance on coastal merchant shipping lanes is 0.5 m.



The motion allowance, and correspondingly the Gross UKC, is greater in the outer part of the channel, than in the more sheltered inner part, even though the net UKC is always at least 0.5m. Even when motion allowance is determined case-by-case, the net UKC should remain as minimum 0.5m.

6.2.5.4 Requirement for UKC calculation and stability information

In some specially designated ports, piloted vessels might be allowed to exceed the design draught (as corrected for current water level) of a channel. In these cases vessels are required to provide a detailed UKC- calculation and related data, including vessel stability information 24 hours prior to pilotage. Finnpilot requires the following stability information for piloted vessels exceeding the design draught or safe draught of a channel:

1. Centre of Buoyancy (KB)
2. Centre of Gravity (KG),
3. Metacentric Height (GM)
4. Block coefficient (bC)

For further information, refer to Finnpilot service terms: https://fiho.fi/lnk/piltrm/en

All vessels using a draught exceeding the design draught of a channel are recommended to have the same information and calculations available.

6.2.6 UKC calculation tools and methods

UKC is mostly affected by vessel squat. There are several methods and applications available for calculating the squat. The Finnish Transport Infrastructure Agency (FTIA) provides tools for estimating the approximate squat, based on the Huuska-Guliev method. These tools are available online at https://fiho.fi/lnk/fwtools/en

The provided tools are suitable for squat estimation by vessels using the coastal merchant shipping lanes. The tools are based on channel design guideline principles. When using the tools, users must naturally also take into account the principles and requirements of their own safety management system (UKC-policy). The master of the vessel is always responsible for manoeuvring of the vessel and the used draught, also when the vessel participates in the Vessel Traffic Service or follows the instructions by a pilot.

7 Saimaa canal and inland waterways

The natural open water season in Southern Saimaa and the Saimaa Canal is on average 211 days, starting at the beginning of April and ending at the end of January.

During the traffic season, the Saimaa Canal and other deep-water canals are operational 24 hours a day. The maximum ship size is 82.5 x 12.6 x 4.35 metres and the maximum clearance is 24.5 metres. Vessels shall listen to VHF radio channel 9 (Saimaa VTS) and 11 (locks) while in Saimaa Canal. In the Saimaa Canal, pilotage is required on all vessels that are over 35 metres in length.

The Finnish Transport Infrastructure Agency's fairway unit provides information on traffic in the Saimaa Canal and Lake Saimaa. Regulations, guidelines and communications concerning canals and canal traffic are also reported in the Notices to Mariners publication.

Further information https://fiho.fi/lnk/saimaa/en

7.1 Buoyage

Approach channels are marked with lights, light buoys and buoys with lateral markers in accordance with the international A system. The approach channel markings are maintained by the Russian authorities. The Saimaa Canal is marked with marker lights (in orange on the western bank, green on the eastern bank), buoys, leading marks, lights and radar reflectors in accordance with the international system. Fairways in Lake Saimaa are marked with a combination of cardinal and lateral marks in accordance with the international A system.

8 Vessel Traffic Services in Finland

Vessels of 24 metres in length overall or more are obliged to participate in the vessel traffic services. When navigating in the VTS area, vessels are required to maintain a continuous listening watch on the working channel used in the area. Furthermore, vessels are obliged to obey the rules relevant to the traffic in the VTS area. Vessels navigating in the VTS area, which are not obliged to participate in the vessel traffic services, are recommended to maintain a listening watch on the working channel in the VTS area or sector in question.

Vessels of 300 gross tonnage and over are required to participate in the Gulf of Finland mandatory ship reporting system GOFREP. Also, vessels under 300 gross tonnage are encouraged to listen to the relevant VHF-traffic channel. Vessels under 300 gross tonnage are required to report in circumstances where they; are not under command, are restricted in their ability to manoeuvre, are at anchor in the TSS or have defective navigational aids.

Detailed instructions are available within the regional Master's Guides, found online at https://fiho.fi/lnk/vtsguide/en

8.1 Gulf of Finland VTS Centre

Located in Helsinki, the Gulf of Finland VTS Centre monitors vessel traffic in both Finland's territorial waters from Hanko to the eastern border in Santio and in international waters in the Gulf of Finland.

Helsinki Traffic, which is responsible for monitoring of the northern GOFREP area, also operates from the Centre. Helsinki Traffic maintains the mandatory ship reporting system for the area and improves vessel traffic safety by intervening in abnormal situations and warning vessels of hazards such as shoals or vessels not under command. It also supervises compliance with COLREGs within the area and reports violations to maritime authorities.

8.2 Western Finland VTS Centre

The Western Finland VTS Centre in Turku monitors vessel traffic in both Finland's territorial waters from the Archipelago Sea up to Tornio and in the South Åland Sea TSS (Traffic Separation Scheme).

The Western Finland VTS Centre also includes Åland Sea Traffic, which monitors vessel traffic in the South Åland Sea TSS, and Turku Radio, which is responsible for safety radio broadcasts and helps ensure distress radio communications along the Finnish coast.

8.3 Saimaa VTS

The VTS centre for the Saimaa region is located in Lappeenranta, and its surveillance area encompasses the Saimaa deep water fairway. Saimaa VTS does not monitor vessel traffic in the Saimaa Canal. The VTS centre maintains a real-time status of the area and broadcasts information to vessels operating in the area. Crucial information to vessels include information on malfunctions of aids to navigation and exceptional weather and ice conditions. The centre also maintains distress and safety radio communications in the area.

Saimaa VTS operates only during its navigation season. The navigation season corresponds mostly to the Saimaa Canal opening times, but Fintraffic VTS will release separate announcements on its start and end dates.

8.4 Maritime safety radio

Turku Radio, which broadcasts from the Western Finland VTS Centre, is responsible for safety broadcasts along the Finnish coast, including navigational warnings, maritime weather forecasts and ice reports. During winter, Turku Radio also broadcasts the vessel and route information on behalf of the icebreakers.

If necessary, Turku Radio supports the Finnish Border Guard in ensuring emergency radio communications within Finland's territorial waters. Turku Radio also receives reports on defective aids to navigation +358 800 181 818.

Radio station details

VHF	Channel 16
VHF-DSC	Channel 70
MMSI	002300230
Answerback	Turku Radio
Call sign	OFK
Position	60°26,375'N 022°13,600'E

Further information is provided in the Finnish List of Lights https://fiho.fi/lnk/ll/en

9 Winter and Ice navigation in Finland

Ice breaking Assistance is provided in all class 1 approach channels with a minimum design draught of 8 metres leading to a winter port designated by the FTIA and in other destinations specified by the FTIA.

9.1 Finland's winter navigation booklet

The Winter Navigation Unit at the Finnish Transport Infrastructure Agency (FTIA) has compiled a booklet of general instructions for winter navigation. The shipping companies or agents must ensure that this publication 'Finland's Winter Navigation' is forwarded to all of their vessels in good time before the vessels enter the area.

Further information is available at https://fiho.fi/lnk/winternav/en

10 Search and Rescue

Search and rescue is described in more detail in the Finnish List of Lights, General information. https://fiho.fi/lnk/ll/en

In Finland, MRCCs receive distress messages by telephone and via the Global Maritime Distress Safety System (GMDSS). Contact between the MRCCs and both vessels in distress or danger and the subsidiary and maritime SAR units operating at sea takes place via the marine VHF radio distress and working channels and digital se-lective calling (DSC).

PRIMARY EMERGENCY RADIO FREQUENCIES

- VHF-DSC channel 70
- VHF channel 16MF
- DSC frequency 2187.5 kHz (sea areas)

The Finnish Coast Guard’s radio network covers GMDSS areas A1 and A2. These areas cover Finland’s Search and Rescue Region in its entirety. The VHF network in area A1 comprises 22 VHF base-stations. The A2 area is covered by a MF-network of 4 MF base-stations.

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