

34th North Sea Hydrographic Commission Meeting (NSHC) 27 – 28 April, Online VTC

Report of the Resurvey Working Group (RWG)

Submitted by: Phil Payne – RWG Chairman

Meetings Held During the Reporting Period

1. RWG8, 18th – 19th September 2018, Paris FR. Chaired by UK (Payne).

The meeting was attended by the following member states: BE (Verstraeten), DE (Vahrenkamp), DK (Hansen), FR (Lamarre, Garlan, Le Jeune, Schmitt), NL (Knoop), UK (Parker, Doddrell (Secretary))
Apologies were received from: DK (Vedel) and SE (Olsson)
In addition, the following observer was present: UK MCA (Kinnear)

2. RWG9, 7th to 8th November 2019, Aalborg DK. Chaired by UK (Payne).

The meeting was attended by the following member states: BE (Verstraeten), DE (Vahrenkamp), DK (Hansen), NL (Loog), SE (Olsson), UK (Parker, Doddrell (Secretary))
In addition, the following observer was present: UK MCA (Colenutt)
Apologies were received from: DK (Vedel), FR (Lamarre, Le Gleau)

3. An intermediate Skype meeting was held on 21st January 2020 to confirm actions and finalise content of CSB paper prior to NSHC34. Chaired by UK (Payne).

The meeting was attended by the following member states: BE (Verstraeten), DE (Vahrenkamp), DK (Hansen, Vedel), NL (Loog), SE (Olsson), UK (Parker, Doddrell (Secretary))
In addition, the following observer was present: UK MCA (Colenutt)
Apologies were received from: FR (Lamarre, Le Gleau)

4. RWG10 will be hosted by NL 15th – 16th September 2020.

Progress on NSHC Action Items

No/year Agenda item	Subject	Action	When	Status
2018	Crowd Sourced Bathymetry	To produce a paper titled 'To investigate how CSB can be used to support survey / resurvey activity in the North Sea region'	NSHC 34	COMPLETE Provided for discussion at NSHC 34.
6/2014 (Concl.122)	Risk Assessment	Undertake a risk assessment analysis for the North Sea area, including the Dover Strait.		OPEN Initial polygons have been provided to DE. RWG10 will build on initial picture.
1/2012 (Concl.97)	Resurvey Working Group	[Updated text after 32 nd NSHC] Incorporate a standing agenda item to NSHC Conference dealing with airborne and satellite bathymetry. Members are encouraged to participate and present input papers and in general to contribute to the		COMPLETE This is now a standing agenda item along with autonomous vehicle use and crowd sourced bathymetry.

		work with airborne and satellite bathymetry.		
3/2010 (Concl.89)	NSHC re-survey WG	NSHC decided to task the NSHC RWG: -to complete the overview where applicable; To publish the scheme on the internet; To propose a way forward to harmonize the presentations of the resurvey schemes and of C55; To include conclusion 28 "Resurveying of critical areas" in their work program.	law. NSHC RWG action list	COMPLETE - Overview complete - Scheme is on NSHC.pro - Decisions on formats agreed to allow harmonisation. - Current C55 schemes given below with no further work planned until outcome of C55 Review Group.

Risk Assessment (NSHC Conclusion 122)

5. During the 6th WG, creating a North Sea Risk Assessment was discounted as each MS had its own strategy based on the physics of its part of the North Sea, the particularities of usage and its own capacities. It was therefore decided to limit any work to the Dover Strait area and to commence by an exchange of national strategies. Plans are now exchanged at each RWG.
6. During the 7th WG a common exchange format was agreed for exchange of areas.
7. During the 8th WG the new chair reinvigorated the discussion and it was agreed that the provision of CATZOC polygons and Resurvey Areas in a common format would provide a common risk picture to allow easier cross state discussions and further discussion of resurvey effort.
8. At the 9th WG DE presented the initial outcomes of provided data. The portrayal of the varied information was not ideal, and several amends were agreed.
9. At the interim meeting held in Jan 2020 further refinements were made to the merging and portrayal of MS polygons. DE will incorporate these changes prior to RWG10.

C55 Proposal (NSHC Conclusion 89)

10. This item has been overtaken by the paper submitted by FR and UK to CBSC16 on C-55 and the subsequent setting up of a C55 review group, however for completeness the following lists the general procedures completed by member states:
 - BE – More basic elements of survey quality such as positioning etc
 - DK - Based on depth, age of survey and vessel traffic.
 - FR – Utilise CATZOCs iaw submitted paper CBSC16-08.3B.
 - NL – Based on adherence to current survey scheme (up to date/overdue)
 - SE – Currently use long term resurvey plan but looking to implement and evaluate the use of CATZOCs.
 - UK – utilise CATZOCs, S44 survey order and source data diagrams but moving towards use of CATZOC solely.

On completion of the review, the RWG will look to promote adherence to the recommendations. It should be noted that the work done under Conclusion 122 is based on CATZOC polygons, which are the proposed method of C55 completion being considered by the Review Group.

Applicability of Alternative Survey Techniques (NSHC Conclusion 97 refers)

11. RWG8 & RWG9 both had wide-ranging discussions on lidar, SDB, CSB and autonomous vehicles. Outcomes and decisions for each methodology are noted below:

Lidar:

- SHOM is the main user of lidar in the area, however UK is looking at conducting trials. Both looking at the land/sea interface as an area where little data currently exists.
- UK, in its international projects has now started collecting data at a density equivalent to that required for an acoustic IHO S44 1a survey, however object detection has not been achieved to allow such a classification to given.

SDB:

- Generally agreed that low accuracy along with poor conditions in the North Sea area, make this technique unlikely to ever contribute much to the resurvey effort.
- Number of other imagery techniques being used for shoreline plotting and change detection.

CSB:

- In-depth discussions held on current state of CSB in each state which are all presented along with issues and opportunities in the accompanying CSB paper.

Autonomous Surveying:

- Several small projects have been undertaken both with USVs and drones.
- While conclusions at this stage were limited it was agreed to provide details of projects to the group as a knowledge base for future work.
- UK undertook to provide opportunities to witness current autonomous survey work.
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Seabed Mobility

12. A great deal of the work conducted by the group is influenced by seabed mobility, including the risk assessment. It was agreed to add this as a separate agenda item to share the outcomes of several ongoing studies with the potential of producing a combined seabed mobility layer for the risk assessment.

Policies on Surveying in and around Offshore Wind Farms

13. Policies on the ever-increasing number of Offshore Windfarms were discussed at RWG9 as the development of offshore structures can affect both environmental effects (currents and seabed migration) as well as shipping transits. These affects potentially cross-national boundaries and therefore need to be considered during resurvey work.
14. FR currently carries out preliminary studies funded by the Ministry of the Environment. All other member states pass this requirement onto the contractor.
15. NL and FR have both commissioned studies to analyse the effect of windfarms on the seabed morphology.
16. Where single contacts exist, details have been shared among the group to allow for discussions during the planning phase of new developments, and a standing agenda item has been added to the group to ensure this important area is covered.
17. Subsequent to RWG9, contact has been established with the [North Sea Offshore Wind Energy Forum](#) and the two groups will look to ensure commonality of purpose regarding resurvey activity around windfarms.

Remote Working

18. The interim Skype meeting held to both confirm actions and finalise content of CSB paper prior to NSHC34 as well as assessing the potential to run future meetings remotely and reduce the environmental impact of the working group. While it was considered a success in running through outstanding actions and updating the group on the latest happenings, it was agreed that the current technology/connectivity made it unsuitable for the main work of the group at this point. Future interim meetings will continue to be run remotely with the main annual meetings being held on a rotational basis as currently happens.
19. The NSHC is invited to:
 - a. **Note** this report.
 - b. **Note** the findings of the paper on CSB and promote multi-national approach where suitable
 - c. **Endorse** the WG plan to limit the risk assessment to a harmonisation and sharing of CATZOC and survey polygons to allow further cross boundary harmonisation of resurvey plans.
 - d. **Endorse** the ToRs and Standing Agenda.
 - e. **Note** a cordial invite to members of the NSHC not already part of the RWG to attend future meetings.

Annexes:

- A NSHC Re-survey Working Group – Decisions Lists
- B NSHC Re-survey Working Group – Actions List
- C NSHC Re-survey Working Group – ToRs
- D NSHC Re-survey Working Group – Standing Agenda

Annex A NSHC Re-survey Working Group – Decisions Lists

Number	Decision item	Responsible	Comments
1-8 th RWG	Action 10-8 th RWG will be used to determine re-survey areas allowing the RWG to focus their work but agreed other areas not classed as re-survey will not be ignored	Chair	
2-8 th RWG	25-years to be the cut-off for re-survey classifications for area files	Chair	
3-8 th RWG	Each MS to provide CATZOC and interval SHP files from Actions 9 and 10 along with small discussion piece of what has been considered when producing their resurvey scheme. This will be reviewed at the 9 th RWG.	MS	
4-8 th RWG	RWG are content with the IHO CSB paper but highlight legal issues regarding the non-use of data. All activity remains at a national level. There is potential for change analysis, but more information is required on how to obtain trusted sources		RWG CSB Paper provides full details of RWG review of the current state of CSB.
5-8 th RWG	Autonomous Surveying to remain as an agenda item	Chair	
1-9 th RWG	Update survey interval map as heat map rather than separate colours. Darker colours will be areas surveyed most frequently	DE	Heat map is ready but cannot be uploaded yet due to technical issues with the website, DE to send to Chair via email for review prior to upload.
2-9 th RWG	Offshore wind farm policies and how its impacting survey plans will be a standing agenda item.	Chair	Chair has started report and aims to send a new standing agenda to NSHC for their approval.
1-9 th RWG	Skype meeting is suitable for interim meetings but not the main event. Face-to-face meetings to continue with the addition of interim meetings halfway between or 1-2 months before NAHC as appropriate to keep on top of action items.	Chair	

Annex B NSHC Re-survey Working Group – Actions List

Number	Action item	Responsible	Comments	Due
1-8 th RWG	Open invite for all countries in the NSHC to attend the RWG	Chair	Completed via chairs report	RWG9
2-8 th RWG	Number of RWG to be included next to action numbers	Secretary	Completed	RWG9
3-8 th RWG	Distribute CUBE paper “what depth value to use for gridding in which situation”	UK	Completed 15/05/2019	RWG9
4-8 th RWG	Provide Technical Hydrographic Instructions for upload to website	MS	UK Completed 15/05/2019 FR - New 2019-2023 strategy provided 09/09/2019 (document and polygons) SE and NL can provide but wouldn't be in English. Amend action wording and carry over as new action. (1-9 th)	As available
5-8 th RWG	Details of NSHC RWG internal website to be shared with RWG members	Chair	Completed 23/11/2018	RWG9
6-8 th RWG	Check links to INSPIRE portals are up to date on IHO website	MS	Links to Action 3-7 th RWG UK Completed 15/05/2019 FR - Request to Sec OHI to complete the list of FR portals on the dedicated IHO page (https://www.iho.int/gis/msdi.gis.html) Issues with accessing IHO website – Action 2-9 th RWG	RWG9
7-8 th RWG	Insert links to IHO website INSPIRE portals onto NSHC RWG website	DE	Links to Action 3-7 th RWG As above - Issues with accessing IHO website – Action 2-9 th RWG	RWG9
8-8 th RWG	Forward MCA details for upload to NSHC RWG contacts page	UK	Links to Action 13-7 th RWG Completed 15/05/2019 FR – Updated contacts details provided 09/09/2019	RWG9

9-8 th RWG	Provide CATZOCs within the S23 area defined at the 7 th RWG for uploaded to restricted area of website	MS, DE	UK Completed 16/05/2019 FR Completed 09/09/2019 UK needs to supply CATZOC C and below polygons/some MS still missing – Action 3-9 th RWG	31/10/2018
10-8 th RWG	Provide SHP files for re-survey areas with 'interval' attribute to DE	MS	Action 4-9 th RWG	RWG9
11-8 th RWG	Upload re-survey areas to restricted area of the website and classify into 0-1 years/as required, 1-6 years, 6-12 years, 12-25 years, >25-years	DE	Completed	RWG9
12-8 th RWG	Alternate Surveying methods to be added to TOR	Chair	Completed 09/04/2019	RWG9
13-8 th RWG	Amend spelling of Dover Strait in TOR (Second Paragraph)	Chair	Completed 09/04/2019	RWG9
14-8 th RWG	Update geographical area in TOR to match S23 area agreed at 7 th RWG	Chair	Completed 09/04/2019	RWG9
15-8 th RWG	Add in comment to TOR to state that the RWG pays particular interest to re-survey areas and areas of mutual interest	Chair	Completed 09/04/2019	RWG9
16-8 th RWG	Add comment to TOR to state that re-survey areas exclude ports	Chair	Completed 09/04/2019	RWG9
17-8 th RWG	Remove ' <i>Additionally, the NSHC Resurvey Working Group is tasked for the Dover Strait/Pas de Calais</i> ' from the TOR	Chair	Completed 09/04/2019	RWG9
18-8 th RWG	Amend TOR 1.13 to <i>share up-to-date Technical Hydrographic Instructions between Member States and to make them available on the NSHC website</i>	Chair	Completed 09/04/2019 Amend based on new wording (Action 5-9 th RWG)	RWG9
19-8 th RWG	Remove 2.7, 2.8 and 2.9 from the Rules of Procedure	Chair	Completed 09/04/2019	RWG9
20-8 th RWG	Provide a small discussion piece with Action 10 on what has been considered when producing the re-survey scheme	MS	Completed – to be discussed in meetings	RWG9
21-8 th RWG	FCO to approve surveying in UK waters and FR-UK to investigate agreements for surveying in each other's waters	UK, FR	To be agreed for each survey - Action Closed	31/12/2018
22-8 th RWG	Supply polygons of survey area and description of study to UK to enable Action 21 to take place	FR	See 21-8 th – Action Closed	31/12/2018
23-8 th RWG	Produce short paper on CSB within the RWG and pass around RWG ahead of sharing with NSHC	UK	Completed	RWG9

24-8 th RWG	Consider CSB options and share via email as found	MS	Completed	As available
25-8 th RWG	Supply SDB specifications & upload to website	FR, DE	Awaiting upload	RWG9
26-8 th RWG	Consider and share SDB options with the RWG	MS	Completed	As available
27-8 th RWG	Provide Lidar specifications once completed	UK	Completed 31/05/2019	RWG9
28-8 th RWG	Provide Lidar specifications & upload to website	FR, DE	Awaiting upload	RWG9
29-8 th RWG	Report on any autonomous surveying studies	MS	Completed	RWG9
30-8 th RWG	Denmark to host 9 th RWG	DK	Completed	RWG9
31-8 th RWG	The Netherlands to host 10 th RWG	NL	Date Supplied 15/09/2020	2020
1-9 th RWG	Supply Survey Specifications and Technical Instructions for upload to the website	MS	On-going. Folder to be added on internal site	As available
2-9 th RWG	Chair to check with IHO – website for links to INSPIRE portals. All to check links once confirmed	Chair/MS	Actions 7 and 8 from 8 th RWG carried over To be completed by 10 th RWG. New IHO website – everything has moved!	RWG10
3-9 th RWG	UK to supply CATZOC C and below polygons. Any outstanding polygons to be forwarded by all MS	UK/MS	UK, BE, NL –Complete Map much more complete	20/12/2019
4-9 th RWG	Supply any outstanding survey interval polygons for upload to website	MS	Completed, to be reviewed when re-survey map is issued	20/12/2019
5-9 th RWG	Amend TOR 1.13 to <i>share up-to-date Survey Specifications and Technical Instructions between Member States and to make them available on the NSHC website</i>	Secretary	Completed 26/09/2019	RWG10
6-9 th RWG	DE to create folders on internal website (e.g. for technical instructions)	DE	In progress, website currently down	31/01/2020
7-9 th RWG	DE to upload all information provided by FR prior to this meeting for all to review	DE	In progress, website currently down	31/01/2020

8-9 th RWG	SE to outline the issue over how we can better represent CATZOC A1 for special users for review by RWG and Chair for any further action and discussion as appropriate.	SE	Completed: CATZOC in Sweden is being updated all over. Areas greater than CATZOC A1 will be depicted using a better sounding accuracy. New edition of S44 has a new Exclusive category that is better than Special Order.	20/12/2019
9-9 th RWG	NL to inform the group about the Smart Sea Project	NL	UK sent a representative to Smart Sea Meeting, will debrief at next meeting, no immediate action required. If anybody wants a debrief NL content to present at next meeting. NL to also provide details on other projects such as Ping to Chart, which includes research on chart change compared to requirements for re-survey	20/12/2019
10-9 th RWG	Put into chairs report that the RWG view there is a position to work together on seabed mobility. We now require technical input. Mobility to be added as an agenda item at next meeting.	Chair	Completed, Chair to add to report	20/12/2019
11-9 th RWG	All MS to provide/update their polygons for interval rather than surveyed and planned. In line with intervals agreed last year. DE to update map as heat map rather than separate colours.	MS	Completed, to be reviewed when re-survey map is issued	MS – 20/12/2019 DE – 31/01/2020
12-9 th RWG	Add a standing agenda item for offshore wind farm policies for discussion each year and how its impacting survey plans	Chair	Completed, Chair to add to report and new standing agenda	RWG10
13-9 th RWG	Share contact details for licencing for wind farms for upload to website	MS	UK completed 12/12/2019 UK details shared within UK parties but still need to supply for website Other MS to also supply their details NL and DK – complicated here	RWG10
14-9 th RWG	Incorporate discussions, new sections and agreements into CSB Paper	Chair	November 2019: In progress, on track for end of December. Completed January 2020. See Action 3-9 th a RWG	20/12/2019
15-9 th RWG	MS to provide studies/experiences of CSB for inclusion in paper	MS	On-going, DE will provide paper to Chair (Baltic and North Sea)	20/12/2019

16-9 th RWG	MS to provide studies/experiences of SDB and airborne work for upload to website	MS	Nothing received to-date NL: SDB survey awaiting completion, details will then be forwarded DE: to create folder for papers on website	20/12/2019
17-9 th RWG	UK (MCA) to provide details/potential visit on autonomous survey work	UK	Not yet completed and fluid. Will inform if opportunity arises.	RWG10
18-9 th RWG	Plan for next meeting in Netherlands 2020 but assess other options to potentially have a remote meeting (All MS to provide details of systems used). Trial prior to commission meeting. If remote in 2020 Netherlands will host in 2021	Chair & MS	Interim Skype meeting held 21 st January 2020. Face-to-face allows for more fluid discussion & agenda content is large enough to justify face-to-face meetings. An interim Skype meeting to chase actions is worthwhile. NL to provide dates for late 2020.	Early February

Annex C NSHC Re-survey Working Group – ToRs

Scope

With reference to NSHC conclusion 28, and actions 3/2010, 1/2012 and 8/2016, and considering the need to monitor the implementation of the North Sea Hydrographic Commission's Member States re-survey plans, the North Sea Hydrographic Commission has established the **NSHC Resurvey Working Group (RWG)** with the following terms of Reference and Rules of Procedure.

The geographic scope of the RWG is the entire area of the North Sea Hydrographic Commission. The RWG should give due consideration to the Dover Strait / Pas-de-Calais, defined by the areas of the Traffic Separation Scheme (TSS) "North Hinder South" and adjoining TSS "In the Strait of Dover and Adjacent Waters" as adopted by the International Maritime Organization (IMO) and published in the IMO "Ship's Routeing". The RWG will give special attention to the routes selected for deep draught vessels passing through the Dover Strait/Pas-de-Calais, published in the IMO "Ship's Routeing".

1. Terms of Reference

The NSHC Resurvey Working Group is tasked for the entire [S23 area \(North Sea, Skagerrak, Channel Islands and Lands' End to Brest\)](#) of the North Sea Hydrographic Commission [excluding ports. The NSHC Resurvey Working Group pays particular interest to re-survey areas and areas of mutual interest.](#)

- 1.1 To maintain and develop the North Sea Resurvey Scheme and present it on the internet.
- 1.2 To maintain a resurvey metadata database where applicable.
- 1.3 To follow up the implementation of the Resurvey Scheme.
- 1.4 To identify possible problems and propose solutions or workarounds to them.
- 1.5 To specify and propose updates and changes to the Resurvey Scheme.
- 1.6 To liaise with national Maritime Administrations and other relevant organisations and groups regarding the North Sea Resurvey Scheme.
- 1.7 To monitor and report on the development of aerial and satellite bathymetry.
- 1.8 To report to the NSHC at the conferences, and whenever found necessary.

~~Additionally, the NSHC Resurvey Working Group is tasked for the Dover Strait/Pas de Calais:~~

- 1.9 To promote that the responsibility for surveying is shared between the Member States.
- 1.10 To note the Member States reports on survey activities in that area, and comment on those survey activities.
- 1.11 To monitor that Member States prioritize the deployment of hydrographic survey capacity to the routes selected for deep draught vessels, and report concerns, if any, to the NSHC.
- 1.12 To share data, information and knowledge on dynamic behaviour of the sea floor.
- 1.13 To ~~acquire up to date Technical Hydrographic Instructions of each Member State.~~ [share up-to-date Survey Specifications and Technical Hydrographic Instructions between Member States and to make them available on the NSHC website.](#)
- 1.14 [To consider Alternate Surveying Methods](#)

2. Rules of Procedure

- 2.1 Each member state of NSHC shall nominate a representative to the RWG, if relevant to the scope and terms of reference. The representatives should be experts in the field of hydrographic survey planning.
- 2.2 The RWG shall work mainly by correspondence, preferably by e-mail.
- 2.3 Meetings shall be arranged when found feasible and at least once between two consecutive NSHC conferences. Hosting of the meetings takes turn between the members of the RWG.
- 2.4 The RWG has a Chair and possibly a Vice-Chair.
- 2.5 The Chair and Vice-Chair shall be members of the RWG and are nominated by the NSHC.
- 2.5 With the Chair's approval non-members may attend the MWG meetings.
- 2.6 Decisions should be made by consensus.
- ~~2.7 The Technical Hydrographic Instructions (THI) for the Dover Strait/Pas de Calais serve to provide insight into the national hydrographic survey policy. It consists of at least a description of the types of resources deployed for each survey, and an approach to resurveying.~~
- ~~2.8. The THI of each Member State is reviewed during each meeting of the RWG. Each Member State will consider the comments made by the other Member States. Comments should aim to balance each other's survey policies.~~
- ~~2.9. The THI will be publicly available on the internet.~~

Annex D NSHC Re-survey Working Group – Standing Agenda**Standing Agenda for the NSHC Resurvey Working Group**

Frequency: Biannual as a minimum

Venue: Rotational

Documents: NSHC-RWG-1.1: Attendance List

NSHC-RWG-1.2: TORs

NSHC-RWG-1.3: Minutes NSHC-RWG8

NSHC-RWG-1.4: Agenda

NSHC Draft minutes

NSHC-A.4-Action list

Agenda

1. Welcome Refreshments and Opening Formalities
 - Introductions of attendants
 - Adoption of the minutes of the previous meeting
 - Adoption of the agenda
 - Status of action items
 - TORs
2. Updates on NSHC and EU developments since previous meeting
3. Updates on survey plans and prioritisation and other national developments
4. Development of harmonised risk map
5. Seabed Mobility
6. Offshore wind farm policies and survey impact
7. Applicability of Alternative Survey Techniques
 - Crowdsourced Bathymetry
 - Autonomous Surveying (ASV)
 - Lidar
8. Any Other Business
9. Future Direction of the Working Group
10. Closing Formalities and Farewell
 - Adoption of new list of action items
 - Next Meeting and discuss UKHO chair and rep for next meeting