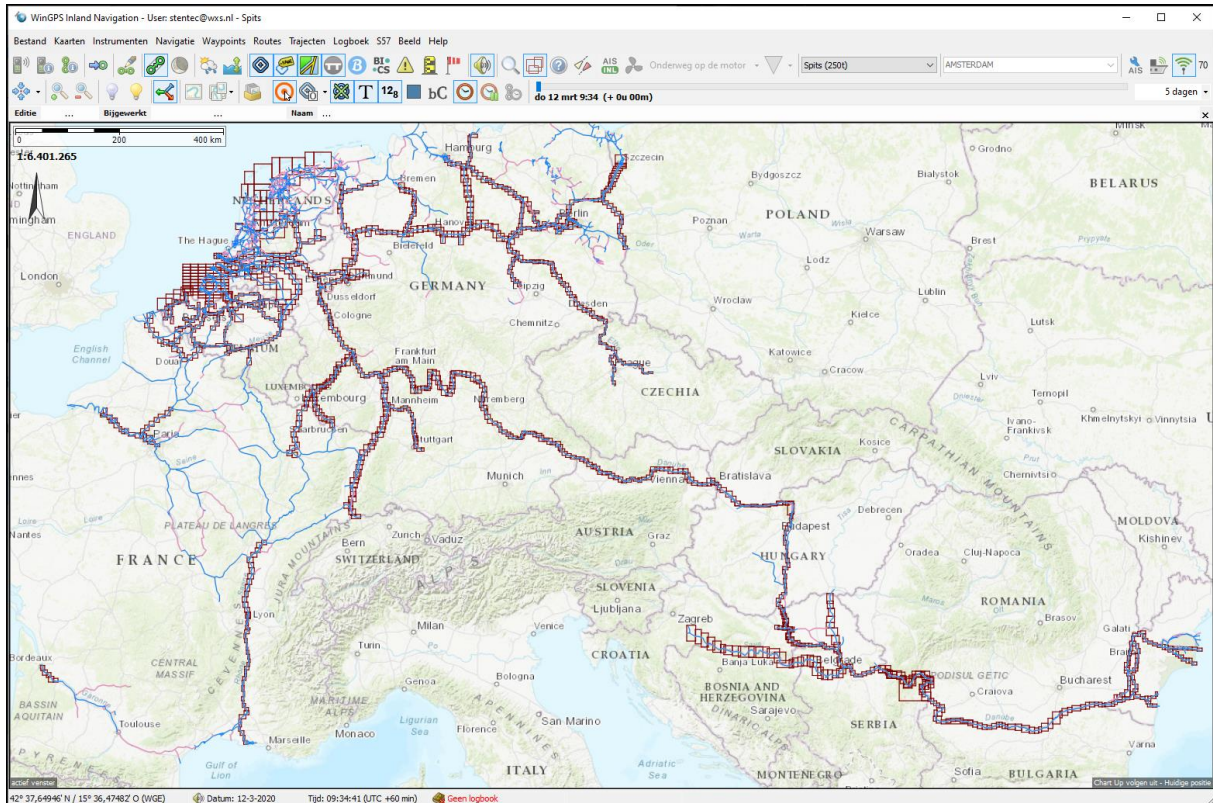


# The status of the European IENC on 29 January 2021

Ir. Wouter Kuik, Stentec Software, Heeg, [stentec@wxs.nl](mailto:stentec@wxs.nl)



## Summary

A recent update is given of the status of the official IENC charts of the European authorities compared to the legal EU law.

For the IENC investigation our new WinGPS Inland navigation software was used, giving access to the latest Inland S57 on the Stentec IENC Server for save navigation. IENC Server statistics are shown per county.

Recommendations are given for improvement satisfying the S57 and Inland IENC standard. This includes biENC (bathymetric IENC) and overlapping IENC of the Danube countries.

New: The first 8 biENC's of Chechia including bathymetric data of 41km the Labe/Elbe connected to the German Elbe. Austrian biENC are not the only one anymore. Hope there will follow more.

## **Table of content**

1. Introduction
2. Legal EU goal
3. Quality procedure
4. Country report summary
5. Update Statistics of the Stentec IENC Server
6. Conclusions
7. Recommendations

### Appendices

- A1. List of IENC sources
- A2. IENC Report per Country
- A3. Logfile of the Stentec IENC Server
- A4. Relevant parts of the Encoding Guide for Inland ENCs

## 1. Introduction

This report give you the latest update of the status of the IENC chart coverage and quality of the participating European governments. These charts are the official charts in S57 format mainly conform Inland ECDIS Standard 2.4.

Free accessible IENC's are used in navigation software, directly as they are, or as basic S57 to be corrected and enriched with additional cartographic data and published together with an update service at commercial prices.

If IENC navigation software is not available, one of the free software can be used for investigation. Like the [WinGPS ENC Viewer](#) (Stentec) or [SeeMyENC](#) (SevenC's).

In some countries like Germany IENC's are legally required to be used for navigation by skippers of professional inland ships.

## 2. Legal EU goal

The legal requirements from the European Union countries regarding IENC can be found in <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013R0909>

This document is available in many languages. For the Netherlands it can be downloaded from the IENC-kennisportaal: <https://ienc-kennisportaal.nl/eu-verordening-9092013/>  
Summarized by Rijkswaterstaat in Dutch:

*De EU uitvoeringsverordening 909/2013 bepaalt dat elke beheerder van een vaarweg met klasse V of hoger een IENC moet produceren die voldoet aan de daarin beschreven richtlijnen.*

## 3. Quality procedure

The IENC quality per country is tested on the following items:

- Exceeding of the required 5MB cell size maximum.
- Plotting quality conform IENC and S57 INLAND ECDIS standards.
- Availability of additional data for bridge and locks pictures (jpg or JPEG, TIF), service (XML) and information (txt).
- Bathymetry included in the IENC or as standalone bIENC (bENC).

## 4. Country report summary

In appendix A2 the investigation of the IENC per country is reported. This concerns:

- Available IENC sets
- Current status
- Remarks
- Recommendations

5. Update Statistics of the Stentec IENC Server

The Chart manager of WinGPS Inland is showing per country the number of IENC cells and the date of the newest S57 cells. See figure below. The country codes are defines in appendix A1.

In totally there are 1377 cells (4-8-2020), although there are partly overlapping cells at the Danube borders of Hungary-Slovakia, Croatia-Serbia and Romania- Serbia.

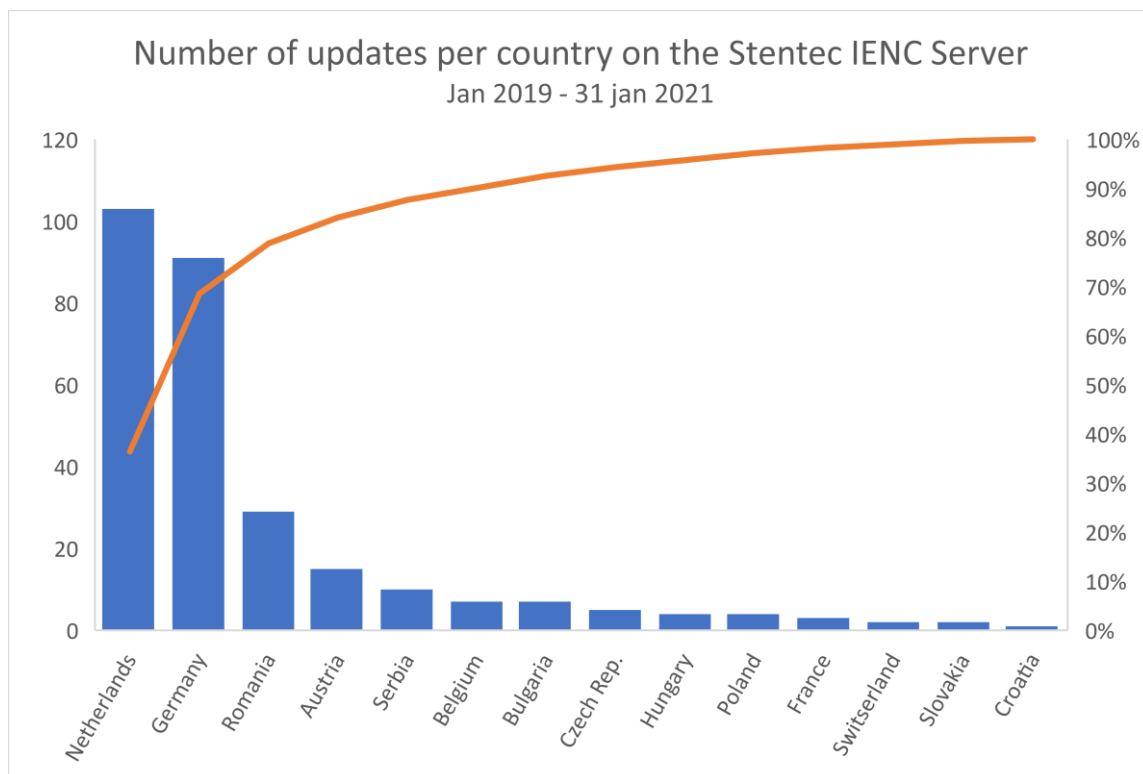
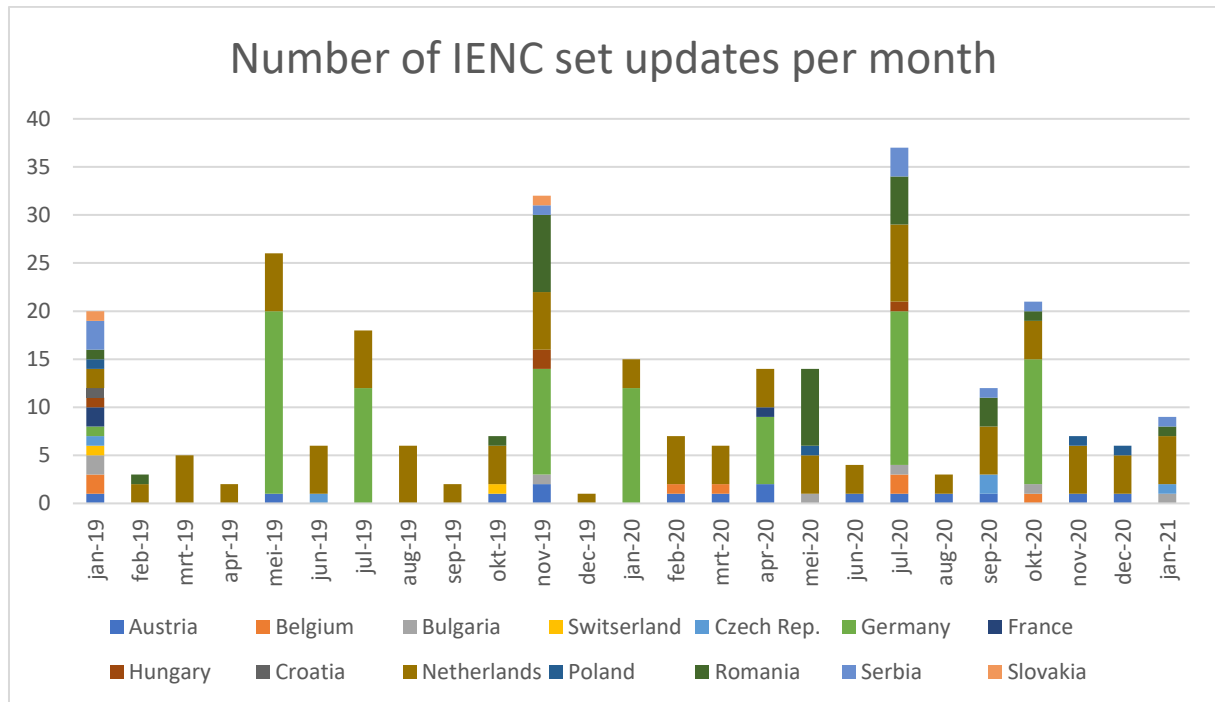
Austria is until so far the only country where bIENC are defined. In this case for the Danube. These include 74 cells with bathymetric data based on soundings.

Germany is showing the largest numbers of cells. A number of 452 is 1/3 of 1377 for the whole EU.

Most country IENC are updated in 2020. NL and DE some in 2020 (NL and DE). A few countries did not update in 2019 or 2020. This concerns Wallonia, France except Siene Aval (2020) and Croatia with most recent IENC from 2018. The latest updates concern the weekly produced IENC Zeeland (NL) and Nederland Nieuwe kaarten from RWS.

<input checked="" type="checkbox"/>	<b>Stentec IENC Server</b>	<b>1390</b>	<b>26-11-2020</b>
<input checked="" type="checkbox"/>	AT	108	29-10-2020
<input checked="" type="checkbox"/>	BE	143	8-6-2020
<input checked="" type="checkbox"/>	BG	19	23-10-2020
<input checked="" type="checkbox"/>	CH	1	18-2-2019
<input checked="" type="checkbox"/>	CZ	45	2-7-2020
<input checked="" type="checkbox"/>	DE	459	30-9-2020
<input checked="" type="checkbox"/>	FR	124	3-4-2020
<input checked="" type="checkbox"/>	HU	37	17-12-2019
<input checked="" type="checkbox"/>	KR	29	11-9-2018
<input checked="" type="checkbox"/>	NL	202	26-11-2020
<input checked="" type="checkbox"/>	PL	10	16-12-2019
<input checked="" type="checkbox"/>	RO	122	8-10-2020
<input checked="" type="checkbox"/>	RS	77	10-9-2020
<input checked="" type="checkbox"/>	SK	14	13-9-2019

After more 1,5 year of European IENC-set updates useful statistics are generated from the latest IENC LOG file of Stentec' IENC server for WinGPS Inland. Although 2019 was a start-up year to come to a weekly IENC update service this gives an impression useful in our opinion to the EU en country IENC organizations as well to users of WinGPS Inland with an Inland Update Abonnement saving the a lot of work navigation with the most up-to-date IENC charts.



So far totally 283 IENC cells have been updated, with a monthly average of 11 IENC / biENC updates. Germany and the Netherlands together are taking 73% of all EU updates into account. These are the countries with most waterways.

## 6. Conclusions

The European IENC are of improving coverage and quality due to a continuing effort of governmental institutions.

Almost all CEMT V waterways in Europe are covered by IENC. One exception is the Seine South of Paris. bIENC are only produced by Austria for the Danube. Two bIENC slightly exceed the 5MB maximum.

For Rotterdam, Slovakia and Romania the bathymetry is included in the IENC. Most of the Slovakian IENC did become so big (10-100MB), that opening them can take minutes on slow PC's. For Romanian Danube this concerns 2 cells of around 10MB.

## 7. Recommendations

It is recommended to producers of the IENC of Slovakia and Romania to take the bathymetry of the IENC and put them in bIENC like Austria conform the IENC standard. This is also easier for bathymetric updates.

For Stentec it is recommended to investigate if it's possible to use the Bathymetry button also for the plotting of bathymetric content included in IENC and speeding it up scale dependent.

For the Netherlands.

- Adding additional data (jpg, XML, txt) for bridges and locks
- Names of Bridges and locks for IENC Rotterdam
- Adding bathymetry for IJsselmeer, Markermeer and Waddenzee.
- Checking dredged waterways in IJsselmeer from Amsterdam-Lelystad-Lemmer.
- Adding local water and names for IJsselmeer, Markermeer and Waddenzee.

For France.

- Publishing the missing IENC of the Seine from Paris direction South to Montereau (CEMT V)

For Belgium, Antwerpen Haven:

- Add SCAMIN to terminals (container, oil), and berths.
- Remove from BE7BZ001 the unsurveyed area in Kanaaldok B2 if applicable.
- Merge the data of cells BE7BZ001, 8V8POA001 and 7V7SRIJN

For Austria the bounds in the meta data of some bIENC cells has to be corrected.

For Slovakia.

- Maximize IENC cell size to the required 5 MB by putting the bathymetric data in bIENC. This concerns 12 cells including one of 100Mb.

Romania

- Maximize IENC cell sizes to the required 5 MB by putting the bathymetric data in bIENC or splitting the 2 large cells in multiple cells of 5 MB max.

Danube countries.

- Prevent overlapping border areas of different quality and actuality.

This has to be investigated in more detail to offer the best quality IENC for navigation.

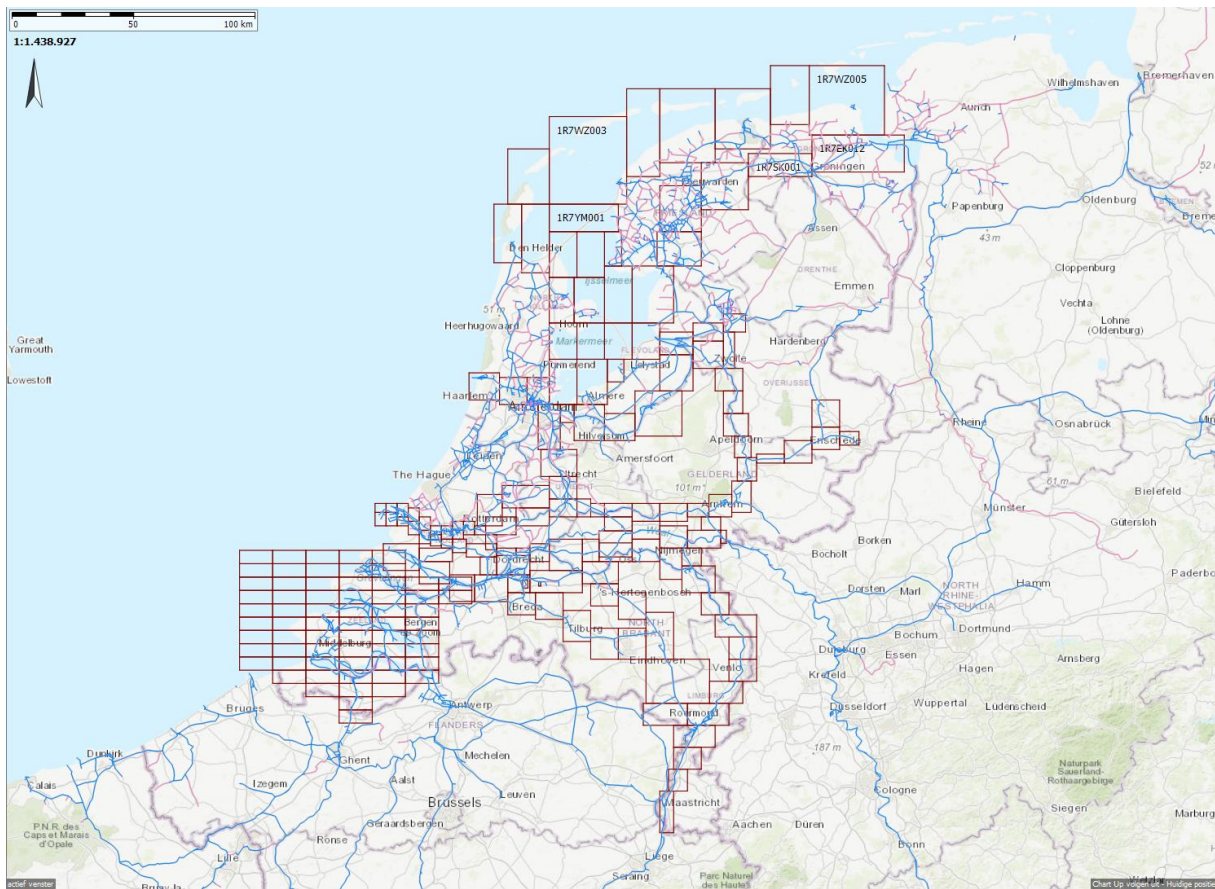
## Appendix A1. Country codes and IENC-download links in Europe

Alphabetic per country code

AT Austria	<a href="http://www.doris.bmvit.gv.at/karten/inland-encs/downloads/inland-encs-inland-ecdis-standard-24/">http://www.doris.bmvit.gv.at/karten/inland-encs/downloads/inland-encs-inland-ecdis-standard-24/</a>
BE Belgium	
Flanders	<a href="http://ris.vlaanderen.be/">http://ris.vlaanderen.be/</a>
Brussels	<a href="https://port.brussels/nl/scheepvaart/river-information-services-ris">https://port.brussels/nl/scheepvaart/river-information-services-ris</a>
Wallonia	<a href="http://geoportail.wallonie.be/catalogue/3d57a714-7786-4da0-a144-2813fcc8a0b1.html">http://geoportail.wallonie.be/catalogue/3d57a714-7786-4da0-a144-2813fcc8a0b1.html</a>
BG Bulgaria	<a href="http://appd-bg.org/">http://appd-bg.org/</a>
CH Switzerland	<a href="https://port-of-switzerland.ch/hafenservice/schiffahrtsservice/inland-enc-hochrhein/">https://port-of-switzerland.ch/hafenservice/schiffahrtsservice/inland-enc-hochrhein/</a>
CZ Czechia	<a href="http://mapy.spspraha.cz/lpm/maps_S57.asp?lang=en">http://mapy.spspraha.cz/lpm/maps_S57.asp?lang=en</a>
DE Germany	<a href="https://www.elwis.de/DE/dynamisch/IENC/">https://www.elwis.de/DE/dynamisch/IENC/</a>
FR France	<a href="http://www.vnf.fr/ecdis/ecdis.html">http://www.vnf.fr/ecdis/ecdis.html</a>
Rhône	<a href="http://www.inforhone.fr/Infos/CarteECDIS">www.inforhone.fr/Infos/CarteECDIS</a>
HU Hungary	<a href="http://vodniputovi.hr/en/ris/enc-charts/">http://vodniputovi.hr/en/ris/enc-charts/</a>
KR Croatia	<a href="http://www.vodniputovi.hr/en/ris/enc-charts/">http://www.vodniputovi.hr/en/ris/enc-charts/</a>
NL Netherlands	<a href="https://www.vaarweginformatie.nl/frp/main/#/page/infra_enc">https://www.vaarweginformatie.nl/frp/main/#/page/infra_enc</a>
PL Poland	<a href="http://ang.szczecin.uzs.gov.pl/files/422_ienc_18042016.zip">http://ang.szczecin.uzs.gov.pl/files/422_ienc_18042016.zip</a>
RO Romania	<a href="http://afdj.ro/en/content/inland-enc">http://afdj.ro/en/content/inland-enc</a>
RS Serbia	<a href="http://www.plovput.rs/electronic-navigational-charts">http://www.plovput.rs/electronic-navigational-charts</a>
SK Slovakia	<a href="https://www.svp.sk/sk/uvodna-stranka/odstepne-zavody/oz-bratislava/riecne-informacne-sluzby/">https://www.svp.sk/sk/uvodna-stranka/odstepne-zavody/oz-bratislava/riecne-informacne-sluzby/</a>

## Appendix A2. IENC Report per Country

### The Netherlands ([Vaarweginformatie RWS](#))



<input checked="" type="checkbox"/>	NL	202	26-11-2020
<input checked="" type="checkbox"/>	IENC Haven Geertruidenberg	1	16-2-2017
<input checked="" type="checkbox"/>	IENC Haven Waspik	1	18-4-2016
<input checked="" type="checkbox"/>	Nederland (exclusief Zeeland)	118	26-11-2020
<input checked="" type="checkbox"/>	Rotterdam	18	21-11-2019
<input checked="" type="checkbox"/>	Zeeland	64	23-11-2020

2/3 of all Dutch IENC Cell's are updated in 2019 or 2020.

- Zeeland, Randmeren, Waal and North Sea Channel in 2020.
- Neder Rijn, Lek, Maasmond, Amsterdam-Rijn Channel update in 2019.
- IJsselmeer, Markermeer, Waddenzee, Southern Maas in 2018,
- Gelderse IJssel updated in 2017.

Zeeland from RWS Zeeland is updated weekly and is also containing bathymetric data.

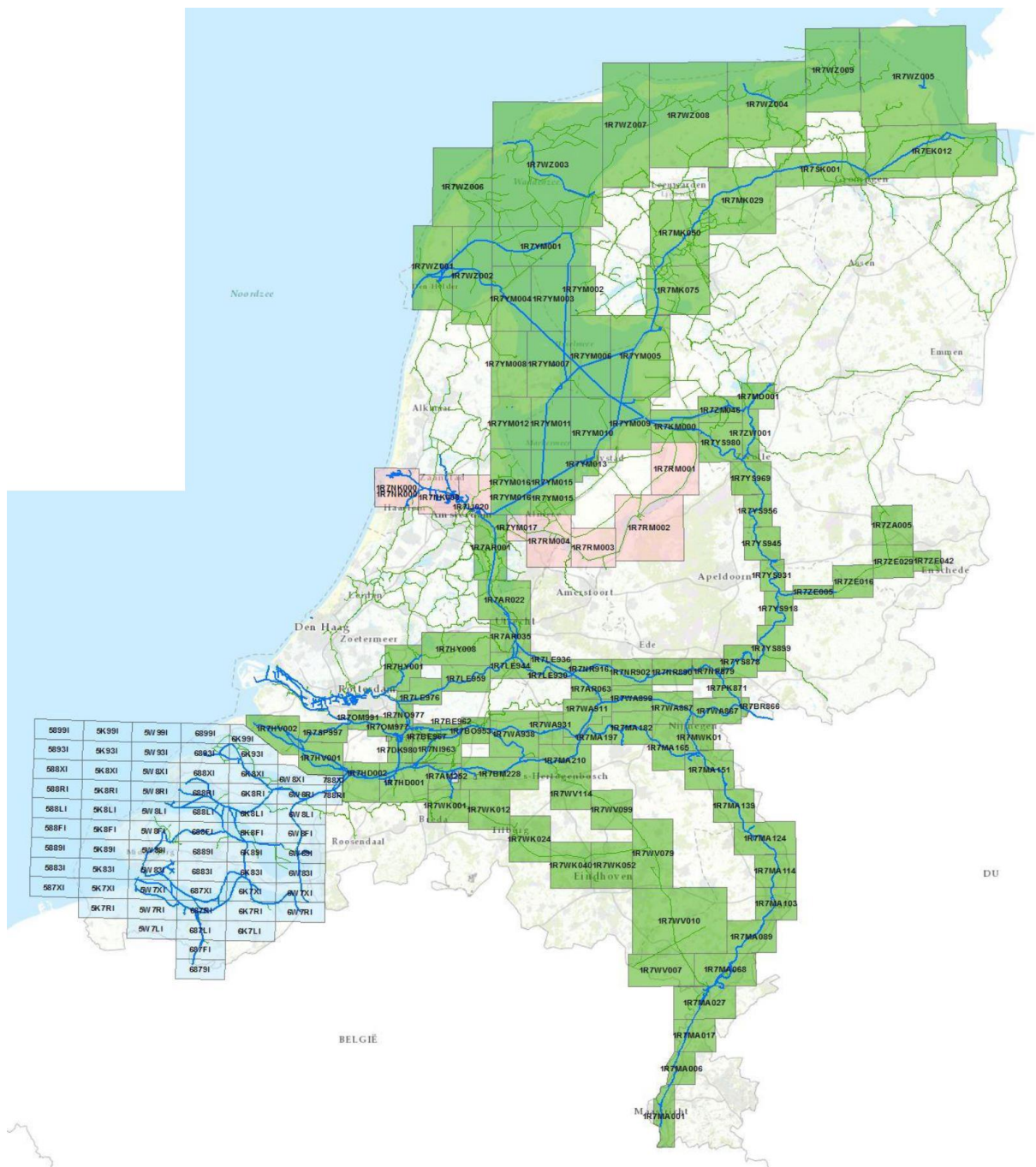
IENC Havenbedrijf Rotterdam has been updated recently (nov 2019) after almost 2 year and also include bathymetric data of the Port of Rotterdam.



The main part of the IENC of the Netherlands is produced by RWS CIV. The set 'Nieuwe kaarten' is updated a few times a year until all content is conform specification. After that a yearly update can be expected. The updates of Buoys and Marks of will be done on a weekly basis (RWS).  
 July.2020 update IENC Nieuwe kaarten with IENC's from 2017 - 2020.

Older and additional RWS IENC can be found in 'Nog te vervangen' ("to be replaced"). This concerns the 01-02-2016 IENC of North Sea Channel (Amsterdam to IJmuiden).

See picture (ref. RWS-CIV) below. Updated July 2020. Green is New Publication. To be replaced in red. Blue is Zeeland Complete. Class V waterways are drawn as blue lines and Class I - IV in green.



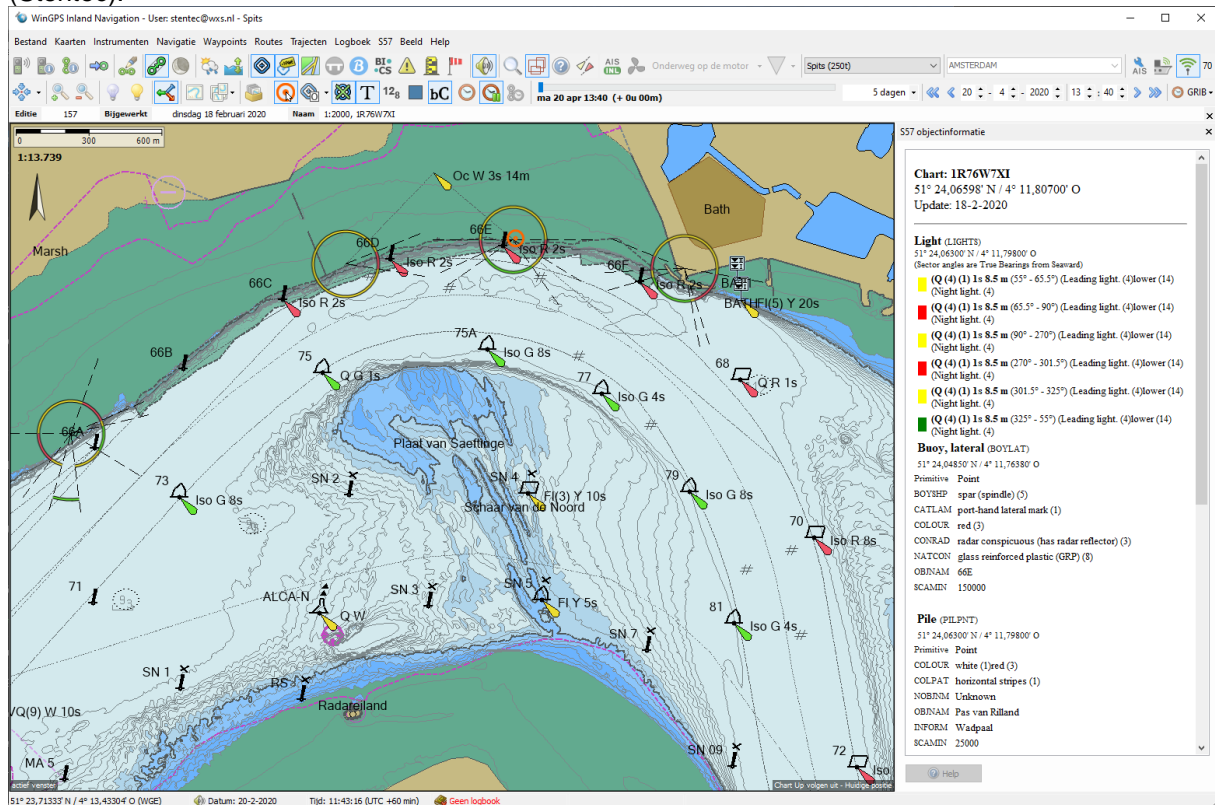
For the Dutch IENC above there is no exceeding of the required 5MB cell size maximum.

### Plotting quality conform IENC and S57 standards

#### Zeeland RWS-Zeeland (2020)

High quality IENC including bathymetry. Weekly updated.  
Names, geometry, service times and pictures of bridges and locks are still missing.

See below an impression of the Westerschelde near de Plaat van Saetfinge in WinGPS Inland (Stentec).



**Rotterdam – Havenbedrijf (2019)**

High quality IENC including bathymetry.

Update procedure and content production process under construction.

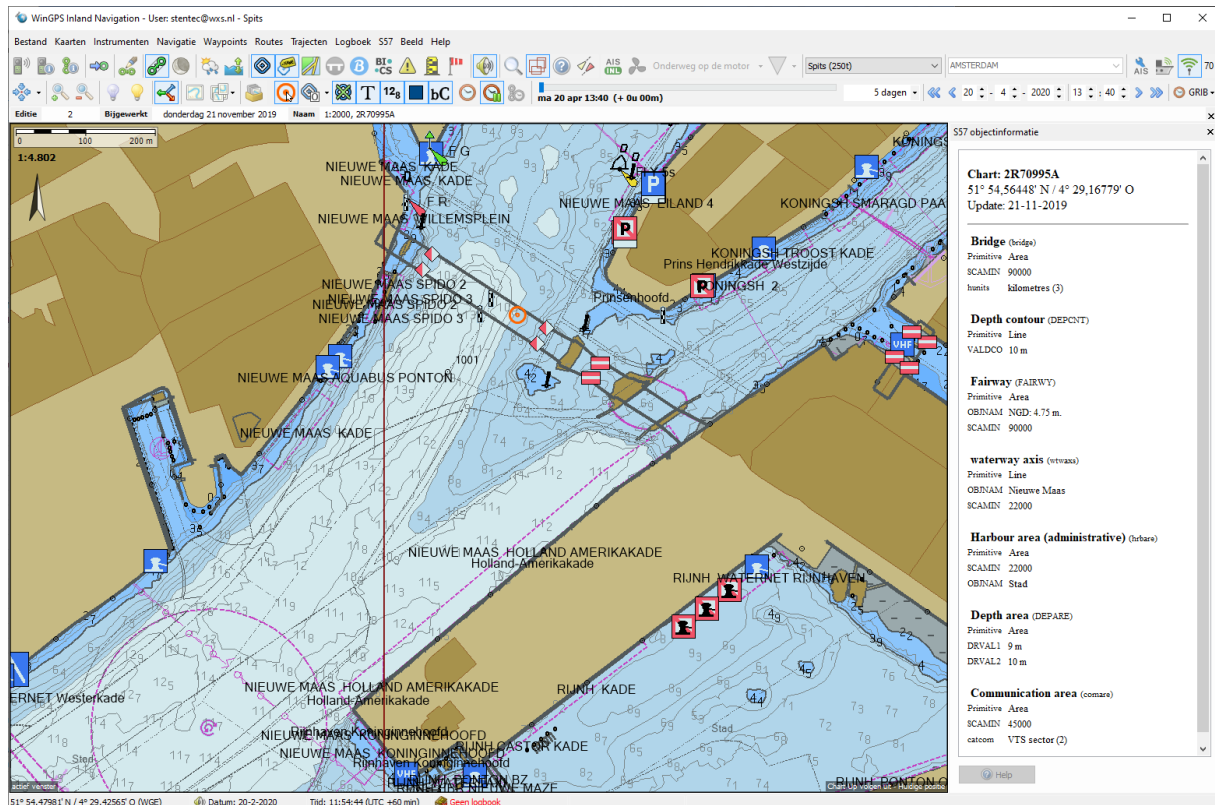
Names, geometry, service times and pictures of bridges and locks are still missing.

Names of waterways are not as Text visible on the chart.

See an impression below with all data switched on.

The Bathymetry is included in the cells instead of in bIENC for update reasons.

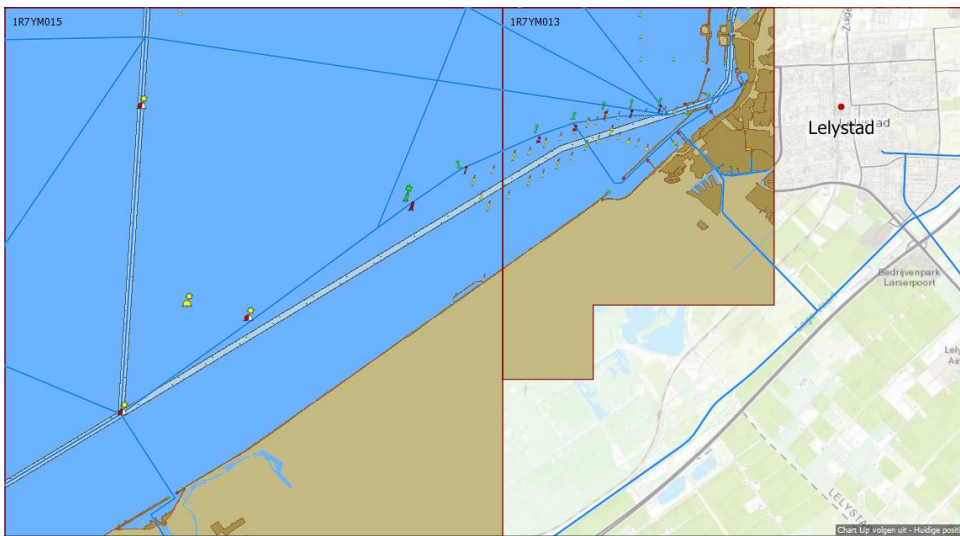
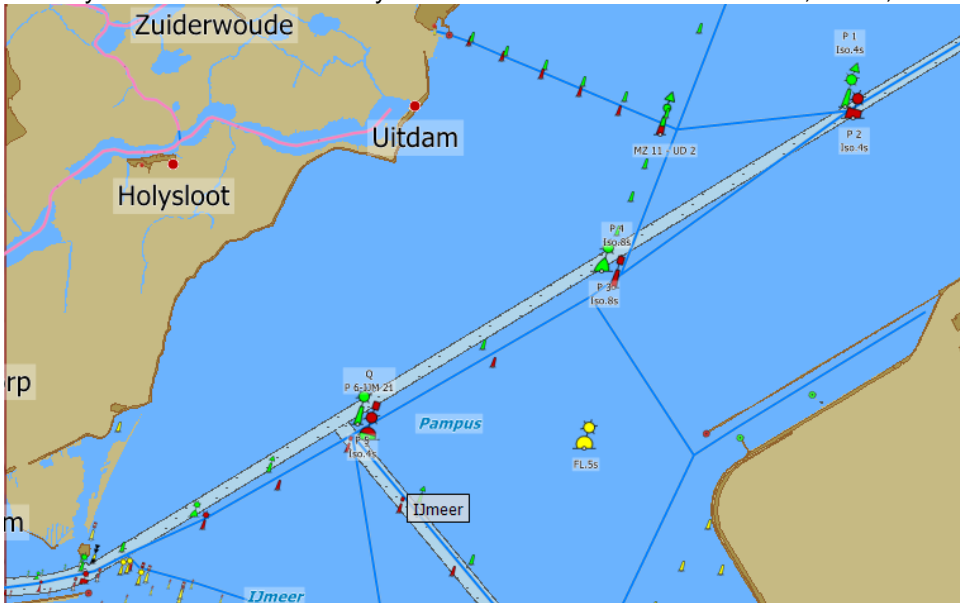
An yearly update of IENC Rotterdam is expected January 2021



**Nieuwe Kaarten RWS-CIV (2017-2019)**

IJsselmeer and Markermeer without bathymetry and without names of waterarea's. Names, geometry, service times and pictures of bridges and locks are still missing

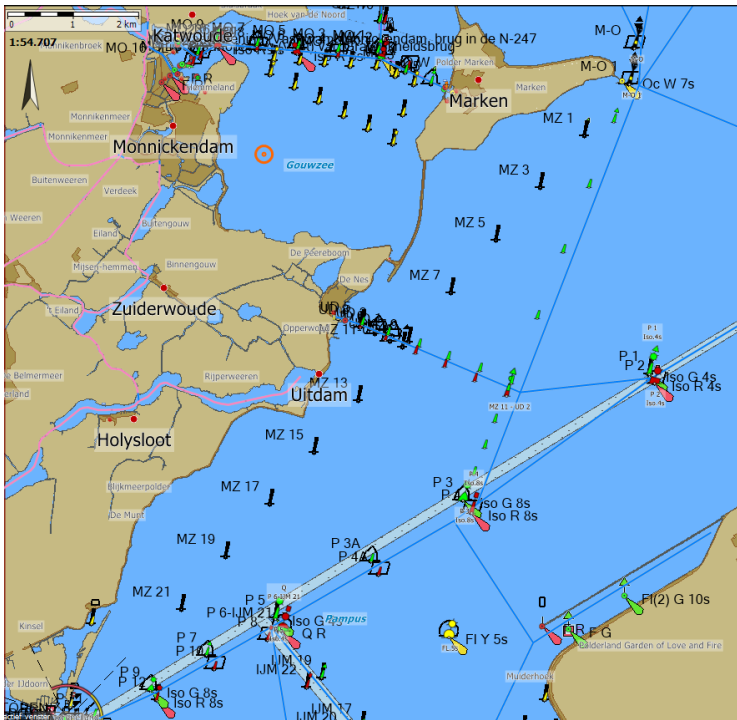
Fairway from Amsterdam to Lelystad not correct on Cell 1R7YM016, M015, M013 (up-to date buoys)



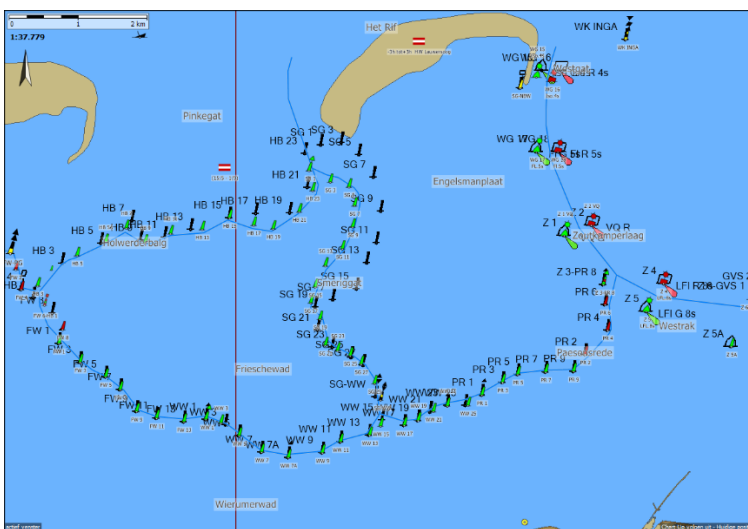
The IENC Fairway of 1R7YM005 does not match the buoys line to PM channel near Lemmer.



The IENC fairways of 1R7YM005 and 006 in the Markermeer north and south of the Spaanderbank probably do not match with dredging lines and certainly not with the Buoys ELA and ELB.



The buoys on the IJsselmeer are not up to date, f.e. the buoy line MZ 1-21 from Amsterdam to Paard van Marken has been removed by RWS in 2019.



The Waddenzee in 'Nieuwe Kaarten' of RWS-CIV contains no bathymetry. Also no water and wad area names which are important for navigation (f.e. Schuitengat and Engelkmanplaat).

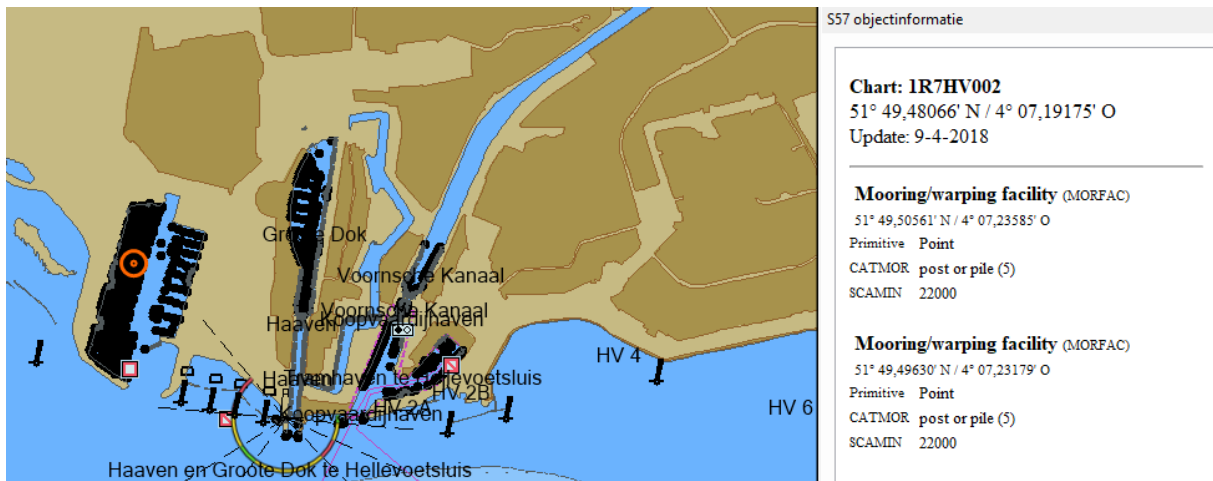
The buoys are complete but not yet updated regularly. See IR7WZ003 on the left. The colored buoys instead are up-to-date (from Stentec Vaarkaart Nederland).

The temporary set 'Kaarten, nog te vervangen' (2016) of RWS-CIV is not investigated.

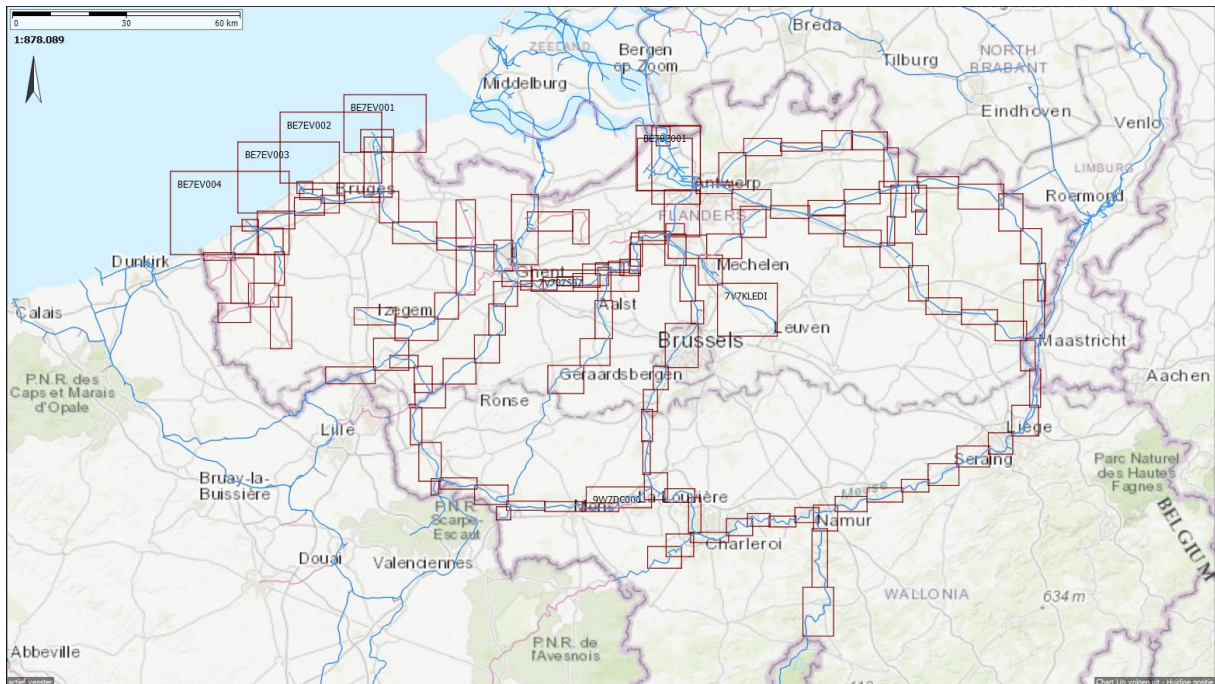
### Investigation the Raw IENC image

In WinGPS Inland the plotting of the IENC is optimized by the Chart Image Optimization option in the S57-settings. When this option is switched off, the “raw” IENC cells are shown as the were produced. This is investigated below.

The Mooring/warping facilities have a very high SCAMIN of 22000 resulting in an overflow at a scale of 1:19.000. See below. It is recommended to reduce the SCAMIN value to 8000 and reducer the pixel size of the objects slightly.



Belgium - Flanders ([VisuRIS](#)) and Wallonia ([Geoportal](#))




There are IENC produced for almost all Belgium waterways. Not only Class V or higher. See the screenshot above. There are no IENC for the Brussel area and for the Wallonian Dendre plus Kanaal Ath-Blathon. IENC Flanders and IENC Wallonia are separated productions.

The February 2020 update from the IENC Flanders from VisuRIS contain IENC mostly from November 2019. IENC Wallonia is published in April 2018 by Geoportal Wallonia.

In October 2020 we added IENC Brussels produced in June 2020. A major missing area in our Inland Update Serving for WinGPS Inland. Also new is IENC Peene from the WSV in North East Germany.

IENC cell exceeding the 5MB maximum are reported below (not updated 4 August 2020).

#### Antwerpen Haven

 8V8POA01.000	21-12-2019 11:34	000-bestand	6.358 kB
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#### Beneden Dijle

 7V7BEDIJ.000	7-2-2020 12:16	000-bestand	5.380 kB
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#### Beneden Zeeschelde

 BE7BZ001.000	7-2-2020 12:16	000-bestand	5.153 kB
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#### Gent Terneuzen

 BE7GT017.000	21-12-2019 11:35	000-bestand	6.788 kB
--	------------------	-------------	----------

#### Haven van Antwerpen

 8V8POA02.000	7-2-2020 12:17	000-bestand	8.333 kB
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#### Kanaal Gent-Terneuzen

 BE7GT017.000	7-2-2020 12:18	000-bestand	5.320 kB
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#### Rupel en Beneden Dijle

 7W7BEDIJ.000	21-12-2019 11:38	000-bestand	5.328 kB
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#### Van Zeebrugge Achterhaven- ibnclusief...


 BE7BK001.000	21-12-2019 11:38	000-bestand	5.471 kB
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#### Zeebrugge Achterhaven

 BE8BK001.000	7-2-2020 12:19	000-bestand	9.736 kB
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#### Zeekanaal

 7W7ZEEK1.000	21-12-2019 11:39	000-bestand	8.014 kB
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 7W7ZEEK2.000	21-12-2019 11:39	000-bestand	5.231 kB
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#### Zeekanaal Brussel Schelde

 7V7ZEEK1.000	7-2-2020 12:19	000-bestand	8.058 kB
--	----------------	-------------	----------

 7V7ZEEK2.000	7-2-2020 12:19	000-bestand	5.260 kB
--	----------------	-------------	----------

Additional data (bridge pictures, service times, text files)

- Flanders Totally 687 jpg, 180 XML and 51 txt
- Wallonia no TIF, JPG or XML



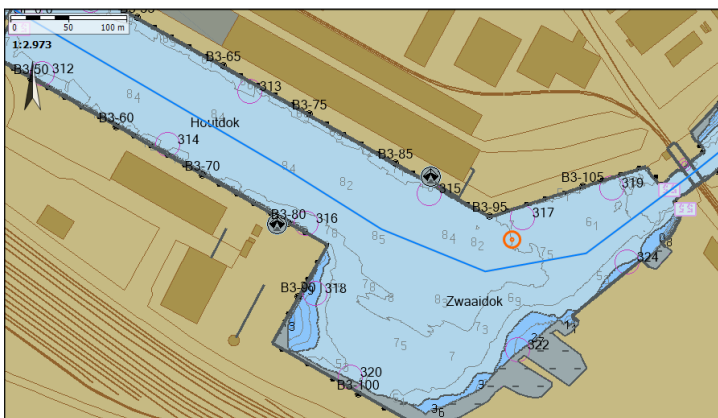
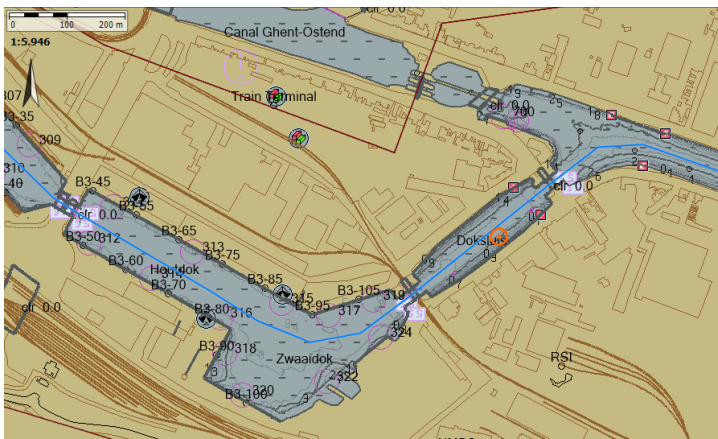
**Plotting quality Antwerpen Haven**

The upper (1:7.500) BE7BZ001 is showing unsurveyed area of the Kanaaldok B2, where at zooming in, the lower (1:5.000) 8V8POA02 is showing a DRVAL minimum dept of 5m, instead.



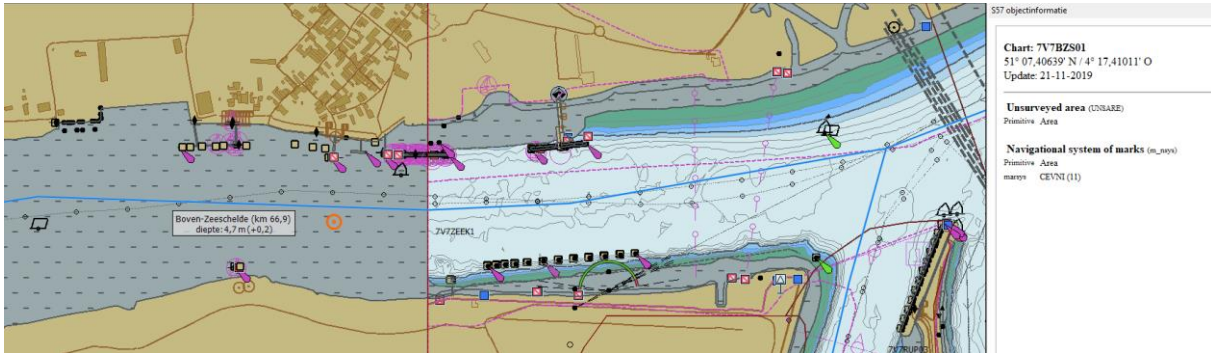
**Bathymetry** is included in the IENC and defined for the main part of the Zeeschelde, Zeekanaal-Brussel Schelde and Antwerpen harbor. Also for Kanaal Gent naar Oostende, Kanaal Gent-Terneuzen and Kanaal Brugge-Zeebrugge. There is no bIENC defined.

The (1:2.500) 2017 bathymetry around Oostende harbor is overruled by the (1:25.000) 2019 unsurveyed aera stripes below. Tn the txt files is mentioned that the depths are frequently liable to changes. Zooming in to the 2017 cell gives the old bathymetry.

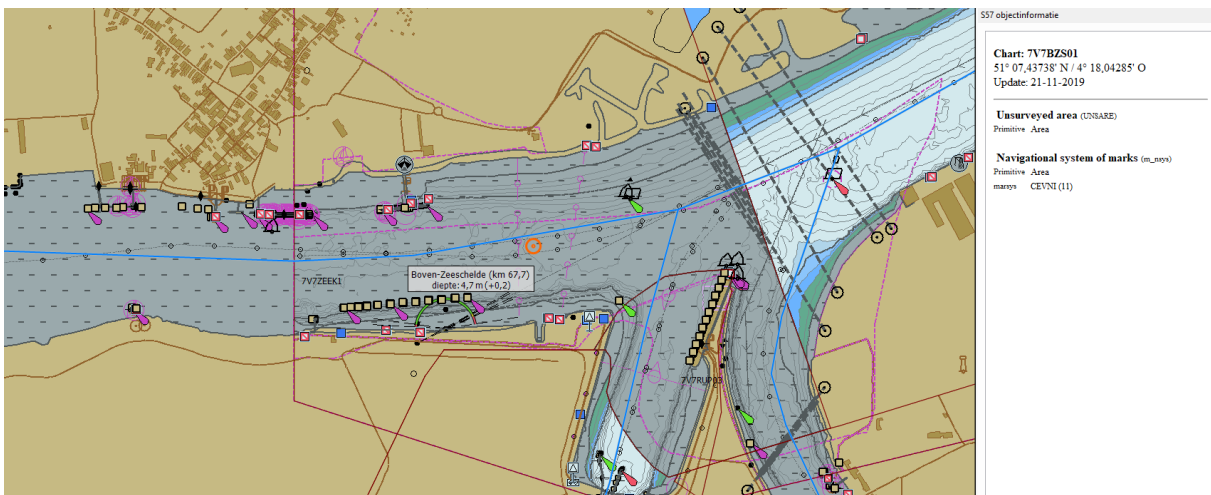


### Unsurveyed Area in the Boven-Zeeschelde

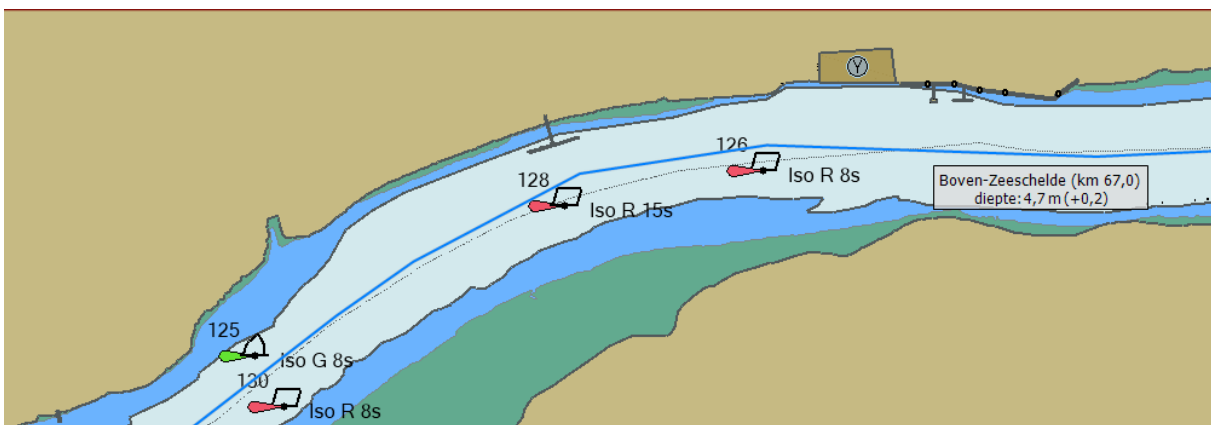
There are Unsurveyed Area stripes on the Boven-Zeeschelde river, although it is relative deep water (4,7m) for smaller ships (Spits) and there is a Navigation system of marks (buoys) defined. See figure below on the left. The grey stripe river area is not an optimal navigation underground (more than 50km). For a possible solution we refer to the Encoding Guide, see Appendix A4 point B.



Zooming out another part of the area above is marked as an Unsurveyed area. See below. All cells are from the end of 2019.



Older IENC of the Boven-Zeeschelde, published 12 Nov 2018, didn't show the Unsurveyed Area but the fairway data instead. See below. These older cells are not available anymore.



<input type="checkbox"/>	<input checked="" type="checkbox"/>	BE	142	29-5-2020
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Afdelingskanaal van de Leie	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Albert II dok	1	1-8-2018
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Albertkanaal	11	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Beneden Dijle	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Beneden Zeeschelde	3	17-12-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Beneden-Nete	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Boven Schelde	5	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Boven-Durme	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Boven-Zeeschelde	13	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Dender	4	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Estuaire vaart Noordzee	4	29-5-2020
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Haven van Antwerpen	2	29-3-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, IJzer	4	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Bocholt-Herentals	5	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Bossuit-Kortrijk	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Dessel-Kwaadmechelen	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Dessel-Turnhout-Schoten	6	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Gent-Oostende	8	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Gent-Terneuzen	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Ieper-IJzer	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Leuven-Dijle	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal naar Beverlo	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal naar Charleroi	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Nieuwpoort-Duinkerke	2	29-5-2020
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Plassendale-Nieuwpoort	3	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Kanaal Roeselare-Leie	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Leie	4	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Lokanaal	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Moervaart	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Netekanaal	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Ringvaart om Gent	2	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Rupel	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Schelde-Rijnverbinding	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Spierekanaal	1	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Zeebrugge Achterhaven	1	21-11-2018
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Zeekanaal Brussel-Schelde	3	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Vlaanderen, Zuid-Willemsvaart	4	21-11-2019
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Wallonie	33	27-4-2018

France ([VNF](#) and [InfoRhône](#))



There are no IENC updates published by the VNF in 2019 or 2020 with exception of Seine Aval from April 2020. All other charts are older. The IENC Seine from Paris direction South to Montereau as CEMT Class V has not yet been published. There are no IENC of lower CEMT Class I-IV.

<input checked="" type="checkbox"/>	FR	124	3-4-2020
<input checked="" type="checkbox"/>	Canal du Rhone au Rhin, Branche Sud	1	2-8-2016
<input checked="" type="checkbox"/>	Garonne	6	23-1-2015
<input checked="" type="checkbox"/>	Grande Saone	15	3-8-2018
<input checked="" type="checkbox"/>	Liaison Dunkerque Escaut	19	27-3-2015
<input checked="" type="checkbox"/>	Moselle	11	3-4-2013
<input checked="" type="checkbox"/>	Oise	7	15-6-2016
<input checked="" type="checkbox"/>	Rhin	15	2-8-2016
<input checked="" type="checkbox"/>	Rhone	32	22-1-2008
<input checked="" type="checkbox"/>	Rhone dans Lyon	1	11-8-2017
<input checked="" type="checkbox"/>	Seine Aval	17	3-4-2020

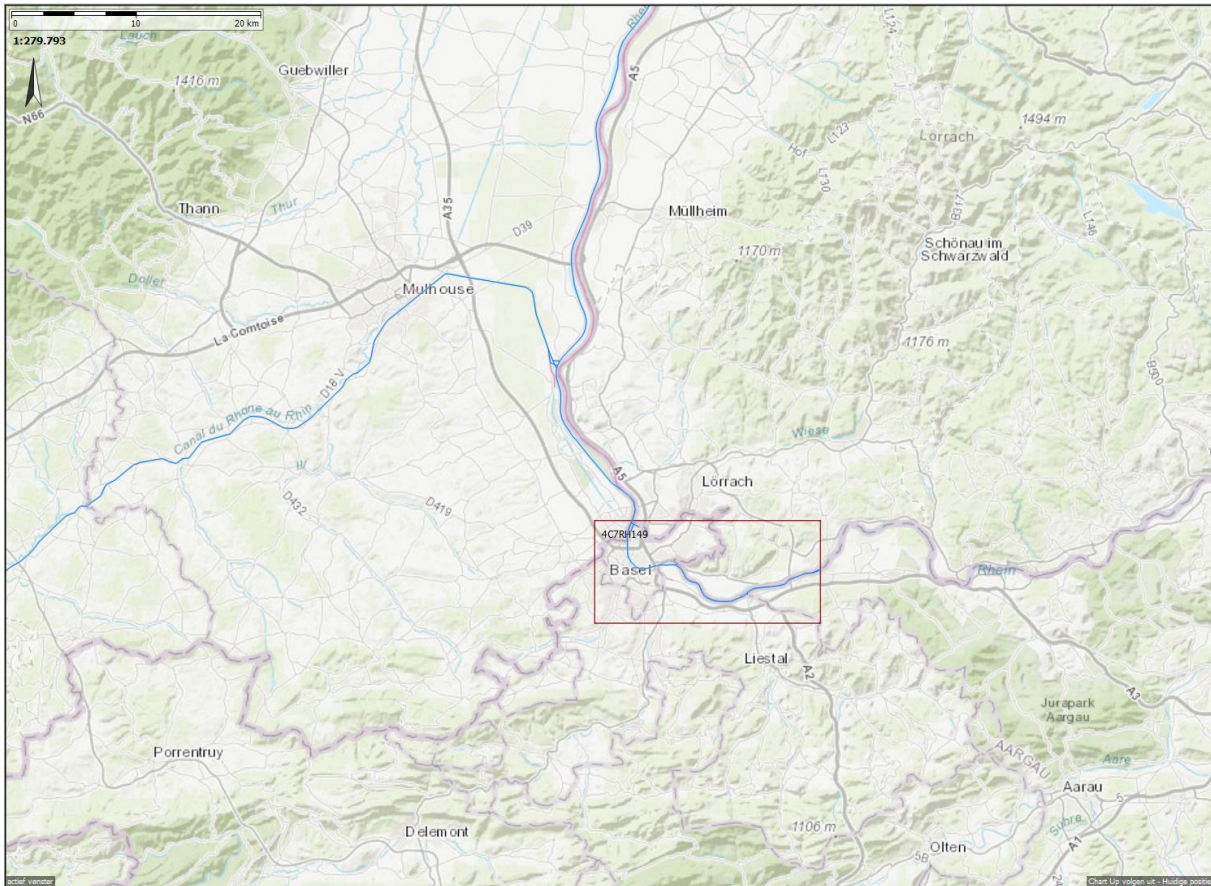
Test on 5MB per cell maximum  
No exceeding

Plotting quality conform IENC and S57 standards  
Not yet investigated.

Additional data (bridge pictures, service times, text files)  
For Grand Saone (9 XML), Duinkerck Escout (185 jpg, 23 XML), Mouselle (169 TIF), Oise (7 XML) and  
Seine Aval (8 XML)

Bathymetry  
No bIENC

Switzerland ([Port of Switzerland](#))



<input type="checkbox"/> <input checked="" type="checkbox"/> CH	1	18-2-2019
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Test on 5MB per cell maximum  
 No exceeding of the 5 MB

Plotting quality conform IENC and S57 standards  
 Not yet investigated.

Additional data (bridge pictures, service times, text files)  
 10 jpeg, 4 jpg

Bathymetry  
 No bIENC

## Germany (ELWIS)



German IENC is produced by the WSV and available on the ELWIS website. See appendix A1. There are currently 459 cells divided over 36 IENC sets. Most important are the Rhine, Elbe and Mittellandkanal. New is IENC Peene in North East Germany.

The German Rhine with the Mosel connected to the French one, the Main with the Main-Danube channel connected to the Danube in Austria and with the Neckar. The German Rhine connects upstream to France (15 Cells) and Switzerland (1 Cell, Basel) and downstream to the Dutch Rhine direction Rotterdam.

A good 82% of the cells are updated in 2019 or 2020, but there are some older sets (18%). Donau (Danube), Mittellandkanal and Potsdamer Havel from 2018. Lahn and Neckar from 2016.

Test on 5MB per cell maximum  
No exceeding of the 5 MB

Plotting quality conform IENC and S57 standards  
Not yet investigated.

Additional data (bridge pictures, service times, text files)

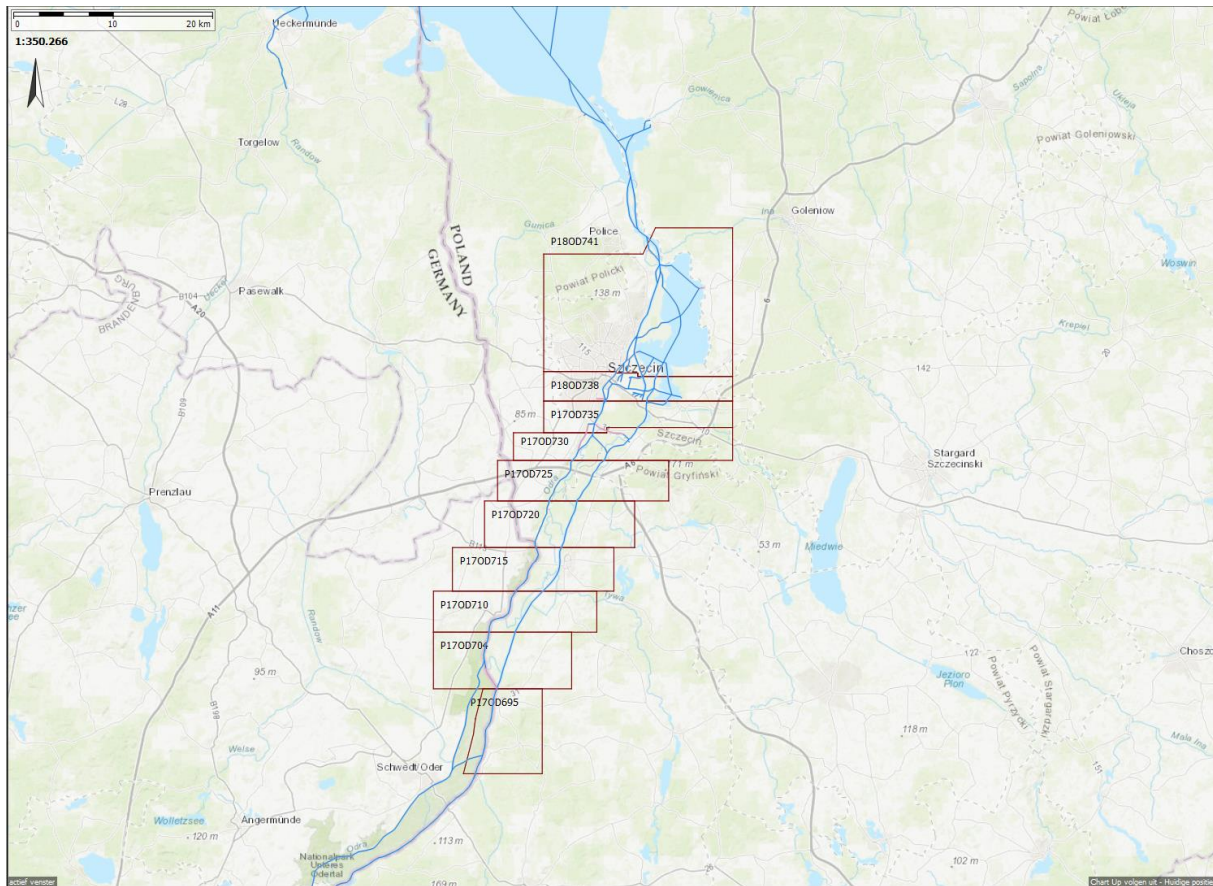
Only for Donau (65 jpg, 25 XML), Main (174 jpg, 58 XML) and Main-Donau Kanal (135 jpg, 16 XML)

Bathymetry, No biENC

<input checked="" type="checkbox"/>	DE	459	30-9-2020
<input checked="" type="checkbox"/>	Berlin-Spandauer-Schiffahrtskanal	1	5-5-2020
<input checked="" type="checkbox"/>	Datteln-Hamm-Kanal	5	29-9-2020
<input checked="" type="checkbox"/>	Donau	22	23-4-2020
<input checked="" type="checkbox"/>	Dortmund-Ems-Kanal	23	29-9-2020
<input checked="" type="checkbox"/>	Elbe	64	29-9-2020
<input checked="" type="checkbox"/>	Elbe-Havel-Kanal	5	19-6-2020
<input checked="" type="checkbox"/>	Elbe-Luebeck-Kanal	6	25-9-2020
<input checked="" type="checkbox"/>	Elbe-Seitenkanal	12	2-3-2020
<input checked="" type="checkbox"/>	Havel-Oder-Wasserstrasse	13	30-9-2020
<input checked="" type="checkbox"/>	Havelkanal	3	25-8-2020
<input checked="" type="checkbox"/>	Kanaltrave	1	9-12-2019
<input checked="" type="checkbox"/>	Kuestenkanal	7	23-6-2020
<input checked="" type="checkbox"/>	Lahn	1	6-4-2016
<input checked="" type="checkbox"/>	Main	39	26-2-2020
<input checked="" type="checkbox"/>	Main-Donau-Kanal	18	28-10-2019
<input checked="" type="checkbox"/>	Mittellandkanal	32	13-1-2020
<input checked="" type="checkbox"/>	Mittellandkanal_Stichkanal_Hannover-Linden	1	12-7-2018
<input checked="" type="checkbox"/>	Mittellandkanal_Stichkanal_Hildesheim	1	12-7-2018
<input checked="" type="checkbox"/>	Mittellandkanal_Stichkanal_Osnabrueck	1	12-7-2018
<input checked="" type="checkbox"/>	Mittellandkanal_Stichkanal_Salzgitter	1	12-7-2018
<input checked="" type="checkbox"/>	Mosel	25	25-6-2020
<input checked="" type="checkbox"/>	Neckar	21	22-6-2020
<input checked="" type="checkbox"/>	Oder	17	25-9-2020
<input checked="" type="checkbox"/>	Peene	7	28-9-2020
<input checked="" type="checkbox"/>	Potsdamer_Havel	3	12-7-2018
<input checked="" type="checkbox"/>	Rhein	56	24-6-2020
<input checked="" type="checkbox"/>	Rhein-Herne-Kanal	4	29-9-2020
<input checked="" type="checkbox"/>	Ruhr	1	29-9-2020
<input checked="" type="checkbox"/>	Saale	9	15-6-2020
<input checked="" type="checkbox"/>	Saar	10	25-9-2019
<input checked="" type="checkbox"/>	Spree-Oder-Wasserstrasse	5	23-9-2020
<input checked="" type="checkbox"/>	Teltowkanal	4	17-6-2020
<input checked="" type="checkbox"/>	Untere-Havel-Wasserstrasse_0-69	8	2-10-2019
<input checked="" type="checkbox"/>	Untere-Havel-Wasserstrasse_70-155	9	2-10-2019
<input checked="" type="checkbox"/>	Wesel-Datteln-Kanal	6	29-9-2020
<input checked="" type="checkbox"/>	Weser	16	15-4-2019
<input checked="" type="checkbox"/>	Westoder	2	24-9-2020



Poland (RIS-ODER)



IENC Poland contains 10 cells produced from October 2018 to August 2019 covering the Oder and West-Oder.

<input checked="" type="checkbox"/> PL	10	16-12-2019
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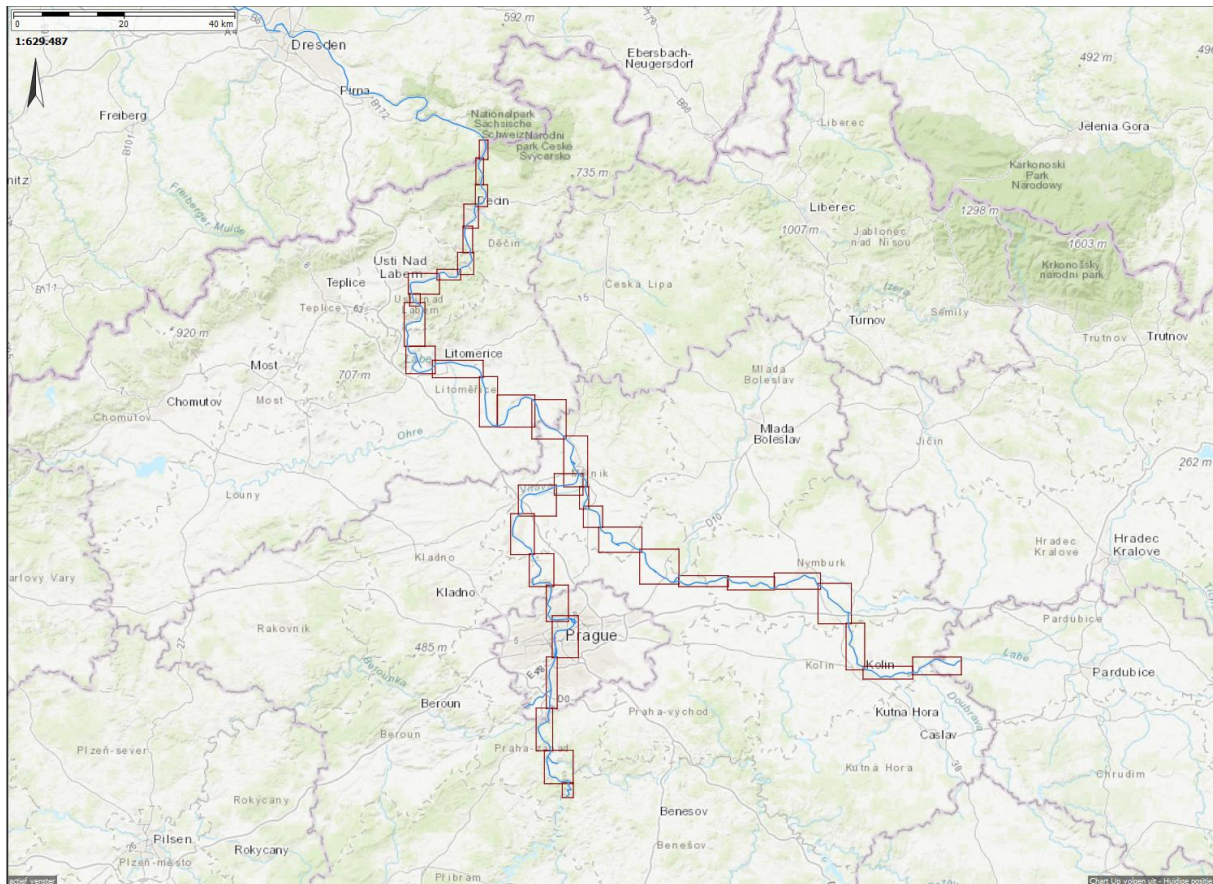
Test on 5MB per cell maximum  
No exceeding of 5MB

Plotting quality conform IENC and S57 standards  
No names of bridges on the IENC.

Additional data (bridge pictures, service times, text files)  
Not available

The bathymetry is included in the IENC.

Czechia ([Lavdis](#))



IENC Czechia contains 37 recently updated cells from the Elbe and Moldau.  
 New are the 8 biENC of the Labe/Elbe connected to the German Elbe.

<input checked="" type="checkbox"/>	CZ	45	2-7-2020
<input checked="" type="checkbox"/>	biENC	8	30-6-2020
<input checked="" type="checkbox"/>	IENC	37	2-7-2020

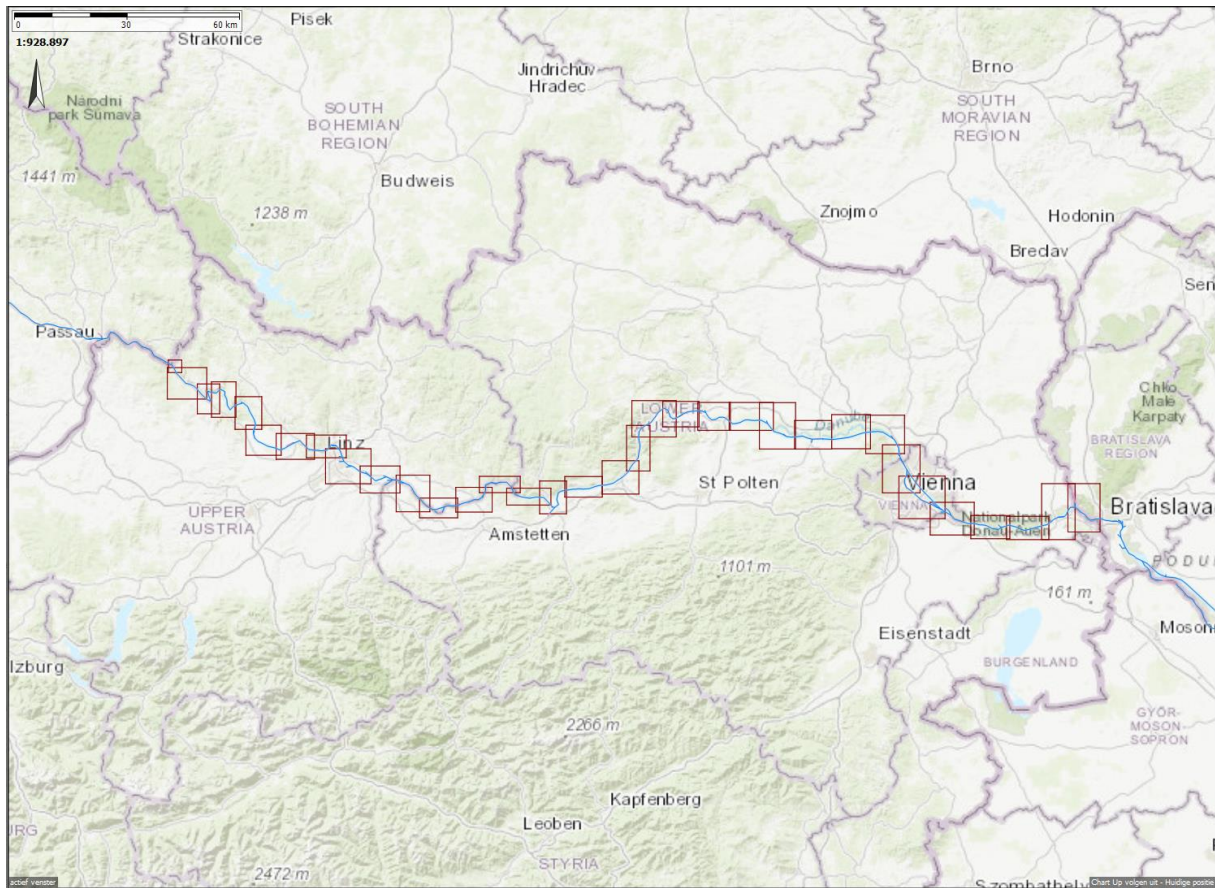
Test on 5MB per cell maximum  
 No exceeding of the 5 MB

Plotting quality conform IENC and S57 standards  
 Not yet investigated. First impression is good.

Additional data (bridge pictures, service times, text files) in the 2020 update.

Bathymetry  
 No biENC

Austria (DoRIS)



IENC Danube plus bIENC (showing bathymetric data)

	<input type="checkbox"/> AT	108	29-10-2020
	<input type="checkbox"/> bENC	74	29-10-2020
	<input checked="" type="checkbox"/> IENC	34	29-10-2020

All IENC and bENC are below 5 MB with exception of the following bENC cells.

	2WBDK017.000	7-2-2020 12:15	000-bestand	6.868 kB
	2WBD2110.000	7-2-2020 12:15	000-bestand	5.178 kB

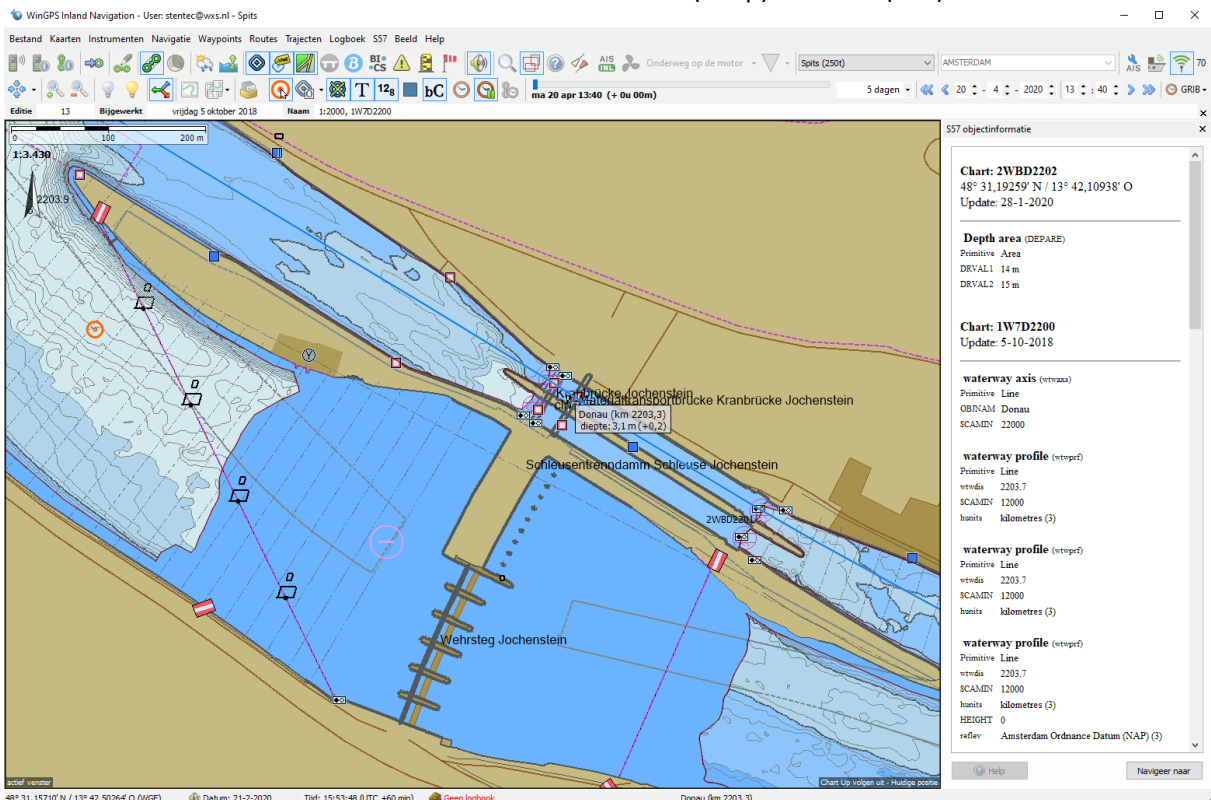
Plotting quality conform IENC and S57 standards in ECDIS 2.3 and 2.4 format. Sometimes update files are published (.001, etc.) The recommended 2.4 format is used for the Stentec Update Service.

Additional data (bridge pictures, service times, text files): 32 TIF of Bridges and 42 XML.

The bENC of Austria also includes the Danube on the German border covered by German IENC.

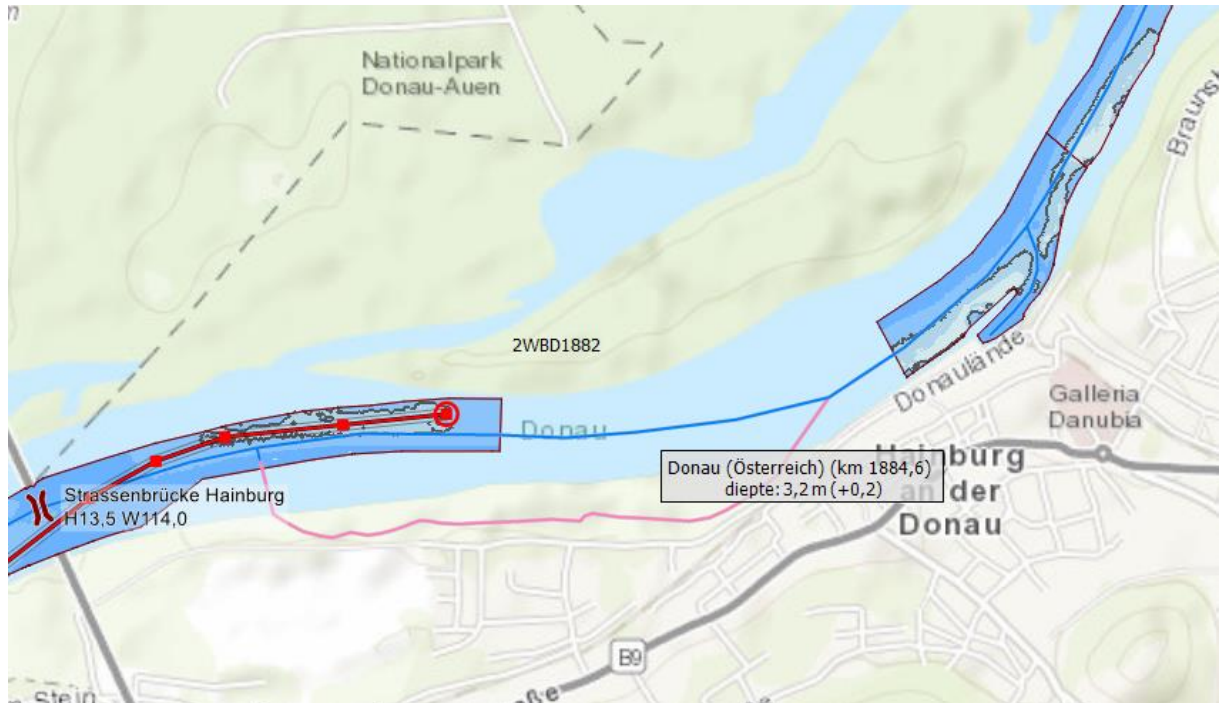


The bIENC colors show the 10m depth in white only on the left side of the Jochenstein lock at km 2203. There is a difference of more than 5m between West (deep) and East (low). Is this correct?

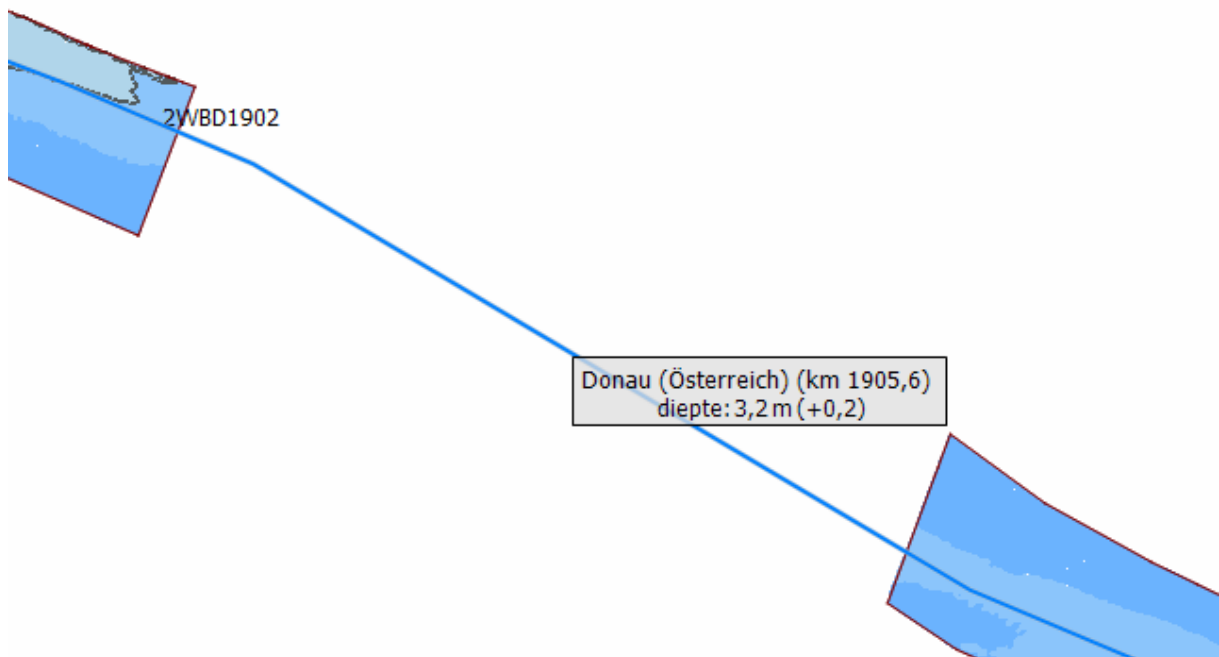


Also the Austrian bIENC does not contain or show Soundings.

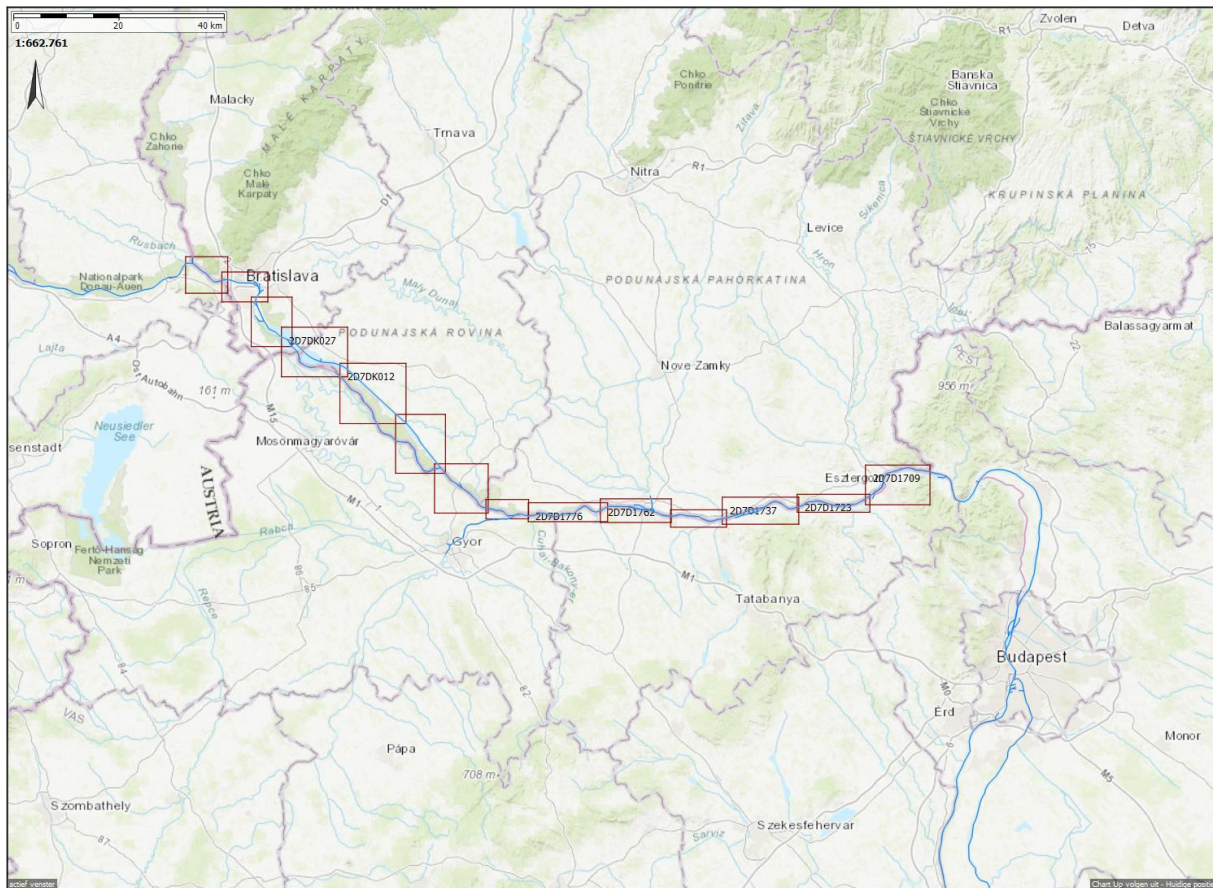
Although the Austrian biENC is of good quality and is updated regularly, we found that some files are not shown on the map when zoomed in, because the rectangular bounds in the Metadata of the biENC were not always current. See the screenshots below. In WinGPS Inland this was solved by calculating the bounds directly from the biENC cell data itself.



2WBD1901

















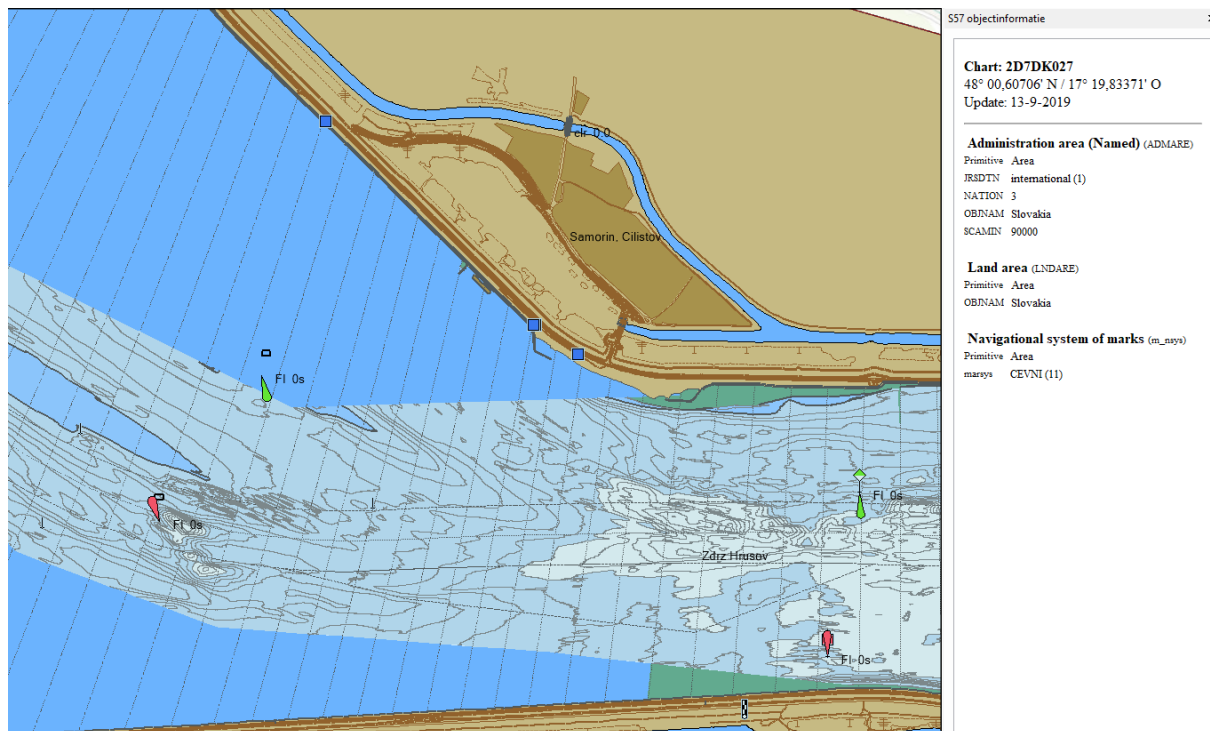
Slovakia ([Danube FIS portal](#))



Test on 5MB per cell maximum

Most cells of Slovakia do not match the required 5 MB maximum, because bathymetric data of the Danube is included. The 2D7K027.00 even contains 100 MB. This can result in very slow opening of the large cells in plotters and navigation software.

 2D7DK027.000	7-2-2020 12:33	000-bestand	102.505 kB
 2D7D1854.000	7-2-2020 12:32	000-bestand	57.614 kB
 2D7D1800.000	7-2-2020 12:32	000-bestand	44.270 kB
 2D7D1872.000	7-2-2020 12:32	000-bestand	31.487 kB
 2D7D1776.000	7-2-2020 12:32	000-bestand	29.921 kB
 2D7D1791.000	7-2-2020 12:33	000-bestand	29.512 kB
 2D7D1864.000	7-2-2020 12:32	000-bestand	23.898 kB
 2D7D1709.000	7-2-2020 12:32	000-bestand	22.884 kB
 2D7D1723.000	7-2-2020 12:32	000-bestand	19.017 kB
 2D7D1737.000	7-2-2020 12:32	000-bestand	14.494 kB
 2D7D1762.000	7-2-2020 12:32	000-bestand	7.407 kB
 2D7D1752.000	7-2-2020 12:32	000-bestand	7.245 kB
 2D7DK000.000	7-2-2020 12:31	000-bestand	4.572 kB
 2D7DK012.000	7-2-2020 12:33	000-bestand	2.790 kB



Above the 100MB cell is shown in WinGPS Inland without correction or improvement. Not all bathymetric data is shown. The depth contours besides the waterway is overlapped with the standard blue waterway color.

Plotting quality conform IENC and S57 standards  
Not yet investigated.

Additional data (bridge pictures, service times, text files)  
Not available

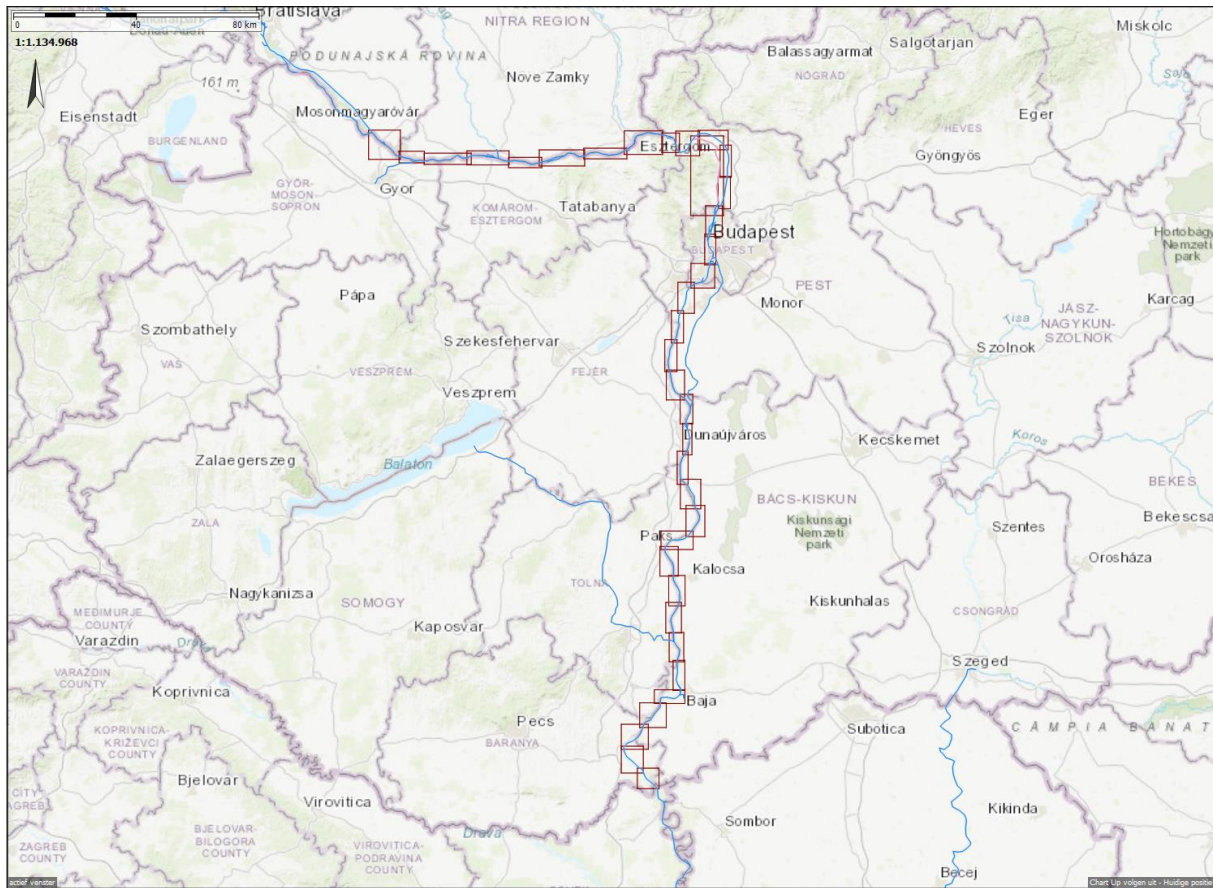
Bathymetry  
No bIENC. Bathymetry included in the mostly large cells.

### Recommendations

To developers: In principle navigation software developers can find a solution for fast handling of the oversized S57 containing bathymetric data. This because in the highest (Other) cell quality bathymetric data only be shown zoomed in. Also the blue water overlap can be handled in the IENC navigation software.

To governments: It is strongly recommended to the official IENC producers of Slovakia not to exceed the cell maximum of 5 MB and put the bathymetric data in the for this goal specially defined bIENC (bathymetric IENC) conform the bIENC of Austria. Showing bIENC data in the Basic, Standard and Other quality must be an easy accessible option in the navigation software.

Hungary ([Danube FIS portal](#))



	HU	37	17-12-2019
	Duna km 1433-1811	36	17-12-2019
	Szduna km 0-30	1	17-12-2019

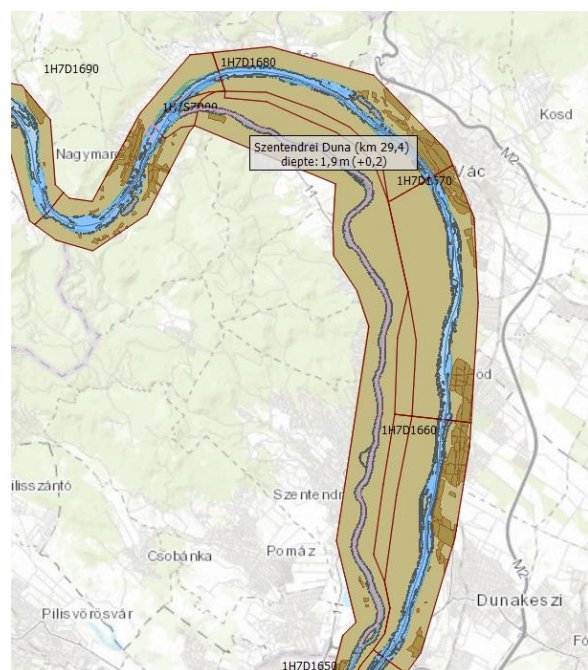
The Szduna (Zsentendrei) is the west side river of the Hungarian Danube. Both have been updated recently.

Test on 5MB per cell maximum  
No exceeding

Plotting quality conform IENC and S57 standards  
Not yet investigated.

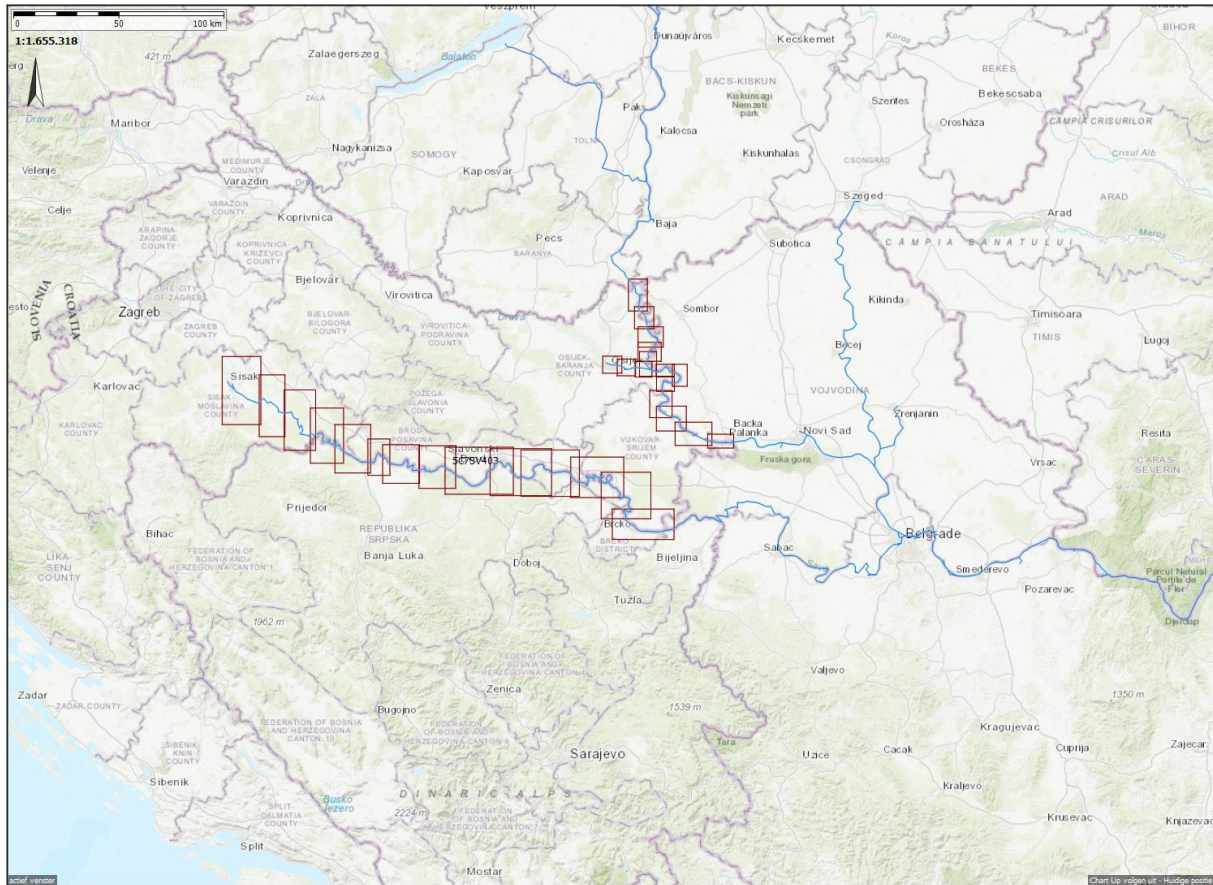
Additional data (bridge pictures, service times, text files).  
No additional files.

Bathymetry  
No bIENC





Croatia ([Danube FIS portal](#))



<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> KR	29	11-9-2018
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Drava	3	10-11-2010
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Dunav	12	11-9-2018
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Sava	14	18-11-2010

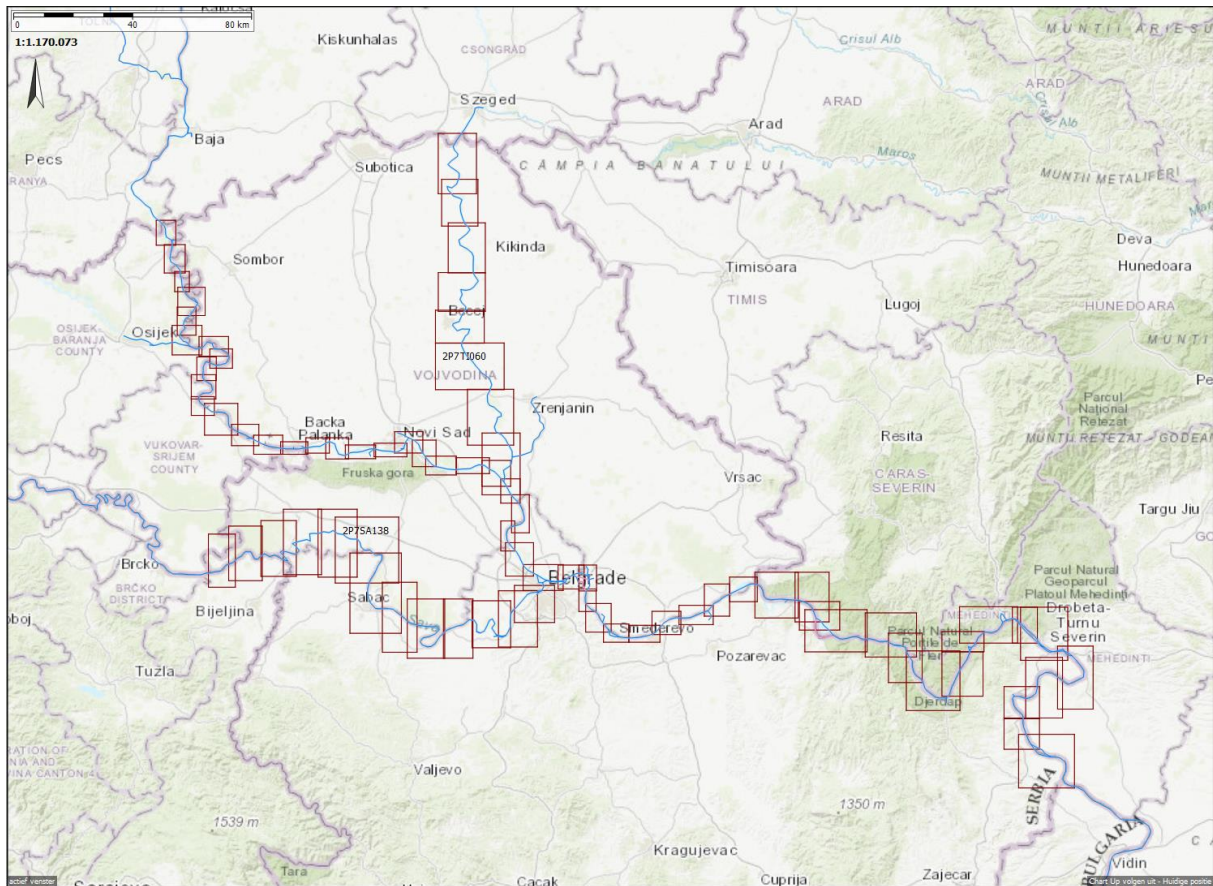
Test on 5MB per cell maximum  
No exceeding of 5MB

Plotting quality conform IENC and S57 standards  
Not yet investigated.

Additional data (bridge pictures, service times, text files)  
For Danube 4 jpg and 6 XML

Bathymetry  
No BIENC

Serbia ([Danube FIS portal](#))



<input checked="" type="checkbox"/>	RS	77	3-9-2020
<input checked="" type="checkbox"/>	Danube	56	3-9-2020
<input checked="" type="checkbox"/>	Sava	13	20-12-2019
<input checked="" type="checkbox"/>	Tisza	8	30-12-2019

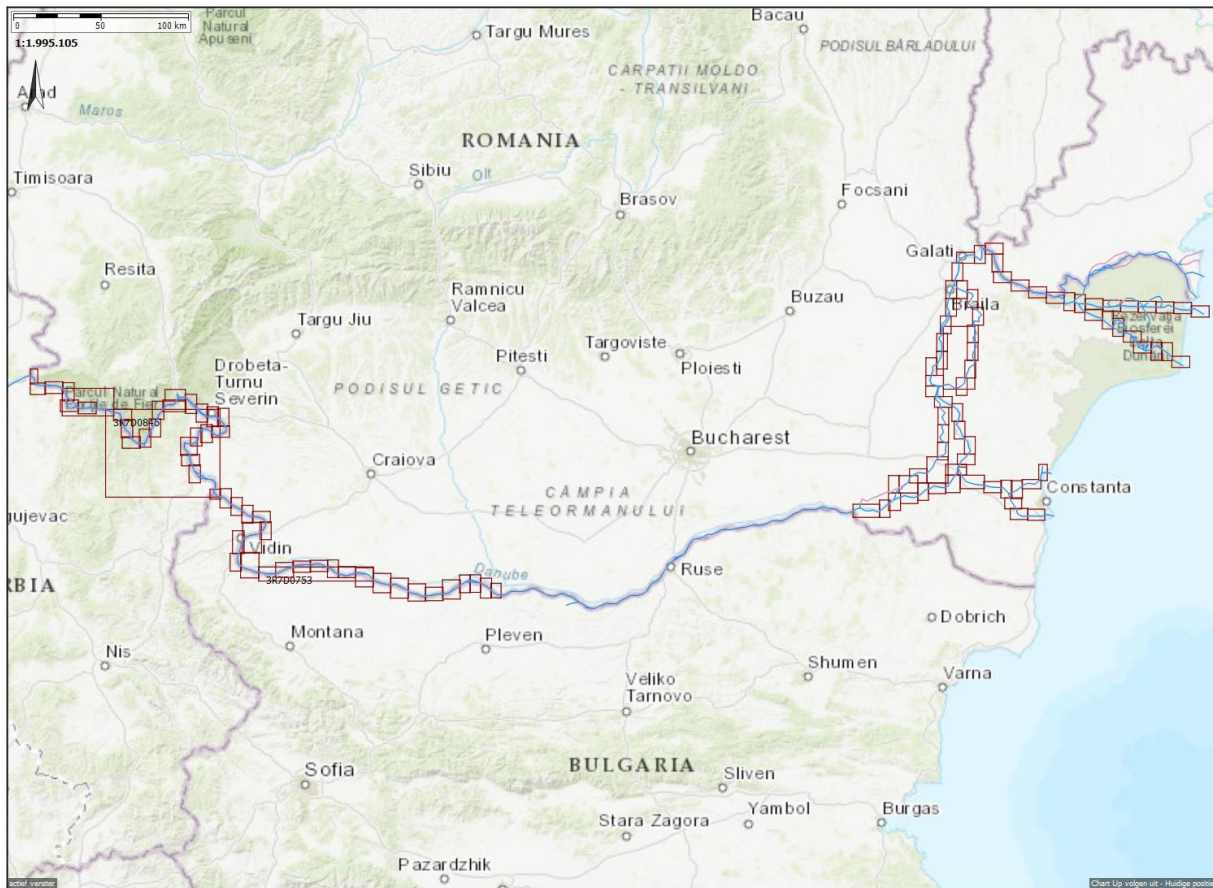
Test on 5MB per cell maximum  
No exceeding of 5 MB

Plotting quality conform IENC and S57 standards  
Not yet investigated.

Additional data (bridge pictures, service times, text files)  
Danube 16 jpg and 2 XML, Sava 14 jpg, Tisza 5 jpg

Bathymetry  
No BIENC


Romania ([Danube FIS portal](#))



<input type="checkbox"/> RO	122	8-10-2020
<input checked="" type="checkbox"/> Borcea	7	12-4-2019
<input checked="" type="checkbox"/> Canal Dunare-Marea Neagra	10	14-11-2019
<input checked="" type="checkbox"/> Donau, km 0 - km 47	10	3-9-2020
<input checked="" type="checkbox"/> Donau, km 175 - km 297	12	3-9-2020
<input checked="" type="checkbox"/> Donau, km 297 - km 375	8	10-4-2020
<input checked="" type="checkbox"/> Donau, km 47 - km 175	9	18-9-2020
<input checked="" type="checkbox"/> Donau, km 610 - km 845	26	8-10-2020
<input checked="" type="checkbox"/> Donau, km 845 - km 1075	24	29-7-2020
<input checked="" type="checkbox"/> Macin	8	15-10-2019
<input checked="" type="checkbox"/> Sf. Gheorghe	8	6-11-2012


Test on 5MB per cell maximum

Canal Dunare-Maerea Neagra

 3R7PAM01.000	7-2-2020 12:30	000-bestand	12.861 kB
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With 15 TIF and 22 XML

Danube km 297 - km 375

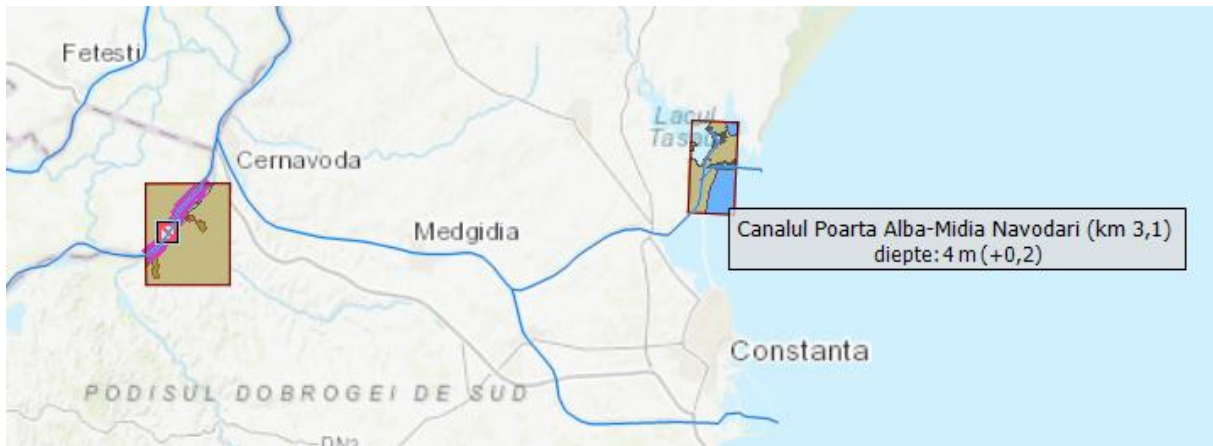
 3R7D0304.000	13-5-2020 09:22	000-bestand	13.993 kB
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Plotting quality conform IENC and S57 standards  
 Not yet investigated.

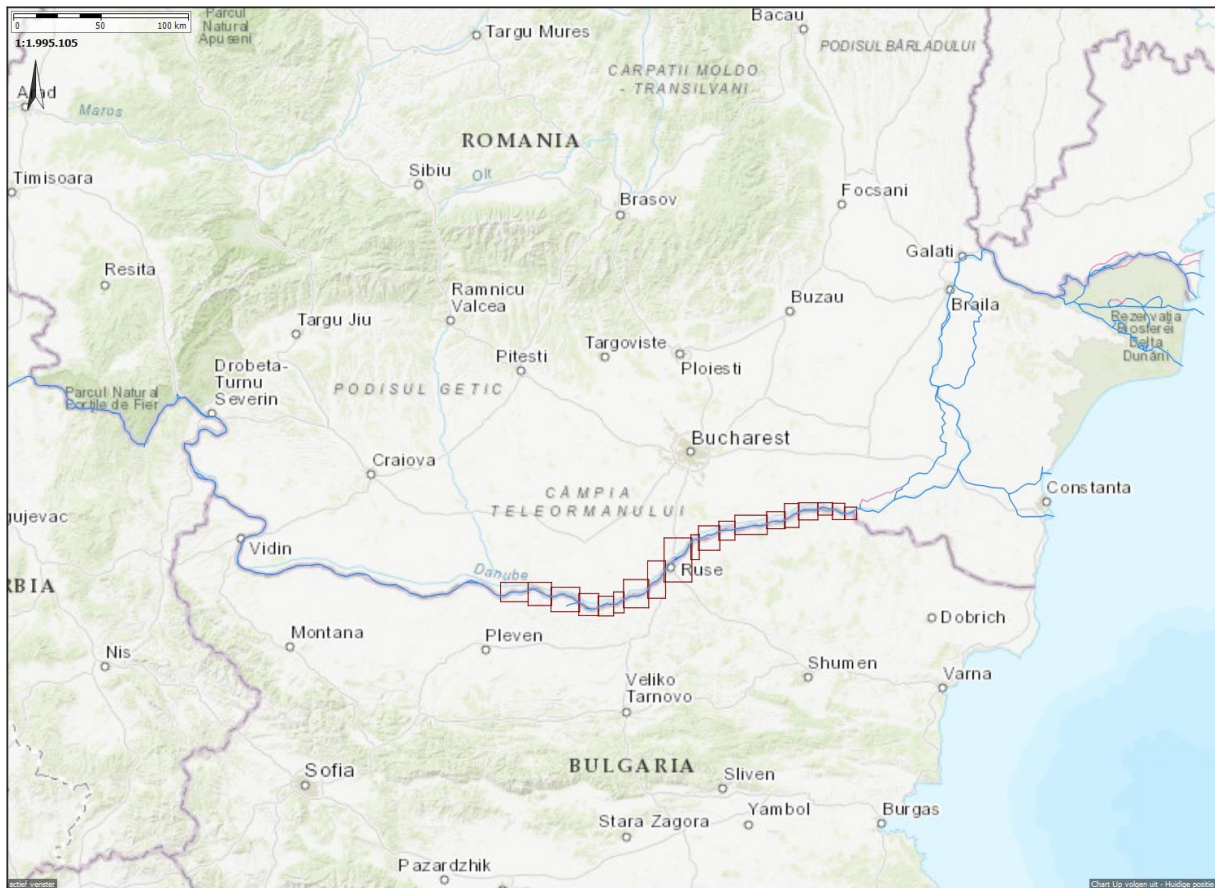
Additional data (bridge pictures, service times, text files)  
 Not available

Bathymetry

No bIENC. Bathymetry included in 3R7D0304.000 for Danube km 304,7 – km 309,6 and Canal Dunare-Maerea Neagra 3R7PAM01. See below.



Bulgaria ([Danube FIS portal](#))



+	BG	19	16-6-2020
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Test on 5MB per cell maximum  
 No exceeding of the 5MB size.

Plotting quality conform IENC and S57 standards  
 Not yet investigated.

Additional data (bridge pictures, service times, text files)  
 No additional data

Bathymetry  
 No IENC

## Appendix A3. Logfile for Stentec IENC Server

Date	Who	Country	IENC	Authority	Size	Byte
2019-01-23	WK	EU	14 Countries	All	1,56	GB
2019-01-23	WK	NL	20190117_U7Inland_week03_NL	RWS Zeeland	39	MB
2019-01-28	VK	BG	21.01.2019	Danube FIS Portal	1,75	MB
2019-01-28	VK	FR	Rhone_Lyon_Edition_1	VNF	620	kB
2019-01-28	VK	RS	Danube_RS_2018_E03_U02	Danube FIS Portal	44,7	MB
2019-01-28	VK	RS	Sava_RS_2018_E03_U03	Danube FIS Portal	33,5	MB
2019-01-28	VK	RS	Tisza_RS_2018_E03_U02	Danube FIS Portal	9,3	MB
2019-02-04	VK	RO	Donau_2019_U01	Danube FIS Portal	2	MB
2019-02-08	VK	NL	20190206_U7Inland_week06_NL	RWS Zeeland	90	MB
2019-02-15	VK	NL	20191302_U7Inland_week07_NL	RWS Zeeland	90	MB
2019-03-12	VK	NL	20190306_U7inland_week10_NL	RWS Zeeland	90	MB
2019-03-12	VK	NL	20190311_U7_NDB_Wrak_Cardium_MD082-19_NL	RWS Zeeland	1	MB
2019-03-18	VK	NL	20190313_U7inland_week11_NL	RWS Zeeland	90	MB
2019-03-18	VK	NL	20190311_U7_NDB_Wrak_Cardium_MD082-19_NL	RWS Zeeland	1	MB
2019-03-18	VK	NL	Nederland(Nieuwe publicatie)	RWS CIV	102	MB
2019-04-23	VK	NL	20190417_U7inland_week16_NL	RWS Zeeland	90	MB
2019-04-29	VK	NL	20190424_U7inland_week17_NL	RWS Zeeland	90	MB
2019-05-03	VK	NL	20190501_U7inland_week18_NL	RWS Zeeland	90	MB
2019-05-08	VK	NL	20190507_U7Inland_Week19_NL	RWS Zeeland	90	MB
2019-05-08	VK	DE	Berlin-Spandauer-Schiffahrtskanal	WSV ELWIS	300	kB
2019-05-08	VK	DE	Datteln-Hamm-Kanal	WSV ELWIS	845	kB
2019-05-08	VK	DE	Dortmund-Ems-Kanal	WSV ELWIS	2,9	MB
2019-05-08	VK	DE	Elbe	WSV ELWIS	15	MB
2019-05-08	VK	DE	Elbe-Havel-Kanal	WSV ELWIS	800	kB
2019-05-08	VK	DE	Elbe-Lübeck-Kanal	WSV ELWIS	960	kB
2019-05-08	VK	DE	Havelkanal	WSV ELWIS	360	kB
2019-05-08	VK	DE	Havel-Oder-Wasserstrasse	WSV ELWIS	2,5	MB
2019-05-08	VK	DE	Küstenkanal	WSV ELWIS	700	kB
2019-05-08	VK	DE	Oder	WSV ELWIS	2,1	MB
2019-05-08	VK	DE	Rhein	WSV ELWIS	11	MB
2019-05-08	VK	DE	Rhein-Herne-Kanal	WSV ELWIS	740	kB
2019-05-08	VK	DE	Ruhr	WSV ELWIS	390	kB
2019-05-08	VK	DE	Spree-Oder-Wasserstrasse	WSV ELWIS	670	kB
2019-05-08	VK	DE	Teltowkanal	WSV ELWIS	760	kB
2019-05-08	VK	DE	Untere-Havel-Wasserstrasse_70_155	WSV ELWIS	1,95	MB
2019-05-08	VK	DE	Untere-Havel-Wasserstrasse_0-69	WSV ELWIS	3,0	MB
2019-05-08	VK	DE	Wesel-Datteln-Kanal	WSV ELWIS	750	kB
2019-05-08	VK	DE	Weser	WSV ELWIS	1,75	MB
2019-05-16	VK	NL	20190515_U7Inland_Week20_NL	RWS Zeeland	41	MB
2019-05-16	VK	NL	20190515_U7Inland_Week20_1 Cel4	RWS Zeeland	2	MB
2019-05-21	VK	AT	2W7D_Edition_13	DORIS	42	MB

2019-05-22	VK	NL	20190522_U7Inland_Week_21_NL	RWS Zeeland	91	MB
2019-05-22	VK	NL	20190515_U7Inland_Week20_1 Cel4	RWS Zeeland	2	MB
2019-06-03	VK	NL	20190529_U7Inland_Week22_NL	RWS Zeeland	91	MB
2019-06-04	VK	NL	20190604_U7Inland_Week23_NL	RWS Zeeland	91	MB
2019-06-05	VK	NL	20190604_U7Inland_Week23_1 Cel	RWS Zeeland	1	MB
2019-06-20	VK	NL	20190619_U7Inland_Week25_NL	RWS Zeeland	91	MB
2019-06-21	VK	CZ	Vlatava_Labe	Lavdis	20	MB
2019-06-26	VK	NL	20190626_U7Inland_Week26_NL	RWS Zeeland	91	MB
2019-07-04	VK	NL	Nederland (nieuwe publicatie) met kaart 2019-07-01	RWS CIV	39	MB
2019-07-05	SB	NL	20190702_U7Inland_Reissue_NL	RWS Zeeland	91	MB
2019-07-10	VK	NL	20190710_U7Inland_Week28_NL	RWS Zeeland	91	MB
2019-07-12	VK	DE	Saar_2019_06_11	WSV ELWIS	3,5	MB
2019-07-12	VK	DE	Oder_2019_01_21	WSV ELWIS	7,7	MB
2019-07-12	VK	DE	Saale_2019_05_16	WSV ELWIS	5,5	MB
2019-07-12	VK	DE	Ruhr_2019_06_27	WSV ELWIS	1,4	MB
2019-07-12	VK	DE	Rhein-Herne-Kanal_2019-06-27	WSV ELWIS	2,3	MB
2019-07-12	VK	DE	Rhein_2019-06-27	WSV ELWIS	37,5	MB
2019-07-12	VK	DE	Mosel_2019-06-06	WSV ELWIS	8	MB
2019-07-12	VK	DE	Westoder_2016-06-24	WSV ELWIS	300	kB
2019-07-12	VK	DE	Dormund-Ems-Kanal_2019-06-27	WSV ELWIS	9,3	MB
2019-07-12	VK	DE	Elbe_2019_05_16	WSV ELWIS	51	MB
2019-07-12	VK	DE	Elbe-Havel-Kanal_2019_05_15	WSV ELWIS	3,3	MB
2019-07-12	VK	DE	Mosel_2019-06-06	WSV ELWIS	8	MB
2019-07-22	VK	NL	Nederland (nieuwe publicatie) met kaart 2019-07-18	RWS CIV	39	MB
2019-07-22	VK	NL	20190717_U7Inland_Week29_NL	RWS Zeeland	91	MB
2019-07-25	VK	NL	20190724_U7Inland_Week30_NL	RWS Zeeland	91	MB
2019-08-02	VK	NL	20190731_U7Inland_Week31_NL	RWS Zeeland	93	MB
2019-08-08	VK	NL	Nederland (nieuwe publicatie) met kaart 2019-08-07	RWS CIV	43	MB
2019-08-08	VK	NL	Nederland (nog te vervangen) met kaart 2019-08-07	RWS CIV	6	MB
2019-08-14	VK	NL	20190813_U7Inland_Week33_NL	RWS Zeeland	93	MB
2019-08-22	VK	NL	20190821_U7Inland_Week34_NL	RWS Zeeland	93	MB
2019-08-29	VK	NL	20190827_U7Inland_Week35_NL	RWS Zeeland	93	MB
2019-09-11	VK	NL	20190910_U7Inland_Week37_NL	RWS Zeeland	93	MB
2019-09-25	VK	NL	20190925_U7Inland_week39_NL	RWS Zeeland	93	MB
2019-10-02	VK	CH	ENC_Hochrhein_Update_2019	Lavdis	5	MB
2019-10-02	VK	NL	20191002_U7Inland_Reissue_NL	RWS Zeeland	93	MB
2019-10-02	VK	RO	Galati_Lower_Danube_RA	Danube FIS Portal	44	MB
2019-10-17	VK	AT	2W_Update_20191010	DORIS	10	MB
2019-10-17	VK	NL	20191010_U7Inland_Week 41_NL	RWS Zeeland	41	MB
2019-10-17	VK	DE	Datteln-Hamm-Kanal_2019-09-18	WSV ELWIS	846	kB
2019-10-17	VK	DE	Dortmund-Ems-Kanal_2019-09-18	WSV ELWIS	2,9	MB
2019-10-17	VK	DE	Elbe_2019-09-30	WSV ELWIS	15	MB
2019-10-17	VK	DE	Elbe_Seitenkanal_2019-09-30	WSV ELWIS	885	kB

2019-10-17	VK	DE	Küstenkanal_2019-09-18	WSV ELWIS	698	kB
2019-10-17	VK	DE	Rhein-Herne-Kanal_2019-09-18	WSV ELWIS	740	kB
2019-10-17	VK	DE	Saale_2019-09-30	WSV ELWIS	1,76	MB
2019-10-17	VK	DE	Saar_2019-09-25	WSV ELWIS	1,72	MB
2019-10-17	VK	DE	Untere-Havelwasserstraße_70-155_2019-10-02	WSV ELWIS	3,06	MB
2019-10-17	VK	DE	Untere-Havelwasserstraße_0-69_2019-10-02	WSV ELWIS	1,95	MB
2019-10-17	VK	DE	Wesel-Datteln-Kanal_2019-09-18	WSV ELWIS	753	kB
2019-10-23	VK	SK	Dunai_km_1709_km_1872_DK	Danube FIS Portal	107	MB
2019-10-23	VK	NL	20191018_U7Inland_Week 42_NL	RWS Zeeland	41	MB
2019-10-23	VK	HU	Duna_km_1433_km_1811	Danube FIS Portal	10	MB
2019-10-23	VK	HU	Szduna_km_0_km_30	Danube FIS Portal	152	kB
2019-10-29	VK	RS	Danube_2P7D1267	Danube FIS Portal	711	kB
2019-11-01	VK	NL	20191030_U7Inland_Week 44_NL	RWS Zeeland	41	MB
2019-11-06	VK	NL	20191106_U7Inland_Week 45_NL	RWS Zeeland	41	MB
2019-11-15	VK	NL	20191113_U7Inland_Week 46_NL	RWS Zeeland	41	MB
2019-11-21	VK	NL	20191121_U7Inland_Week 47_NL	RWS Zeeland	40	MB
2019-11-22	SB	NL	Rotterdam 2019-11-21	Havenbedrijf Rotterdam	38	MB
2019-11-28	VK	NL	20191127_U7Inland_Week 48_NL	RWS Zeeland	40	MB
2019-11-28	VK	AT	2W7D_Edition_15	DORIS	6,3	MB
2019-11-28	VK	AT	2WBD_Edition_2	DORIS	36,3	MB
2019-11-28	VK	RO	14112019_cdmn-pamn_0	Danube FIS Portal	5,6	MB
2019-11-28	VK	RO	20191015-macin_1	Danube FIS Portal	64	kB
2019-11-28	VK	RO	20191015-mm0-mm47	Danube FIS Portal	430	kB
2019-11-28	VK	RO	20191015-mm47-km175_0	Danube FIS Portal	163	kB
2019-11-28	VK	RO	20191004-km175-km297_1	Danube FIS Portal	240	kB
2019-11-28	VK	RO	20191114_km297-km375	Danube FIS Portal	6,4	MB
2019-11-28	VK	RO	23102019_km610_km845	Danube FIS Portal	6,9	MB
2019-11-28	VK	RO	23102019_km845_km1075	Danube FIS Portal	390	kB
2019-11-28	VK	BG	BG_IENC_2.3_20.09.2019	Danube FIS Portal	510	kB
2019-12-20	VK	NL	20191218_U7Inland_Week 51_NL	RWS Zeeland	41	MB
2020-01-14	VK	NL	20200110_U7_Inland Week 2_NL	RWS Zeeland	41	MB
2020-01-14	VK	DE	Berlin-Spandauer-Schiffahrtskanal_2019-12-18	WSV ELWIS	302	kB
2020-01-14	VK	DE	Dortmund-Ems-Kanal_2019-12-18	WSV ELWIS	2,9	MB
2020-01-14	VK	DE	Elbe_2020-01-06	WSV ELWIS	15	MB
2020-01-14	VK	DE	Elbe-Luebeck-Kanal_2019-12-09	WSV ELWIS	964	kB
2020-01-14	VK	DE	Havelkanal_2019-12-10	WSV ELWIS	385	kB
2020-01-14	VK	DE	Kanaltrave_2019-12-09	WSV ELWIS	164	kB
2020-01-14	VK	DE	Main_2019-11-27	WSV ELWIS	12	MB
2020-01-14	VK	DE	Main-Donau-Kanal_2019-10-28	WSV ELWIS	9,8	MB
2020-01-14	VK	DE	Rhein_2019-12-18	WSV ELWIS	11	MB
2020-01-14	VK	DE	Rhein-Herne-Kanal_2019-12-18	WSV ELWIS	731	kB
2020-01-14	VK	DE	Spree-Oder-Wasserstrasse_2020-01-08	WSV ELWIS	680	kB
2020-01-14	VK	DE	Teltowkanal_2020-01-06	WSV ELWIS	756	kB



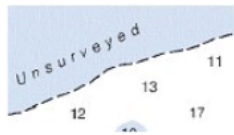

2020-01-23	VK	NL	20200110_U7_Inland Week 4_NL	RWS Zeeland	93	MB
2020-01-30	VK	NL	20200129_U7_Inland Week 5_NL	RWS Zeeland	93	MB
2020-02-06	VK	BE	Vlaanderen_ris_25_11_2019	VisuRIS	230	MB
2020-02-06	VK	NL	20200206_U7_Inland Week 6_NL	RWS Zeeland	93	MB
2020-02-12	VK	NL	20200211_U7_Inland_Week 7_NL	RWS Zeeland	93	MB
2020-02-13	VK	AT	2W_Update_20200128	DORIS	5,1	MB
2020-02-14	VK	NL	Nederland (nieuwe publicatie) met kaart 2020-02-12	RWS CIV	112	MB
2020-02-18	VK	NL	20200218_U7_Inland_Week 8_NL	RWS Zeeland	93	MB
2020-02-25	VK	NL	20200225_U7_Inland_Week 9_NL	RWS Zeeland	93	MB
2020-03-04	VK	NL	20200303_U7_Inland_Week 10_NL	RWS Zeeland	93	MB
2020-03-10	VK	AT	2W_Update_20200302	DORIS	10	MB
2020-03-12	VK	NL	20200310_U7_Inland_Week 11_NL	RWS Zeeland	93	MB
2020-03-20	VK	NL	20200318_U7_inland_Week 12_NL	RWS Zeeland	93	MB
2020-03-20	VK	BE	Boven_Schelde_Belgie_oud_2019	VisuRIS	860	kB
2020-03-24	VK	NL	20200324_U7_Inland_Week 13_NL	RWS Zeeland	93	MB
2020-04-02	VK	NL	20200324_U7_Inland_Week 14_NL	RWS Zeeland	93	MB
2020-04-09	VK	NL	20200324_U7_Inland_Week 15_NL	RWS Zeeland	93	MB
2020-04-09	VK	DE	Berlin-Spandauer-Schiffahrtskanal_2020-03-31	WSV ELWIS	1,35	MB
2020-04-09	VK	DE	Elbe_2020-03-31	WSV ELWIS	52,5	MB
2020-04-09	VK	DE	Elbe-Seitenkanal_2020-03-02	WSV ELWIS	2,4	MB
2020-04-09	VK	DE	Havel-Oder-Wasserstrasse_2020-03-31	WSV ELWIS	10,5	MB
2020-04-09	VK	DE	Main_2020-02-26	WSV ELWIS	27,7	MB
2020-04-09	VK	DE	Mittellandkanal_2020-01-13	WSV ELWIS	7,45	MB
2020-04-09	VK	DE	Spree-Oder-Wasserstrasse_2020-03-31	WSV ELWIS	3,14	MB
2020-04-15	VK	NL	20200324_U7_Inland_Week 16_NL	RWS Zeeland	93	MB
2020-04-16	VK	AT	biENC 2W_Update_20200406	DORIS	8,6	MB
2020-04-16	VK	FR	ENC_ROOT_SEINE_AVAL_ED1_MAJ1	VNF	2	MB
2020-04-30	VK	NL	20200429_U7_Inland_Week 18_NL	RWS Zeeland	93	MB
2020-04-30	VK	AT	2W_Update_20200427	DORIS	1,9	MB
2020-05-07	VK	NL	20200507_U7_Inland_Week 19_NL	RWS Zeeland	93	MB
2020-05-12	VK	BG	BG_IENC_2.3_07.05.2020	Danube FIS Portal	1,76	MB
2020-05-12	VK	RO	20200205_Bala_Borcea	Danube FIS Portal	820	kB
2020-05-12	VK	RO	14112019_CDMN-PAMN	Danube FIS Portal	22,6	MB
2020-05-12	VK	RO	20200403-mm47-km175	Danube FIS Portal	612	kB
2020-05-12	VK	RO	20200403-mm0-mm47	Danube FIS Portal	1,44	MB
2020-05-12	VK	RO	20200317_km610_km845	Danube FIS Portal	16	MB
2020-05-12	VK	RO	20191218-km175-km297	Danube FIS Portal	948	kB
2020-05-12	VK	RO	10042020_km375_km297	Danube FIS Portal	16,8	MB
2020-05-12	VK	RO	06042020_km 845_km 1075	Danube FIS Portal	1,16	MB
2020-05-20	VK	NL	20200520_U7_Inland_Week 21_NL	RWS Zeeland	93	MB
2020-05-26	VK	PL	ienc_05022020	RIS-ODER	11,8	MB
2020-05-27	VK	NL	20200520_U7_Inland_Week 22_NL	RWS Zeeland	93	MB
2020-06-10	VK	NL	20200609_U7_Inland_Week 24_NL	RWS Zeeland	93	MB
2020-06-17	VK	NL	20200617_U7_Inland_Week 25_NL	RWS Zeeland	93	MB

2020-06-19	VK	AT	2W_Update_20200608	DORIS	4	MB
2020-06-25	VK	NL	20200623_U7_Inland_Week 26_NL	RWS Zeeland	93	MB
2020-07-02	VK	AT	2W_Update_20200629	DORIS	4,81	MB
2020-07-02	VK	NL	20200630_U7_Inland Zeeland_Reissue_NL	RWS Zeeland	92	MB
2020-07-02	VK	RS	IENC_2P7D_edition03_20191231	Danube FIS Portal	24,7	MB
2020-07-02	VK	RS	IENC_2P7SA_edition03_20191220	Danube FIS Portal	10,1	MB
2020-07-02	VK	RS	IENC_2P7TI_edition03_20191222	Danube FIS Portal	10,4	MB
2020-07-02	VK	RO	0200520-km175-km297	Danube FIS Portal	876	kB
2020-07-02	VK	RO	20200615_Km610 - Km845	Danube FIS Portal	16,7	MB
2020-07-02	VK	RO	14052020_km845 - km1075	Danube FIS Portal	1,01	MB
2020-07-02	VK	HU	IENC_2_3_ED6_17122019	Danube FIS Portal	26,5	MB
2020-07-02	VK	BG	BG_IENC_2.3_16.06.2020	Danube FIS Portal	1,65	MB
2020-07-08	VK	NL	20200707_U7_Inland_week 28_NL	RWS Zeeland	93	MB
2020-07-08	VK	DE	Wesel-Datteln-Kanal_2020-06-23	WSV ELWIS	2,3	MB
2020-07-08	VK	DE	Teltowkanal_2020-06-17	WSV ELWIS	3,3	MB
2020-07-08	VK	DE	Spree-Oder-Wasserstrasse_2020-05-05	WSV ELWIS	3,2	MB
2020-07-08	VK	DE	Saale_2020-06-15	WSV ELWIS	6,5	MB
2020-07-08	VK	DE	Ruhr_2020-06-23	WSV ELWIS	1,25	MB
2020-07-08	VK	DE	Rhein-Herne-Kanal_2020-06-23	WSV ELWIS	2,2	MB
2020-07-08	VK	DE	Rhein_2020-06-24	WSV ELWIS	36,5	MB
2020-07-08	VK	DE	Neckar_2020-06-22	WSV ELWIS	16,5	MB
2020-07-08	VK	DE	Mosel_2020-06-25	WSV ELWIS	8,1	MB
2020-07-08	VK	DE	Küstenkanal_2020-06-23	WSV ELWIS	2,1	MB
2020-07-08	VK	DE	Elbe-Havel-Kanal_2020-06-19	WSV ELWIS	2,8	MB
2020-07-08	VK	DE	Elbe_2020-06-18	WSV ELWIS	58,5	MB
2020-07-08	VK	DE	Dortmund-Ems-Kanal_2020-06-23	WSV ELWIS	9,3	MB
2020-07-08	VK	DE	Donau_2020-04-23	WSV ELWIS	13,5	MB
2020-07-08	VK	DE	Datteln-Hamm-Kanal_2020-06-23	WSV ELWIS	2,1	MB
2020-07-08	VK	DE	Berlin-Spandauer-Schiffahrtskanal_2020-05-05	WSV ELWIS	1,3	MB
2020-07-08	VK	BE	Estuaire_Vaart_Noordzee_02-06-2020	VisuRIS	13,2	MB
2020-07-08	VK	BE	Kanaal_Nieuwpoort-Duinkerke_02-06-2020	VisuRIS	1,3	MB
2020-07-15	VK	NL	20200715_U7_Inland_week 29_NL	RWS Zeeland	93	MB
2020-07-23	VK	NL	20200722_U7_Inland_week 30_NL	RWS Zeeland	93	MB
2020-07-29	VK	NL	20200729_U7_Inland_week 31_NL	RWS Zeeland	93	MB
2020-07-29	VK	RO	29072020_km 845_km 1075	Danube FIS Portal	1	MB
2020-07-29	VK	RO	29072020_km 610_km 845	Danube FIS Portal	16,7	MB
2020-07-31	VK	NL	20200729_U7_Inland_week 32_NL	RWS Zeeland	92	MB
2020-07-31	VK	NL	Nederland (nieuwe publicatie) met kaart 2020-07-30	RWS CIV	120	MB
2020-07-31	VK	NL	Nederland (nog te vervangen) met kaart 2020-07-30	RWS CIV	13	MB
2020-08-07	VK	NL	20200804_U7_Inland_week 33_NL	RWS Zeeland	92	MB
2020-08-26	VK	NL	20200825_U7_Inland_week 35_NL	RWS Zeeland	91	MB
2020-08-26	VK	AT	2W_Update_20200730	DORIS	15,6	MB
2020-09-04	VK	NL	20200901_U7Inland_week 36_NL	RWS Zeeland	91	MB

2020-09-04	VK	RS	IENC_2P7D_edition03_20200904	Danube FIS Portal	24,8	MB
2020-09-09	VK	NL	20200908_U7Inland_week 37_NL	RWS Zeeland	91	MB
2020-09-09	VK	CZ	23_07_2020_Vlatava_Elbe	Lavdis	7	MB
2020-09-09	VK	CZ	23_07_2020_Elbe_Bathemetry	Lavdis	8	MB
2020-09-15	VK	NL	20200915_U7Inland_week 38_NL	RWS Zeeland	91	MB
2020-09-24	VK	NL	20200922_U7Inland_Week 39_NL	RWS Zeeland	91	MB
2020-09-28	VK	AT	2W_Update_20200928	DORIS	1,9	MB
2020-09-30	VK	RO	20200903_mm0-mm47	Danube FIS Portal	1,4	MB
2020-09-30	VK	RO	20200918-mm47-km175	Danube FIS Portal	502	kB
2020-09-30	VK	RO	20200903-km175-km297	Danube FIS Portal	876	kb
2020-09-30	VK	NL	20200930_U7_Inland Zeeland_Reissue_NL	RWS Zeeland	91	MB
2020-10-07	VK	NL	20201006_U7_Inland_week 41_NL	RWS Zeeland	91	MB
2020-10-07	VK	DE	Datteln-Hamm-Kanal_2020-09-29	WSV ELWIS	2,1	MB
2020-10-07	VK	DE	Dortmund-Ems-Kanal_2020-09-29	WSV ELWIS	9,3	MB
2020-10-07	VK	DE	Elbe_2020_09_29	WSV ELWIS	56,5	MB
2020-10-07	VK	DE	Elbe-Luebeck-Kanal_2020-09-25	WSV ELWIS	3,4	MB
2020-10-07	VK	DE	Havelkanal_2020-08-25	WSV ELWIS	1,5	MB
2020-10-07	VK	DE	Havel_Oder_Wasserstrasse_2020_09	WSV ELWIS	12,3	MB
2020-10-07	VK	DE	Oder_2020-09-25	WSV ELWIS	7,8	MB
2020-10-07	VK	DE	Rhein-Herne-Kanal_2020-09-29	WSV ELWIS	2,1	MB
2020-10-07	VK	DE	Ruhr_2020-09-29	WSV ELWIS	1,2	MB
2020-10-07	VK	DE	Spree-Oder-Wasserstrasse_2020-09-23	WSV ELWIS	10	MB
2020-10-07	VK	DE	Wesel-Datteln-Kanal_2020-09-29	WSV ELWIS	2,3	MB
2020-10-07	VK	DE	Westoder_24-09-2020	WSV ELWIS	780	kB
2020-10-07	VK	DE	Peene_2020-09-28	WSV ELWIS	2,8	MB
2020-10-14	VK	NL	20201014_U7Inland_week 42_NL	RWS Zeeland	90	MB
2020-10-21	VK	NL	20201020_U7Inland_week 43_NL	RWS Zeeland	90	MB
2020-10-23	VK	BE	ENC_ROOT_2020-06	Port Brussels	13,8	MB
2020-10-28	VK	NL	20201026_U7Inland_week 44_NL	RWS Zeeland	90	MB
2020-10-28	VK	RS	IENC_2P7SA_edition03_20200910	Danube FIS Portal	11,4	MB
2020-10-28	VK	RO	08102020_km_610_km_845	Danube FIS Portal	2,33	MB
2020-10-28	VK	BG	BG_IENC_2.3_23.10.2020	Danube FIS Portal	1,65	MB
2020-11-03	VK	NL	20201103_U7Inland_week 45_NL	RWS Zeeland	90	MB
2020-11-13	VK	NL	20201110_U7Inland_week 46_NL	RWS Zeeland	90	MB
2020-11-18	VK	NL	20201117_U7Inland_week 47_NL	RWS Zeeland	90	MB
2020-11-18	VK	AT	2W_Update_20201029	DORIS	683	kB
2020-11-18	VK	PL	ienc_05022020	RIS-ODER	11,8	MB
2020-11-26	VK	NL	20201123_U7Inland_week 48_NL	RWS Zeeland	90	MB
2020-11-27	VK	NL	Nederland (Excl. Zeeland) met kaart 2020-11-26	RWS CIV	49	MB
2020-12-01	VK	NL	20201201_U7Inland_week 49_NL	RWS Zeeland	91	MB
2020-12-08	VK	NL	20201208_U7Inland_week 50_NL	RWS Zeeland	91	MB
2020-12-16	VK	NL	20201208_U7Inland_week 51_NL	RWS Zeeland	91	MB
2020-12-22	VK	NL	20201222_U7Inland_week 52_NL	RWS Zeeland	91	MB
2020-12-22	VK	AT	2W_Update_20201218	DORIS	570	kB

2021-01-06	VK	NL	20210105_U7_Inland_week 01_NL	RWS Zeeland	91	MB
2021-01-07	VK	NL	Rotterdam 2021-07-01	Havenbedrijf Rotterdam	27,8	MB
2021-01-12	VK	NL	20210112_U7Inland_week 02_NL	RWS Zeeland	91	MB
2021-01-19	VK	NL	20210119_U7Inland_week 03_NL	RWS Zeeland	91	MB
2021-01-19	VK	CZ	20201209_Labe-spolecný hranicní úsek	Danube FIS Portal	173	kB
2021-01-19	VK	BG	BG_IENC_2.3_07.01.2021	Danube FIS Portal	1,66	MB
2021-01-19	VK	RO	20201217_Sectorul_Dunare	Danube FIS Portal	5	MB
2021-01-19	VK	RS	IENC_2P7D_edition03_20201230	Danube FIS Portal	38,4	MB
2021-01-26	VK	NL	20210126_U7Inland_week_04_NL	RWS Zeeland	91	MB

## Appendix A4. Relevant parts of the Encoding Guide for Inland ENC

<b>I - Depths</b>		
<b>I.1 Depths in Fairways and Areas</b>		
<b>I.1.9 Unsurveyed Area (C)</b>		
An area for which no bathymetric survey information is available. (S-57standard)		
Graphics	Encoding Instructions	Object Encoding
<p><i>Chart Symbol</i></p>  <p><i>IENC Symbolization</i></p> 	<p>A) Those areas in the river which cannot be surveyed, for example, due to depths too shallow for surveying boats and hence no depth data is available, shall be coded by UNSARE. This shall only be done for areas below the specific water level to which the depth of the river is referred. For areas above this specific water level, DEPARE - DRVAL2 = 0 shall be used (refer to I.1.6).</p> <p>B) Especially in case parts of the navigable water area are not surveyed but may be deep enough for navigation, DEPARE with QUASOU = 2 (depth unknown) or 8 (value reported (not surveyed)) shall be used in order to show that ships may navigate in these areas as well. This may imply especially for sidearms or private marinas.</p> <p>C) All navigable water bodies shall be covered by either DEPARE, depare, DRGARE or UNSARE (Group 1) objects using one of the options mentioned in I.1.1 to I.1.9.</p>	<p><b>Object Encoding</b></p> <p><b>Object Class = UNSARE(A)</b>                      (C) QUASOU = (Refer to letter B)                      (C) SORDAT = [YYYYMMDD]                      (C) SORIND = (Refer to Section B, General Guidance)</p> <p><b>Object Encoding</b></p> <p><b>Object Class = DEPARE(A)</b>                      (M) DRVAL1 = ["0"]                      (M) DRVAL2 = ["Unknown" or [x.x] (metres), e.g. 2.7]                      (C) QUASOU = (Refer to letter B)                      (C) SORDAT = [YYYYMMDD]                      (C) SORIND = (Refer to Section B, General Guidance)</p>