



UK Hydrographic  
Office

**ADMIRALTY**

# Hydrographic Note (H102) Guidance for Survey Contractors

v1.3 February 2024



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## Introduction

- The purpose of this guidance is to facilitate and assist survey contractors with identifying navigationally significant features to be submitted by Hydrographic Note (H102) during surveys.
- The aim is to clarify the UK Hydrographic Office (UKHO) requirements for H102's to reduce unnecessary work for contractors and the UKHO in preparing and processing Hydrographic Notes.
- This document does not replace existing guidance: the Maritime and Coastguard Agency (MCA) and UKHO specifications on H102's should still be followed.
- Throughout this guidance the Hydrographic Note will also be referred to as H102.
- At the end of this guidance there is a glossary of acronyms and terms.
- This guidance is to be followed by all UKHO and MCA contractors but can be considered best practice for all other survey work commissioned outside of these two organisations.



## Why are Hydrographic Notes needed?

### Safety of Navigation

It is important that safety critical information identified during a survey is reported as soon as possible so that products can be updated to ensure safety at sea.

### Timeliness due to possible delays

There may be occasions where there is a delay to surveying or processing data. H102's ensure that navigationally significant data can be published by Notices to Mariners (NM) without delay.

### Rules

The UK CHP Survey Specification 2020 contains the following requirements for Hydrographic Notes:

Reports of significant differences to depths for a given area, particularly to the controlling depth, and any newly discovered dangers to surface or sub-surface navigation, shall be passed **within 24 hours** to the MCA Hydrography and Receiver of Wrecks teams, and to the UKHO using the "Hydrographic Note" (H102) form.

For UKHO surveys the H102 should be submitted to the relevant local maritime authorities and UKHO immediately.

It is important that navigationally significant changes are reported by H102 within the stated time frames so that the Notices to Mariners can be issued as soon as possible. If new information is known but not reported it could lead to an avoidable marine incident.



## Requirements

### Compare as the Survey proceeds:

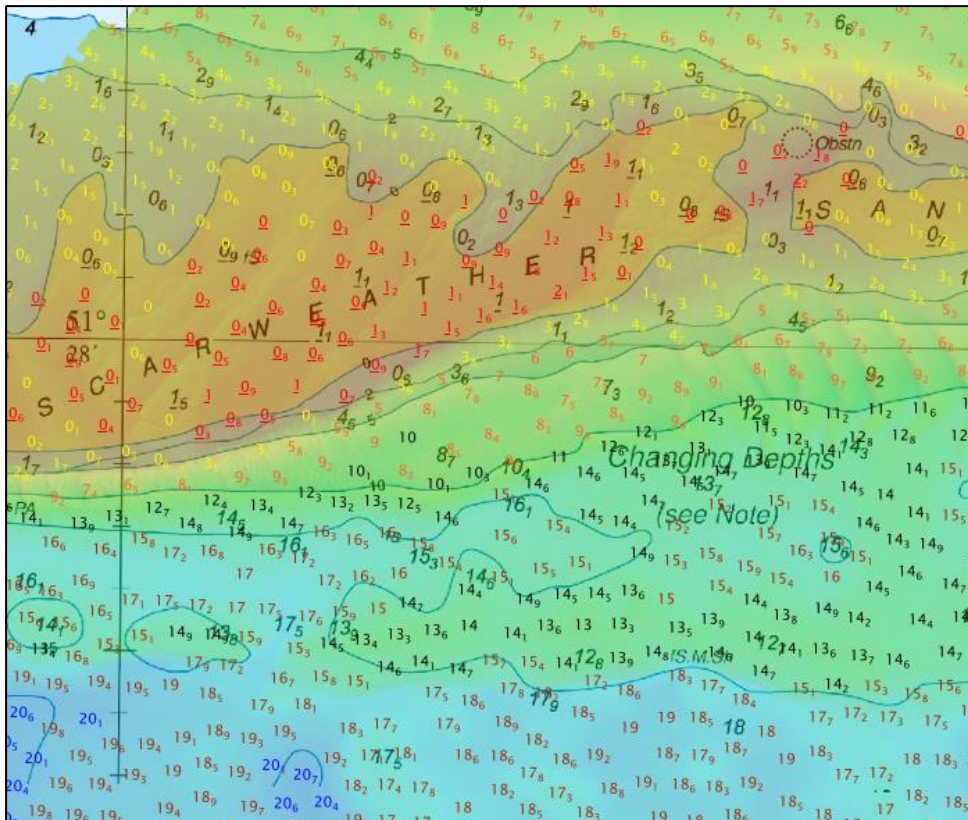
- Comparison between the largest scale\* (and up to date) published chart or Electronic Navigation Chart (ENC) and the data collected should be carried out as the survey proceeds. Ensure that the latest edition of the chart or ENC is used for comparison and all NM's have been applied.
- The process consists of assessing the depth changes and deciding what is navigationally significant.
- When examining depths for rocks, wrecks, obstructions and aquaculture, H102's can be submitted if necessary for new and shoaler features as they are identified.
- When determining the least depth over a bank or in an area, it is better to survey the whole feature before doing a chart comparison to identify the least depth over the shoal.
- We would hope to receive all Hydrographic Notes as the survey progresses, but if further navigationally significant differences are identified after survey field work is completed then please send them in as soon as possible.

\*The largest scale chart shows the maximum possible detail for the area. (eg: 1:25000 scale is larger than 1:50000 scale). A Band 5 ENC is larger scale than a Band 1 ENC)



## How the UKHO does it

The UKHO uses a display of the survey surface with a shoal biased sounding selection overlaid digitally on the chart:



- Using transparency and a colour banded sounding selection, the shoals and the depths can be more easily identified displayed against the latest published chart.
- If the depths are shoaler than charted, use the Decision Trees and guidance on depth selection below to decide if an HI02 is required.



## Using Decision Trees

“Decision Trees” are flow diagrams to assist in deciding whether navigationally significant changes to charted depth information should be reported to the UKHO by H102. They are intended to provide a visual reference guide to aid the decision-making process.

The following decision trees are available in the guidance:

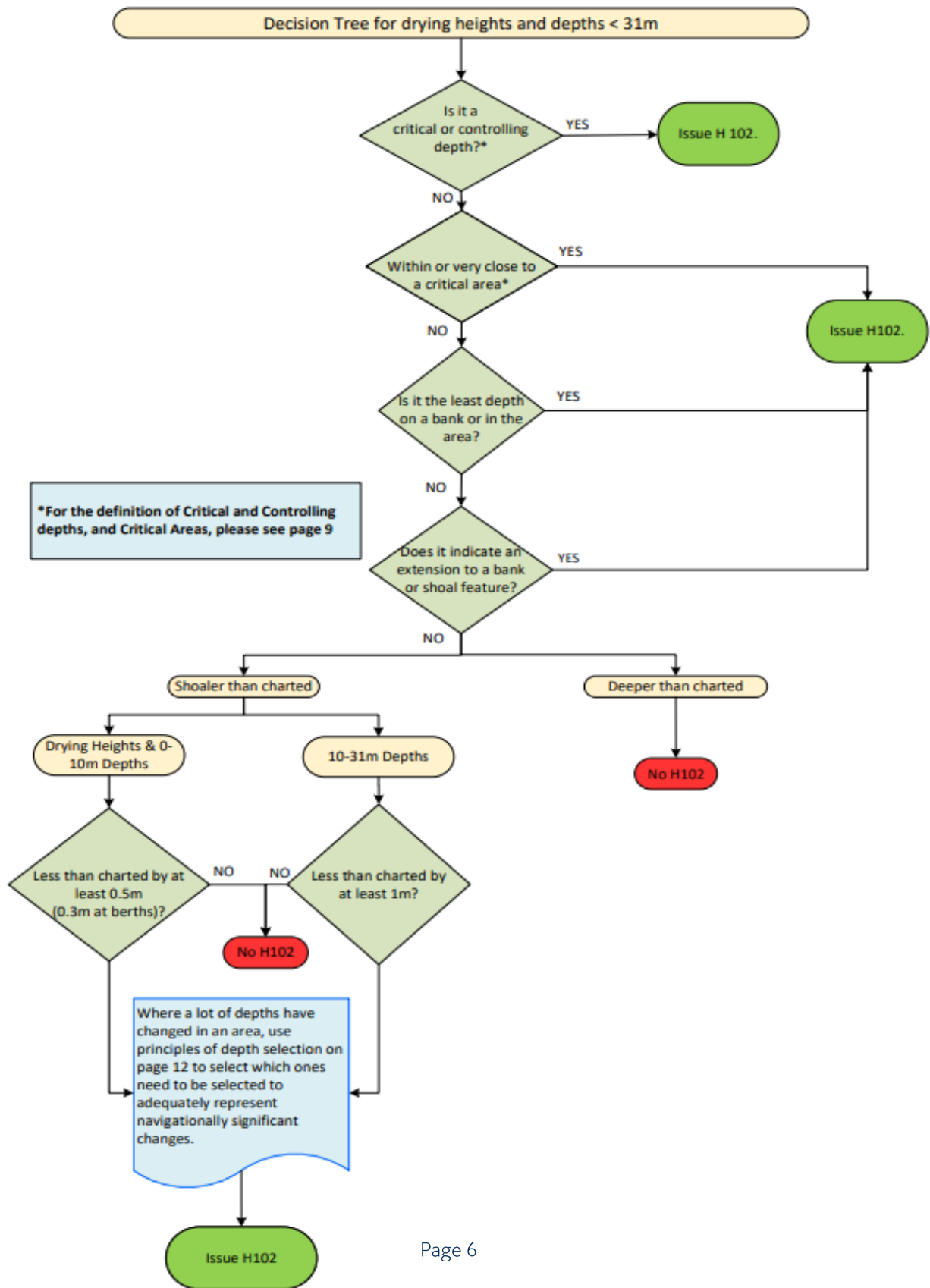
- H102 Guidance for drying heights and depths in 31 m or less
- H102 Guidance for depths of over 31 m and under 800m
- H102 Guidance for reporting new or amended wrecks, rocks, obstructions and aquaculture in 800m or less.

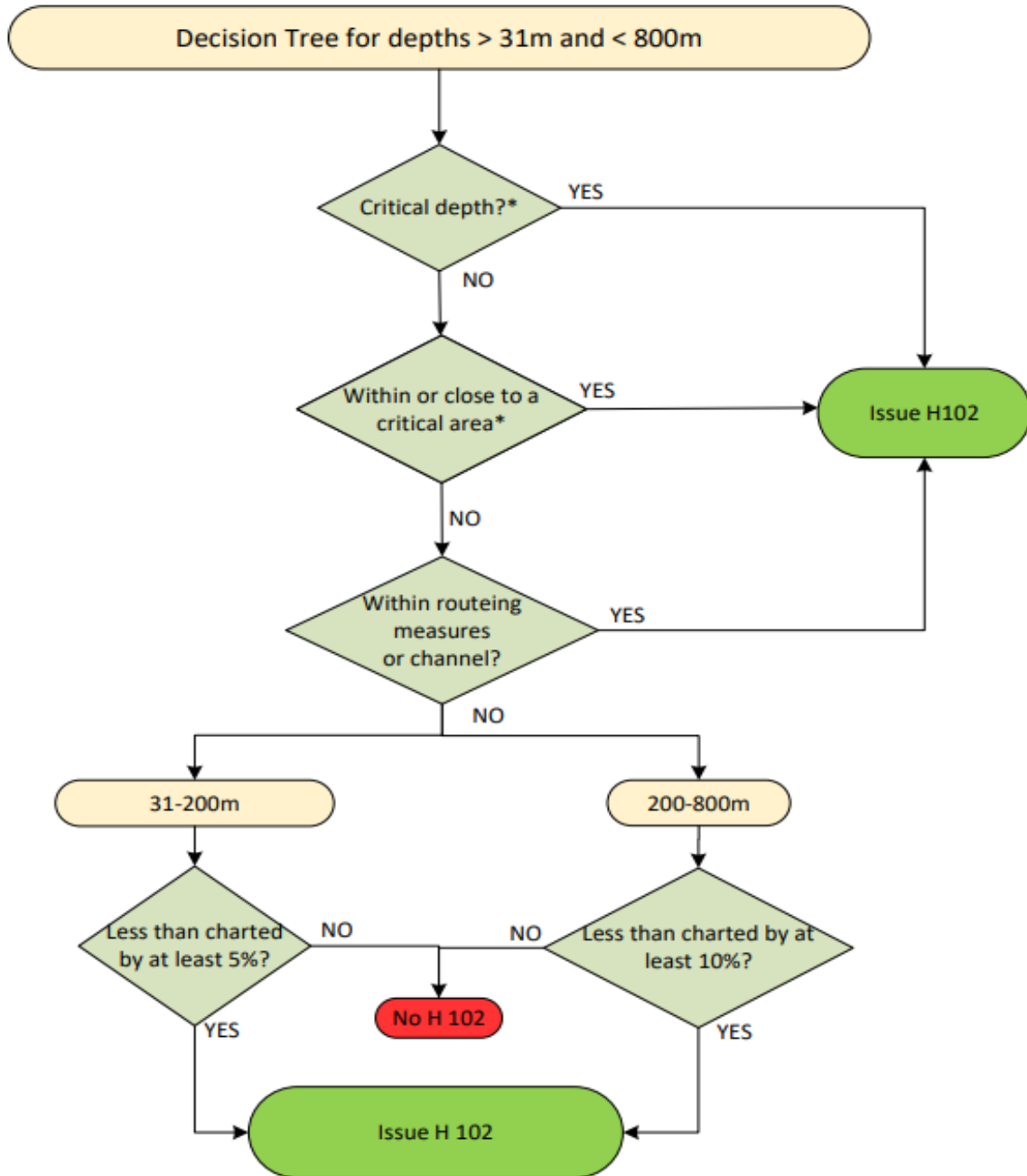
It is important that the correct decision tree is used for the depth range being examined as the requirements will be different.

The decision trees work like any flow diagram. Follow the arrows starting at the top of the decision tree to decide if an H102 is required for the selected feature.

### Important:

- The UKHO does **not** require H102's for depths and wrecks which are deeper than charted.
- **All** new wrecks must be reported by H102, including non-dangerous wrecks.
- In high-risk areas with minimum under-keel clearance, **any** shoaling of critical or controlling depths must be reported by H102 (eg: within Deep Water Routes and Traffic Separation Schemes).
- Contours should not be included on H102. Spot depths and positions only.
- IF IN DOUBT REPORT IT.

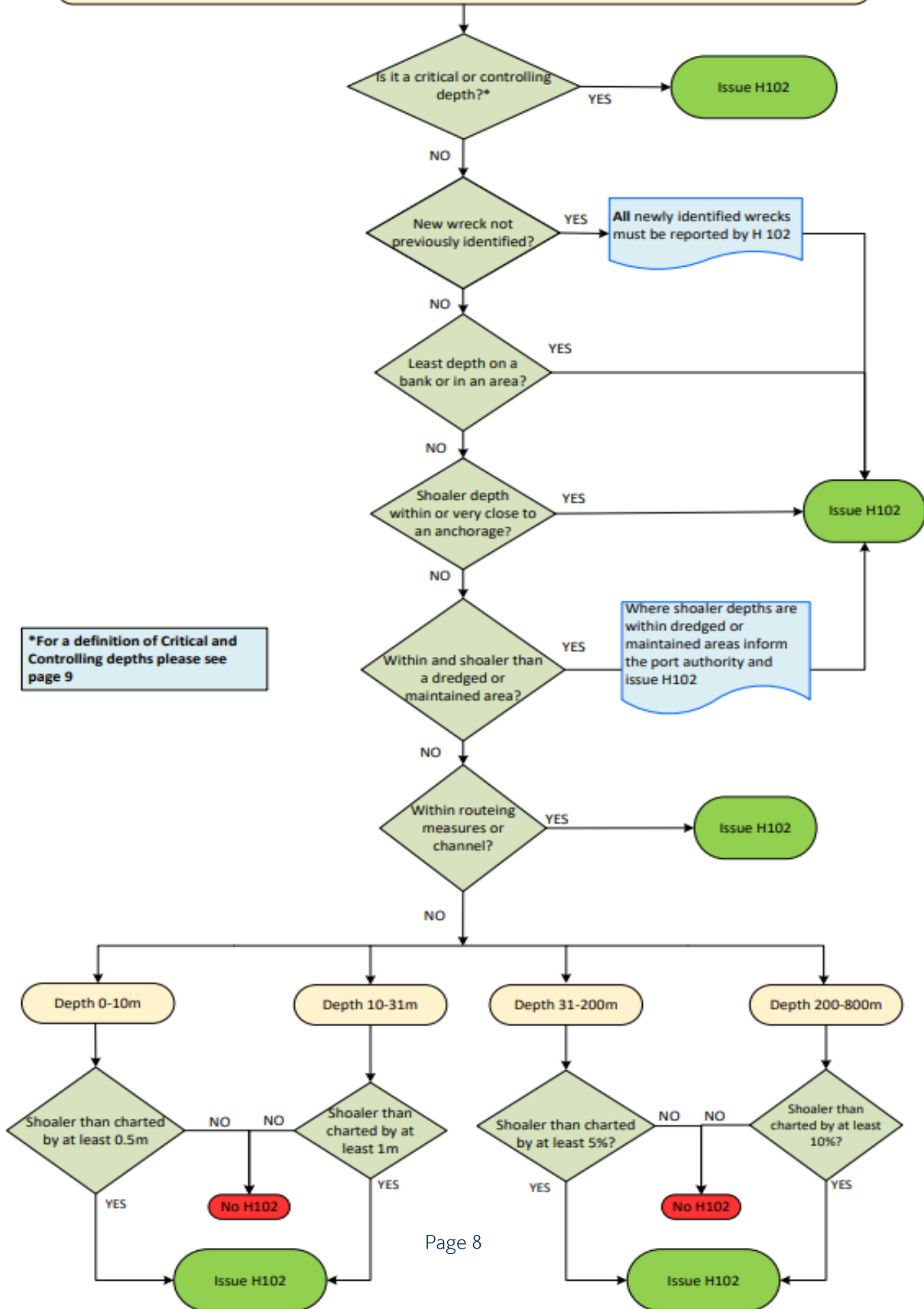




\*For a definition of Critical depths and Critical Areas, please see page 9



Decision Tree for reporting new or amended wrecks, rocks, obstructions & aquaculture in depths < 800m



\*For a definition of Critical and Controlling depths please see page 9



## Critical and Controlling Depths, and Critical Areas.

- **Controlling depth:** The least depth which vessels cannot avoid when navigating through a channel. This will generally be towards the centre of the channel (see Example 1 on page 22). However, in busy channels where vessels travel in both directions, two controlling depths may be present – one on each side of the centre line. With under-keel clearance the controlling depth restricts the safe use of the channel to draughts of less than that depth at a particular time / state of tide. Controlling depths are only applicable to surface navigation, so not relevant to depths over 31 m.
- Also defined as: 'The least depth in the approach or channel to an area, such as a port or anchorage, governing the maximum draft of vessels that can enter.'
- **Critical Depths:** Depths outside a channel or harbour approach are therefore not strictly 'controlling depths'. In an uneven area, where there is no clear channel, it may be necessary to select the least depths over several heads, i.e. the 'critical depths'. Even where there is a clear ship channel, the surveyor needs to consider the needs of other vessels that may not be constrained by, and may even avoid, the ship channel.

Critical depths are therefore those depths in the wider area which are critical to the safe navigation of any vessel likely to be in the area. A critical depth is defined as the least depth in proximity to a known or potential navigational route. Critical depths can be any depth.

### **Critical areas include:**

- Deep water routes and Traffic Separation Schemes (TSS)\*
- Leading Lines\*
- Fairways and recommended tracks\*
- Anchorage areas
- Alongside jetties
- Quays and berths
- Entrances to harbours and basins.
- Dredged and maintained areas

**\*For a definition of these terms please see the Glossary on Pages 29-33**



## What is Navigationally Significant?

- In high-risk areas with minimum under-keel clearance, such as Deep-Water Routes and Traffic Separation Schemes, **any** shoaling of critical or controlling depths\* needs to be reported by H102.
- Least depth reductions over wrecks, rocks, obstructions and aquaculture (according to the decision tree).
- The least depth over shoals and banks, and over bars in navigable channels should be reported if less than charted.  
Note that any shoaling of the least depth in these areas should be reported, as indicated on the decision trees. Depth reductions which indicate an extension to a bank or feature, especially near channels, are also navigationally significant.
- The typical maximum draught of vessels is 24m, but deeper depth changes are navigationally significant to sub-surface navigation and fishing vessels and therefore need to be considered.

Particular attention should also be paid to depths in other critical areas, for example:

- On or adjacent to leading lines (see page 31)
  - Controlling depths\* in fairways and along recommended tracks (See page 32)
  - In anchorage areas (See Page 33)
  - Alongside jetties
  - Quays and berths
  - Entrances to harbours and basins.
  - Dredged and maintained areas (see page 33)
- In areas where only leisure craft sail, only depth changes within the 10m contour are significant.
  - It is important to consider the location and context of the depth in relation to charted features. For example, a smaller reduction to a deeper depth near a traffic lane may be more significant than a greater depth reduction further away.
  - Remember that although depth changes in critical areas are more significant, other areas should also be examined in detail for differences.

\*For a definition of critical and controlling depths please see page 9.



## Hazardous Features

A hazardous feature is any feature where, if the information was missing or incorrect on the chart or ENC, it could lead to a marine accident serious enough to put lives at risk or cause serious environmental damage.

If the least depth is reduced, the position has changed, or the feature is wrongly depicted or missing on the chart, then this should be reported by HI02.

These features will be in high transit areas such as:

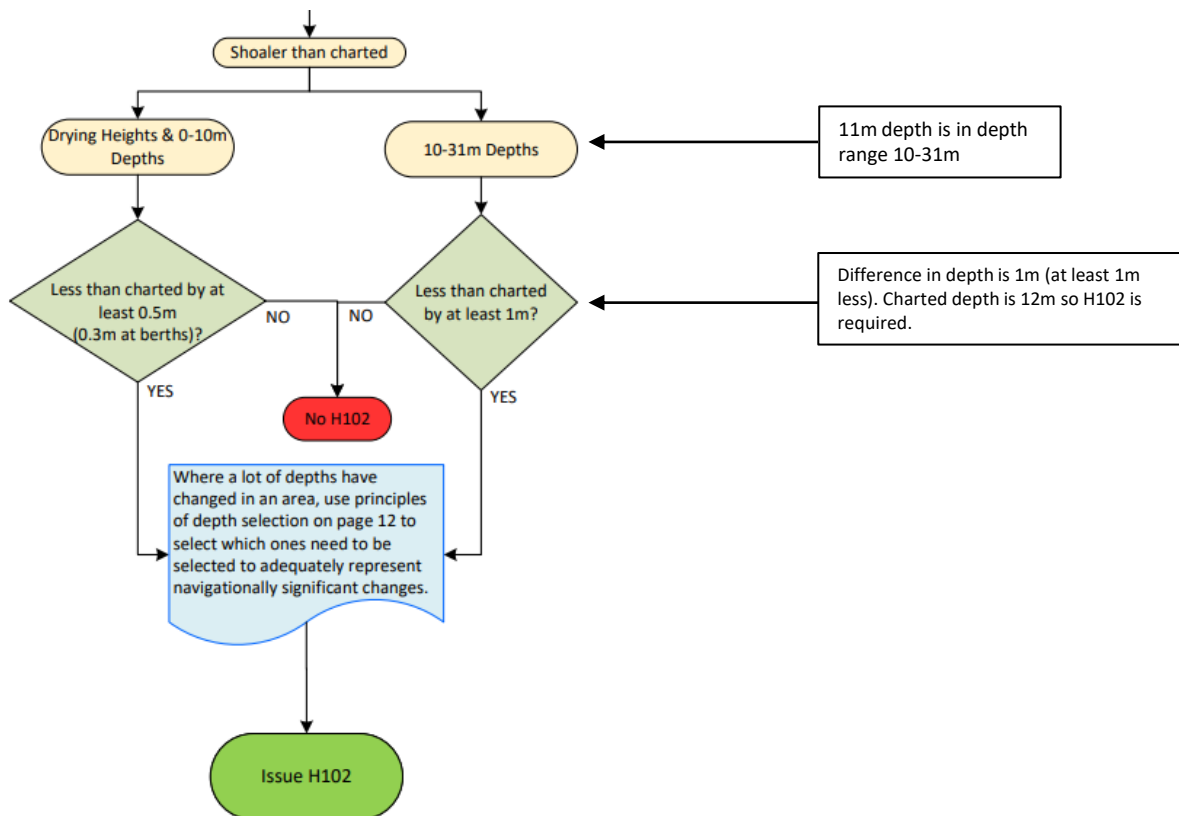
- Anchorage Areas/Anchorages
- Port Approaches
- Recommended Routes and Tracks, Traffic Separation Schemes.





## Depth Selection (continued)

In *Image A* (above on page 12), the red 11m depth is 1m less than the 12m depth so will need to be reported by H102 as it is at least 1m shoaler within the depth range of 10m-31m (see the extract from the H102 decision tree for depths between 10m and 31m below). Always select the least depth within the triangle.



Therefore, in the example above an H102 would be required.

**Important:** the most significant shoal depths which need to be reported may not be located directly over the charted depths. When the guidance advises to report "depths less than charted", consider the shoalest depth in the vicinity of the charted depths, not necessarily the survey depth in the same position as the charted depth.



## Contours

Use the charted contours to determine the movement of banks or shoals, especially into channels, to identify shoaler depths. If the shoaler depth indicates a movement of the contour over a wider area, consider including other depths along the limit of the depth area which may be significant and more clearly demonstrate the change. Please note that the UKHO require the survey depths and positions; the position of the contour itself should not be given or estimated (for more information please see page 17 *How to Report*).

In the example below, the 8.3m depth represents the shoalest depth along the limit of the new 10m contour and the 9.5m has been selected to show that that the depth range extends further south. If the software is available, it may be useful to create contours digitally from the survey data and compare to the charted contours to more easily identify sediment migration (also in the example below).

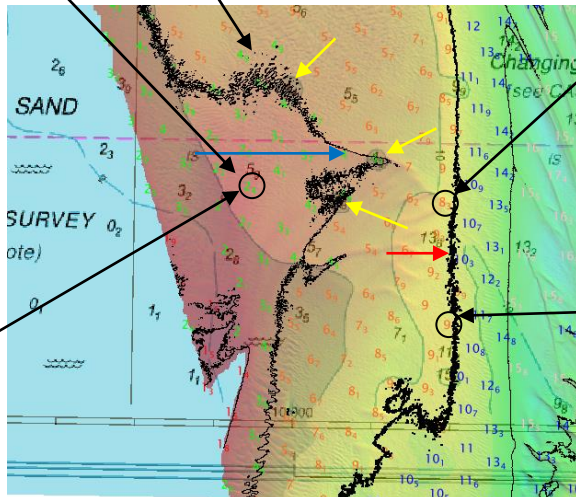
Example:

Note that in this example there are three existing charted shoals of less than 5m along the limit of the digitised 5m contour (arrowed in yellow). Therefore, additional depths would not be necessary to show the contour limit unless shoaler than charted. It is useful though to add additional shoal depths such as the 2.4m depth to show the extent of the change.

The position of the 8.3m shoalest depth should be given in this case to show the migration of the 10m contour. The digital contour should only used as a guide to identify the shoaler depths.

The 9.5m depth could also be included to show more of the extent of the change to the 10m contour.

2.4m depth (5.9m charted)



Key	
	Easterly migration of 5m contour
	Easterly migration of 10m contour



## Multiple Significant Depths in an Area

Where several depths which meet the criteria have changed in a localised area it can be difficult to select the most significant depths to include on the H102. The best option is to produce a points shapefile or hob file of the depths with an extract of the dataset and send with the H102 for the UKHO to assess.\* See section How To Report on page 17 and example 6 on page 27.

If it is not possible to provide a points shape file or hob file for multiple depths please continue to list the depths on the H102 as usual.

\*Please note that this method can only be used in the event of multiple depths in a localised area which meet the NM criteria to avoid listing long lists of depths on the H102. In all other cases the depths and positions should be given on the H102 as usual.



## Additional reporting requirements

<b>Fixed and Floating Aids to Navigation</b>	The positions and characteristics of fixed and floating Aids to Navigation in the survey area do not need to be reported if they are as charted. However, if navigational significant differences between physical features and their depiction on the current Admiralty nautical charts and publications are identified, then this should be immediately reported to the local port and lighthouse authorities using the H102 form. The local maritime authority (MCA in the UK) and UKHO should be copied in to all correspondence of this kind.
<b>Leading Lines and Tracks</b>	The leading lines and recommended tracks along channels and into harbours and anchorages marked by lights or fixed daymarks must be very carefully examined. If navigational significant differences between physical features and their depictions on the current Admiralty nautical charts and publications are identified, then this should be immediately reported to the local port and lighthouse authorities using the H102 form. The local maritime authority (MCA in the UK) and UKHO should be copied in to all correspondence of this type.



## How to Report

- UKHO need a reduced depth and a position for each navigationally significant depth to issue a Notice to Mariners. If final tidal/ellipsoidal reduction values aren't available, an initial figure or predicted tides should be used and noted as such on the H102.
- Additional graphics are useful to show the context of the depth change being submitted. However, the UKHO cannot use graphics showing changes to contours, and the position of the contour itself should not be given or estimated.  
When submitting an H102 for changes to a contour, please ensure that the significant depths and positions from the limit of the depth area are supplied.
- Where numerous depths (> 10) are considered navigationally significant in an area, consider including a .hob file or a points shapefile with the H102 and rendering an extract from the dataset with an explanation. This will avoid reporting long lists of depths saving unnecessary work for the Surveyor and UKHO.
- Complete form H102 and submit to UKHO and other local authorities\* (if applicable) within 24 hours for MCA Surveys, or immediately for UKHO Surveys. Details of how to submit the H102 can be found on page 21.
- List the Hydrographic Notes in the Report of Survey including the dates they were submitted.
- The Admiralty H Note App for submitting H102's may also be used and is available on Google Play and the App Store.

\* For more information, please see page 16



## H 102 Example

<b>HYDROGRAPHIC NOTE</b>	<b>H.102</b> (V8.0 Oct 2014)
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### Reporting information affecting Admiralty Products

For new information affecting Admiralty Charts and Publications forward to [sdr@ukho.gov.uk](mailto:sdr@ukho.gov.uk)  
To report issues related to ENC's or their display forward to [customerservices@ukho.gov.uk](mailto:customerservices@ukho.gov.uk)  
This form H.102 and instructions are available online at [www.ukho.gov.uk/msi](http://www.ukho.gov.uk/msi)

Date	06/10/2018	Ref. Number	HI 1602 – 004		
Name of ship or sender	UKHO survey vessel "Just a Splash"				
IMO number if applicable	N/A				
Address	UKHO survey vessel "Just a Splash", St Lucia				
E-mail/Tel/Fax of sender	UKHO.surveyteam@gmail.com				
General Locality	Vieux Fort, St Lucia				
Subject	Depth shallower than charted.				
Position (see Instruction 2)	Latitude	13°44.320'N	Longitude	061°00.336' W	
	GPS	yes	Datum	ITRF2014	Accuracy 0.2m
Admiralty Charts affected	1273	Edition	2		
Latest Weekly Edition of Notice to Mariners held	Yes				
Replacement copy of Chart No (see Instruction 3)	IS- IS NOT required				
ENCs affected	GB401273				
Latest update disk applied	Week:	NA			
Make, model and or age of ECDIS if applicable	NA				
Publications affected (NP/DP number, Edition No.)	none				
Date of latest supplement/update, page & Light List No. etc	NA				

The H102 should be completed as fully as possible without any blank sections. If a section doesn't apply please state N/A (Not Applicable).



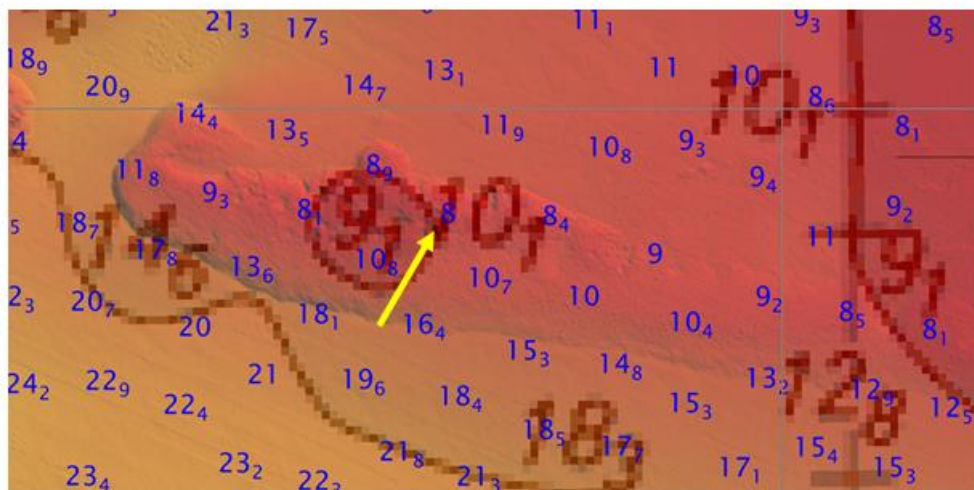
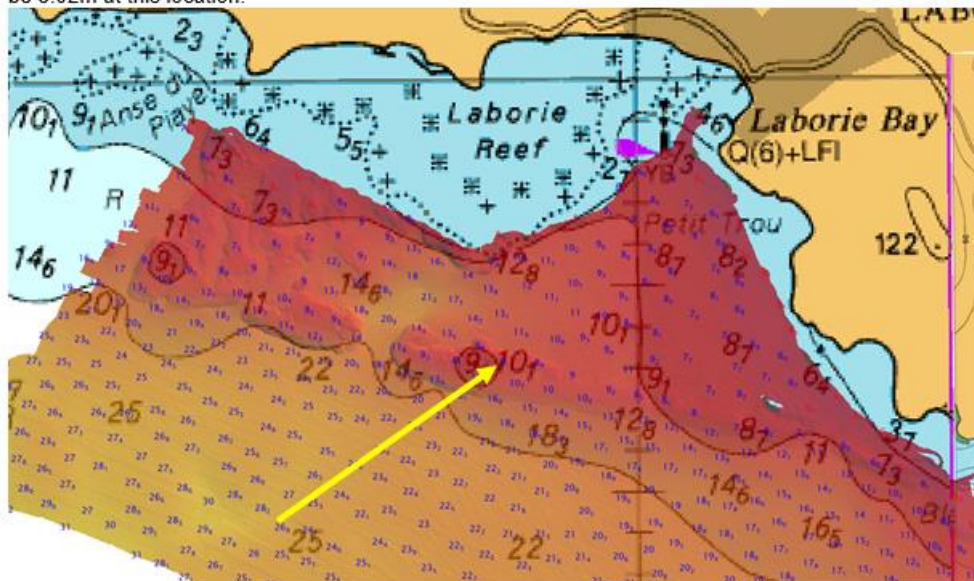
## H 102 Example (continued)

### HYDROGRAPHIC NOTE

H.102  
(V8.0 Oct 2014)

Details of anomaly / observation:

Chart implies a depth of around 10m whereas the depth found during survey HI1602 is found to be 8.02m at this location.



Please provide as much detail of the observation as possible. Include graphics of the survey depths overlaid on the latest version of the Admiralty Chart to better illustrate the anomaly/observation.



## H102 Example (continued)

Use additional space  
for comments or  
recommendations

<b>HYDROGRAPHIC NOTE</b>		<b>H.102</b> (V8.0 Oct 2014)
Recommend adding 8m depth to the chart at this position.		
Name of observer/reporter	Andrew Talbot	
H.102A Submitted Yes/No	H.102B Submitted Yes/No	
Tick box if not willing to be named as source of this information		<input type="checkbox"/>

Alternatively use our new H Note App located here:  
[www.admiralty.co.uk/apps/h-note](http://www.admiralty.co.uk/apps/h-note)



### INSTRUCTIONS

1. Mariners are requested to notify the United Kingdom Hydrographic Office (UKHO) when new or suspected dangers to navigation are discovered, changes observed in aids to navigation, or corrections to publications are seen to be necessary. Mariners can also report any ENC display issues experienced. The Mariner's Handbook (NP 100) Chapter 4 gives general instructions. The provisions of international and national laws should be complied with when forwarding such reports.
2. Accurate position or knowledge of positional error is of great importance. Where latitude and longitude have been used to specifically position the details of a report, a full description of the method used to obtain the position should be given. Where possible the position should be fixed by GPS or Astronomical Observations. A full description of the method, equipment, time, estimated error and datum (where applicable) used should be given. Where the position has been recorded from a Smart Phone or Tablet, this is to be specifically mentioned. When position is defined by sextant angles or bearings (true or magnetic to be specified), more than two should be used in order to provide a redundancy check. Where position is derived from Electronic Position Fixing (eg LORAN C) or distances observed by radar, the raw readings of the system in use should be quoted wherever possible. Where position is derived after the event, from other observations and/or Dead Reckoning, the methodology of deriving the position should be included.
3. **Paper Charts:** A cutting from the largest scale chart is often the best medium for forwarding details, the alterations and additions being shown thereon in red. When requested, a new copy will be sent in replacement of a chart that has been used to forward information, or when extensive observations have involved defacement of the observer's chart. If it is preferred to show the amendments on a tracing of the largest scale chart (rather than on the chart itself) these should be in red as above, but adequate details from the chart must be traced in black ink to enable the amendments to be fitted correctly.
4. **ENCs:** A screen shot of the largest scale usage band ENC with the alterations and additions being shown thereon in red. If it is to report an issue with the display of an ENC, a screen shot of the affected ENC should be sent along with details of the ECDIS make, model or age and version in use at the time.
5. When **soundings** are obtained The Mariner's Handbook (NP 100) should where possible be consulted. It is important to ensure that full details of the method of collection are included with the report. This should include but not limited to:
  1. Make, model and type of echo sounder used.



## H 102 Example (continued)

### Contacts for H 102 submission

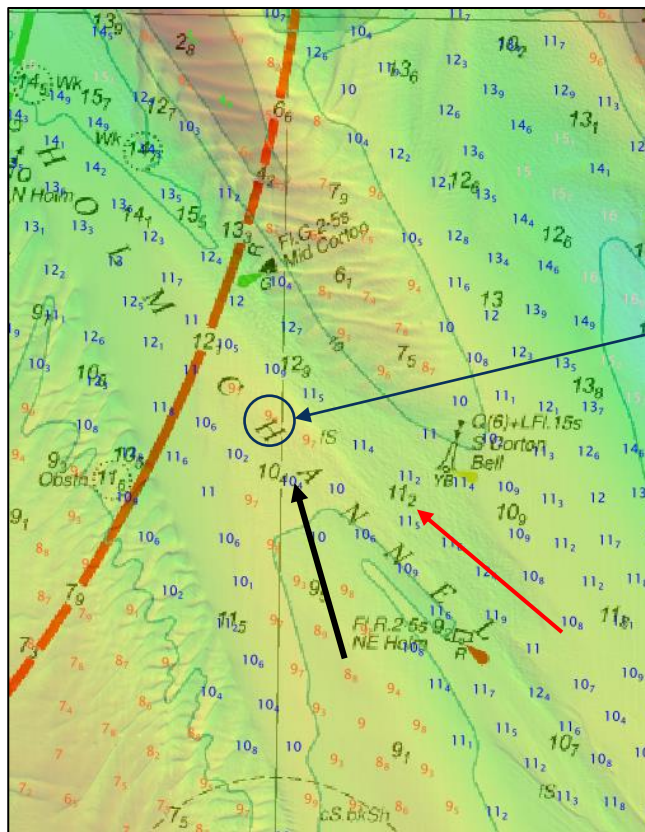
- [sdr@ukho.gov.uk](mailto:sdr@ukho.gov.uk)
- [BDC.Surveys@UKHO.gov.uk](mailto:BDC.Surveys@UKHO.gov.uk)
- [row@mcga.gov.uk](mailto:row@mcga.gov.uk)
- [chp@ukho.gov.uk](mailto:chp@ukho.gov.uk) (CHP Surveys only)
- [chp.mca@ukho.gov.uk](mailto:chp.mca@ukho.gov.uk) (CHP Surveys only)
- Local Port and Lighthouse Authorities if applicable (see page 16)
- In country maritime authorities (if outside the UK)

Please note that not all of these contacts are currently listed on the H 102 but will be added in a future update.



# Example 1

Holm Channel survey Controlling Depth change



9.4m new controlling depth should be reported by H102. (Least charted depth in Holm Channel is 10.4m).

Key	
	North-west migration of sediment affects the limit of the 10m contour.
	Direction of traffic*

\*The direction of traffic can be determined by examining the charted Aids to Navigation, and Automatic Identification System (AIS) data (if available). In the example above the lateral buoys and South Cardinal buoy clearly show the channel limits. Note that the buoyage is IALA A in this example.

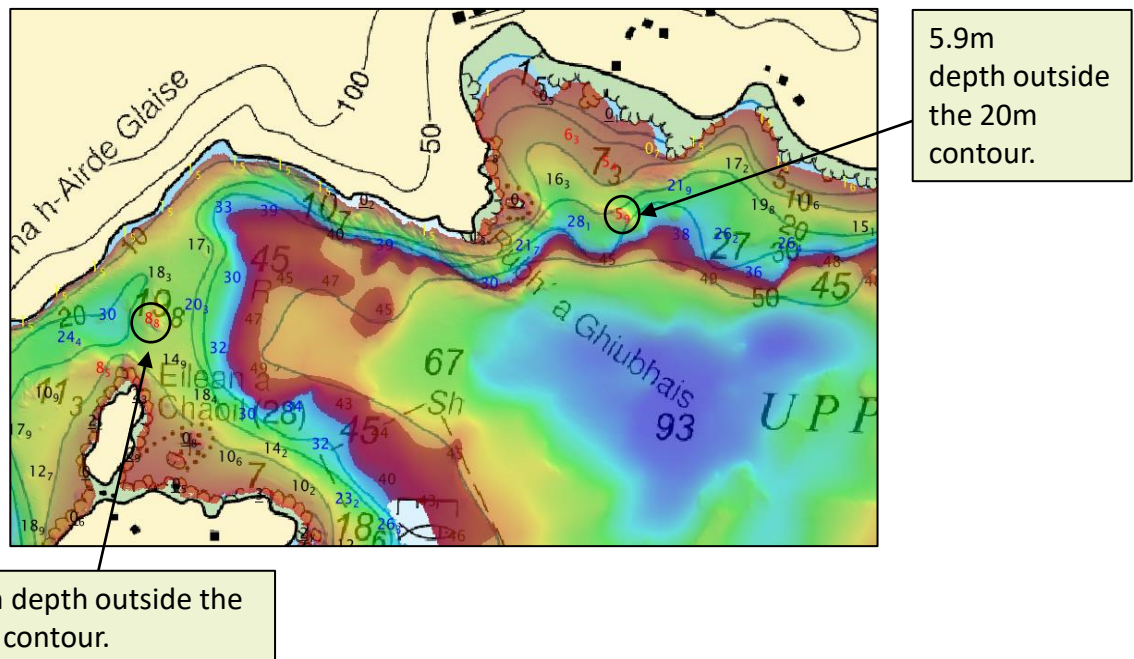




## Example 3

### Uncharted shoals

In the following example two uncharted shoals were correctly identified and submitted by H102. Both depths were issued by Notices to Mariners:

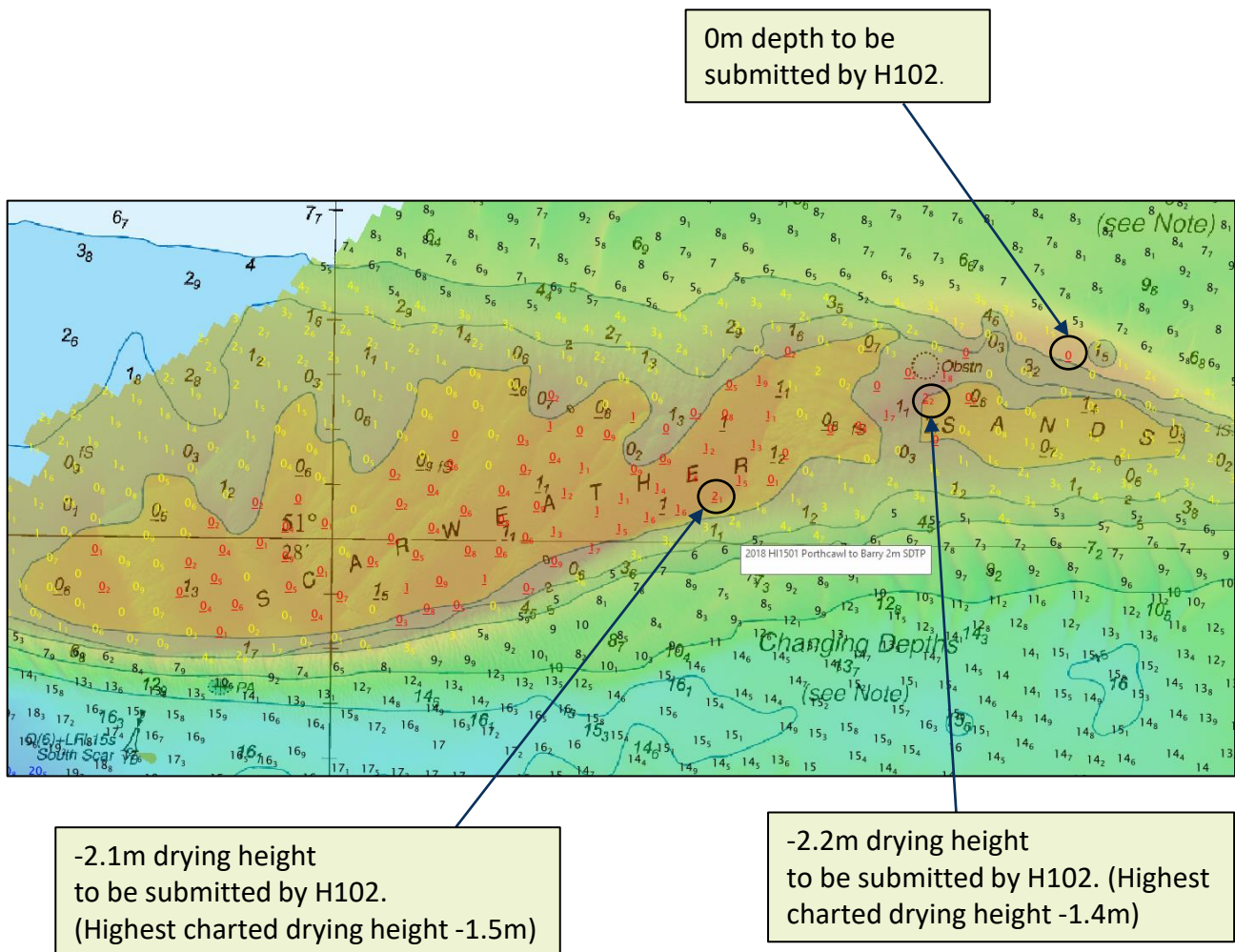


The example above demonstrates how using a colour banded sounding selection helps to identify depths of interest.



## Example 4

Least depths over banks: An area of changing depths creating shoaler drying heights.  
(Charted notes for Changing Depths should be ignored for this process).

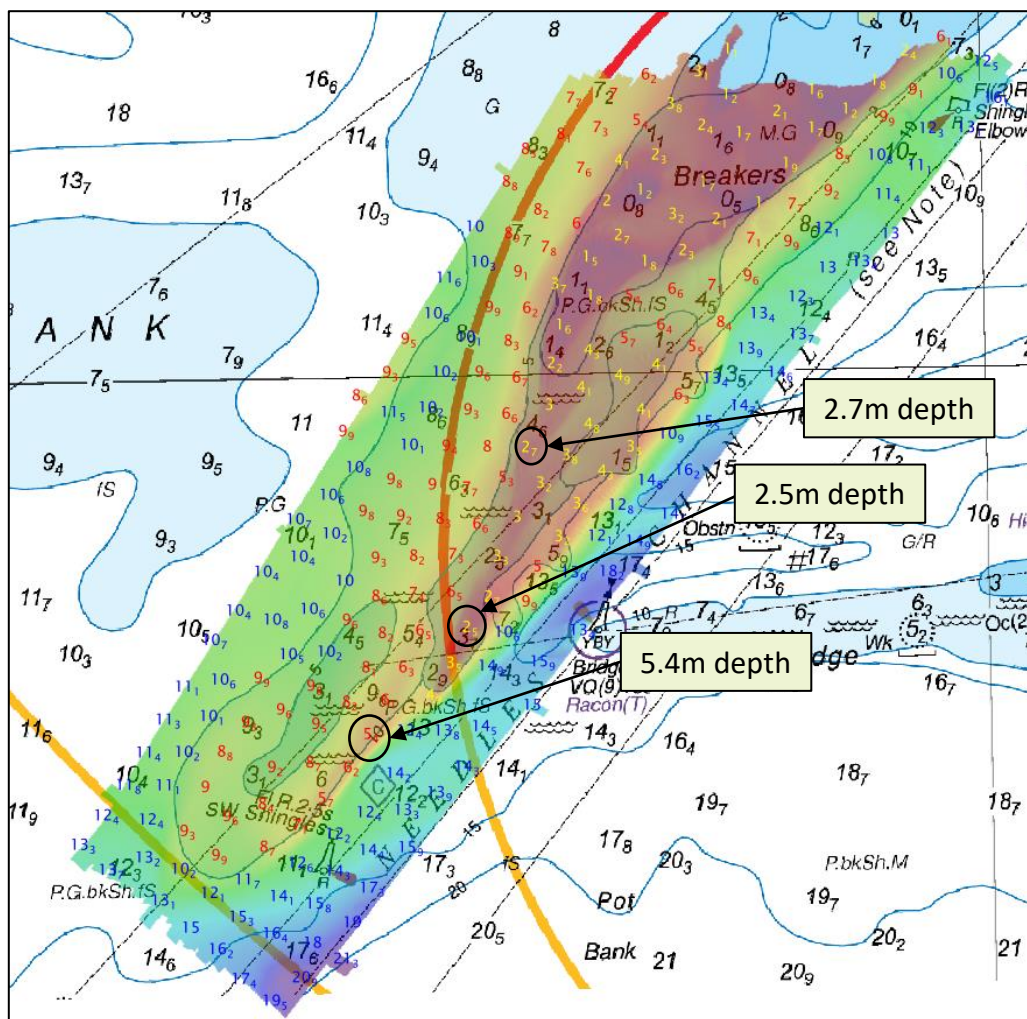




## Example 5

### Needles Channel Survey

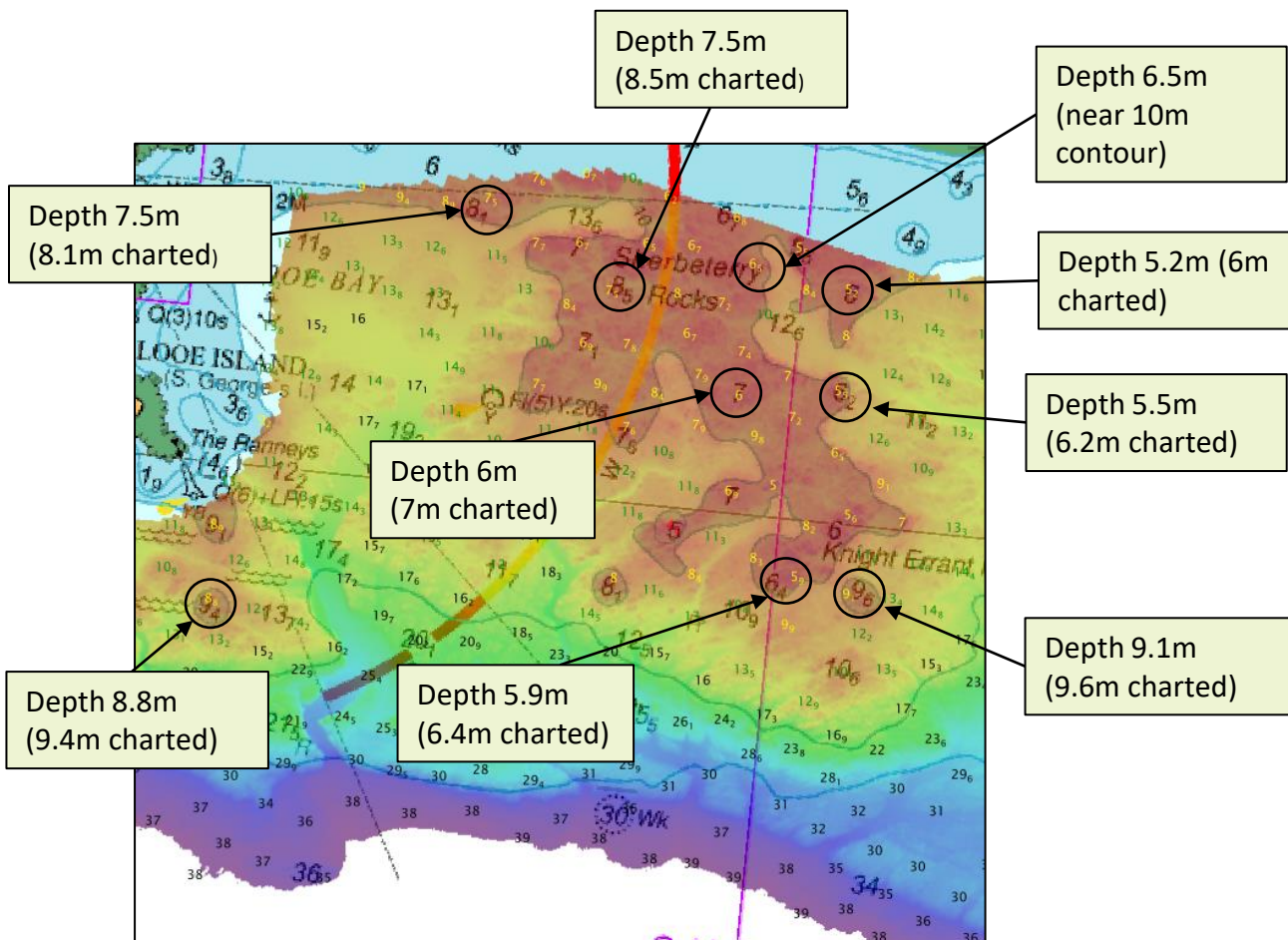
In this example, NM's were issued for the shoaler depths in the Channel, and to show the shoaling of the bank into the channel.





## Example 6

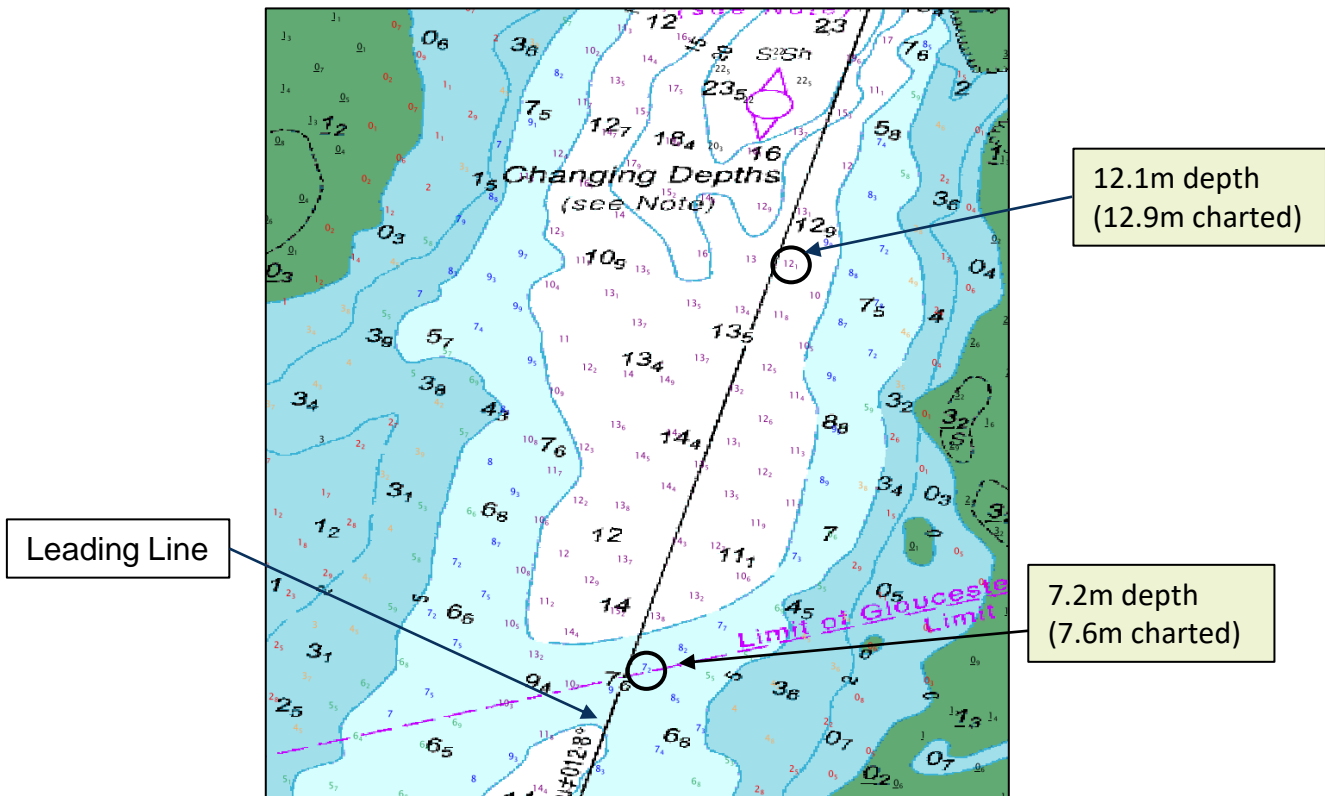
In this example there are several depths which meet the criteria in a localised area. In this case, if the software is available, it would be better to submit a .hob file or a points shapefile of the positions with the HI02 for the UKHO to assess.





## Example 7

Depths on or close to a Leading line:



**Any** shoaling of the depths along or adjacent to the leading line are important to consider.



## Glossary of Acronyms and Terms

### Acronyms

UKHO	UK Hydrographic Office
MCA	Maritime and Coastguard Agency
CHP	Civil Hydrography Programme
HI	Hydrographic Instruction
ENC	Electronic Navigation Chart
NM	Notice to Mariners
DWR	Deep Water Route
TSS	Traffic Separation Scheme
H Note (H102)	Hydrographic Note.

### UKHO Terms

A shoal (noun):	a natural physical feature on the seabed
Shoal (adjective):	<i>“a shoal depth”</i> (a shallow depth)
Shoaler	<i>“Shoaler than charted”</i> (shallower than charted)



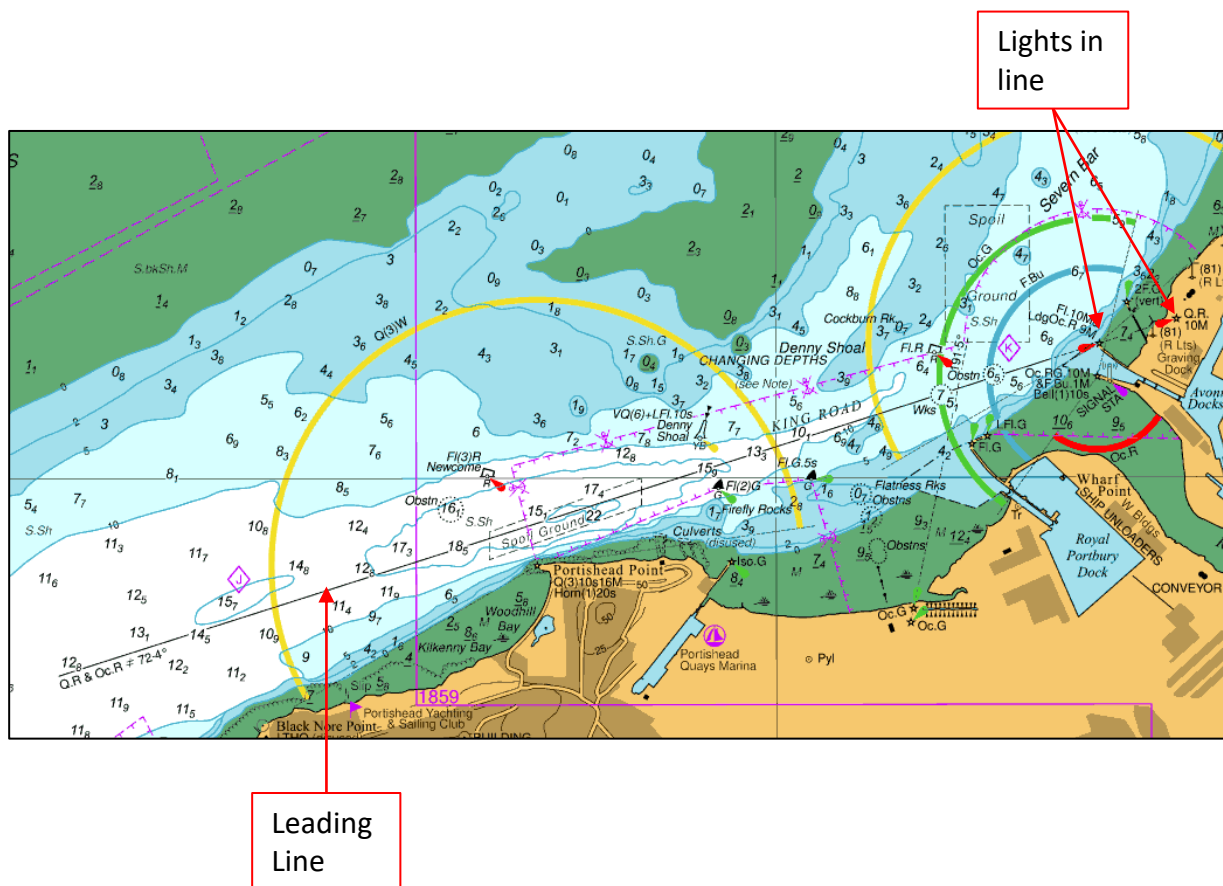


## Glossary of Acronyms and Terms

### Cartographic Terms (cont.)

#### Leading Lines

Defined as a straight line used for navigation produced by the alignment of marks (leading marks), lights (leading lights) or radio transmitters for mariners to follow using the safest route into a harbour, for example.





## Glossary of Acronyms and Terms

### Cartographic Terms (cont.)

#### Fairways and recommended tracks

Fairways are marked with a pecked line on the chart/ENC:

	<i>Fairway, designated by regulatory authority: with minimum depth</i>
	<i>with maximum authorised draught</i>

Recommended tracks are marked as follows on the chart/ENC:

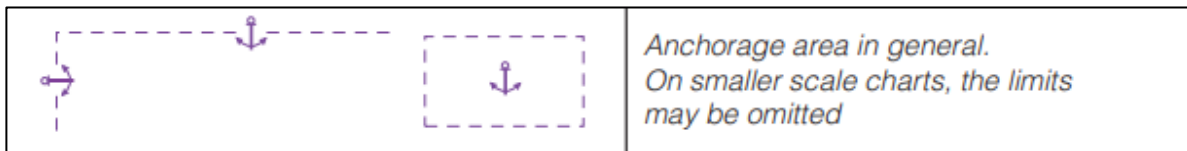
	<i>Recommended track based on a system of fixed marks</i> ‡
	<i>Recommended track not based on a system of fixed marks</i> ‡
	<i>One-way track and DW track based on a system of fixed marks</i>
	<i>One-way track and DW track not based on a system of fixed marks</i>
	<i>Recommended track with maximum authorised draught</i> ‡



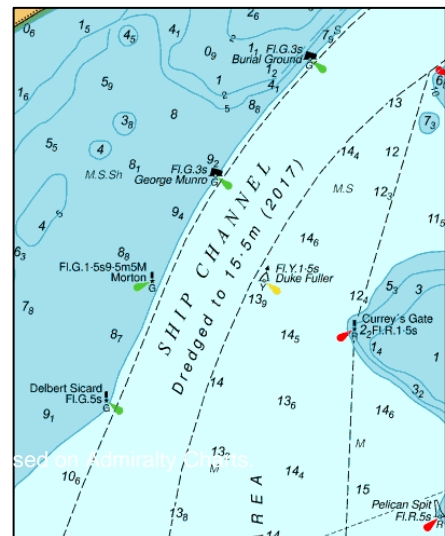
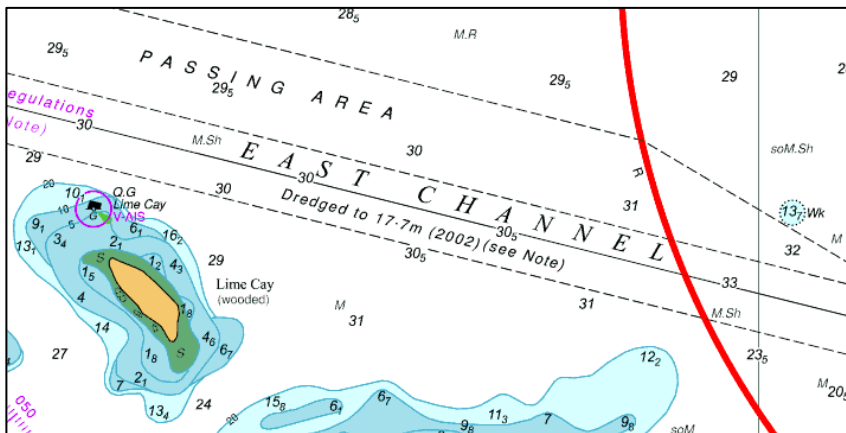
## Glossary of Acronyms and Terms

### Cartographic Terms (cont.)

Anchorage areas are depicted on charts and ENC's like this:



Dredged Channels are marked by a pecked black line usually found in the approaches to a port:



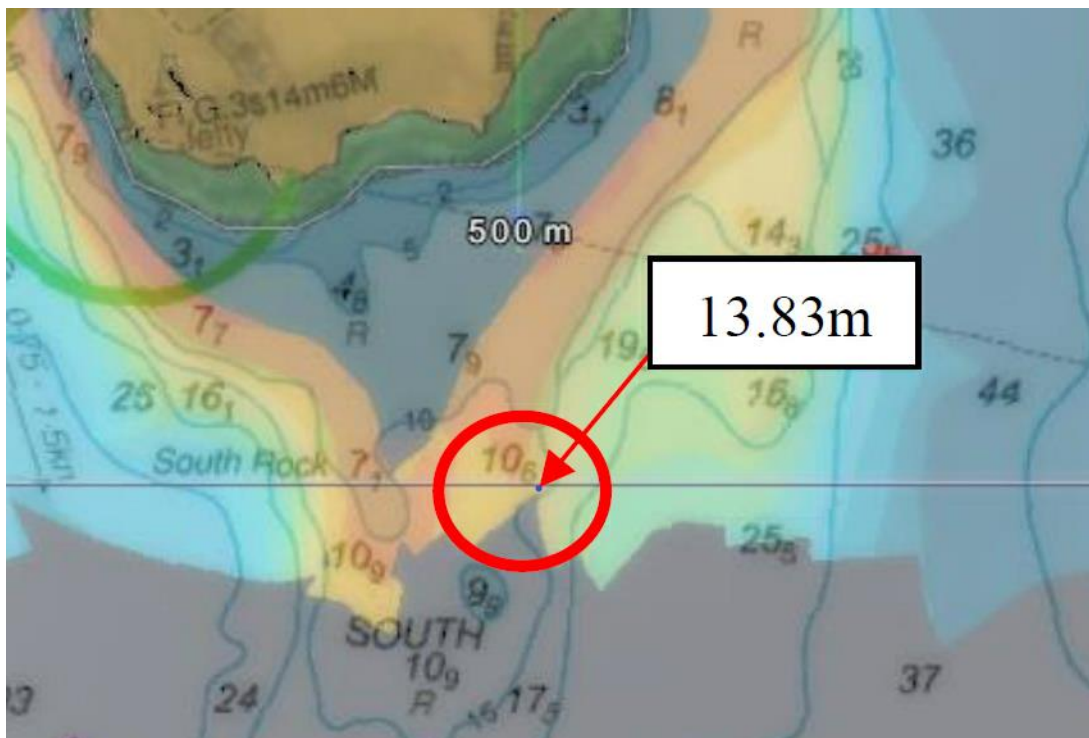


## Feedback Example 1

Please note the examples below are for additional information only. These depths submitted by H102 are correct according to the criteria above but illustrate why NM action was not taken in these cases. If in doubt, please report it.

### Depths not actioned due to chart scale.

In this example, although correctly identified, the 13.8m depth on the 20m contour was not actioned by NM because on the **largest scale chart** the adjacent 10.6m depth was the shoaler depiction. If NM action had been taken the 13.8m depth would have replaced the 10.6m depth at this scale leading to an inaccurate depiction of depths in the area..

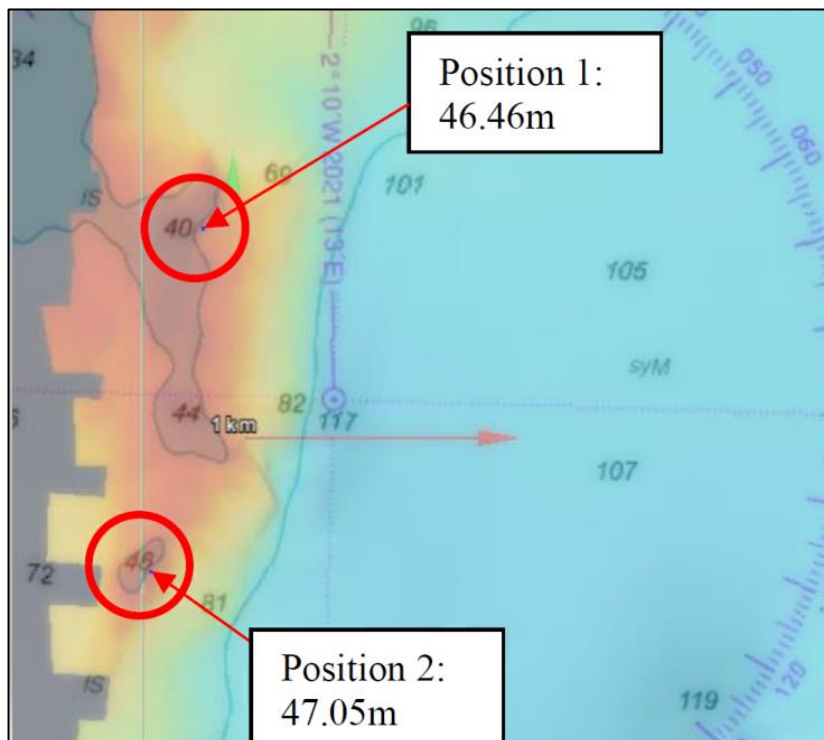




## Feedback Example 2

### Depths not actioned due to chart scale

Similarly to Example 1, the 46m and 47m depth in the image below were correctly identified for NM action as they are outside the 50m contour but the adjacent 40m and 45m depths (respectively) are the shoalest depictions at the scale of the **largest scale** chart. This is a more accurate depiction for the mariner as the existing charted depths within the shoals are unchanged.





## Feedback Example 3

### Drying height not actioned due to chart scale and limited survey coverage

In this example the  $-1.1\text{m}$  drying height was not actioned as there are no other drying heights marked on the chart in this area, and the survey did not cover the whole intertidal section. Therefore comparison was not possible to determine the highest drying height.

