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***e-Navigation enhanced INS (ee-INS)***

***User guide***

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## DOCUMENT STATUS

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## 1 System description

The developed test system, called the e-Navigation enhanced Integrated Navigation System (ee-INS), looks and works a lot like a normal ECDIS. However not all ECDIS functionalities have been implemented as the main objective of the system is to test the new services; METOC, MSI, Exchange of Intended Route and Route Suggestion.

The top menu gives access to different sub menus.



+ / - zooms in/out.

*Centre* moves the chart area to the position of own vessel.

*Auto follow* makes the chart area follow own vessel.

*Setup* of navigation and map details.

*New route* makes it possible to create new route in chart area by mouse click.

*Routes* opens the route manager.

*MSI* opens the MSI list.

*AIS Targets* show a list of AIS targets in range sorted by either vessel name, MMSI, HDG or DST (chosen by mouse click on header).

*AIS* turns AIS data input on/off.

*Risk* is yet to be implemented.

*ENC* turns ENC Charts on/off.

*MSI filter* turns the MSI filter on/off.

*Toggle NoGo* turns display of NoGo areas on/off.

 new MSI message received (unacknowledged MSI in the MSI list).

To zoom in or out use the +/- buttons in top menu. It is also possible to choose a predefined scale by right click on the chart area and choosing scale in the menu.

To zoom in on a specific area on the chart left click and hold the button in the position of one of the corners of the area, drag square to wanted area and release button.

To move the center of the chart double click left mouse button in the chart centre wanted.



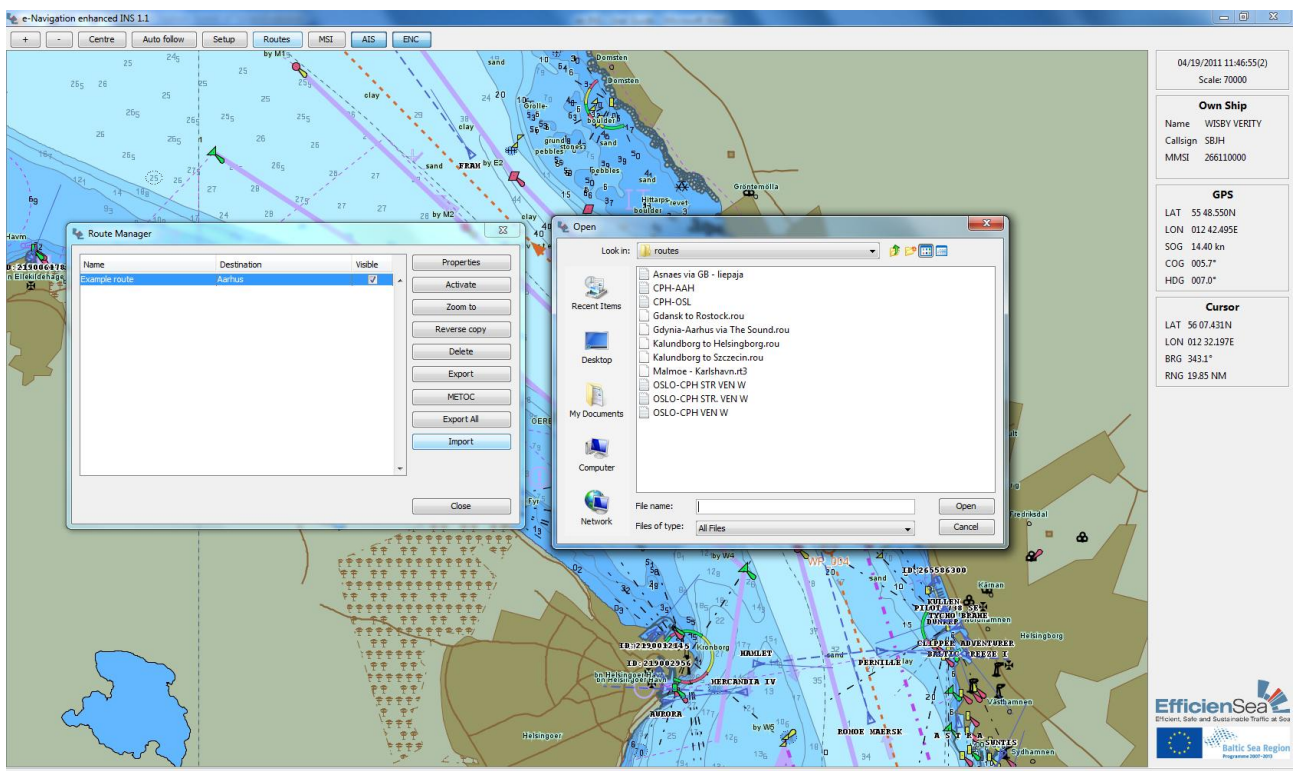
## 2 Route functionality

### 2.1 Importing Route

Routes may be imported from vessels own ECDIS by use of a memory stick.

After inserting memory stick in the ee-INS laptop open the import screen and choose route.

The import screen is found in the 'Route' menu.



Unfortunately not all route formats are readable – we hope that this will be possible to read all in the near future.

### 2.2 Creating route

Creating a new route is done by mouse click in the chart area.

Push the 'New route'-button in the top menu. Left click on the position of the first route waypoint and repeat for the following. When position of the last waypoint on the route is reached right click and choose 'End route'.

During creation of new route it is possible to zoom in/out on the touchpad/mouse wheel and to pan by holding the left mouse button and dragging chart to desired position.

After creating route it is possible to name it, set the departure time (for arrival calculations and correct METOC request), enter departure /arrival ports and to change waypoints position, XTD, SOG, etc. in the Route Properties menu. To access the Route Properties menu right click on the route and choose 'Route properties'.

New route default speed, turn radius and XTD are entered in the *Setup/Navigation* menu.

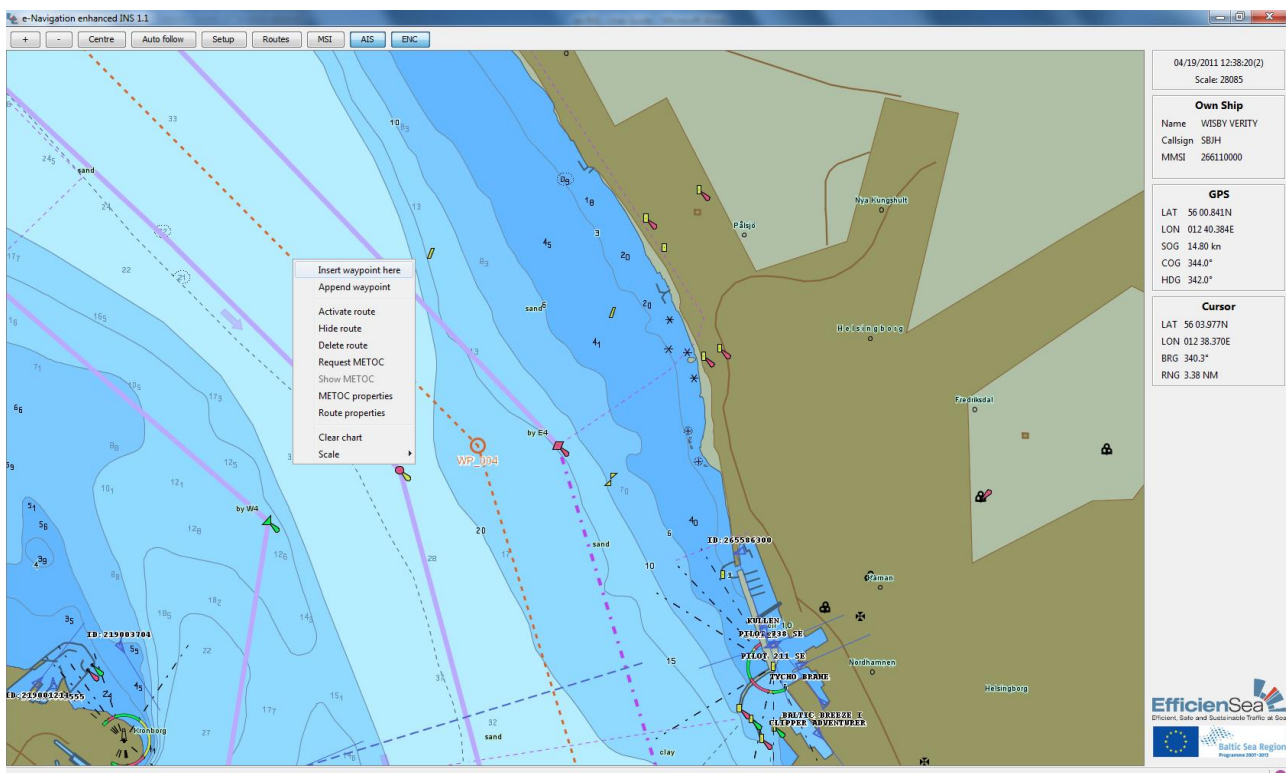
## 2.3 Editing Route

It is possible to delete, insert and move waypoints in a deactivated route.

To insert waypoint; right click on route leg and choose 'Insert waypoint here'.

To delete waypoint; right click on waypoint and choose 'Delete waypoint'.

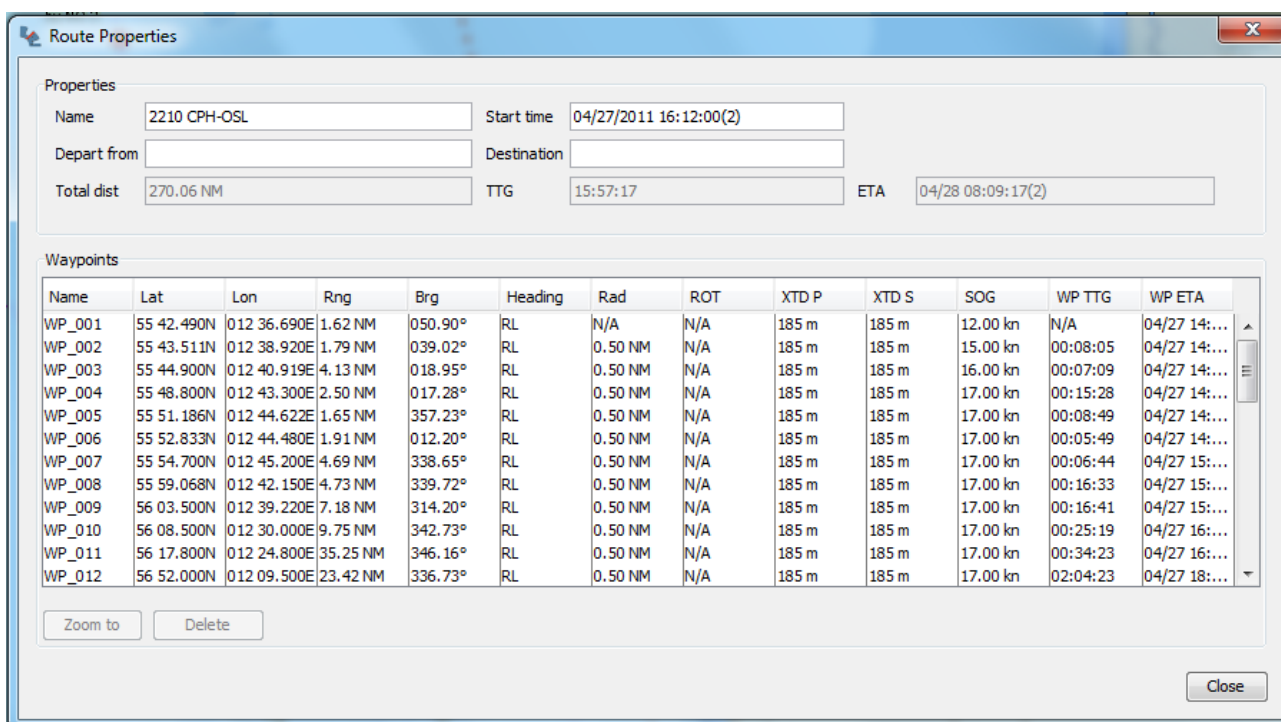
Waypoints are moved by drag and drop. Left click and hold left mouse button, drag waypoint to new position and release mouse button.



*Editing route – insert or append waypoint*

Route may also be changed in the Route Properties menu. It is possible to change all route data including start time which may be used when requesting METOC data for a later departure time.

To open for editing, double click in the individual fields.



**Route Properties**

Properties

Name: 2210 CPH-OSL Start time: 04/27/2011 16:12:00(2)

Depart from: Destination:

Total dist: 270.06 NM TTG: 15:57:17 ETA: 04/28 08:09:17(2)

Waypoints

| Name   | Lat        | Lon         | Rng      | Brg     | Heading | Rad     | ROT | XTD P | XTD S | SOG      | WP TTG   | WP ETA       |
|--------|------------|-------------|----------|---------|---------|---------|-----|-------|-------|----------|----------|--------------|
| WP_001 | 55 42.490N | 012 36.690E | 1.62 NM  | 050.90° | RL      | N/A     | N/A | 185 m | 185 m | 12.00 kn | N/A      | 04/27 14:... |
| WP_002 | 55 43.511N | 012 38.920E | 1.79 NM  | 039.02° | RL      | 0.50 NM | N/A | 185 m | 185 m | 15.00 kn | 00:08:05 | 04/27 14:... |
| WP_003 | 55 44.900N | 012 40.919E | 4.13 NM  | 018.95° | RL      | 0.50 NM | N/A | 185 m | 185 m | 16.00 kn | 00:07:09 | 04/27 14:... |
| WP_004 | 55 48.800N | 012 43.300E | 2.50 NM  | 017.28° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:15:28 | 04/27 14:... |
| WP_005 | 55 51.186N | 012 44.622E | 1.65 NM  | 357.23° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:08:49 | 04/27 14:... |
| WP_006 | 55 52.833N | 012 44.480E | 1.91 NM  | 012.20° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:05:49 | 04/27 14:... |
| WP_007 | 55 54.700N | 012 45.200E | 4.69 NM  | 338.65° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:06:44 | 04/27 15:... |
| WP_008 | 55 59.068N | 012 42.150E | 4.73 NM  | 339.72° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:16:33 | 04/27 15:... |
| WP_009 | 56 03.500N | 012 39.220E | 7.18 NM  | 314.20° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:16:41 | 04/27 15:... |
| WP_010 | 56 08.500N | 012 30.000E | 9.75 NM  | 342.73° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:25:19 | 04/27 16:... |
| WP_011 | 56 17.800N | 012 24.800E | 35.25 NM | 346.16° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 00:34:23 | 04/27 16:... |
| WP_012 | 56 52.000N | 012 09.500E | 23.42 NM | 336.73° | RL      | 0.50 NM | N/A | 185 m | 185 m | 17.00 kn | 02:04:23 | 04/27 18:... |

Zoom to Delete

Close

Route properties menu

### 3 METOC service

The METOC service (Meteorological and Oceanographic data on route) gives the navigator information on weather conditions up to 54 hours ahead in time on the planned route.

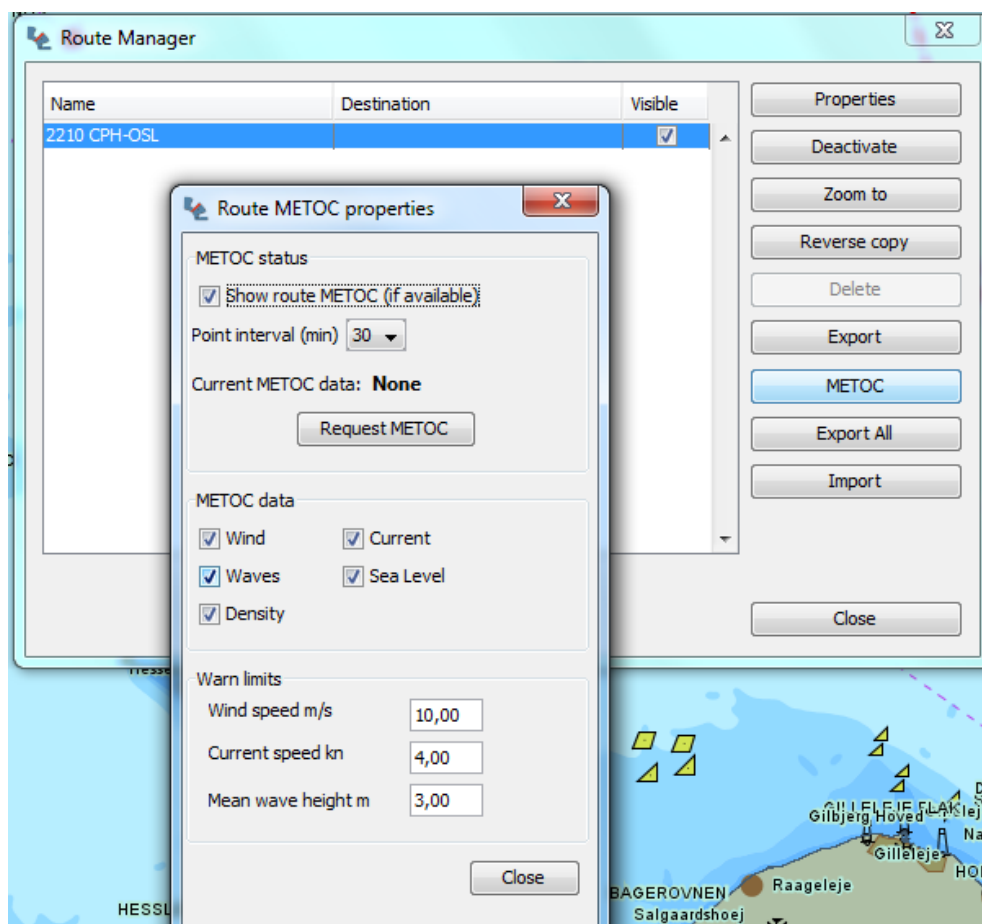
As the METOC data is linked to the planned route it is necessary to import or create a route before requesting METOC data. If departure time is different from present time, the departure time may be changed in the Route Properties Menu / Start time (remember to have the route deactivated before changing start time as it will use present time if route is active). See the Route Functionality section.

When route is created and route start time has been entered METOC data is requested in the 'Routes'-menu/ METOC. METOC data may also be requested by right click on the route

It is possible to change the interval between forecast points between 15, 30, 45 and 60 minutes.

Which data is needed may be selected in the check boxes and warning limits are entered in the lower part of the screen.





*METOC menu*

After entering all data METOC is requested by pressing the 'Request METOC' button. A message is sent to the shore server and data is returned after a while – 'XX METOC points received'.

METOC data is shown on route

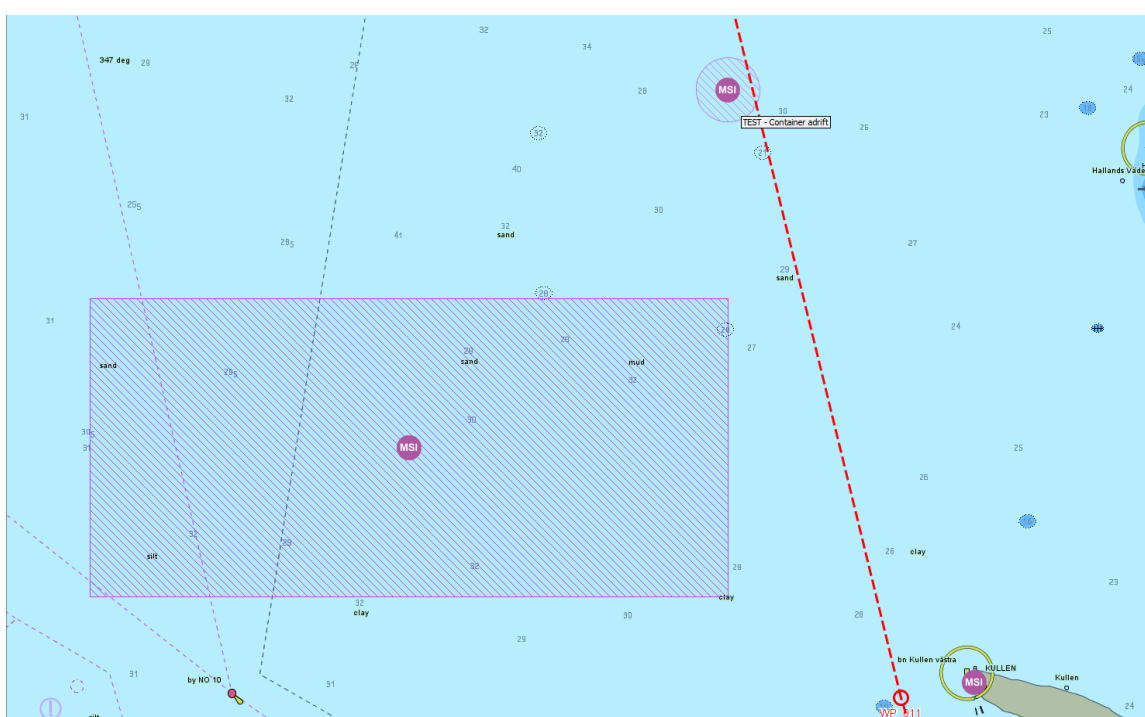
| VTS area – The Sound | Confined waters - Danish | Deep sea – entire Baltic Sea |
|----------------------|--------------------------|------------------------------|
| Current              | Current                  | Wind                         |
| Water level          | Water level              | Waves                        |
| Wind                 | Wind                     |                              |
| Waves                | Waves                    |                              |
| Density              | Density                  |                              |

*Available METOC data*

## 4 Maritime Safety Information (MSI) – Navigational Warnings

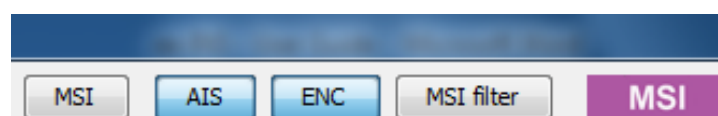
MSI/Navigational Warnings are received by the ee-INS via GSM or Iridium. Messages are created and kept up to date by the the Subarea Coordinator for the Baltic Sea in Norrköping and by the responsible National Coordinators today promulgating information via NAVTEX, VHF, internet, etc.

When system is started the first time all MSI in force will be received by the system within a few minutes. Following first start-up updates are received every 5 minutes to make sure that the list of MSI in the system is valid at all times.



MSI message positions are shown on the chart by a round purple MSI symbol and may be accompanied by a shaded area for which the message is valid, e.g. a seismic survey area. It is possible to get a short description of the message content, e.g. Buoy adrift, Light unlit or New wreck, by mouseover. To get the full text and any additional data in the MSI message it is opened by right click on the symbol and choosing 'Show MSI details'.

The list of MSI messages in force is opened by click on the MSI button in the top menu or if there is unacknowledged MSI messages in the system, on the flashing purple MSI symbol in the top menu.



Newly received/unacknowledged MSI messages in the MSI list are colored red. After reading and assessing the individual MSI messages the navigator can acknowledge this by click on the 'Acknowledge' button. The coloring will then change to green.

If there is unacknowledged messages in the list the purple MSI symbol in the top menu will flash.

To find the geographical position of a MSI message in the MSI list the 'Go-to' function may be used.

When navigating in an active route in a large scale MSI messages outside chart area but within MSI visibility range are shown by a MSI arrow symbol.

#### 4.1 MSI filter

To avoid display of MSI messages irrelevant to own vessels navigation, i.e. far from own ship and planned route, it is possible to apply the MSI filter. The MSI filter is turned on/off by click on the '*MSI filter*'-button.

When filter is applied only MSI messages within MSI visibility range is shown.

The MSI visibility ranges are set in the '*Setup/e-Nav services*'-menu (default setting: 40 nm).

All MSI messages are still received by the system. If navigator wants to have all MSI messages displayed the MSI filter is simply switched off.

When MSI filter is on and navigating on an active route, MSI messages outside present chart area but within visibility range direction of relevant MSI messages are indicated by a MSI symbol with an arrow in



the side of the chart area

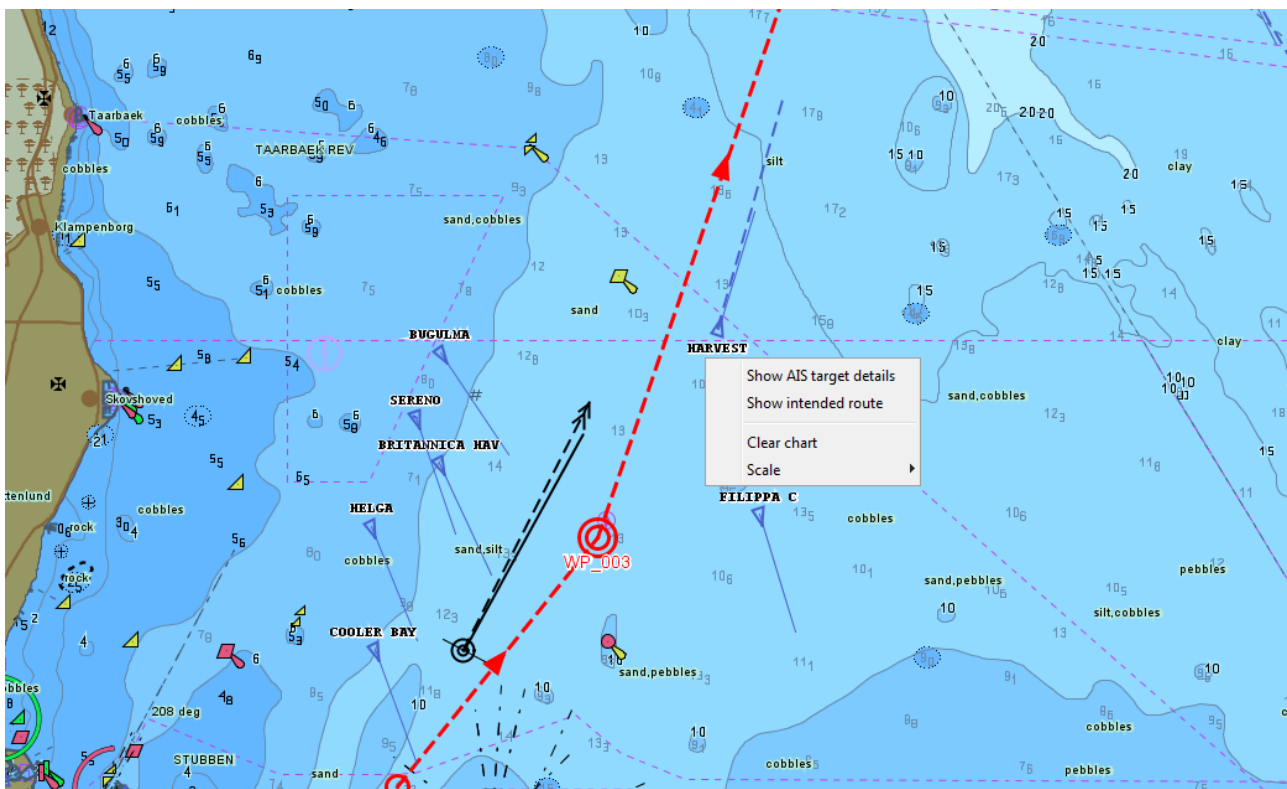
## 5 Exchange of Intended Route

When vessels route is activated on the ee-INS it is broadcasted on VHF AIS every 6 minutes. This makes it possible for vessels in the vicinity to see vessels planned track and adjust own navigation accordingly.

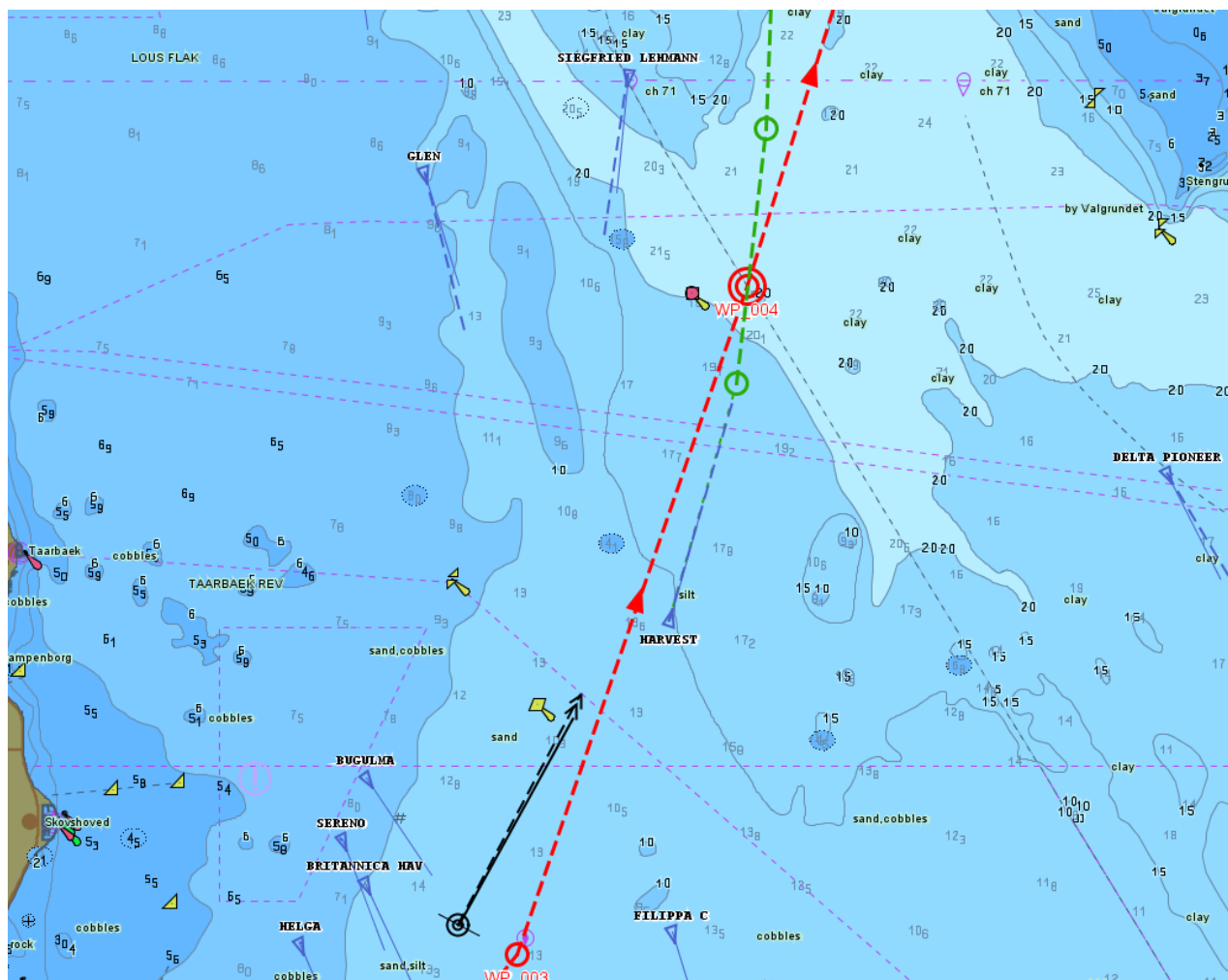
If route is changed – waypoint positions or arrival time to waypoints – the new route is broadcasted right away and again every 6 minutes.

To see other vessels planned tracks right click on vessel and choose ‘Show intended route’.

To hide other vessels planned track right click on vessel and choose ‘Hide intended route’.



*Show intended route*



*Display of other vessels intended route*

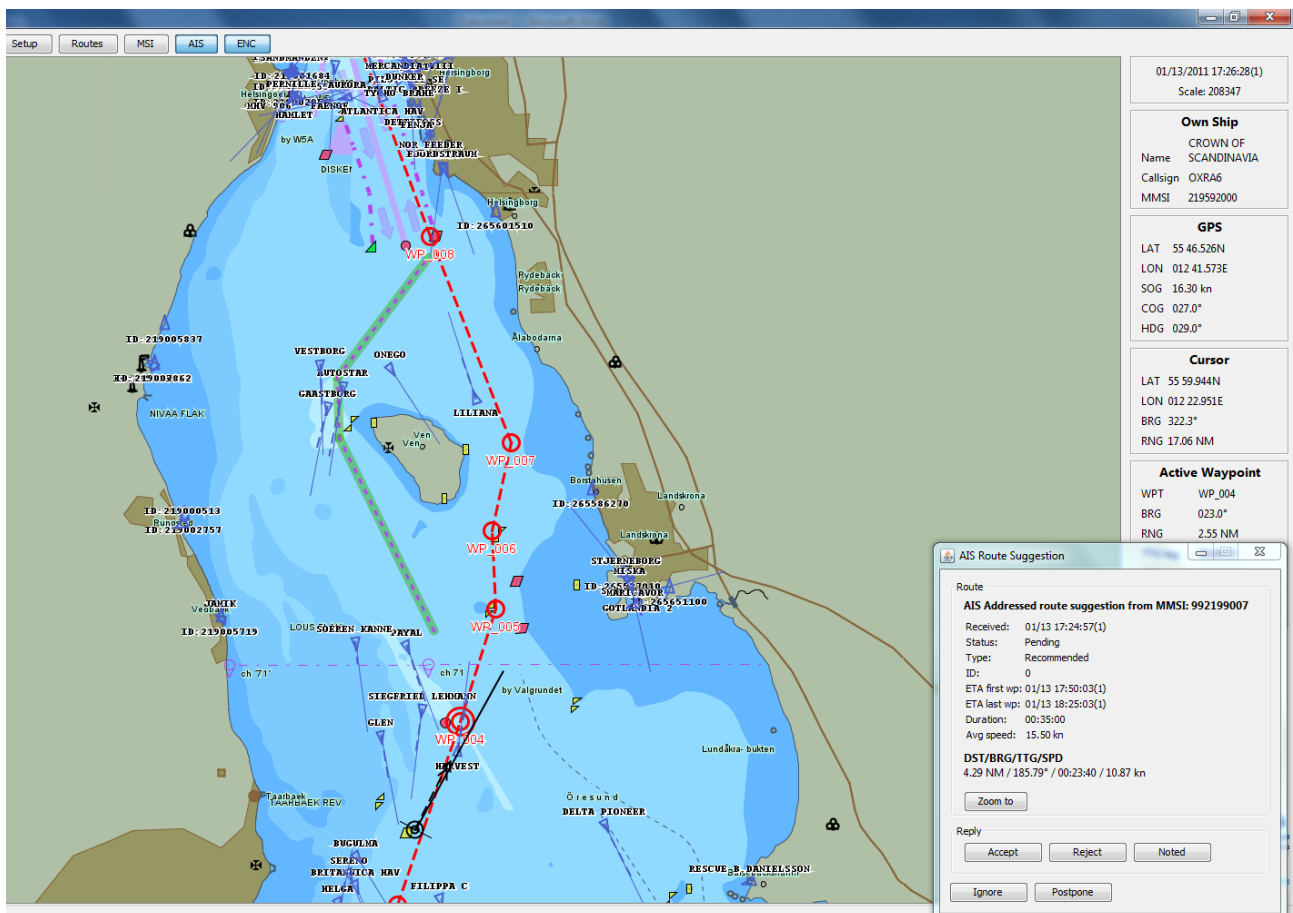
For now it is only the following vessels that have the ee-INS installed and are transmitting their intended route:

- |                        |                                 |
|------------------------|---------------------------------|
| • Crown of Scandinavia | (Ferry, Oslo-Copenhagen)        |
| • Pearl of Scandinavia | (Ferry, Oslo-Copenhagen)        |
| • Tycho Brahe          | (Ferry, Helsingør-Helsingborg)  |
| • Kronprins Frederik   | (Ferry, Gedser-Rostock)         |
| • Svitzer Fenja        | (Tugboat, Great Belt/The Sound) |
| • Svitzer Mars         | (Tugboat, The Sound)            |
| • Wisby Wave           | (Tanker, The Baltic)            |
| • Vitta Theresa        | (Tanker, The Baltic)            |
| • Bitten Theresa       | (Tanker, The Baltic)            |
| • MHV 911 Bopa         | (Navy vessel, The Sound)        |
| • LW Dam               | (Rescue boat – Gedser)          |
| • Poul Løwenørn        | (Buoy tender, Danish waters)    |

## 6 Route Suggestion

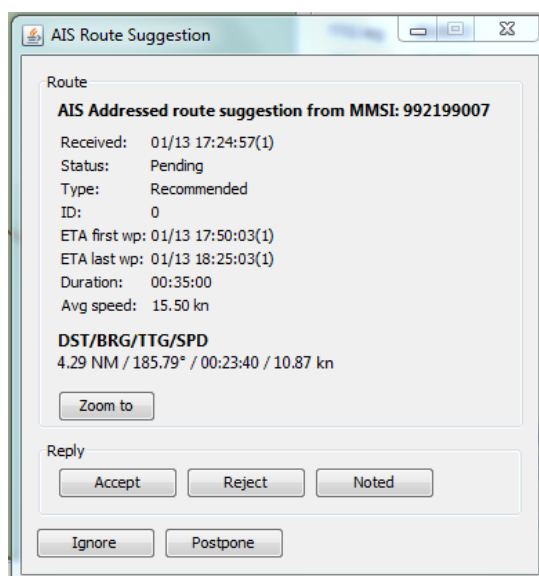
Sound VTS, SAR Authorities or other shore based users are able to send Route Suggestions and Search Patterns (up to 16 waypoints) to the ee-INS via VHF AIS.

The Route Suggestion/Search Pattern is shown on the chart with a dashed purple/green line and an accompanying text box with additional information.



*Route suggestion*

The navigator can either accept, reject, note, ignore or postpone the suggestion by mouse click on the associated button.



*Route suggestion text box*

*Accept:* A positive reply message is transmitted to shore authorities. Navigator should after acceptance change route accordingly.

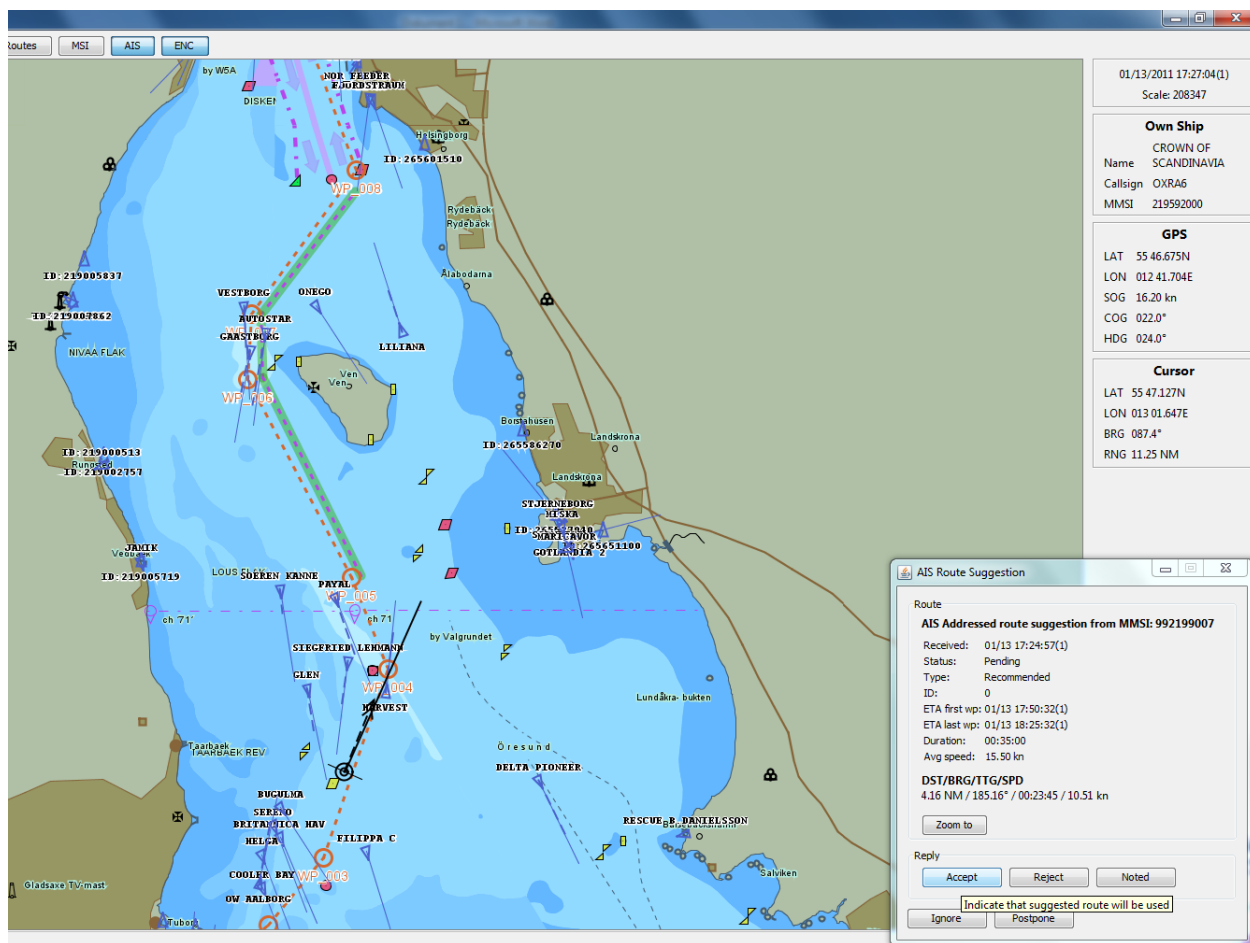
*Reject:* A negative reply message is transmitted to shore authorities. No further action is needed.

*Noted:* Navigator is not able to decide if the route suggestion is to be followed or not. A 'noted' message is transmitted to shore authorities.

*Ignore:* Route suggestion is ignored. No message is sent to shore authorities.

*Postpone:* Assessment of route suggestion is postponed. Text box disappears. No message is sent to shore authorities.

If the route suggestion is accepted it is necessary for the navigator to change the route manually. This is done by deactivating the route and moving/adding/deleting waypoints to make it fit with the suggested route segment. After changing route it is activated again.



*Accepted Route suggestion*

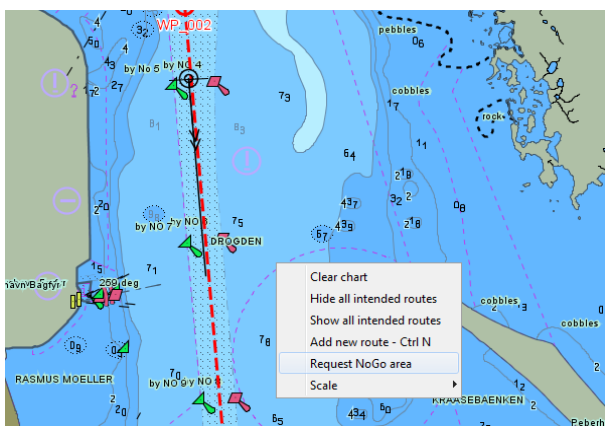
If the navigator is not able to accept or reject at present the message may be postponed by click on the 'Postpone' button. The text box will disappear but the route suggestion will still be shown on the chart. The text box is opened again by click on the route suggestion.



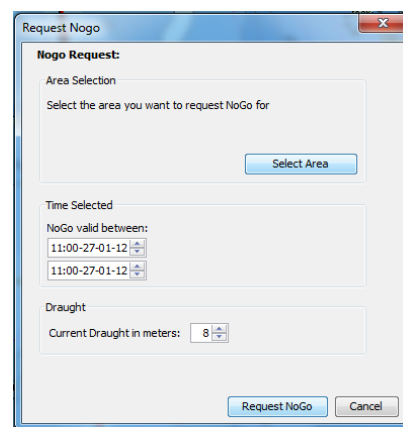
## 7 No Go area

No Go area is a vessel specific supplement to depth contours on charts and the tool can provide vessels with information on navigable and non-navigable areas real time. The No go area functionality combines detailed bathymetry data with tide predictions. The No Go areas are presented on the chart display on request.

To request a No go area right click on the chart area and select '*Request NoGo area*' on the list. A Request NoGo window pops up.



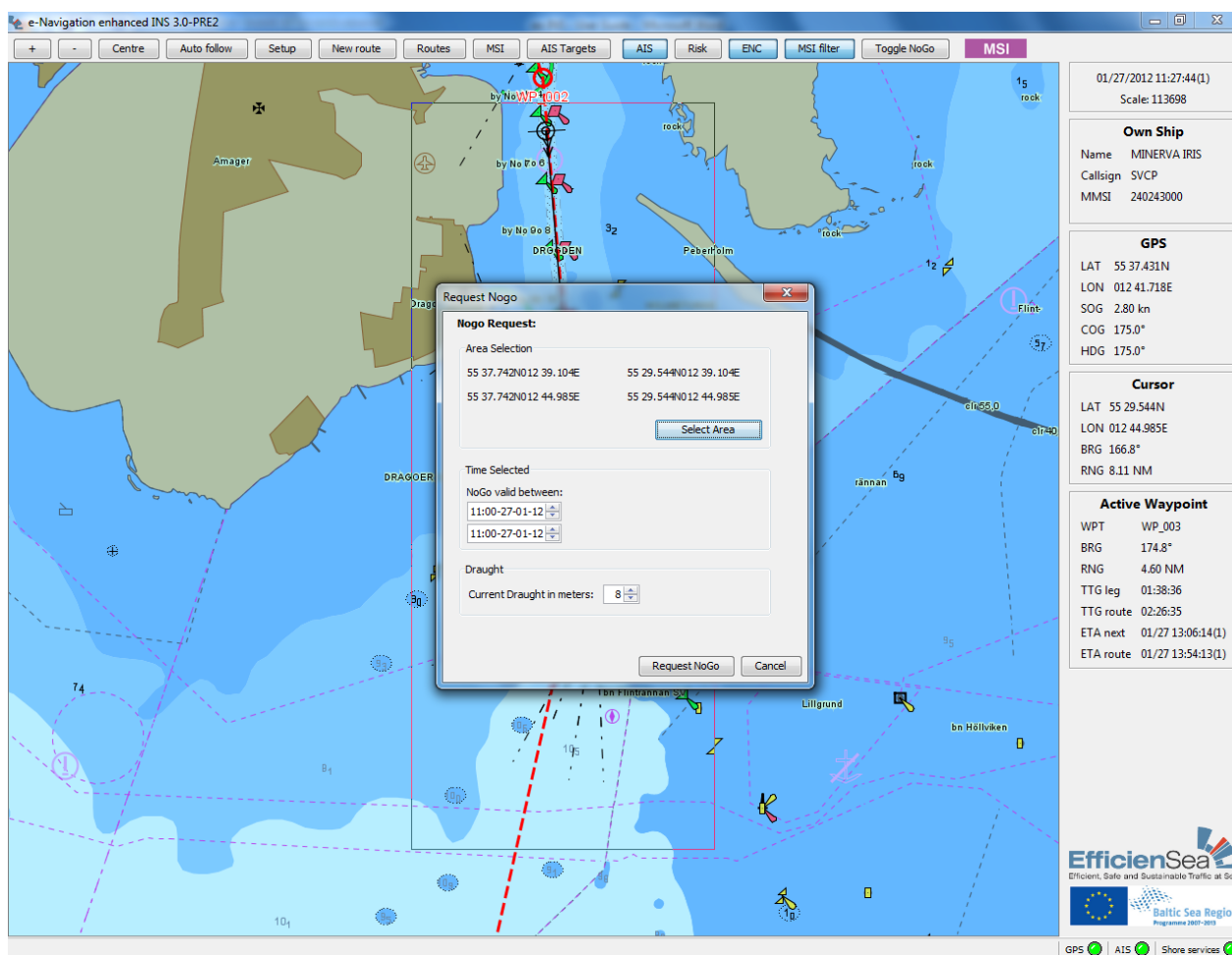
*Right click*



*Request NoGo window*

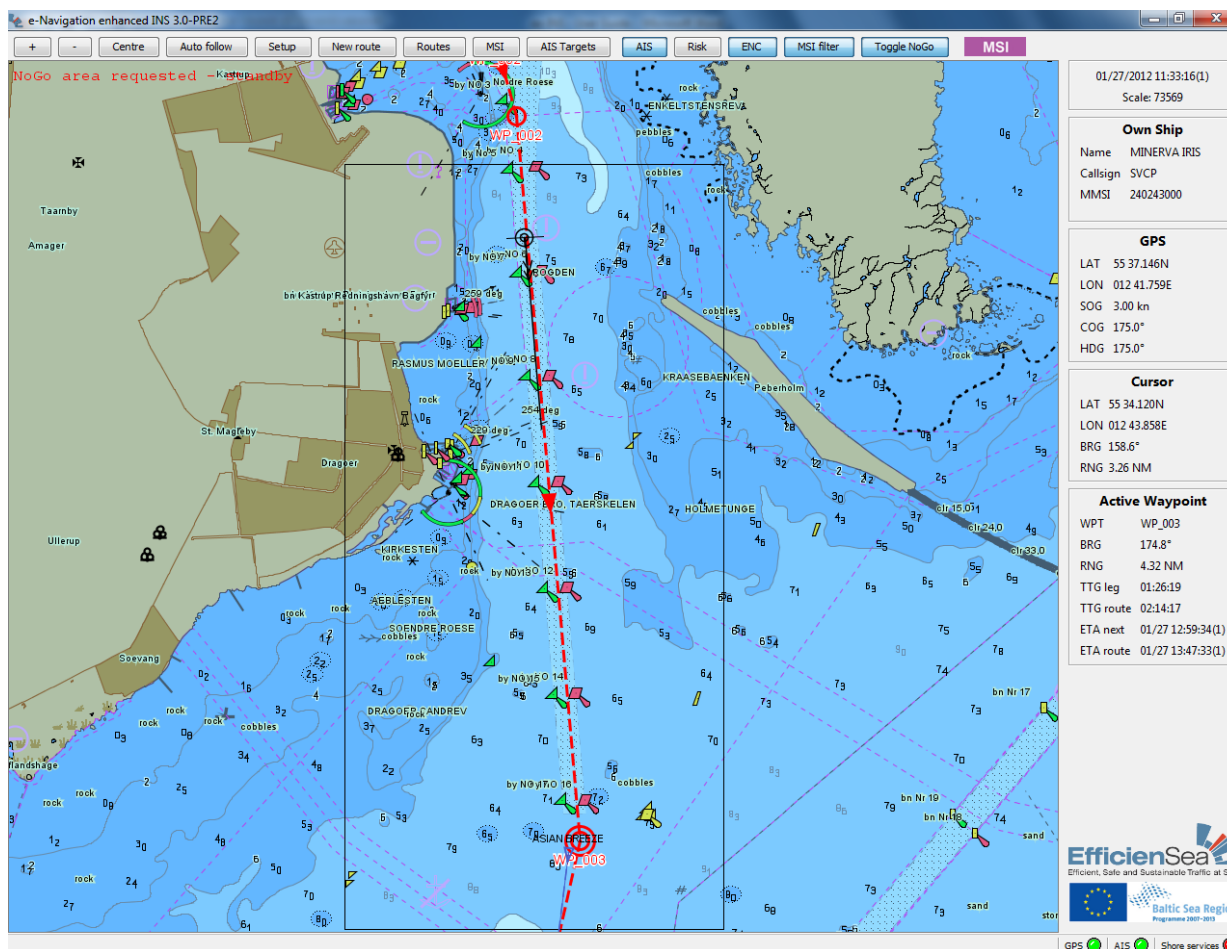
Area is selected by clicking 'Select area', when window disappears and chart is displayed, left click and hold the left mouse button and drag box to wanted area. When area is selected choose valid time from/to (up to 48 hours ahead in time) and vessels maximum draught in meters (including squat). Click '*Request No Go*' button.

It may be necessary to add vessels accepted Under Keel Clearance to the maximum draught to get most usable presentation of navigable water.



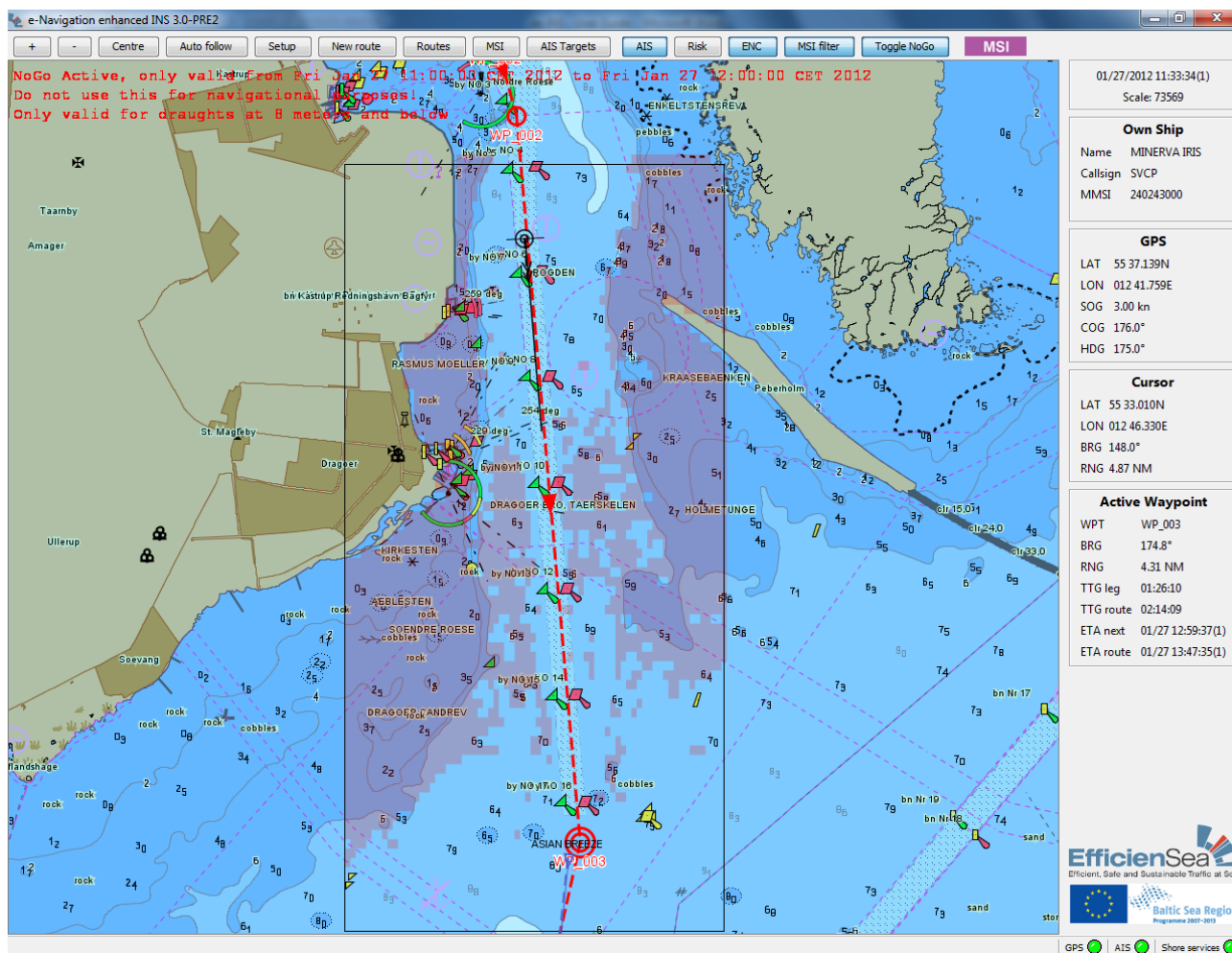
### Request NoGo

The request will then be calculated. It may take some time dependent on the amount of requested data (size of area and time period).



*NoGo area requested – standby, may take some time depending on size of area and time period*

When calculation is terminated the No Go areas are received and presented on chart display by shaded magenta blocks (size approx. 100 x 100 metres). If depth within a block is less than requested draught at any time within requested time frame it will be shown as a No Go area.

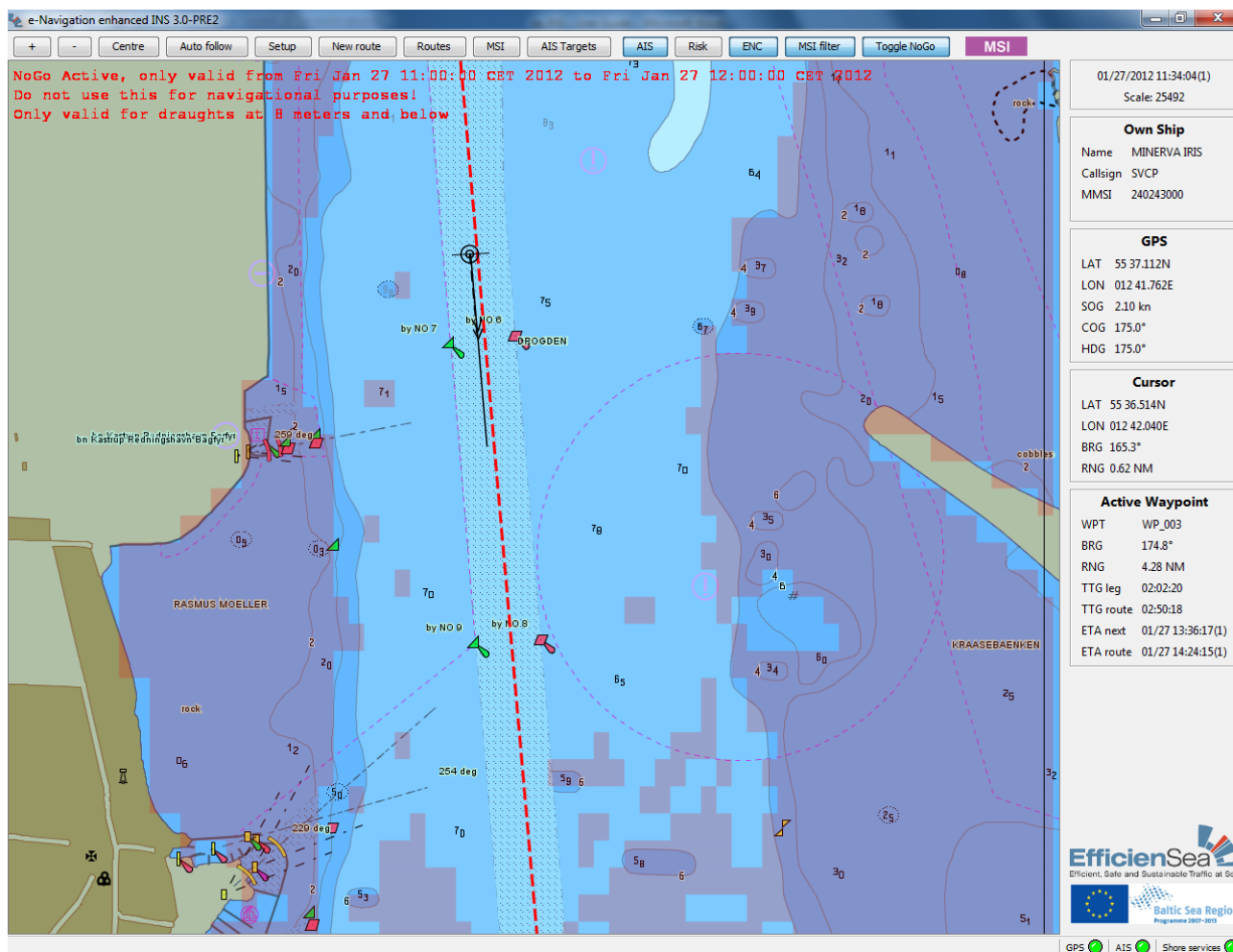


Calculation terminated and No Go area presented on chart

It is possible to turn the presentation of No Go area on/off by click on

**Toggle NoGo**

button in top menu.



Presentation of No Go area on chart

## 8 Installation and update of the ee-INS

To install e-Navigation Enhanced INS, open up a browser and point it to <http://service.e-navigation.net/>. There you will be able to download an installer by clicking the first link on the page. Save the installer anywhere on your system where you can find it again.

To begin the install procedure, double click the installer executable. You will be taken through a series of dialogs, where you can accept the default or change them as you see fit.

When upgrading from an earlier version, it is important that you install into the same directory as you did the first time. In this way your settings will be preserved.

Before you can start the program for the first time you need to install the Navicon Interface. This is done by locating the new start menu entry labeled “e-Navigation Enhanced INS”. In this folder click the entry labeled “Install Navicon Interface”. Click “USB Dongle” and “Begin Install”. When the install has finished, you can start the main program by going to the same start menu entry and clicking the shortcut labeled “e-Navigation Enhanced INS”.

Navigational charts are not installed by default. This can be done by our technicians.

## 9 TeamViewer

To initiate a TeamViewer session with our technicians, start up the team viewer client by clicking on its desktop icon. A dialog will appear with a session id and a password. Supply our technicians with both, by either telephone or email.

Please note that TeamViewer will issue a new session id and password on every application startup. This means that you cannot close the application when you have given our technician session id and password.