



Questionnaire to BSHC Member States on the implementation status of Baltic Sea Chart Datum 2000 (BSCD2000), S-104 Water Level and S-111 Surface Currents

Please return to Thomas Hammarklint by email (thomas.hammarklint@sjofartsverket.se) at the latest by **15 March 2024**.

Member state	Estonia
Date of reply	2024-03-06
Point of Contact	Gabriela Kotsulim, Estonian Transport Administration, gabriela.kotsulim@transpordiamet.ee

1. Are all the decisions done to implement the Baltic Sea Chart Datum 2000?

1.1. When the decisions have been done or planned to be done?

All decisions are done

1.2. What are the national decisive organizations?

Estonian Transport Administration

2. What is the national status of implementation of chart datum?

2.1. What actions have already been done?

**We informed ports, mariners and others about new height system*

** We have created a new vertical reference homepage section with information for ports and mariners*

** Also we held an information day on December 2017 for ports, pilots and other interested parties.*

** Created a booklet with most important information about the change of the vertical reference system and changes on navigational charts*

** Published information about the implementation of BSCD2000 in the NtM (continuously published since December 2018).*

** EMA has written 2 dedicated articles in two different maritime magazines and given an interview to a maritime radio about the changes in navigational information that arise from the new vertical system.*

**Maritime Administration explained transition process in Tallinn Boat Show on 6-8 March 2020 (Meremess- The year's most waited maritime event in Estonia is also the biggest boat show in the Baltic States. In addition to boats, on display at fair will be a diverse array of services for boaters, new engine models, ever more sophisticated navigation devices and other electronics products, routing software)*

We started our transition process with Berthing, Harbour ENC's and Berthing, and Harbour paper charts.

Estonia has 79 Berthing, 17 Harbour, 26 Approach, 14 Coastal and 7 General ENC's, 65 paper charts and 3 chart albums.



From 1 January 2018 to March 2023, we completed:

- *17 harbour ENC-s
- *79 berthing ENC-s
- *9 harbour paper charts
- *11 berthing paper charts

We also produced 3 chart album that contains charts from two height systems. Charts in scale 250 000 and 50 000 are in the BHS-77 and charts in scale 1:2000 to 1:7500 are in BSCD2000.

2.2. What actions have been planned to be executed and what is the schedule?

We are compiling Approach cells.

In addition to changing the height system, we also make Approach cells on a new scale (45 000 to 22 000).

After that Coastal and General cells.

2.3 Which ENC Approach have been updated with the new reference datum? If possible, attach a chart datum overview covering Your countries nautical charts, designed graphically or as a table. Also, if possible, include an attribute to each named chart describing the CD difference to BSCD2000 in cm (CD minus BSCD2000). Example attached at the end of the Questionnaire (Annex).

0, Approach cells are in work

2.4 If you implemented the attribute VERDAT in S-57 (ENC), are You using VERDAT=3 (Mean Sea Level)?

Yes

3. Has Your country established the national realization of EVRS and are the water level stations connected to this new height system (BSCD2000)?

3.1 Which organization/-s is responsible for the water level stations/data in Your country?

Estonian Land Board, Taltech Institute of Maritime Systems and Estonian Environmental Agency.

3.2 Which reference are used today to present water level information? Does Your country planning to present water level information referring to BSCD2000? Doing it already today? Date decided for change the reference to BSCD2000?

Water level is presented referring to both: BK77 and BSCD2000

<http://on-line.msi.ttu.ee/meretase/?en>

<https://www.ilmateenistus.ee/meri/vaatlusandmed/kogu-rannik/kaart/?lang=en>

and

<https://www.ilmateenistus.ee/siseveed/veetase-navigatsioonikaardi-nullist/?lang=en>



3.3 Are there any plans for digital service/-s intended for the users to have the option to choose MSL or BSCD2000 as the reference level for water level information?

This is already done (links are in point 3.2)

3.4 GNSS supported UKC control/confirmation is probably the reality in a few years. We also need reliable water level predictions for carrying out optimal loading and real time water level data to check the GNSS data. Do we need a shared service in the Baltic Sea for water level information (predictions/real-time), which fulfils nautical needs and demands?

Perhaps this is good idea, predictions could be much more reliable if they are based on data from multiple countries.

3.5 Do we need to work together with the development of the IHO S-104 standard?

4. Are the relevant national contacts and interest groups defined for the change of chart datum and water level reference?

4.1. What are the essential national interest groups in Your country?
Harbours, mariners, educational institutions, scientific organizations.

4.2. Are the relevant point of contacts known and contacts been made to them?
Yes

4.3 Are You planning any information campaign about the change of chart datum and water level reference? If, yes have you published information about this somewhere?
see point 2.1

5. Have You identified any obstacles or major issues concerning transition to the harmonized vertical reference?

5.1. What are the major obstacles or issues?
There are no major errors and problems during the transition, because there have been no questions about this topic for a long time.

5.2. What measures has been planned to avoid them?
At the moment there are no additional notification campaigns, but we will keep information about the changes up on the website, in the web application Nutimeri (<https://gis.vta.ee/nutimeri/>) and Notices to Mariners

6. Connections to neighbouring countries

6.1. Which are the relevant countries to cooperate?
As we talk about BSCD2000, then all countries around Baltic Sea.

6.2. Are the needed points of contacts already known?
Yes



6.3. What actions have been agreed with the relevant countries (e.g. synchronising plans and schedules)?

BSCD2000 is official. We have not synchronized our ENC and paper chart production in BSCD2000 with neighbouring countries.

7. Are there any needs for support from BSHC?

Currently no

8. Do you have any other proposals or guidance to the CDWCWG to help and foster the transition process?

9. Are you using GNSS and GNSS augmentation services for referring to your (bathymetric) surveys to the chart datum?

9.1 What GNSS augmentation service is used for hydrographic surveys? (If there are several augmentation services, list all of them.)

GNSS VRS Service provided by HADES OÜ

9.2 To which coordinate system, and vertical reference level/frame the GNSS augmentation service is referred to? (If there are several systems in use, list all of them.)

WGS-84 (ETRS89, EH2000 via geoid model from end of 2017)

9.3 Does your HO require, in-house or procured, that Hydrographic survey system shall be prepared to be able to measuring the GNSS-height and refer the depth to the geoid?

Yes, but we have that already.

9.4 Do you discuss within your HO the need of an altimetric measured Mean Sea Surface (MSS)? (For example, in order to support hydrodynamic models, shipping and / or adjust existing depth data)?

No we have not

9.5 Has your HO assessed the need for dynamic geodetic reference systems (time-dependent transformation relationship) between primarily national and global reference frames?

No, we just transferred to EH2000 (or BSCD2000).

10. What is the national status of the implementation of IHO S-104 Water Level and S-111 Surface Currents?

10.1 What actions have already been done?

We have been in contact with TalTech Maritime Systems Institute (MSI) and Estonian Environmental Agency about these data. They are dealing in Estonia with both water level and currents.

Discussions are ongoing. Also both datasets are part of ongoing BS E-Nav project, responsible is FMI

10.2 What actions have been planned to be executed and what is the schedule?

MSI is planning to update their databases so that it would be possible to get both real-time and model data at least once per day. This is



prerequisite for creating S-104 and S-111. They promised to do that during 2024.

FMI should prepare workflow of creating both datasets from database data. When this is done then all countries around Baltic Sea can use this solution. Deadline is 2025 April, but prototypes should be ready by Oct 2024.

10.3 Are all the decisions done to implement S-104 and S-111?

Yes as they are part of BS E-Nav project

10.4 When the decisions have been done or planned to be done?

For FMI April 2025, for the rest Nov 2026.

10.5 Which organization/-s is responsible for observed and modelled/forecasted water level (Refer to 3.1) and currents in Your country?

Estonian Environmental Agency and TalTech Maritime Systems Institute(MSI)

10.6 How is Your country represented in the IHO Tides, Water Level and Currents Working Group (TWCWG)?

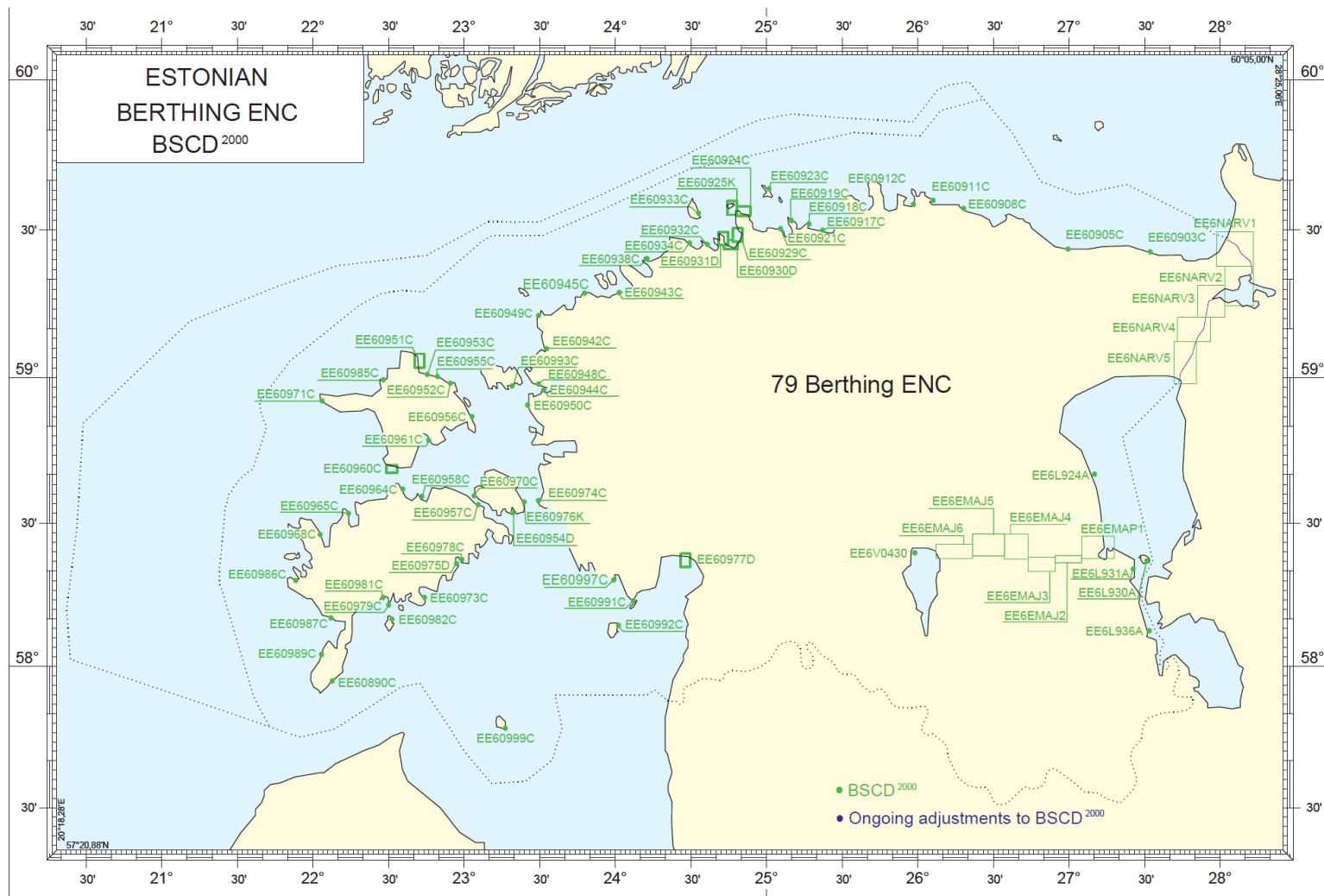
Via the CDWCWG



BSHC CDWCWG

Swedish Maritime Administration
Hydrographic Office

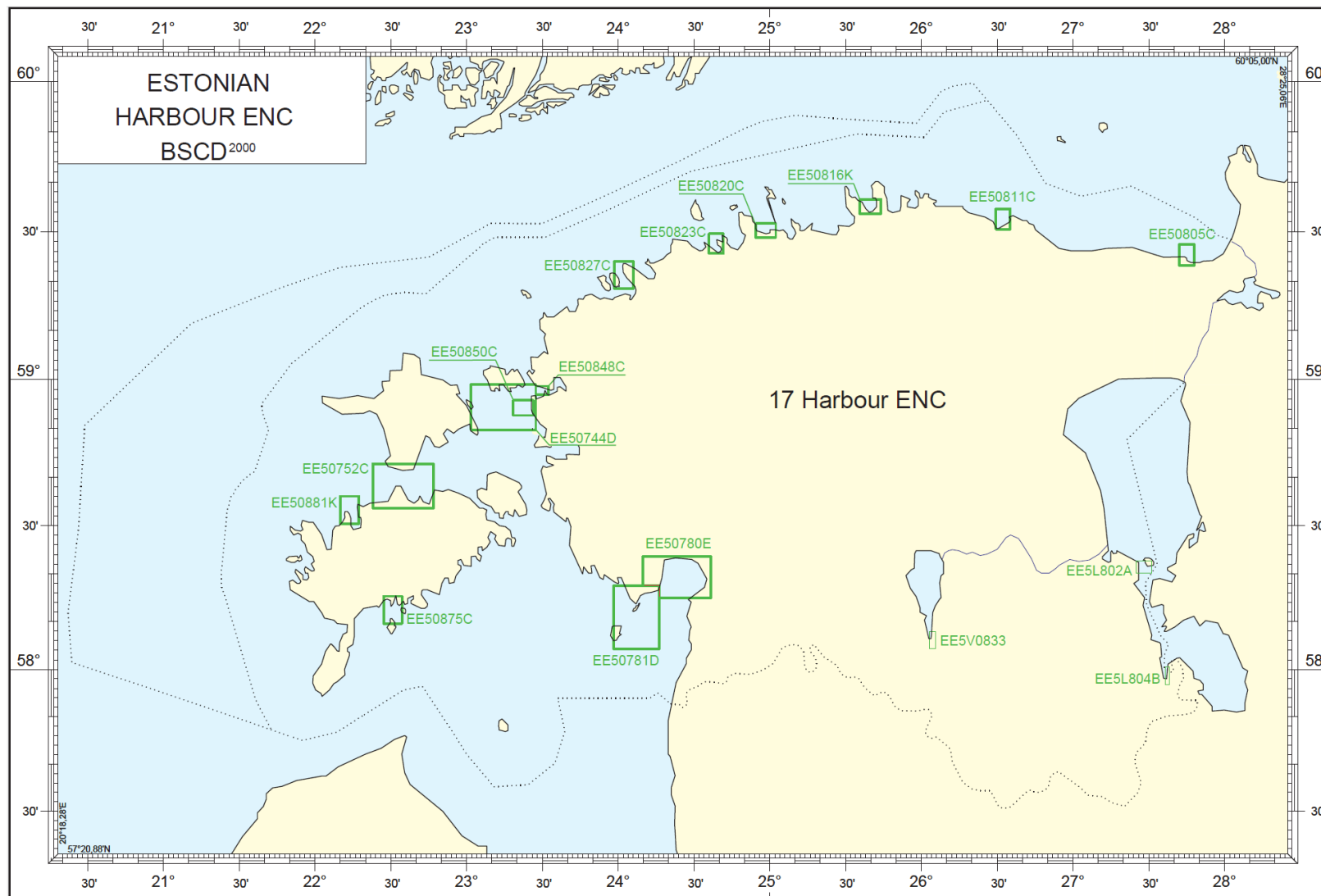
All Berthing and Harbour cells are in the new height system:





BSHC CDWCWG

Swedish Maritime Administration
Hydrographic Office

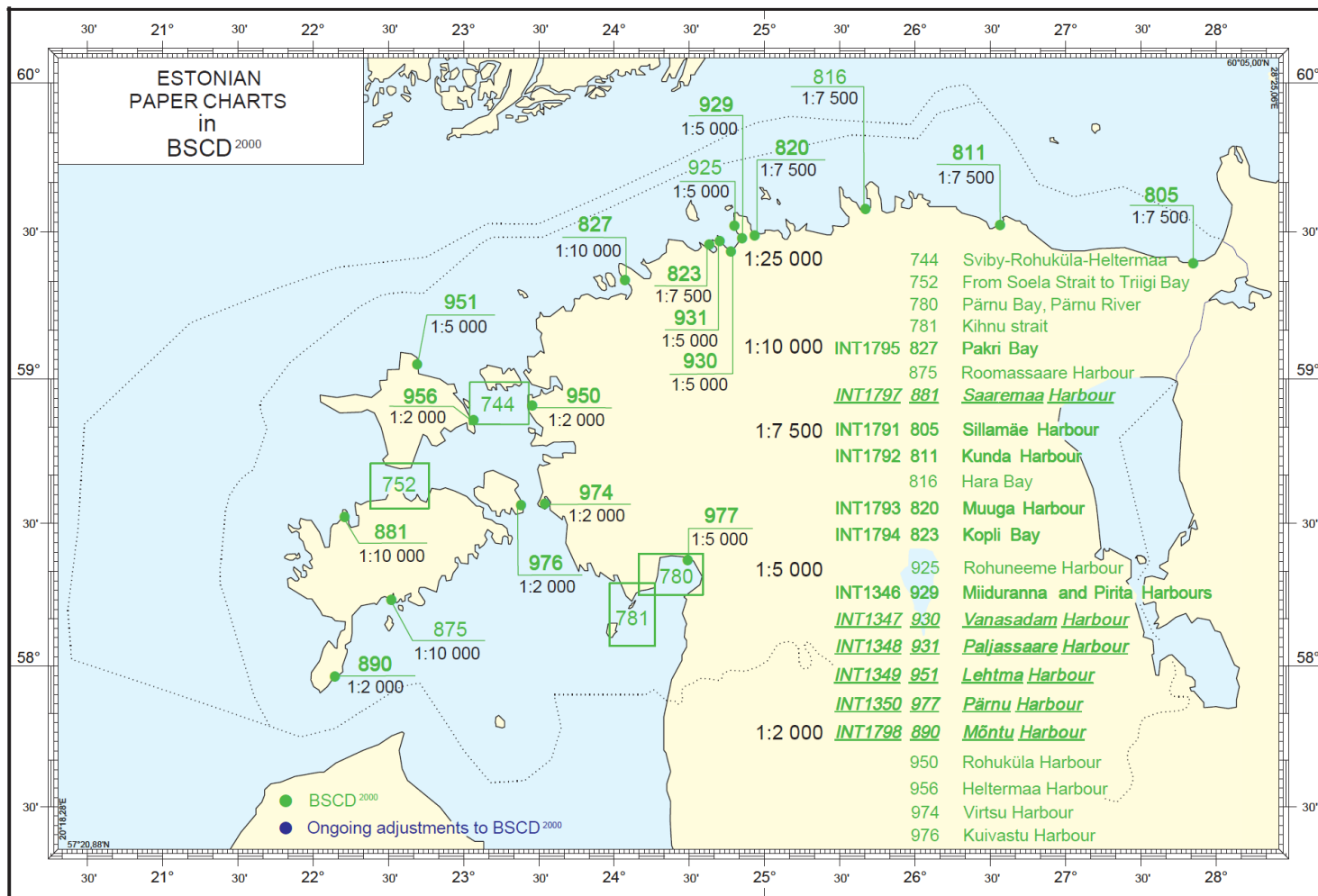




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All large scale paper charts are in new height system:





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2023 finally started with Approach cells:

