



Questionnaire to BSHC Member States on their implementation status of the transition to a Harmonised Vertical Reference, Baltic Sea Chart Datum 2000 (BSCD2000).

Please return to Thomas Hammarklint by email (thomas.hammarklint@sjofartsverket.se) at the latest by **17 March 2023**.

Member state	LATVIA
Date of reply	2023-02-16
Point of Contact	Bruno Spels, MAL, bruno.spels@lhd.lv

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

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

Decisions has been done in middle 2020 and implementation continues

1.2. What are the national decisive organizations?

Latvian Geospatial Information Agency,
Maritime Administration of Latvia,
Ministry of Defence,
Latvian Environment, Geology and Meteorology Centre

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

2.1. What actions have already been done?

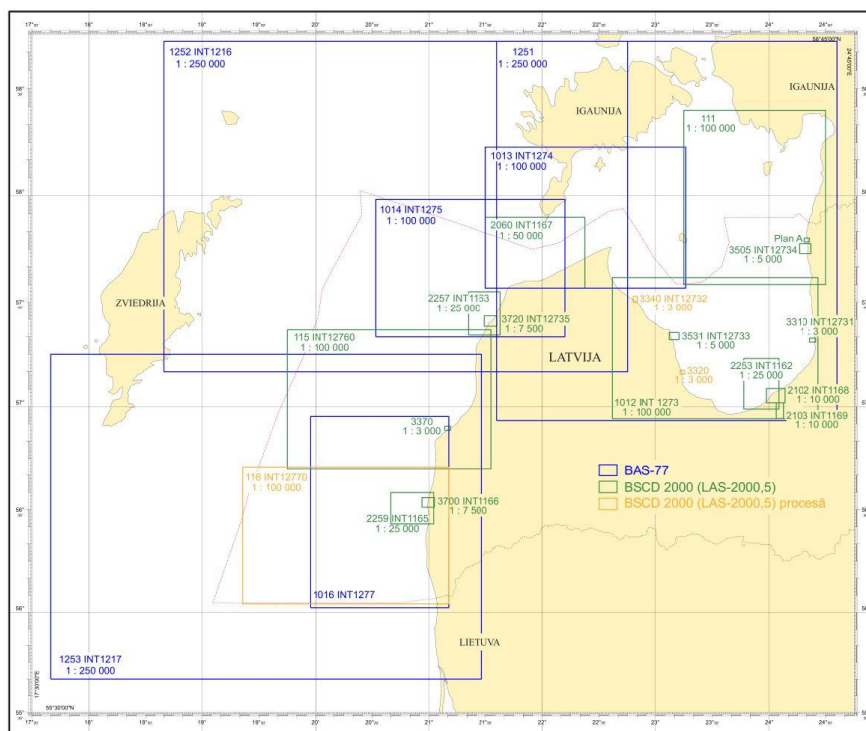
Details regarding depth conversion to BSCD2000 are given in chart notes

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

Harbour charts are either already implemented to BSCD, LAS-2000,5 or they are in progress.

Some of coastal charts already implemented to BSCD, LAS-2000,5 or they are in progress. Some are still in queue but will be implemented with new chart editions.

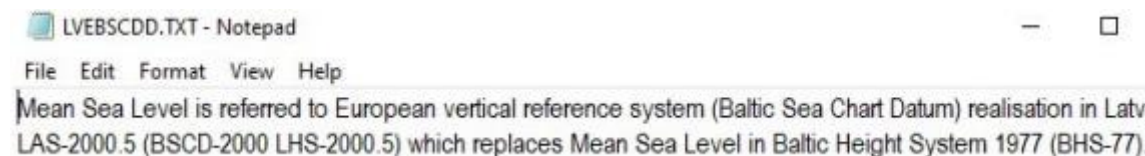
General charts will be implemented with new chart editions after all coastal charts will be implemented to BSCD, LAS-2000,5. See scheme below



Further planned actions are to step by step implement BSCD, LAS-2000,5 to new editions of charts in a following sequence – harbour charts, coastal charts, general charts.

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, updated around January, 2021. 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).

On February 2023 Latvia have 12 ENCs with the new reference datum (see table in annex.)



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?



"Latvian Environment, Geology and Meteorology Centre"
<https://videscentrs.lvgmc.lv/lapas/vsia-latvijas-vides-geologijas-unmeteorologijas-centrs>

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?

LAS-2000,5 (EVRF2007 epoch 2000,0). and BAS-77

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?

Information about each water level station zero values are given in both reference systems that are used today.

NS Andrejosta

Darbība uzsākta: 14.01.1930.
Ūdenstilpe: Daugava
Baseins: Daugavas
Koordinātas:
Platums 56°57'39"Z

Garums 24°05'38"A
Stacijas nulles atzīme: -1.26 m LAS-2000,5 (-1.41 m BAS-77)
Attālums no upes grīvas: 13 km

Hidroloģiskie novērojumi:
Automātiskie
Ūdens līmenis

Papildinformācija:
• Hidroloģisko režīmu ietekmē Rīgas HES darbība un Rīgas līcis;
• Novērojumu datus izmanto hidroloģiskā režīma izpētē, hidroloģisko prognožu sastādīšanā.

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?

Yes

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



Yes

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?

Marine related organizations (ports, etc.)

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?

Mariners are informed via products and publications such as nautical charts and Notices to Mariners about the reference system that is used in new – just released chart edition. Explanatory works with ports and other interest groups have been done

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?

- No reliable geoid model for Baltic see territory of Latvia
- Information to the users about the transition to the chart datum Baltic Sea Chart Datum 2000 (BSCD2000) is a major challenge and creates misunderstandings but in recent years due to explanatory works those misunderstandings have decreased.

5.2. What measures has been planned to avoid them?

- Investigate for best possible geoid models for Baltic see territory of Latvia
- To keep end users informed about transition

6. Connections to neighbouring countries

6.1. Which are the relevant countries to cooperate?

Estonia, Lithuania, Sweden.

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)?



Not yet.

7. Are there any needs for support from BSHC?

Support not needed yet, only to continue information exchange between members about updates of the implementation.

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

No.

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.)

EGNOS, TRIMBLE VRS, LATPOS

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.)

WGS84 Most surveys are made in UTM34N. We use Mean Sea Level (BSCD, LAS-2000,5) height reference system now. Any other transformations, if necessary, usually are done during post processing.

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?

Technically we are prepared to measure the GNSS-height and refer the depth to the geoid? Problem is reliable geoid model for Latvian waters in the Baltic Sea.

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)?

Not for now.

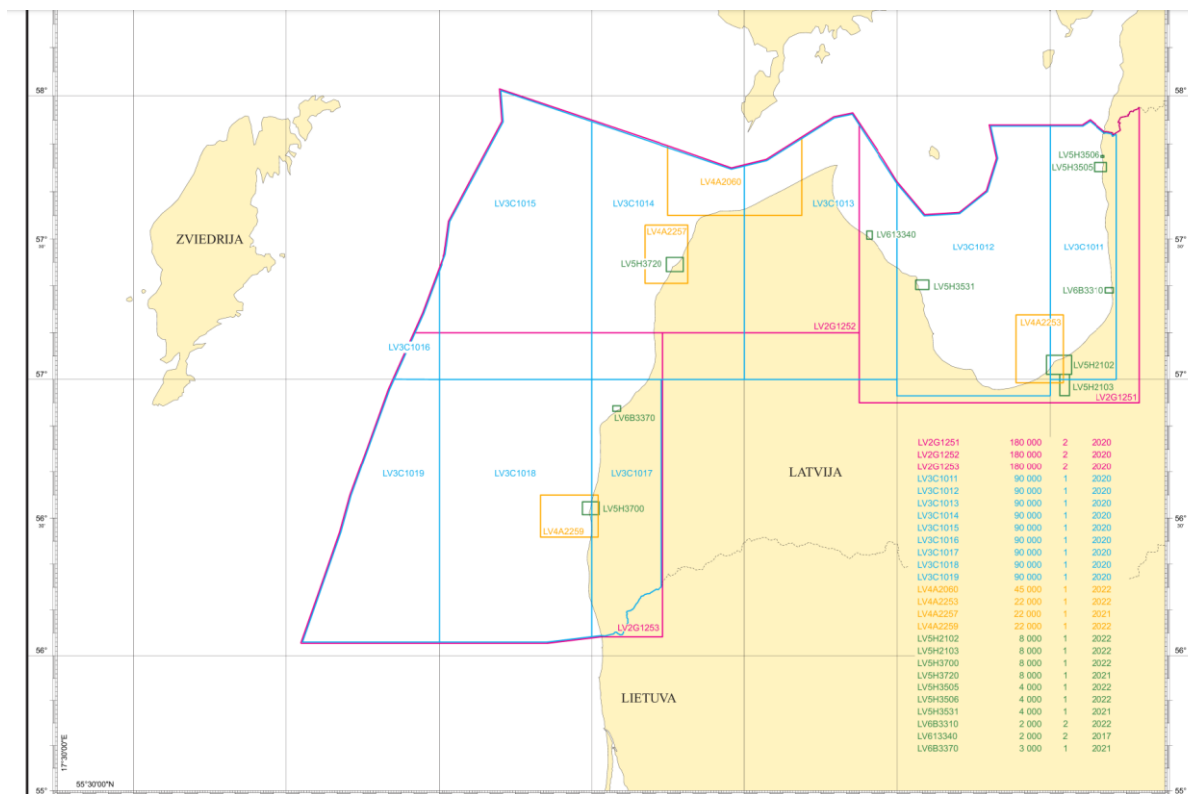
9.5 Has your HO assessed the need for dynamic geodetic reference systems (time-dependent transformation relationship) between primarily national and global reference frames?

It might be necessary in the future.



Annex

ENC from Latvia



Following ENC Approach have been updated with the new reference datum BSCD, LAS-2000,5 (red color in table below):

Kartes Nr.	Kartes nosaukums	Vert. atskaites sistēma	ENC LAS sistēmā
1251	Baltijas jūra. Rīgas jūras līcis	BAS-77	
1252 INT 1216	Baltijas jūra. No Irbes jūras šauruma līdz Gotlandei	BAS-77	
1253 INT 1217	Baltijas jūra. No Pāvilostas līdz Klaipēdai	BAS-77	
111	Baltijas jūra. Rīgas līcis. Ziemeļaustrumu daļa	BSCD 2000	
1012 INT 1273	Baltijas jūra. Rīgas līča Dienvidu daļa	BSCD 2000	
1013 INT 1274	Baltijas jūra. Rīgas jūras līcis. Irbes jūras šaurums	BAS-77	
1014 INT 1275	Baltijas jūra. No Irbes jūras šauruma līdz Ventspils ostai	BAS-77	
115 INT 12760	Baltijas jūras centrālā daļa. Akmensrags - Užava	BSCD 2000	
1016 INT 1277	Baltijas jūra. No Pāvilostas līdz Šventoji ostai	BAS-77	
2060 INT 1167	Baltijas jūra. Irbes jūras šaurums. No Mazirbes līdz Ovišragam	BSCD 2000	LV4A2060
2253 INT 1162	Baltijas jūra. Rīgas līcis. Pieejas Rīgas ostai	BSCD 2000	LV4A2253
2257 INT 1163	Baltijas jūra. Pieejas Ventspils ostai	BSCD 2000	LV4A2257
2259 INT 1165	Baltijas jūra. Pieejas Liepājas ostai	BSCD 2000	LV4A2257
3720 INT 12735	Baltijas jūra. Ventspils osta	BSCD 2000	LV5H3720
2102 INT 1168	Baltijas jūra. Rīgas līcis. Rīgas ostas ziemeļu daļa	BSCD 2000	LV5H2102
2103 INT 1169	Baltijas jūra. Rīgas līcis. Rīgas ostas dienvidu daļa	BSCD 2000	LV5H2103
3700 INT 1166	Baltijas jūra. Liepājas osta	BSCD 2000	LV5H3700
3505 INT 12734	Baltijas jūra. Rīgas jūras līcis. Salacgrīvas osta	BSCD 2000	LV6B3505
3531 INT 12733	Baltijas jūra. Rīgas jūras līcis. Mērsraga osta	BSCD 2000	LV6B3505
3310 INT 12731	Rīgas jūras līcis. Skultes osta	BSCD 2000	LV6B3310
3340 INT 12732	Rīgas jūras līcis. Rojas osta	BAS-77	
3370	Pāvilostas osta	BSCD 2000	LV6B3370