INTERNATIONAL HYDROGRAPHIC ORGANIZATION

ORGANISATION HYDROGRAPHIQUE INTERNATIONALE

IHB File S3/8151/DQWG

CIRCULAR LETTER 23/2011
11 March 2011

THIS CIRCULAR LETTER INCLUDES A QUESTIONNAIRE

DATA QUALITY WORKING GROUP
- MARINERS' SURVEY QUESTIONNAIRE ON
THE UNDERSTANDING AND USE OF QUALITY INDICATORS FOR CHART DATA

References:

a) CL36/2007 dated 3 April
b) CL120/2007 dated 17 December
c) CL/2009 dated 12 May
d) CL17/2010 dated 8 February
e) CL59/2010 dated 7 September

Dear Hydrographer,

Introduction

1. As reported in Reference a), the Data Quality Working Group (DQWG) was established in 2007 by the CHRIS (now HSSC) to investigate how the quality of survey data could be better presented to the mariner. Reference b) reported that further investigations were required regarding the use and display of quality indicators for ENC data. This resulted in an initial recommendation to amend the definitions for the S-57 object attribute CATZOC. These recommended changes were subsequently agreed by Member States and announced in Reference c).

2. The DQWG is now continuing its work by considering appropriate Data Quality Indicators for S-101, the next generation ENC Product Specification, as well as developing improved ways of displaying the quality of chart data in S-101 ENCs to the user. In this connection, the DQWG must determine whether the existing ENC data quality indicators will be appropriate or whether new indicators will need to be developed.

3. Reference d) asked Member States to report which of the current S-57 data quality indicators are being used to populate their ENCs. Reference e) asked Member States to describe how they allocate CATZOC classifications to legacy data (bathymetric data collected prior to the implementation of CATZOC standards).

Survey Questionnaire

4. The next stage of investigation into data quality indicators is to ascertain mariners' understanding of the quality of chart data via a survey questionnaire. The questionnaire is presented in two formats: a pdf version which may be downloaded and completed off-line and a web-based version that respondents can complete and submit on-line. The pdf version is included as Attachment 1 and may also be downloaded from the IHO web site at:

www.iho.int » Committees & WGs » DQWG » Miscellaneous

The on-line version of the questionnaire may be accessed at:

https://www.surveymonkey.com/s/IHODQWG

5. Member States are requested to bring details of the survey questionnaire to mariners' attention by all means possible and particularly to all relevant maritime institutes so that a broad response can be obtained.

6. Respondents to the survey questionnaire should reply directly to the address provided in the questionnaire **by 27 May 2011**.

On behalf of the Directing Committee
Yours sincerely,

Robert WARD
Director

Attachment:

1: Survey Questionnaire about the Depiction of the Quality of the Data in Nautical Charts (in English only)

Questionnaire about the Depiction of the Quality of the Data in Nautical Charts

Your answers to this questionnaire, to be returned ***before 27 May 2011*** (see details on last page), will remain anonymous unless you choose to provide your details at the end of this questionnaire.

There is NO obligation to provide your personal or contact details.

Section A, About You

1. What is your Position or Role?

_____

_____

2. How many years have you been using nautical charts?

- ☐ 0 – 5
- ☐ 5 – 10
- ☐ 10 – 15
- ☐ 15 +

3. What navigation qualifications do you hold?

Qualification 1 Please state:

Qualification 2 Please state:

Qualification 3 Please state:

---

4. Which of the following best describes the type of shipping that you are involved in?

Select all that apply.

- ☐ Local/coastal
- ☐ Domestic
- ☐ Trans Oceanic
- ☐ Other. Please state: _____

5. Which sector do you operate in?

Select all that apply.

- ☐ Military
- ☐ Merchant Navy
- ☐ Commercial
- ☐ Ferry
- ☐ Oil and Gas (support)
- ☐ Renewables (support)
- ☐ Leisure (yacht)
- ☐ Day boat
- ☐ Cruise liner
- ☐ Fishing
- ☐ Pilotage
- ☐ Survey
- ☐ Other. Please state: _____

6. In your work, which products do you use to navigate?

Select all that apply.

- ☐ Paper Charts
- ☐ ENCs
- ☐ Raster Charts
- ☐ Commercial (non Hydrographic Office) Vector Charts

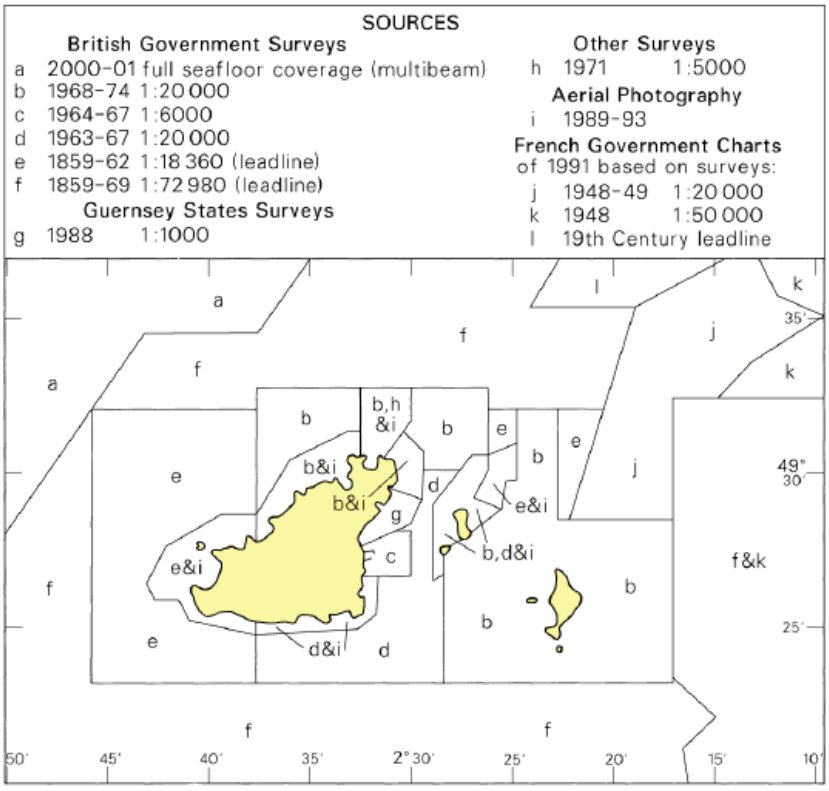
Section 2, Your Perception and Awareness of Current Methods of Representing the Quality of the Data in Nautical Charts

Paper charts and ENCs indicate the quality of the data in nautical charts in many different, and sometimes subtle, ways. These are set out below. Please answer the questions relating to any of the methods that apply to you. The questions are not intended to be a "test" so please **do not look up the answer so as to get a good "score"**. The questions are intended to identify which of the existing chart data quality identifiers are not used or are not well understood and to use this information to design a better method of depicting quality in the future.

Paper Charts

7. Do the charts you use have a source or reliability diagram?

For example:



☐ Yes
☐ No Jump to question 9

8. Do you use the information in the source or reliability diagram?

☐ Yes

If Yes; Do you plan routes which stay in better surveyed areas?

☐ Yes
☐ No

If you operate using revised procedures for areas with different qualities of survey, for example reducing speed, please state what you do: _____

Are there any other actions that you take? (Please describe them) _____

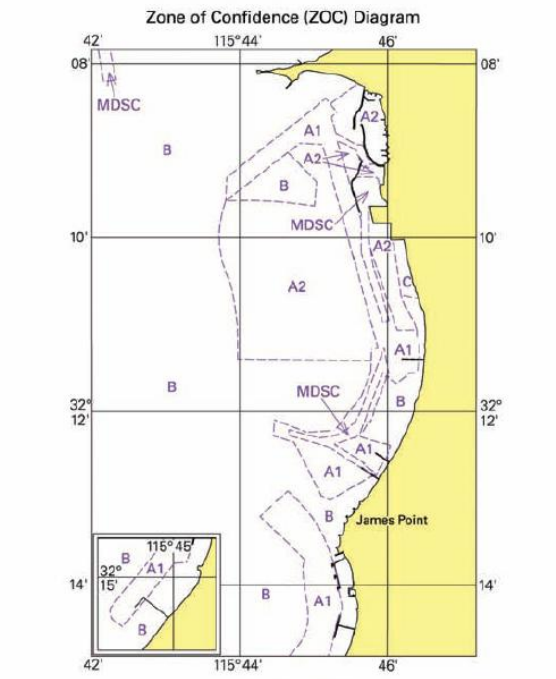
☐ No

If No, why?

☐ I have used the same route many times before
☐ I do not think quality information is relevant
☐ I do not trust the quality information
☐ I do not understand the quality information
☐ I think the quality information presented is too complicated
☐ I think the provided quality information is not comprehensive enough
☐ I have never been aware that quality information is available
☐ I have no time to study the quality information
☐ Other. Please state: _____

9. Do the charts you use have a 'Zones of Confidence' (ZOC) diagram?

For example:



ZOC CATEGORIES
(For details see Australian Notice to Mariners No 25)

ZOC	POSITION ACCURACY	DEPTH ACCURACY	SEAFLOOR COVERAGE
A1	±5m	=0·50m + 1%d	All significant seafloor features detected.
A2	±20m	=1·00m + 2%d	All significant seafloor features detected.
B	±50m	=1·00m + 2%d	Uncharted features hazardous to surface navigation are not expected but may exist.
C	±500m	=2·00m + 5%d	Depth anomalies may be expected.
D	Worse than ZOC C	Worse than ZOC C	Large depth anomalies may be expected.
U	Unassessed - The quality of the bathymetric data has yet to be assessed.		
MDSC	Maintained Depth See Chart		

☐ Yes
☐ No Jump to question 11.

10. Do you use the information in the ZOC Diagram?

☐ Yes

If Yes; Do you plan routes which stay in better surveyed areas?

☐ Yes
☐ No

If you operate revised procedures for areas with different qualities of survey, for example reducing speed, please state what you do: _____
_____

_____

_____

Are there any other actions that you take? (please describe them)
_____

_____

☐ No

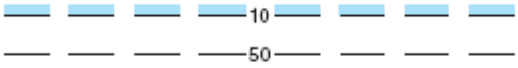
If No, why?
☐ I have used the same route many times before
☐ I do not think quality information is relevant
☐ I do not trust the quality information
☐ I do not understand the quality information
☐ I think the quality information presented is too complicated
☐ I think the provided quality information is not comprehensive enough
☐ I have never been aware that quality information is available
☐ I have no time to study the quality information
☐ Other. Please state: _____

_____

_____

Charts have several quality indicators. Please state if you are aware of the meaning of the various indicators shown below and also how you take note of or use these indicators when planning a route and navigating.

11. Broken depth contours

Example: 

A) Do you understand the meaning of the Broken Depth Contour symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 12

B) How does the existence of broken depth contours alter the way that you plan and then navigate a route? _____

_____

_____

_____

12. Broken coastline

Example: 

A) Do you understand the meaning of the broken coastline symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 13

B) How does the existence of a broken coastline alter the way that you plan and then navigate a route? _____

_____

_____

13. Dotted danger lines

Example:

A) Do you understand the meaning of the dotted danger line symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 14

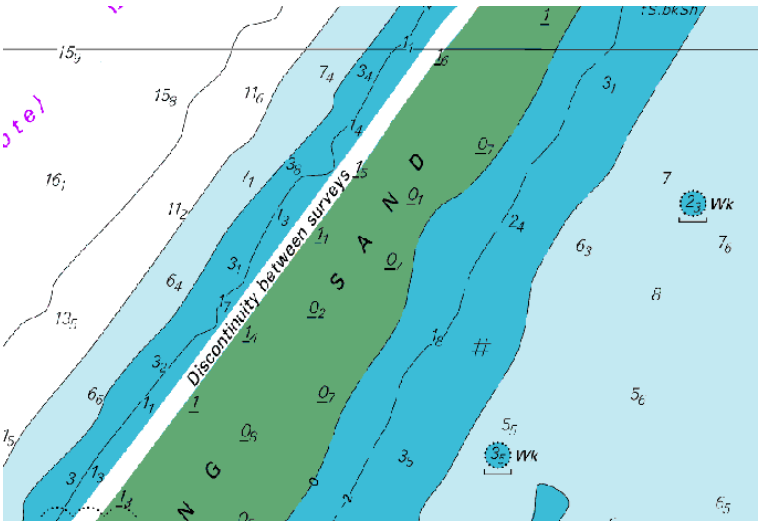
B) How does the existence of dotted danger lines alter the way that you plan and then navigate a route? _____

_____

_____

14. Discontinuity between surveys

Example:



A) Do you understand the meaning of the discontinuity between surveys note?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 15

B) How does the existence of a discontinuity between surveys note alter the way that you plan and then navigate a route? _____

_____

15. Notes relating to lack of survey

Example:

A) Do you understand the meaning of the „Unsurveyed' and „Depths' notes?

☐ Yes
☐ No Proceed to question 16

B) What does the „Unsurveyed' note mean? _____

C) What does the „Depths' note mean? _____

_____

D) How does the existence of „Unsurveyed' and „Depths' notes alter the way that you plan and then navigate a route? _____

_____

16. PA, PD, ED and SD abbreviations

Example:

PA PD ED SD

A) Do you understand the meaning of the PA, PD, ED and SD abbreviations when applied to a feature or sounding?

☐ Yes
☐ No Proceed to question 17

B) What does the abbreviation PA mean? _____

_____

C) What does the abbreviation PD mean? _____

_____

D) What does the abbreviation ED mean? _____

_____

E) What does the abbreviation SD mean? _____

_____

F) What does the abbreviation Rep'd (1999) mean? _____

_____

G) How does the existence of a „PA, PD, ED, SD or Rep'd abbreviation against a feature or sounding alter the way that you plan and then navigate a route?

PA _____

_____

PD _____

_____

ED _____

_____

SD _____

_____

Rep'd (1999) _____

_____

H) How would you plan a route or navigate differently if the year reported was 25 years ago, as opposed to 1 year ago? _____

_____

_____

_____

17. Upright (hairline) sounding

Example: 12 9_1 *12* 9_2

Upright font **Normal font for soundings**

A) Do you understand the meaning of a sounding written in an upright font?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 18

B) How does the existence of a sounding written in an upright font alter the way that you plan and then navigate a route? _____

_____

_____

18. Discoloured water legend

Example: *'Discoloured water'*

A) Do you understand the meaning of the discoloured water note?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 19

B) How does the existence of a discoloured water note alter the way that you plan and then navigate a route? _____

_____

_____

19. Sand wave symbol

Example: 

A) Do you understand the meaning of the sand wave symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 20

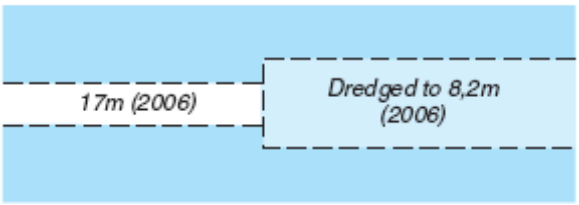
B) How does the existence of a sand wave symbol alter the way that you plan and then navigate a route? _____

_____

_____

20. Dredged to… note

Example:



A) Do you understand the meaning of the „Dredged to…' note?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 21

B) How does the existence of a „Dredged to…' note alter the way that you plan and then navigate a route? _____

_____

C) How would you plan a route or navigate differently if the year dredged was 10 years ago, as opposed to 1 year ago? _____

_____

_____

21. Potentially Dangerous Wreck

Example:

A) Do you understand the meaning of the potentially dangerous wreck symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 22

B) How does the existence of a potentially dangerous wreck symbol alter the way that you plan and then navigate a route? _____

_____

_____

22. Bar above a Dangerous wreck symbol

Example:

A) Do you understand the meaning of a bar above a dangerous wreck symbol?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 23

B) How does the existence of a bar above a dangerous wreck symbol alter the way that you plan and then navigate a route? _____

_____

_____

23. Works in progress legend

Example:

A) Do you understand the meaning of works in progress legend?

☐ Yes What does it indicate? _____

_____

☐ No Proceed to question 24

B) How does the existence of a works in progress legend alter the way that you plan and then navigate a route? _____

_____

_____

You have now answered questions on a set of symbols representing data quality. The following questions relate to how you feel about current symbology.

24. Is the current set of symbols clear?

☐ Yes
☐ No

25. Are the number of symbols adequate?

- ☐ Yes
- ☐ No
- ☐ Too Many
- ☐ Too Few

26. Which symbol(s) are the most important to you?
Select all that apply

- ☐ Broken depth contours (as seen in question 11)
- ☐ Broken coastline (as seen in question 12)
- ☐ Dotted danger lines (as seen in question 13)
- ☐ Discontinuity between surveys (as seen in question 14)
- ☐ Notes relating to lack of survey (as seen in question 15)
- ☐ PA, PD, ED and SD abbreviations (as seen in question 16)
- ☐ Upright (hairline) sounding (as seen in question 17)
- ☐ Discoloured water legend (as seen in question 18)
- ☐ Sand wave symbol (as seen in question 19)
- ☐ Dredged to … legend (as seen in question 20)
- ☐ Potentially Dangerous Wreck (as seen in question 21)
- ☐ Bar above a Dangerous wreck symbol (as seen in question 22)
- ☐ Works in progress legend (as seen in question 23)

27. Which symbol(s) are the least important to you?
Select all that apply

- ☐ Broken depth contours (as seen in question 11)
- ☐ Broken coastline (as seen in question 12)
- ☐ Dotted danger lines (as seen in question 13)
- ☐ Discontinuity between surveys (as seen in question 14)
- ☐ Notes relating to lack of survey (as seen in question 15)
- ☐ PA, PD, ED and SD abbreviations (as seen in question 16)
- ☐ Upright (hairline) sounding (as seen in question 17)

☐ Discoloured water legend (as seen in question 18)

☐ Sand wave symbol (as seen in question 19)

☐ Dredged to … legend (as seen in question 20)

☐ Potentially Dangerous Wreck (as seen in question 21)

☐ Bar above a Dangerous wreck symbol (as seen in question 22)

☐ Works in progress legend (as seen in question 23)

28. Is there specific information on data quality that is missing?

☐ Yes Please state: _____

_____

☐ No Proceed to question 29

ENCs

29. Do you use ENCs?

☐ Yes
☐ No Jump to question 41

30. When using ENCs do you use the information in the CATZOC display?

☐ Yes

If Yes; Do you plan routes which stay in better surveyed areas?

☐ Yes

☐ No

Do you operate revised procedures for areas with different qualities of survey (for example do you slow down?) Please state what you do: _____

_____

_____

Any other actions that you take? (please state actions)

_____

_____

☐ No Proceed to next question

In addition to CATZOC, ENCs have several data quality indicators included in the encoding details, as listed below. Please indicate if you are aware of the following indicators and their meaning and also whether you use these when navigating and/or route planning.

31. HORACC – Horizontal accuracy

A) What is your understanding of HORACC?
☐ Do not know Proceed to question 32

What does HORACC indicate? _____

_____

B) How does HORACC alter the way that you plan and then navigate a route?

_____

_____

32. POSACC – Positional accuracy

A) What is your understanding of POSACC?
☐ Do not know Proceed to question 33

What does POSACC indicate? _____

_____

B) How does POSACC alter the way that you plan and then navigate a route?

_____

_____

33. SOUACC – Sounding accuracy

A) What is your understanding of SOUACC?
☐ Do not know Proceed to question 34

What does SOUACC indicate? _____

_____

B) How does SOUACC alter the way that you plan and then navigate a route?

_____

_____

34. VERACC – Vertical Accuracy

A) What is your understanding of VERACC?
☐ Do not know Proceed to question 35

What does VERACC indicate? _____

_____

B) How does VERACC alter the way that you plan and then navigate a route?

_____

_____

_____

35. SURATH – Survey Authority

A) What is your understanding of SURATH?
☐ Do not know Proceed to question 36

What does SURATH indicate? _____

_____

B) How does SURATH alter the way that you plan and then navigate a route?

_____

_____

36. SURSTA – Survey Start

A) What is your understanding of SURSTA?
☐ Do not know Proceed to question 37

What does SURSTA indicate? _____

_____

B) How does SURSTA alter the way that you plan and then navigate a route?

_____

_____

37. SUREND – Survey End

A) What is your understanding of SUREND?
☐ Do not know Proceed to question 38

What does SUREND indicate? _____

_____

B) How does SUREND alter the way that you plan and then navigate a route?

_____

_____

_____

38. TECSOU – Technique of Sounding

A) What is your understanding of TECSOU?
☐ Do not know Proceed to question 39

What does TECSOU indicate? _____

_____

B) How does TECSOU alter the way that you plan and then navigate a route?

_____

_____

39. QUASOU – Quality of Sounding

A) What is your understanding of QUASOU?
☐ Do not know Proceed to question 40

What does QUASOU indicate? _____

_____

B) How does QUASOU alter the way that you plan and then navigate a route?

_____

_____

40. QUAPOS – Quality of Position

A) What is your understanding of QUAPOS?
☐ Do not know Proceed to question 41

What does QUAPOS indicate? _____

_____

_____

B) How does QUAPOS alter the way that you plan and then navigate a route?

_____

_____

Wider Data Quality Issues

41. Do you feel that the data quality of the paper chart or ENC that you use, is of any relevance to you?

☐ Yes Jump to question 44
☐ No Proceed to question 42

42. Would you make use of information about the quality of the charted data if it was explained to you or was available on the charts that you use?

☐ Yes Jump to question 44
☐ No Proceed to question 43

43. Why would you not take note or use information about the quality of the chart data? (You may tick more than one)

☐ Routes are planned centrally and I have no/little control over them
☐ Policy is governed by my company/organisation
☐ The route I use has no alternatives so I can not alter it.
☐ The route I use has been travelled many times before so I know it is OK.
☐ I trust that the HO producing the chart has done a good job and that the chart depicts the seafloor accurately.
☐ I am not aware of what data quality information is available.
☐ I do not understand the relevance of the data quality information
☐ The charts / ENCs I use do not contain any data quality information or is so limited that it is effectively useless.

Other reasons. Please state: _____

_____

44. Do you take into account the mobility of the seabed (For example sand waves, siltation) when navigating/passage planning?

☐ Yes
☐ No. Why not? Please state: _____

_____

If you answered No jump to question 46

45. How would you judge the mobility of the seabed?

Please state: _____

_____

_____

46. Do you take data quality information into account when determining a safe minimum under keel clearance?

☐ Yes please state how: _____

_____

☐ No please state why: _____

_____

47. Do you feel that you have received sufficient training on data quality?

☐ Yes
☐ No

48. Would you like to receive further training/information on data quality?

☐ Yes
☐ No

49. If you currently use data quality indicators do you think the existing methods (Source diagram, CATZOC etc) are adequate?

☐ Yes
☐ No

So far you have answered questions that relate to the quality of charted bathymetric (depth) data. The following questions relate to the quality of other charted data.

50. Would you find it useful to have quality information relating to non bathymetric data? This could be about the source and date of certain information, for example: "*… navigation light description recorded on the 16th January 2003, by Trinity House Vessel Galatea. Last verified on 18th June 2005. Record complete.*"

☐ Yes
☐ No Jump to question 56

51. For which types of non bathymetric charted data would you find it useful to have quality information available?

☐ Harbour information
☐ Sailing directions
☐ Regulations/restrictions
☐ Navigational aids
☐ Hazards
☐ Other, please state: _____

52. What information would you like to be available? You may tick more than one:

- ☐ Date/age
- ☐ Completeness of the records
- ☐ Individual/organisation that collected the data
- ☐ Other please state: _____

53. Would you like old/out of date information to be automatically flagged?

- ☐ Yes
- ☐ No

What would you consider to be old/out of date?

- ☐ 1 year since it was reviewed
- ☐ 5 years since it was reviewed
- ☐ 10 years since it was reviewed
- ☐ 20 years since it was reviewed
- ☐ 50 years since it was reviewed
- ☐ Other, please state: _____

54. Would you like incomplete date information to be automatically flagged?

- ☐ Yes
- ☐ No

55. How would you like to see the completeness of data represented? Please state: _____

_____

Section 3, Future Developments

56. All existing data quality indicators relate to charted parameters. Would you like any new system (ECDIS) to take into account your own vessel parameters; for example, draught, length, beam, under-keel clearance? (such parameters would need to be entered into your ECDIS).

☐ Yes Please state why: _____

_____

☐ No

57. If you answered No to question 56, please say why and, if you can, explain how you would like information about the quality of charted data to be presented?

Please state: _____

_____

58. In addition to the existing methods of representing data quality several alternatives have been suggested. Please consider the list below and indicate which concept you prefer and why.

☐ Categories for the zone of confidence (CATZOC), as presently in use

☐ A yes/no indicator highlighting whether the information meets the minimum standards for safe navigation, based on survey age, accuracy, and seabed mobility

☐ A no-go-area overlay, based on survey age, accuracy, and seabed mobility, and vessel parameters

☐ A dynamic colour overlay (for example; red = no-go, amber = beware, green = safe-to-go) on ENCs based on the ship parameters, charted depth, estimated uncertainty of the charted depth, and so on.

☐ Separate indicators for survey age, accuracy, and seabed mobility

☐ Other, please state: _____

_____

Please explain the reason for your choice**:** _____

_____

59. Please consider the following visualisation methods and indicate which concept you would like to see utilised in conjunction with your answer from Question 58

☐ A permanent data quality symbol

☐ A permanent data quality colour overlay

☐ A permanent quality figure

☐ A permanent short description in words

☐ An on-demand (via toggle function) data quality symbol as a sparse grid

☐ An on-demand (via toggle function) data quality colour overlay

☐ An on-demand (via toggle function) quality figure

☐ An on-demand (via toggle function) short description in words

☐ Other, please state:_____

_____

Please explain the reason for your choice: _____

_____

_____

Further Comments

If you have any further comments that you feel would be useful to the work of the IHO Data Quality Working Group, please use the space below or attach other sheets.

_____

_____

_____

_____

_____

Please send completed questionnaires *before 27 May 2011* to:

Mr Sam Harper
Bathymetric Data Centre
United Kingdom Hydrographic Office
Admiralty Way
Taunton
Somerset TA1 2DN
England
Or email to: samuel.harper@ukho.gov.uk

Contact Details (Optional)

Your answers to this questionnaire will be anonymous.

However, you may wish to give permission for the IHO Data Quality Working Group to contact you regarding our study. If so, please fill out the form below. Your details will not be passed to any third party and will be discarded once the study has finished.

Name: _____

Email: _____

Address: _____

_____

_____

Contact telephone number: _____

_____