

4th Meeting of the IHO Hydrographic Surveys Working Group (HSWG4)
(Virtual Room – Teams Meeting)
27th February to 2nd March 2023

(Paragraph numbering is the same as the Agenda Item numbering and does not necessarily reflect the order in which matters were discussed.)

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Minutes Note:

On this document,

References are used, according to the following:

- Doc HSWG4-xx, corresponds to a document in annex of the minutes.
- Ref HSWG4-xx, corresponds to a document available on the HSWG webpage of IHO website.

1. Welcome and opening remarks from Chair Group

The Chair started by welcoming all the members to the fourth meeting of HSWG. A brief talk on the status of HSWG and IHO and mentioned the major focus on the work of the Project Teams on the C-13 (Manual of Hydrography) and on Satellite Derived Bathymetry Best Practices Guide. The Chair followed by introducing the Chairing team, with Megan Greenaway and Carlos Marques greeting all.

2. Welcome and opening remarks from IHO

Mr Abri Kampfer, IHO Director, addressed all the participants, greeting all members of the HSWG.

Mr Sam Harper, IHO Assistant Director, introduced himself, greeting all members of the HSWG.

3. Very short introduction from all participants

(Doc HSWG4 – List of Participants)

The Chair invited all members to briefly introduce themselves, starting by Member states in alphabetical order and then Industry.

Johan Verstraeten from Vlaamse Hydrografie - Belgium, Nickolas Roscher from Diretoria de Hidrografia e Navegação (DHN) - Brasil, Christian Comtois and Andrew Leyzach from Canadian Hydrographic Service (CHS) - Canada, Chen liang and Lilei Lv from Maritime Safety Administration (MSA) - China, Giuseppe Masetti and Juho Salmiya from Danish Geodata Agency - Denmark, Mohamed Ashraf Koura from Egypt, Seppo Mäkinen and Jani Pötrönen from the Finnish Transport and Communication Agency Traficom / Hydrographic Office – Finland, Jeremy Rossetto. from Service Hydrographique et Océanographique de la Marine (SHOM) – France, Jean Guy Nistad from Bundesamt für Seeschifffahrt und Hydrographie (BSH) – Germany, Vishal Sharma from Indian National Hydrographic Office (INHO) – India, Ilenia Batzu and Claudio Carporale from Istituto Idrografico della Marina – Italy, Masanao Sumiyoshi from Japan Coast Guard Hydrographic and Oceanographic Department (JHOD) – Japan, Adrián Montúfar from Dirección General Adjunta de Oceanografía, Hidrografía y Meteorología (DIGAOHM) de Marina Armada de México – Mexico, Arne Edmund Ofstad from Norwegian Mapping Authority Hydrographic Service – Norway, Valentina Pavel from the Romanian Maritime Hydrographic Directorate – Romania, Cdr José Luis Sánchez de Lamadrid Jaques from Instituto Hidrográfico de la Marina (IHM) – Spain, Ian Davies, from United Kingdom Hydrographic Office (UKHO) – United Kingdom, Doug Roush and Matt Carter from National Geospatial Agency (NGA) – United States of America, Steven Posey from U.S. Navy - United States of America, Jose Arias from IIC Technologies – USA, Véronique Jégat from Fugro, Jason Creech from David Evans and Associates – USA, Jose Cordero from Kongsberg Maritime – Norway, Knut Hartmann from EOMAP – Germany, Iain Slade from Fugro/International Federation of Hydrographic Societies (IFHS) – UK,

Marco Filippone from Fugro – Germany, Ashish Srinivasan from Abu Dhabi National Oil Company (ADNOC) – UAE, David Vincentelli from Exail – France, Poerbandono from Institut Teknologi Bandung (ITB) – Indonesia, Sean Cullen from Geological Survey of Ireland – Ireland, Sebastien Tauvry from ECA robotics – USA all presented themselves.

4. Procedures of the Meeting

The Chair explained all meeting procedures. Also, the voting procedure was explained, in case a specific formal vote may be required, however, in most cases, an informal vote will preferably be used. It was also reminded that HSWG documentation is online, and documents for the meeting were sent one week prior to the meeting. Microsoft Teams is still the online tool being used by the group, although other tools are being considered.

5. Approval of agenda

(Doc HSWG4 – HSWG4 Agenda)

The agenda was available to all members in advance, with the last version sent by email in the previous week. Any necessary changes were requested at this point. Having had no changes presented, the agenda was approved by all members with no changes or additions.

The HSWG4 agenda is available on the IHO/HSWG website.

HSWG4 Decision 01: HSWG4 Agenda is approved with no changes or additions.

6. Review of TORs and ROP

(Ref HSWG4 – TOR and ROP)

Terms of Reference with Rules of Procedure are available to all on the IHO/HSWG website and were presented for any comments. A suggestion was made to introduce the new publication for SDB reference (here called B13) in the TORs. Sam Harper mentioned that the request to change the TORs can be made to the HSSC when the B13 publication is presented for approval.

No additional comments were noted.

The TOR and ROP is available on the IHO/HSWG website.

HSWG4 Decision 02: HSWG TOR are approved with no changes.

HSWG4 Decision 03: HSWG ROP are approved with no changes.

7. Approval of Minutes of HSWG2

(Ref HSWG4 – Minutes from HSWG3)

The Secretary described the minutes from HSWG3 which are available on the IHO/HSWG website. All minor changes were previously mentioned by email and then corrected.

The Minutes were approved by all.

The minutes are available on the IHO/HSWG website.

HSWG4 Decision 04: Minutes of HSWG3 are approved with no further changes.

8. Review of actions from HSWG3

(Ref HSWG4 – HSWG3 Actions List status)

The Secretary presented the Actions List for all members, reviewing the evolution of the work done and the current status of each action. All actions from last meetings were reviewed and updated accordingly, with the following notes:

HSWG4 Action 01: Secretary to collect events information (dates and locations) to post in the HSWG Calendar (IHO/HSWG website).

9. Key objectives for HSWG3

The Chair summarised the intentions for HSWG4, mentioning the S-44 update and summary of suggestions for improvement. Also the Tides water levels and currents working group collaboration for S-44. Another topic to be debated is the Promotion of S-44 in line with the IHO strategic objectives. One topic to be discussed is also the liaison with other working groups, Finally, the aim is to make progress with C-13 update and finalizing the SDB best practice guide publication to be submitted in HSSC15.

10. HSWG Work Plan

(Ref HSWG4 – Work plan)

The Vice-Chair started by explaining the Work Plan is available on the website and in every meeting the work plan is updated accordingly.

The Work Plan then was presented, and a brief explanation on major activities was given emphasising the work to be done on each PT.

11. S-44

11.1 Current Status of S-44 and Maintenance Process

(Ref HSWG4 – S-44 maintenance plan)

The Vice Chair presented the status of S-44 and the maintenance process for S-44. Megan explained the background on S-44 maintenance and the full process for S-44 updates. The current status on S-44 6.1 edition was shown, with this edition having been approved by Member States and published late in October 2022. Any translations can use the detailed Changes List to focus the translation only on the changes made, rather than the whole document.

The Maintenance plan is defined as a regular update every 2 years, with HSWG preparing the review throughout the first year and half and approving all changes by February 2024 in order to have the new update ready for presentation on the 2nd year for the HSSC meeting, normally in May.

HSWG4 Action 02: Jason Creech to check S-102 raster table for possible overlap with S-44 matrix..

11.2 S-44 Feedback Tracking

The Vice Chair specified that the tracking changes spreadsheet was available on the MS Teams, presenting its layout.

11.3 Additional feedback on S-44 from operational experience

The Chair asked for any feedback on S-44 new edition implementation. Jani Pötrönen mentioned that the bathymetric coverage term could be opened even in a bit more detail than it is now. Jason Creech stated that there might be an overlap between the S-44 matrix and the new S-102 raster attribute table.

HSWG4 Action 03: Jani Pötrönen to update the S-44 feedback tracking spreadsheet with the topic of the term bathymetric coverage issue.

11.4 Presentation from contributors on key S44 issues raised (HSWG Members)

(Ref HSWG4 – Hydrographic Uncertainty Subgroup)

11.5 Hydrographic Uncertainty Subgroup (Germany)

Jean-Guy Nistad presented about the hydrographic uncertainty subgroup, to discuss how the uncertainty is dealt with in S-44. The focus is to try to formalize the concept of measurement uncertainty as applied to the hydrographic survey context. The subgroup is composed of eight members. The sub-group has discussed the topic, giving some recommendations. The sub-group agrees that measurement uncertainty should be described in detail in a single source and most likely C-13. Also S-44 should try to stay aligned with other terms and definitions used in metrology. Jean-Guy Nistad explained the minutes from the sub-group meeting are available and opened the group discussions to all other members that want to contribute, mentioning also that Dr. Brian Calder (USA) is also interested in participating.

11.6 Promotion of S-44 and Links to IHO Strategic Objective 2.2

A question was raised by Poerbandono about the uncertainties being used for construction purposes, however a point was made as the matrix may serve for these purposes. David Vincentilli raised a similar question regarding the cable industry and a question was made about the possibility of S-44 looking also at the needs of this industry. It was then discussed that industry has their own requirements, and it would probably be good to understand how it will fit the safety of navigation, S-44 standards so that the data can be used for that purpose also.

Sam Harper mentioned that IHO strategic objectives perfectly align with broadening the scope of S-44 for the use of all communities.

11.7 Education on S-44

The chair asked for information from HSWG members on any promotion examples that may have happened already:

Sean Cullen (IRL) mentioned that in Ireland there is a Masters program with some information on seabed mapping and the new matrix is already being incorporated in the presentation material.

The Chair pointed an action to all to coordinate with educational establishments on getting education material. And Vice-Chair suggested that this material could be published on HSWG website. Sam Harper reminded that there is a e-learning portal being prepared that could also serve the purpose.

HSWG4 Action 04: All to coordinate with education establishments to see what raising awareness of S-44 at the start of people's career's, may be achievable.

11.8 Support for further translation of S-44 for onward IHO publication

The Vice Chair reminded the group that updated versions may be translated, and the changes list will be a helpful tool to make each version less onerous to translate. It was noted that when a translated version is available, it should be supplied to IHO to publish on the website. Nickolas Roscher mentioned Portuguese translation will be ready in a few months.

12. Other HSWG Matters

The Chair introduced the Liaison subject to all members outlining the groups at which HSWG is linked to.

12.1 Liaison with other HSSC Working Groups

12.1.1 DQWG

The Chair mentioned that the chairing team has met with DQWG some months prior to this meeting and presented HSWG point of view (from HSWG3) about CATZOC and S-44. It was mentioned that the proposed mapping was seen as a good point, however more care should be taken, and a flow chart

should be adopted as after the survey data as the CATZOC may decay with the charting process. Several examples were shown, from UK, USA and Portugal.

12.1.2 HDWG

Doug Roush mentioned there is no information to add since the last meeting, it was exposed at HDWG that uncertainty should be defined at the registry, and one should define the standard for it.

There is the need to find a new liaison with this group, as Doug Roush is retiring.

HSWG4 Action 05: Chair team to nominate new HDWG liaison.

12.1.3 TWCWG

The Chair explained that the TWCWG will be meeting and will be presenting a plan to create uncertainty standards for Tides and Currents measurements that can be incorporated within S-44.

There is the need to find a new liaison with this group, as Doug Roush is retiring.

HSWG4 Action 06: Chair team to nominate new TWCWG liaison.

12.1.4 S-100WG

(Ref HSWG4 – S-100 vs S44 (Megan Greenaway))

Hans Öias (SWE) presented on the liaison with S-100WG, explaining that S102 met in December in Monaco, with several changes and a more finalised products are now available. A hot topic for discussion in S-100 is the definition of a grid.

The Vice Chair showed several inconsistencies, as errors and accuracy or uncertainties terms, or even the source of data used for compilation, Cubic feature versus cubic meter, etc... There is now a need for clarification across the definitions on S-100 (S-101, S-102, ...) and S-44 terms. The Chair suggested the use of a group to work with S-100 on the common use of terminology. Hans Öias offered to lead, and Carlos Marques also volunteered.

HSWG4 Action 07: Hans Öias to circulate a document with changes to S-100 unmatched terminology.

HSWG4 Action 08: Chair to share unmatched terminology document with IHO Secretariat and S-100 Chair.

12.1.5 GEBCO-TSCOM

TSCOM is the GEBCO sub-committee on Ocean Mapping and currently the focus is support for Seabed 2030 and creating a tool to evaluate the existing gaps. Next meeting is set for the summer, an online meeting, and a face-to-face meeting will be late in autumn.

12.1.6 Crowdsource Bathymetry Working Group

Sam Harper stated the CSBWG met in January, having completed the publication B12, guidance on crowdsourced bathymetry. Currently there are 34 Member States that are allowing CSB in their waters, with data management and processing being the current issue to be solved.

12.2 Exchange experiences of new technology, approaches and best practice

(Ref HSWG4 – Hydrographic practice on intelligent USV)

LiLei LV (China) presented on Hydrographic Practice on Intelligent USV in Bohai Sea and Relevant Recommendations. Showing the interaction from USV and sonar and a survey ship, with the results achieved.

From the discussion it was mentioned that the importance for HSWG here is probably the sonar and the standards for what is expected as a result from Hydrographic Surveys. It is not a matter of the vessel being crewed or uncrewed. The remote vessels were a way to work around the pandemic moment and presented very good results.

There was no consensus that “Promoting the development of intelligent USV survey” should be included in the Terms of Reference of HSWG, however there was a consensus that technical standards and guidelines on “intelligent USV survey” should be added to an independent chapter C-13.

13. MHPT Part 1

(Doc HSWG4 – MHPT breakout session agenda)

The HSWG Chair started by explaining that Nickolas Roscher and Ian Slade, both needed to stand down as Chair and Vice Chair of MHPT, and Ian Davies (UK) has volunteered to replace the Chair and took over as interim Chair.

HSWG Chair asked for nominations to MHPT Chair position and there were no nominations, other than Ian Davies. It was agreed that Ian Davies would take over as Chair for MHPT. There were no objections.

With Nickolas Roscher being available for Vice Chair position, HSWG Chair asked for nominations to MHPT Vice Chair position. There were no other nominations, therefore it was then set that Nickolas Roscher is the Vice Chair for MHPT. There were no objections.

With Poerbandono already being Secretary of SDBPT, the HSWG Chair asked for nominations to MHPT Secretary position and there were no nominations, leaving this decision for the MHPT meeting.

The MHPT Chair (Ian Davies - UK) presented on MHPT, starting by giving an update on current MHPT work. Ian Davies explained that a questionnaire about C-13 publication was put up on last meeting, and is now available online, and asked for IHO support to promote the questionnaire. Currently there were registered 62 responses, 19 from HOs, and one conclusion that can be seen is that there is the need for C-13 both as a reference document and operationally.

MHPT plan is now to start by reviewing the TOR's and ROP's, then the workplan, a review of the questionnaire and start working on the Chapters with intersession meetings.

HSWG4 Decision 05: Ian Davies from UKHO is nominated MHPT Chair

HSWG4 Decision 06: Nickolas Roscher from Diretoria de Hidrografia e Navegação (DHN) - Brasil is nominated MHPT Vice Chair

14. SDBPT Part 1

(Doc HSWG4 – SDBPT breakout session agenda)

SDBPT Chair - Knut Hartmann (EOMAP) presented the SDBPT current status. The agenda for the breakout sessions was presented, with the focus on a final check on the SDB document to be proposed for SDB Best Practice Guide publication.

Knut Hartmann informed that the document was available in two versions, a clean version and a track changes version, and all comments and modifications were registered. The main focus of the Breakout sessions will be to analyse these comments and modifications to finalise the document.

15. Breakout Sessions #1,

On breakout sessions, MHPT and SDBPT had separate meetings with their respective members. Each group followed their own agenda, with separate minutes produced.

16. Breakout Sessions #2

On breakout sessions, MHPT and SDBPT had separate meetings with their respective members. Each group followed their own agenda, with separate minutes produced.

17. Breakout Sessions 3#

On breakout sessions, MHPT and SDBPT had separate meetings with their respective members. Each group followed their own agenda, with separate minutes produced.

18. Breakout Sessions 4#

On breakout sessions, MHPT and SDBPT had separate meetings with their respective members. Each group followed their own agenda, with separate minutes produced.

19. Progress Report from Project Teams

19.1 MHPT

(Ref HSWG4 – MHPT Breakout sessions)

Ian Davies presented the evolution of works by MHPT, and the outcomes of the breakout sessions. Responses to questionnaire were analysed and there were only 62 responses to the questionnaire on

C13, with MHPT feeling the number is short for the proposed purpose, and therefore the questionnaire duration should be extended to 31st May. From the data available, it was possible to understand where to focus on the dissemination of the questionnaire and a communication plan was created to coordinate an approach to a wider group of stakeholders. The results from the questionnaire were detailed for all to understand. The communication plan was shown as well as the Chapter champions for the review of C-13. Next steps were presented with focus on the extension of the questionnaire duration and presenting the results of the first review on HSWG5.

The HSWG Chair concluded asking for agreement from HSWG to the proposed decisions from MHPT and thanking Ireland for volunteering Eoin MacCraith to be Secretary for MHPT. He also thanked Ian for his work and taking up the Chair of MHPT.

Ian Davies finished by presenting a review of the work plan for MHPT.

HSWG4 Decision 07: Eoin MacCraith is nominated MHPT Secretary

HSWG4 Decision 08: C-13 Questionnaire to be extended to 31st of May

HSWG4 Decision 09: C-13 draft available by May 2025

19.2 SDBPT

(Ref HSWG4 – SDBPT Breakout sessions)

Knut Hartmann showed the progress on the breakout sessions, where a review of the final document was done.

Knut started by presenting the participants on the meeting and the main agenda item as being the update of the SDB Best Practice Document. From the first review to the first version there was no critical feedback, with all minor changes being accepted. Some comments from bilateral meetings were highlighted and discussed, with new schematic figures added, key specifications harmonized for all SDB methods and Feature detection paragraph moved to applications. Contributors will be added to the last page, following the B12 example.

The revised work plan was adjusted and presented. A discussion on non-linear relationship from SDB vertical uncertainty and current S-44 classification was pointed out with the decision to mention the S-44 matrix and pixel specific vertical uncertainty classification. A discussion is needed on the description of satellite imagery definition at S-101. The cover image will be done by AI and several options to be presented to all members for pool vote. An update cycle was also discussed with a similar approach as to S-44, of 2 year update cycle, to be adopted.

Knut Hartman mentioned that documents are now shared in Sharepoint and the next in person meeting is scheduled for HSWG5, with the election of the Chair Team in the agenda.

Knut finalised with a presentation of the Action Items for SDBPT.

The Chair concluded, mentioning that the SDB Best Practice Document is now available to all HSWG group for comments until 26th March at a Sharepoint link. The document is to be delivered to HSSC by mid-April.

HSWG4 Action 09: ALL to do necessary comments and changes on the SDB Guidance draft document before 26th March.

HSWG4 Action 10: SDBPT Chair compile all changes and deliver SDB document draft by 31st March.

HSWG4 Action 11: Chair deliver SDB Best Practice document delivered to HSSC by 14th April.

20. Any other business

Italy presented on the potential development or linkage to an existent standard for habitat mapping, starting to show the proposal focusing on having a new approach and define standards on S-44 (distribution of sampling on the bottom which linked to the backscatter. The interpretation of the backscatter response, etc..).

From the discussion Hans Oias reminded that with HSPT and the generation of S-44 v 6.0, it was decided not to include seabed classification as it was out of S-44 scope. The Chair and Andrew Leyzack (CAN) mentioning it may be related to safety of navigation, where navigators need to understand the impact of potentially making contact with a soft or hard seabed.

The Chair proposed an initial seabed sonar backscatter/ lidar and SDB intensity Project Team within HSWG to define standards data supporting seabed classification could be created. An informal vote was taken, which had an acceptance of 28/43 with an objection of 2/43. Considering the proposal of creating a new project team, several members volunteered to be part of the group, Sean Cullen (Ireland), Serena Bigelli (Italy), Knut Hartmann (EOMAP), David Vincentelli (Exail), Carlos Marques (Portugal).

Following any other business subject, Ian Slade suggested that some presentation should be done about the work in progress at C-13 update.

The use of MSTeams and GitHub was discussed.

HSWG4 Decision 10: Establishment of Backscatter Project Team.

HSWG4 Action 12: HSWG Chairing Team to develop material to publicise work of HSWG on conferences or any other sector.

HSWG4 Action 13: HSWG Chairing Team to consider development of communications plan, and bring back on HSWG5.

20.1 Conferences and other events

David Vincentelli informed that FHS will be organizing the Hydro23 Conference at Genova – Italy, from 6th to 8th November.

David Parker informed that THS UK and Ireland will be organising the Remote Hydrography 2-Day Conference early next year.

Dates of events will be published on the HSWG/IHO calendar.

21. Date, venue and method of next meeting – HSWG5

Chair welcomed the presence of Indonesia, with Commander Colombo and Commander Fatoni.

For this agenda item it was proposed that HSWG5 would be an in-person meeting, in early October 2023. The intention is to try having a meeting in the Asia Pacific region. The Chair gave the floor to Indonesia.

Indonesia welcomed all HSWG to Indonesia, offering to host the HSWG5 meeting in either Bali, Jakarta or Lombok.

HSWG4 Decision 11: Next meeting (HSWG5) will be in Indonesia.

22. Review of updated Work Plan

The current Work Plan was reviewed and will be posted in the IHO/HSWG website.

23. Intersessional activities

Vice Chair reviewed the planned intersessional activities.

24. Review of Action List and items for agenda for HSWG4

[\(Doc HSWG4 – Decisions List\)](#)

[\(Doc HSWG4 – Actions List\)](#)

The list of Actions and Decisions was reviewed and agreed by all members. The Actions List and Decisions List is annexed to this document.

HSWG4 Decision 12: HSWG agreed on the actions and decisions list presented.

25. Closing remarks

The Chair closed the meeting thanking all the participants for all the hard work put through the meeting. He emphasised the good progress from the Project Teams with C-13 and the possible B-13 in focus. Intersessional works will follow and HSWG5 is planned for late September/early October.

26. Annex A – Glossary

27. Annex B - Documents

28. Documents in external reference (IHO's HSWG website)

(Ref HSWG4 – TOR and ROP)

(Ref HSWG4 – Minutes from HSWG3)

(Ref HSWG4 – HSWG3 Actions List status)

(Ref HSWG4 – Work plan)

(Ref HSWG4 – S-44 maintenance plan)

(Ref HSWG4 – Hydrographic Uncertainty Subgroup)

(Ref HSWG4 – S-100 vs S44 (Megan Greenaway))

(Ref HSWG4 – Hydrographic practice on intelligent USV)

(Ref HSWG4 – MHPT Breakout sessions)

(Ref HSWG4 – SDBPT Breakout sessions)

Annex A - Glossary

AUV – Autonomous Underwater Vehicle

ARHC - Arctic Regional Hydrographic Commission

C-13 - Manual on Hydrography

CATZOC – Category of Zones of Confidence

CHC – Canadian Hydrographic Conference

CSB – Crowdsourced Bathymetry

CSBWG – Crowdsourced Bathymetry Working Group

DQWG – Data Quality Working Group

GEBCO - General Bathymetric Chart of the Oceans

HO – Hydrographic Office

HDWG - Hydrographic Dictionary Working Group

HSSC - Hydrographic Services and Standards Committee

HSWG - Hydrographic Surveys Working Group

HSWG1 - Hydrographic Surveys Working Group 1st meeting

HSWG2 - Hydrographic Surveys Working Group 2nd meeting

HSWG3 - Hydrographic Surveys Working Group 3rd meeting

HSWG4 - Hydrographic Surveys Working Group 4th meeting

IHO - International Hydrographic Organization

IOC - Intergovernmental Oceanographic Commission

MHPT – Manual of Hydrography Project Team

MS - Microsoft

PT – Project Team

ROP – Rules of Procedure

S-44 – Standards for Hydrographic surveys

S-100 - Based Product Specifications

S-100WG – S-100 Working Group

SDB - Satellite Derived Bathymetry

SDBPT - Satellite Derived Bathymetry Project Team

TOR – Terms of Reference

TSCOM – Technical Sub-Committee on Ocean Mapping

TWCWG – Tides, Water Level and Currents Working Group

WG – Working Group

Annex B – Documents

(Doc HSWG4 – List of Participants)

(Doc HSWG4 – HSWG4 Agenda)

(Doc HSWG4 – Decisions List)

(Doc HSWG4 – Actions List)

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Doc HSWG4 – List of Participants

Member State	Organization	Abbreviation	Name
Belgium	Vlaamse Hydrografie	Vlaamse Hydrografie	Johan Verstraeten
Brazil	Diretoria de Hidrografia e Navegação (DHN)	DHN	Nickolas Roscher
Canada	Canadian Hydrographic Service (CHS)	CHS	Andrew Leyzack
Canada	Canadian Hydrographic Service (CHS)	CHS	Christian Comtois
China	Maritime Safety Administration (MSA)	MSA	Chen Liang
China	Maritime Safety Administration (MSA)	MSA	Lilei Lv
China	Maritime Safety Administration (MSA)	MSA	Lingzhi Wu
China	Maritime Safety Administration (MSA)	MSA	Cheng Sheng Qian
China	Maritime Safety Administration (MSA)	MSA	Yu Tingting
Denmark	Danish Geodata Agency	DGA	Juho Salmia
Denmark	Danish Geodata Agency	DGA	Giuseppe Masetti
Denmark	Danish Geodata Agency	DGA	Philip Sigaard Christiansen
Finland	Finnish Transport and Communication Agency Traficom / Hydrographic Office	TRAFICOM	Jani Pötrönen
Finland	Finnish Transport and Communication Agency Traficom / Hydrographic Office	TRAFICOM	Seppo Mäkinen
France	Service hydrographique et océanographique de la Marine (SHOM)	SHOM	Jeremy Rossetto
Germany	Bundesamt für Seeschifffahrt und Hydrographie (BSH)	BSH	Jean-Guy Nistad
IHO	IHO Secretariat	IHO	Abri Kampfer
IHO	IHO Secretariat	IHO	Sam Harper
India	Indian National Hydrographic Office (INHO)	INHO	Vishal Sharma
Indonesia	Institut Teknologi Bandung (ITB)	ITB	Poerbandono, Prof.
Indonesia	Indonesia		Cdr Fatoni
Indonesia	Indonesia		Cdr Yohanis Kalambo
Ireland	Geological Survey of Ireland	GSI	Sean Cullen
Italy	Istituto Idrografico della Marina	IIM	Claudio Caporale
Italy	Istituto Idrografico della Marina	IIM	Ilenia Batzu
Japan	Japan Coast Guard Hydrographic and Oceanographic Department (JHOD)	JHOD	Masanao Sumiyoshi
Latvia	Maritime Administration of Latvia (LHD)	LHD	Krists Dzenis
Mexico	Dirección General Adjunta de Oceanografía, Hidrografía y Meteorología (DIGAOHM) de Marina Armada de México	DIGAOHM	Adrián Montúfar
Norway	Norwegian Mapping Authority Hydrographic Service	kartverket	Arne Edmund Ofstad
Portugal	Instituto Hidrográfico (IH)	IH	Carlos Videira Marques (Secretary)
Romania	Romanian Maritime Hydrographic Directorate, Romanian NAVY		Valentina Cornelia Pavel
SDB	UK Hydrographic Office (UKHO)	UKHO	Austin Capsey
SDB	Institute for Electromagnetic Sensing of the Environment (CNR-IREA)	CNR-IREA	Claudia Giardino
SDB	Federal Maritime and Hydrographic Agency (BSH)	BSH	Volkmar Leimer
Spain	Instituto Hidrográfico de la Marina (IHM)	IHM	Cdr José Luis Sánchez de Lamadrid Jaques
Sweden	Sjöfartsverket (SMA)	SMA	Hans Öiås

UK	United Kingdom Hydrographic Office (UKHO)	UKHO	David Parker (Chair)
UK	United Kingdom Hydrographic Office (UKHO)	UKHO	Ian Davies
USA	National Geospatial Agency (NGA)	NGA	Doug Roush
USA	National Geospatial Agency (NGA)	NGA	Matt Carter
USA	National Oceanographic and Atmospheric Administration - Office of Coast Survey (NOAA-OCS)	NOAA-OCS	Megan Greenaway (Vice Chair)
USA	US Navy	USNavy	Steven Posey
Expert Contributor	Abu Dhabi National Oil Company (ADNOC)	ADNOC	Ashish Srinivasan
Expert Contributor	Hogere Zeevaartschool	Zeevaartschool	Axel Annaert
Expert Contributor	iXblue/AFhy Francophone Hydrographic Society	iXblue	David Vincentelli
Expert Contributor	Fugro/International Federation of Hydrographic Societies (IFHS)	IFHS	Iain Slade
Expert Contributor	David Evans and Associates	DEA	Jason Creech
Expert Contributor	IIC Technologies	IIC TEC	Jose Arias
Expert Contributor	Kongsberg Maritime	KM	Jose Cordero
Expert Contributor	EOMap	EOMap	Knut Hartmann
Expert Contributor	Fugro	Fugro	Marco Filippone
Expert Contributor	Exail	ECA	Sebastien Tauvry
Expert Contributor	Fugro	Fugro	Véronique Jégat

Doc HSWG4 – HSWG4 Agenda

IHO Hydrographic Surveys Working Group Meeting (HSWG 4)

(Online MS Teams only)

27th February to 2nd March 2023, from 1100 daily CET (1000 GMT)

Day 1 – Monday 27th February

1100 - Plenary

1. Welcome and opening remarks from chair group. (*Chair*)
2. Welcome and opening remarks from IHO.
3. Very short introduction from new participants since HSWG2 (Member State alphabetical order then industry)
4. Procedures of the Meeting. (*Chair*)
5. Approval of agenda. (*Chair*)
6. Review of ToRs and RoPs (*Secretary*)
7. Approval of Minutes of HSWG3 (*Secretary*)
8. Review of actions from HSWG3 (*Secretary*)
9. Key objectives for HSWG4 (*Chair*)
10. HSWG Work Plan (*Vice-Chair*)
11. S-44 Part 1: (*Vice-Chair*)
 - 11.1. Current status of S-44 and Maintenance Process
 - 11.2. S44 Feedback Tracking
 - 11.3. Additional feedback on S44 from operational experience
 - 11.4. Presentation from contributors on key S44 issues raised (HSWG Members)
 - 11.5. Promotion of S-44 and Links to IHO Strategic Objective 2.2 (*Chair*)
 - 11.6. Education on S-44 (*Chair*)
 - 11.7. Support for further translation of S-44 for onward IHO publication

1300 - 1400 Break

1400 - Plenary

12. Other HSWG Matters: (Chair)

12.1. Liaison with other HSSC Working Groups (including designation of individuals for liaison)

12.1.1. DQWG (Anderson Peçanha)

- 12.1.1.1. Current situation
- 12.1.1.2. CATZOC / S-1xx Quality / S44 mapping update
- 12.1.1.3. Further opportunities for collaboration

12.1.2. HDWG (Douglas Roush)

- 12.1.2.1. Current situation
- 12.1.2.2. Terminology
- 12.1.2.3. Further opportunities for collaboration

12.1.3. TWCWG (HSWG Chair)

- 12.1.3.1. Current situation
- 12.1.3.2. Further opportunities for collaboration

12.1.4. S-100WG (Hans Oias)

- 12.1.4.1. Current situation
- 12.1.4.2. Further opportunities for collaboration

12.1.5. GEBCO TSCOM (Sam Harper)

- 12.1.5.1. Current situation
- 12.1.5.2. Further opportunities for collaboration

12.1.6. Crowdsourc Bathymetry Working Group (Sam Harper)

- 12.1.6.1. Current situation
- 12.1.6.2. Further opportunities for collaboration

12.2. Exchange experiences of new technology, approaches and best practice.

(Member States and Industry Reps to suggest introductory presentations to promote discussion to Chair in advance)

13. MHPT Part 1

13.1. Nomination / Election of Chair, Vice-Chair and Secretary (HSWG Chair)

28.1.1 [Nominations received from Ian Davies (UK) for Chair, Nickolas Roscher (Brazil) for Vice-Chair]

13.2. General update from MHPT (MHPT Chair)

13.3. Terms of Reference

13.4. Workplan

13.5. Review of Current Edition (if time available)

13.6. Structure of next edition of C-13

13.7. Outline for MHPT Breakout sessions

14. SDBPT Part 1 (SDBPT Chair)

14.1. General update from SDBPT

14.2. Terms of Reference

14.3. Workplan

14.4. General initial input from HSWG

14.5. Outline for SDBPT Breakout sessions

1600 Close of Day 1

Day 2 – Tuesday 28th February

1100

15. Breakout Sessions #1 (running in parallel)

- MHPT
- SDBPT (If needed)

1300-1400 Break

16. Breakout Sessions #2 (running in parallel)

- MHPT
- SDBPT (If needed)

1600 Close of Day 2

Day 3 – Wednesday 1st March

1100

17. Breakout Sessions #3 (running in parallel – rooms TBC)

- MHPT
- SDBPT (If needed)

1300-1400 Break

18. Breakout Sessions #4 (running in parallel – rooms TBC)

- MHPT
- SDBPT (If needed)

1600 Close of Day 3

Day 4 – Thursday 2nd March

1100 - Plenary

19. MHPT Part 2: (MHPT Chair – Plenary Room)

- 19.1. Present outcomes of MHPT Breakout Session
- 19.2. Further HSWG Input
- 19.3. Updated Workplan
- 19.4. Next Steps

20. SDBPT Part 2: (SDBPT Chair – Plenary Room)

- 20.1. Present outcomes of SDBPT Breakout Session
- 20.2. Further HSWG Input
- 20.3. Updated Workplan
- 20.4. Next Steps

1300-1400 Break

1400 - Plenary

21. Any other business. (Chair)

- 21.1. Conferences and other events

22. Date, venue and method of next meeting – HSWG5 (Chair)

23. Review of updated Work Plan (Vice-Chair)

24. Intersessional activities. (Vice-Chair)

25. Review of Action List and items for agenda for HSWG4. (Secretary)

26. Closing remarks. (Chair and Vice-Chair)

1600 – Close of Day 3 and Close of Meeting

Doc HSWG4 – HSWG Decisions List

HSWG4 Decision 01: HSWG4 Agenda is approved with no changes or additions.

HSWG4 Decision 02: HSWG TOR are approved with no changes.

HSWG4 Decision 03: HSWG ROP are approved with no changes.

HSWG4 Decision 04: Minutes of HSWG3 are approved with no further changes.

HSWG4 Decision 05: Ian Davies from UKHO is nominated MHPT Chair

HSWG4 Decision 06: Nickolas Roscher from Diretoria de Hidrografia e Navegação (DHN) - Brasil is nominated MHPT Vice Chair

HSWG4 Decision 07: Eoin MacCraith is nominated MHPT Secretary

HSWG4 Decision 08: C-13 Questionnaire to be extended to 31st of May

HSWG4 Decision 09: C-13 draft available by May 2025

HSWG4 Decision 10: Establishment of Backscatter Project Team.

HSWG4 Decision 11: Next meeting (HSWG5) will be in Indonesia.

HSWG4 Decision 12: HSWG agreed on the actions and decisions list presented.

Doc HSWG4 – HSWG Actions List

HSWG4 Action 01: Secretary to collect events information (dates and locations) to post in the HSWG Calendar (IHO/HSWG website).

HSWG4 Action 02: Jason Creech to check S-102 raster table for possible overlap with S-44 matrix..

HSWG4 Action 03: Jani Pötrönen to update the S-44 feedback tracking spreadsheet with the topic of the term bathymetric coverage issue.

HSWG4 Action 04: All to coordinate with education establishments to see what raising awareness of S-44 at the start of people's career's, may be achievable.

HSWG4 Action 05: Chair team to nominate new HDWG liaison.

HSWG4 Action 06: Chair team to nominate new TWCWG liaison.

HSWG4 Action 07: Hans Oias to circulate a document with changes to S-100 unmatched terminology.

HSWG4 Action 08: Chair to share unmatched terminology document with IHO Secretariat and S-100 Chair.

HSWG4 Action 09: ALL to do necessary comments and changes on the SDB Guidance draft document before 26th March.

HSWG4 Action 10: SDBPT Chair compile all changes and deliver SDB document draft by 31st March.

HSWG4 Action 11: Chair deliver SDB Best Practice document delivered to HSSC by 14th April.

HSWG4 Action 12: HSWG Chairing Team to develop material to publicise work of HSWG on conferences or any other sector.

HSWG4 Action 13: HSWG Chairing Team to consider development of communications plan, and bring back on HSWG5.