

Report of the Hydrographic Surveys Working Group

Submitted by:	David Parker, Chair, HSWG
Related Documents:	S-44 v6.2 [Proposed]
Related Projects:	S-44 Drafting Team Manual on Hydrography Project Team (C-13) Satellite Derived Bathymetry Project Team (B-13)

Chair:	David Parker, UK
Vice-Chair:	Megan Greenaway, USA
Secretary:	Cdr Carlos Videira Marques, Portugal
Member States:	Australia, Belgium, Brazil, Canada, Chile, China, Croatia, Denmark, Ecuador, Finland, France, Germany, India, Indonesia, Iran, Ireland, Italy, Japan, Korea, Latvia, Mexico, Netherlands, New Zealand, Norway, Portugal, Romania, Spain, Sweden, Turkey, UK, USA (31)
Expert Contributor Organisations:	Abu Dhabi National Oil Company, AFHy, AML Oceanographic, David Evans and Associates, ECA Robotics, EGS International, EOMap, EIVA, Exail, Fugro, German Aerospace Centre (DLR), Hellenic Centre for Marine Research, Hogere Zeevaartschool, Hydrobiology, IFHS, Institut Teknologi Bandung (ITB Indonesia), IIC Technologies, Institute for Electromagnetic Sensing of the Environment (CNR-IREA), Institute of Technology for Development (Lactec), Istanbul Technical University, JOA Surveys, Kongsberg Maritime, Teledyne Marine (22)
<i>See Annex A for full details for the registered members of HSWG and associated Project Teams.</i>	

Meetings Held During Reporting Period

1. In 2021, there was consensus in HSWG to hold two meetings a year, one online only, and one in person.
2. HSWG5 held in person, Lombok, Indonesia, 2nd to 5th October 2023. Kindly hosted by Pushidrosal. 18 attendees + additional online for some project team activity.
 - HSWG Work plan and objectives further progressed.
 - Two days of break-out sessions for S-44 Drafting Team, C-13 and SDB PTs.
 - C-13 Manual on Hydrography update progressed.
 - S-44 v6.2 further progressed.
 - SDB one-day session for regional government and industry stakeholders hosted.
3. HSWG6 held via VTC (with Hybrid Hub at GSI Dublin, Ireland) 26^h February to 1st March 2024. 56 Attendees.
 - HSWG Work plan and objectives further progressed.
 - Two days of break-out sessions for S-44 Drafting Team, C-13 and SDB PTs.
 - C-13 Manual on Hydrography update progressed.
 - S-44 v6.2 draft finalised.
4. The next HSWG meeting will be held in person at the European Space Agency, Frascati, Italy, October 2024.

Work Program

S-44

An updated edition of S-44 was submitted to HSSC in 2022, and later accepted by MS. Version 6.1.0 was published October 2022.

A 2-year update cycle for S-44 has been agreed and accepted by HSSC in 2022. Therefore, HSWG have been considering a range of improvements and updates to the standard and have now finalised a draft for v6.2. This is submitted to HSSC along with this report for endorsement.

HSWG has several sub-groups which support aspects of S-44. These are covering Bathymetric Coverage, Uncertainty, and Metadata.

The Chair Team have also been liaising with the GEOHAB Backscatter Working Group to develop content and standards around backscatter data to help make S-44 more universally used in seabed mapping. Some limited content has been adopted for S-44 v6.2, but there is a longer-term plan to develop backscatter standards which can be integrated into the S-44 Matrix.

For this update 6.2.0 of the 6th edition, the main changes include the addition of a priori uncertainty and a posteriori uncertainty to the glossary and clarification of these terms in Annex C, clarification of the term total horizontal uncertainty, revision of section 3.8 Nature of the Bottom (i.e. backscatter) and the associated parameters in the Matrix.

Manual on Hydrography Project Team

The MHPT have met during break-out sessions within HSWG5 and 6. Ian Davies (UK) was formally elected as MHPT Chair at HSWG4 and Nickolas Rocher moved to the Vice-Chair position. Eoin MacCraith (Ireland) is Secretary. Ian has now left the UKHO to move to industry but has been able to stay on as chair in the capacity of an expert contributor.

MHPT are maintaining their own work plan which is subordinate to the HSWG Work Plan. See Annex C.

A questionnaire was created and published in 2023 to gather views from across member states, industry, and academia as to the intended use of C-13 and required content. Using these responses, a document framework has been established and agreed. Chapter leads have been established and are now working intersessionally on content, in line with dates within the Workplan (Annex C).

One issue raised to date for IHO to consider is that C-13 will have a considerable requirement for the generation of graphics in a consistent format. The project team have agreed that this need cannot be met by the team members, existing content, or industry. It is therefore requested that IHO consider making funding available to provide a contractor for this work.

Satellite Derived Bathymetry Project Team

The Satellite-Derived Bathymetry Project Team (SDBPT) is chaired by Knut Hartman (EOMAP), supported by Poerbandono from Institut Teknologi Bandung (ITB Indonesia).

They are maintaining their own work plan which is subordinate to the HSWG Work Plan. See Annex D.

B-13 Satellite Derived Bathymetry Best Practice Guide was finalised and supplied to HSSC15 for endorsement. It was published by IHO in March 2024.

Other

HSWG have maintained liaisons with other key WGs, such as S-100, HDWG, DQWG and TWCWG. This is intended to lead to better interactions, better alignment between standards (e.g. current misalignment of uncertainty formulas between S-44 and S-100) and an offer has been made to TWCWG to include standards for water levels and currents within a future iteration of the S-44 standard.

Progress on HSSC Action Items

As above.

Problems Encountered

1. Slow progress on C-13 update until October 2023, largely due to the need to work entirely remotely due to Covid-19 pandemic. Progress still slow due to size of the task and limited number of consistent contributors.
2. Attendance at in-person meeting more limited due to financial / ecological restrictions on travel from member organisations.
3. Some misalignment noted between S-44 and S-100 standards. Includes description of uncertainty and other terminology/definitions. Although S-44 definitions believed to be correct, not easy to propose changes to S-100 standards due to high priority timelines.
4. How much priority should a standards organisation place on standardisation between standards?

Any Other Items of Note

1. HSWG Chairing team were re-elected to current roles in October 2023 at HSWG5. They will not be able to stand for another term when elections due again in 2026.
2. HSWG Chairing Team proposes to create an additional Vice-Chair post. We will then elect into this post from the membership as well as a new Secretary. This will increase the capacity of the chairing team to manage multiple project teams and sub-groups. The ToRs have been updated, along with other minor updates and corrections, and are proposed to HSSC 16.

Conclusions and Recommended Actions

- An updated version (6.1) of S-44 was published in 2022. In coordination with IHO enabling download tracking on the web site, this has enabled progress against Strategic Objective 2.2.2. to be monitored.
- A two-year update mechanism for S-44 is established and ongoing.
- S-44 v6.2 has been drafted and is supplied to HSSC for endorsement before being circulated to Member States.
- B-13 SDB Guide has now completed Member State review and is published.
- MHPT have made progress on an update to C-13. However, this is a large task which will take a considerable amount of time.

Justification and Impacts

- B-13 SDB Best Practice Guide is IHO's first document on SDB, helping the method be recognised as an appropriate and useful tool in certain locations and applications, and improve understanding of both benefits and limitations.
- A regular update cycle to S-44 has enabled iterative improvements, and longer term, larger changes to be fully considered and discussed before implementation. This has also allowed bringing in external experts such as the GEOHAB Backscatter Working Group to enable them to use S-44 as a mechanism for improved standards in their domain. This in turn further expands the reach of S-44, leading to more bathymetry to a common interoperable standard.

Action Required of HSSC

The HSSC is invited to:

- a. Endorse S-44 v6.2
- b. Note challenges relating to the new version of C-13.
- c. Note challenges relating to current misalignment between S-44 and S-100 standards.
- d. Agree and support proposed work plans.

**Membership of HSWG
(Member States)**

No.	Member State	Name of Delegate	Organisation
001	Australia	Andrew Coulls	Australian Hydrographic Office (AHO)
002	Australia	Scott Lyton	Australian Hydrographic Office (AHO)
003	Belgium	Johan Verstraeten	Vlaamse Hydrografie
004	Brazil	Anderson Peçanha	Diretoria de Hidrografia e Navegação (DHN)
005	Brazil	Leonardo Gomes de Araujo	Diretoria de Hidrografia e Navegação (DHN)
006	Brazil	Nickolas Roscher	Diretoria de Hidrografia e Navegação (DHN)
007	Canada	Andrew Leyzack	Canadian Hydrographic Service (CHS)
008	Canada	Christian Comtois	Canadian Hydrographic Service (CHS)
009	Chile	Luis Montecinos	Servicio Hidrográfico y Oceanográfico de la Armada de Chile (SHOA)
010	China	Jin Wu	Maritime Safety Administration (MSA)
011	China	Lingzhi Wu	Maritime Safety Administration (MSA)
012	China	Chao ZHU	Maritime Safety Administration (MSA)
013	China	Zhengwei CHEN	Maritime Safety Administration (MSA)
014	China	Chen Liang	Maritime Safety Administration (MSA)
015	China	Shujuan Jia (贾淑娟)	Maritime Safety Administration (MSA)
016	China	Yulei DONG	Maritime Safety Administration (MSA)
017	China	Cheng Sheng Qian	Maritime Safety Administration (MSA)
018	China	Lilei Lv	Maritime Safety Administration (MSA)
019	Croatia	Ante Glavurdic	Hrvatski Hidrografski Institut (HHI)
020	Croatia	Goran Olujić	Hrvatski Hidrografski Institut (HHI)
021	Croatia	Hrvoje Ćikotić	Hrvatski Hidrografski Institut (HHI)
022	Croatia	Ljerka Vrdoljak	Hrvatski Hidrografski Institut (HHI)
023	Croatia	Vinka Kolić	Hrvatski Hidrografski Institut (HHI)
024	Denmark	Giuseppe Masetti	Danish Geodata Agency
025	Denmark	Juho Salmia	Danish Geodata Agency
026	Denmark	Philip Sigaard Christiansen	Danish Geodata Agency
027	Denmark	Belén Jiménez Barón	Danish Geodata Agency (DGA)
028	Ecuador	Jorge Alovera Alvarado	Instituto Oceanográfico de la Armada del Ecuador (INOCAR)
029	Egypt	Mohamed Ashraf Koura	Egyptian Navy Hydrographic Department
030	Finland	Jani Pötrönen	Finnish Transport and Communication Agency Traficom / Hydrographic Office
031	Finland	Seppo Mäkinen	Finnish Transport and Communication Agency Traficom / Hydrographic Office
032	France	Jeremy Rossetto	Service hydrographique et océanographique de la Marine (SHOM)
033	France	Xavier Mathias	Service hydrographique et océanographique de la Marine (SHOM)
034	Germany	Jean-Guy Nistad	Bundesamt für Seeschifffahrt und Hydrographie (BSH)
035	IHO	Abri Kampfer	IHO Secretariat
036	IHO	Sam Harper	IHO Secretariat
037	India	International Affairs NHO	Indian National Hydrographic Office (INHO)
038	India	Vishal Sharma	Indian National Hydrographic Office (INHO)
039	India	Kuldeep Singh	Indian National Hydrographic Office (INHO)
040	Indonesia	Fatoni, Cdr	Hydrography and Oceanography Centre
041	Indonesia	Yohanis Kalambo, Cdr	Indonesia
042	Indonesia	Poerbandono, Prof.	Institut Teknologi Bandung (ITB)
043	Indonesia	Agus Triyana	Hydrography and Oceanography Centre
044	Indonesia	Dyan Primana Sobaruddin	Hydrography and Oceanography Centre
045	Indonesia	Y Londongallo Kalambo	Hydrography and Oceanography Centre
046	IR of Iran	Ali Soltanpour	National Cartographic Center
047	Ireland	Eoin MacCraith	Geological Survey of Ireland
048	Ireland	Sean Cullen	Geological Survey of Ireland
049	Italy	Claudio Caporale	Istituto Idrografico della Marina
050	Italy	Enrico Zanona	Istituto Idrografico della Marina
051	Italy	Ilenia Batzu	Istituto Idrografico della Marina

052	Italy	Serena Bigelli	Istituto Idrografico della Marina
053	Japan	Masanao Sumiyoshi	Japan Coast Guard Hydrographic and Oceanographic Department (JHOD)
054	Japan	? Need to hear ?	Japan Coast Guard Hydrographic and Oceanographic Department (JHOD)
055	Japan	Takahumi Hashimoto	Japan Coast Guard Hydrographic and Oceanographic Department (JHOD)
056	Korea	Tae-Heon Kim	Korea Hydrographic and Oceanographic Agency (KHOA)
057	Korea	Yeong-hwa Jeong	Korea Hydrographic and Oceanographic Agency (KHOA)
058	Latvia	Bruno Spels	Maritime Administration of Latvia (LHD)
059	Latvia	Kristis Dzenis	Maritime Administration of Latvia (LHD)
060	Mexico	Adrián Montúfar	Dirección General Adjunta de Oceanografía, Hidrografía y Meteorología (DIGAOHM) de Marina Armada de México
061	Netherlands	LTCDR Raymon van de Veen	Netherlands Hydrographic Office (NIHO)
062	New Zealand	Bradley Cooper	Land Information New Zealand (LINZ)
063	Norway	Arne Edmund Ofstad	Norwegian Mapping Authority Hydrographic Service
064	Portugal	João Vicente	Instituto Hidrográfico (IH)
065	Portugal	Miguel Cândido	Instituto Hidrográfico (IH)
066	Portugal	Carlos Videira Marques (Secretary)	Instituto Hidrográfico (IH)
067	Romania	Valentina Cornelia Pavel	Romanian Maritime Hydrographic Directorate, Romanian NAVY
068	Spain	José Luis Sánchez de Lamadrid Jaques	Instituto Hidrográfico de la Marina (IHM)
069	Spain	Lt-Cdr. Luis Manuel Rusillo Díaz-Obregón	Instituto Hidrográfico de la Marina (IHM)
070	Spain	Carlos	Instituto Hidrográfico de la Marina (IHM)
071	Spain	Luis	Instituto Hidrográfico de la Marina (IHM)
072	Sweden	Hans Öiäs	Sjöfartsverket (SMA)
073	Turkey	Nurî Karaaslan	Seyir Hidrografi ve Oşinografi Dairesi Başkanlığı (SHODB)
074	UK	David Parker (Chair)	United Kingdom Hydrographic Office (UKHO)
075	UK	Rob Andrew	United Kingdom Hydrographic Office (UKHO)
076	USA	Doug Roush	National Geospatial Agency (NGA)
077	USA	Martin Turnwell	Ocean Infinity
078	USA	Matt Carter	National Geospatial Agency (NGA)
079	USA	Megan Greenaway (Vice Chair)	National Oceanographic and Atmospheric Administration - Office of Coast Survey (NOAA-OCS)
080	USA	Neil Weston	National Oceanographic and Atmospheric Administration - Office of Coast Survey (NOAA-OCS)
081	USA	Steven Posey	US Navy

**Membership of HSWG
(Expert Contributors)**

No.	Observer Organisation	Name of Delegate	Country Based In
082	Abu Dhabi National Oil Company (ADNOC)	Ashish Srinivasan	UAE
083	Hogere Zeevaartschool	Axel Annaert	Belgium
084	EGS International	Chris Howlett	UK
085	iXblue/AFhy Francophone Hydrographic Society	David Vincentelli	France
086	Exail	Fabien Germond	France
087	Fugro	Hugh Parker	Australia
088	EOMap	Knut Hartmann	Germany
089	Fugro/International Federation of Hydrographic Societies (IFHS)	Iain Slade	UK
090	EIVA	Ian Davies	UK
091	AML Oceanographic	James Walton	USA

092	David Evans and Associates	Jason Creech	USA
093	IIC Technologies	Jose Arias	USA
094	Kongsberg Maritime	Jose Cordero	Norway
095	Kongsberg Maritime	Kjetil Jensen	Norway
096	Fugro	Marco Filippone	Germany
097	Teledyne Marine	Nathan Wardwell	USA

Additional Membership of SDBPT Only

Organisation	Name of Delegate	Country Based In
Australian Geospatial-Intelligence Organisation	Clint Thorpe	Australia
Australian Hydrographic Office	Nigel Townsend, Cdr	Australia
EOMAP Australia Pty Ltd	Magnus Wettle	Germany
EOMAP GmbH & Co. KG	Edward Albada	Germany
EOMAP GmbH & Co. KG	Thomas Heege	Germany
EOMAP GmbH & Co. KG	Philip Klinger	Germany
EOMAP GmbH & Co. KG	Kim Knauer	Germany
Federal Maritime and Hydrographic Agency (BSH)	Volkmar Leimer	Germany
Fugro	Dhira Adhiwijina	
Fugro	Marina Niederjasper	Germany
German Aerospace Centre (DLR)	Dimosthenis Traganos	Germany
Hellenic Centre for Marine Research (HCMR)	Vivi Drakopoulou	Greece
Hydrobiology	Simon Drummond	Australia
Institut Teknologi Bandung (ITB)	Adistina Lailia Fajar Dewi	Indonesia
Institut Teknologi Bandung (ITB)	Fickrie Muhammad	Indonesia
Institute for Electromagnetic Sensing of the Environment (CNR-IREA)	Claudia Giardino	Italy
Institute for Electromagnetic Sensing of the Environment (CNR-IREA)	Mariano Brescini	Italy
Institute of Technology for Development (Lactec)	Henrique Reisdorfer Leite	Brasil
Instituto Hidrográfico	Ruben Santos	Portugal
Istanbul Technical University	Emre Gülher	Turkey
Land Information New Zealand (LINZ)	Stuart Caie	New Zealand
National Oceanic and Atmospheric Administration (NOAA)	Richard Stumpf	USA
Quality Positioning Services (Q.P.S.) B.V.	Deborah Febres Urdaneta	Netherlands
Royal Australian Navy	Michael Rue	Australia
UK Hydrographic Office (UKHO)	Austin Capsey	UK
University Florida	Vincent Lecours	USA

Annex B – HSWG Workplan

HSWG Proposed Work Plan - 2024 to 2026

HSWG Tasks

A	Conduct at least annual meetings of HSWG and its sub-group(s) and project team(s) (IHO Tasks 2.1.2.9).
B	Maintain and promote IHO publication S-44 – <i>Standards for Hydrographic Surveys</i> – preparing and proposing revisions and amendments to reflect changes in the demands of hydrographic data users, particularly those pertaining to data quality and standards.
C	Update, maintain, and promote IHO publication C-13 – <i>IHO Manual on Hydrography</i> – to reflect current techniques, methodologies and survey systems, in particular to ensure harmonization with the standards articulated in S-44.
D	Develop and promote Satellite Derived Bathymetry (SDB) best practice and identify future development priorities.
E	Maintain close liaison with other HSSC and IRCC working groups, in particular the work of the Data Quality Working Group (DQWG) to meet the presentation/visualization requirements of nautical data to the maritime customer, and the CBSC to support the educational and best practice elements.
F	Identify new systems, technologies and methodologies and exchange experiences, best practice and challenges amongst member states in line with the IHO objectives.
G	Act as a focal point for hydrographic surveys industry engagement with the IHO.
H	Liaise with other relevant IHO Working Groups to promote harmonization across IHO standards.

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A-1	Organise and conduct HSWG7 meeting	H	Agree location / date / send invitation	Jan 2024	Oct 2024	O	Chair HSWGSec		One offer to host received from Germany
B-1	Review S-44 Edition 6.2.0	M	Prepare list of proposed updates	June 2024	Sept 2025	O	All		
B-2	Prepare next S-44 edition v 6.3 or 6.2.1	M	Implement updates	Sept 2025	March 2026	O	S-44 editorial board		
B-3	Develop S-44 v6.2 promotional material	M	Consolidate and share material	April 2022	On going	O	Vice Chair HSWG		
B-4	Develop S-44 education material	M	Consolidate and share material	April 2022	On going	O	Vice Chair HSWG		
B-5	Identify translation opportunities for S-44	L	Supply translated material to IHO	April 2022	On going	O	Vice Chair HSWG		Dependency: Member states to supply translated documents
B-6	Monitor S-44 uptake worldwide	H	IHO Secretariat accept action to set up IHO download monitoring system	May 2022	On going	O	IHO		IHO Strategic Plan 2021-2026 (Goal 2 – Target 2.2.2 – page 7) Dependencies: -IHO website metrics available -New edition of S-44 available
C-1	Review C-13 Edition 1.0.0	H	Initial meeting of project team (MHPT)	Oct 2022	Sept 2023	C	Chair MHPT		
C-2	Prepare next C-13 edition	H	Compile updates and change recommendations	March 2024	April 2025	P	Chair MHPT		Complete by MHPT-8 Release C-13 Dec 2025
C-3	Develop C-13 promotional material	L	Consolidate and share material	Aug 2025	On going	P	Chair MHPT		

Work item	Title	Priority H-high M-medium L-low	Next milestone	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
C-4	Develop C-13 education material	L	Consolidate and share material	Aug 2025	On going	P	Chair MHPT		
C-5	Identify translation opportunities for C-13	L	Supply translated material to IHO	2026	On going	P	Chair MHPT		
D-1	Maintain SDB best practice guidelines	M	SDBPT to draft best practice guidelines	March 2024	On going	O	Chair SDBPT		
D-2	Identify future development priorities	L	Prioritization of technological aspects which shall be addressed by SDBBWG	July 2021	On going	O	Chair SDBPT		
E	Maintain liaison with HSSC and IRCC subordinate bodies – DQWG, HDWG, TWCWG, S100WG	H	Initial meetings with WGs.	July 2021	On going	O	Chair group to facilitate		Liaison for each WG established at HSWG1
F-1	Attend relevant industry events	M	Share event dates	2021	On going	O	All		
F-2	Develop new system/technology presentation material and supporting documents	M	Provide briefings to HSWG	2021	On going	O	All		
G	Attend and represent HSWG at relevant industry fora	M	Provide briefings to HSWG	2021	On going	O	All		
H	Identify areas of overlap and potential conflicts across standards	H	Provide a list of potential standards conflicts	July 2021	On going	O	Chair group		Approach S-100 and DQWG on best method to collaborate to address potential conflicts

Annex C – MHPT Workplan

Work Plan #	Title	Lead	Priority H-High M-Medium L-Low	Next Milestone	Start Date	End Date	Status P-Planned O-Ongoing C-Completed S-Superseded	Remarks
C-1	Review C-13 requirements via Questionnaire		H	Identify sub-group & Potential timeline	Feb 21	Feb 23	C	Questionnaire to be reviewed as part of MHPT-3
C-1a	<i>Review the existing C-13 edition to provide additional points to be addressed in the questionnaire</i>	<i>ID</i>	<i>H</i>	<i>Update and Finalise Questionnaire</i>	<i>Nov 20</i>	<i>Oct 22</i>	<i>C</i>	<i>Add additional requirements at MHPT-3 Questionnaire ready to be launched.</i>
C-1b	<i>Draft Questionnaire</i>	<i>All</i>	<i>H</i>	<i>Update and finalise Questionnaire</i>	<i>Oct 22</i>	<i>Oct 22</i>	<i>C</i>	<i>Complete review and amends to draft questionnaire at MHPT-3 for approval by HSWG</i>
C-1c	<i>Issue Questionnaire to Member States HO's, Academia and Industry and wider public</i>	<i>All</i>	<i>H</i>	<i>Questionnaire published</i>	<i>Dec 22</i>	<i>Jun 23</i>	<i>C</i>	<i>Identify suitable online survey site and identify costs and funding options. Propose Questionnaire left open for 6 months to allow tie in with HSWG-4 allowing preliminary results to be discussed. Undertake second publicity campaign in targeted sectors to encourage more feedback</i>
C-2	Review current C-13		H	Compile updates and change recommendations	Oct 22	Jun 23	O	Prepare draft to next meeting: MHPT-5
C-2a	<i>MHPT Members undertake preliminary review of current C-13, provide feedback</i>		<i>H</i>	<i>Co-ordinate documentation to support recording review</i>	<i>Oct 22</i>	<i>Oct 23</i>	<i>C</i>	<i>Revise Review Spreadsheet to allow Chapter Leads to provide summaries of reviews by section. Create a check off list against original ToC to ensure all sections are checked. Gap Analysis of S5B Review of IHO Publications and existing references Review of other references and publications Review of stakeholder feedback Develop scope of work for changes required</i>

C-2 ^a -i	Chapter 1 - Principles of Hydrographic Surveying	ID/JC	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -ii	Chapter 2 - Positioning	CC	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -iii	Chapter 3 - Depth Determination	KJ	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -iv	Chapter 4 - Seabed Classification and Feature Detection	SC/KJ	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -v	Chapter 5 - Water Levels and Flow	DR	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -vi	Chapter 6 - Topographic Surveying	CC(1) HP(2)	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in C-13 Review Template Findings to be presented at HSWG 05
C-2 ^a -vii	Chapter 7 – Hydrographic Practise	JAA	H	Review of Content	Oct 22	Oct 23	C	Review at HSWG 4 Review Requirements to be included in MHPT-3 Minutes
C-2 ^a -viii	Appendices		M		May 23	Jul 24	P	To be reviewed once Chapter Changes are collated
C-2b	Consolidation of questionnaire results				Jun 23	Oct 23	C	Intersessional Meetings to analyse results and update C-13 Review Template
C-2c	Define scope of final document		M		Jun 23	Feb 24	C	Based on chapter reviews and questionnaire Intersessional Meeting to confirm final scope
C3	Editing of C13 to incorporate revisions/amendments				Mar 24	Apr 25	P	Review of Progress at MHPT-6 Complete by MHPT-8

C-3a	MHPT incorporate changes and amendments				Mar 24	Apr 25	P	Amendments and New Insertions incorporated by Chapter and reviewed externally at C4. Timeline to be determined at later meetings.
C-3 ^a -i	Chapter 1 _ Geodesy and Coordinate Systems	CC	M	Undertake Amendments Identified in Review	May 24	Jun 24	P	Provision of Graphics to be determined to provide uniformity External support for new insertions to be requested via Questionnaire
C-3 ^a -ii	Chapter 2 - Positioning		M	Undertake Amendments Identified in Review	Jul 24	Aug 24	P	Provision of Graphics to be determined to provide uniformity
C-3 ^a -iii	Chapter 3 – Tides, Water Levels and Flow		M	Undertake Amendments Identified in Review	Sep 24	Oct 24	P	External support for new insertions to be requested via Questionnaire External support for new insertions to be requested via Questionnaire
C-3 ^a -iv	Chapter 4 – Depth Determination	NR	L	Undertake Amendments Identified in Review	Nov 24	Dec 24	P	Provision of Graphics to be determined to provide uniformity External support for new insertions to be requested via Questionnaire
C-3 ^a -v	Chapter 5 – Seafloor Classification	SC	L	Undertake Amendments Identified in Review	Jan 25	Feb 25	P	External support for new insertions to be requested via Questionnaire External support for new insertions to be requested via Questionnaire
C-3 ^a -vi	Chapter 6 – Feature Detection		L	Undertake Amendments Identified in Review	Mar 25	Apr 25	P	Provision of Graphics to be determined to provide uniformity External support for new insertions to be requested via Questionnaire
C-3 ^a -vii	Chapter 7 – Hydrographic Practise	NR	H	Undertake Amendments Identified in Review	Mar 24	Apr 24	P	External support for new insertions to be requested via Questionnaire External support for new insertions to be requested via Questionnaire
C-3 ^a -viii	Chapter 8 – Topographic and Imagery Surveying		L	Undertake Amendments Identified in Review	Apr 25	May 25	P	Provision of Graphics to be determined to provide uniformity External support for new insertions to be requested via Questionnaire

C-3 ^a -ix	<i>Annexes and Appendices</i>	<i>ID</i>	<i>M</i>	<i>Undertake Amendments Identified in Review</i>	<i>Mar 24</i>	<i>Apr 25</i>	<i>P</i>	<i>Provision of Graphics to be determined to provide uniformity External support for new insertions to be requested via Questionnaire</i>
C-4	<i>HSWG Review of Draft C-13 Document</i>				<i>May 24</i>	<i>Apr 25</i>	<i>P</i>	<i>Alos External Reviewers identified by initial Questionnaire</i>
C-4 ^a	<i>Final Edited Chapters formatted into proposed document format</i>	<i>HSWG</i>			<i>Feb 25</i>	<i>Apr 25</i>		<i>Final Format of Document to be confirmed along with how this will be completed (IHO or External Party)</i>
C-4 ^a -i	<i>Chapter 1 _ Geodesy and Coordinate Systems</i>	<i>HSWG</i>	<i>M</i>	<i>Review Amended Content</i>	<i>Jul 24</i>	<i>Jul 24</i>		<i>2</i>
C-4 ^a -ii	<i>Chapter 2 - Positioning</i>	<i>HSWG</i>	<i>M</i>	<i>Review Amended Content</i>	<i>Sep 24</i>	<i>Sep 24</i>		<i>3</i>
C-4 ^a -iii	<i>Chapter 3 – Tides, Water Levels and Flow</i>	<i>HSWG</i>	<i>M</i>	<i>Review Amended Content</i>	<i>Nov 24</i>	<i>Nov 24</i>		<i>4</i>
C-4 ^a -iv	<i>Chapter 4 – Depth Determination</i>	<i>HSWG</i>	<i>M</i>	<i>Review Amended Content</i>	<i>Jan 25</i>	<i>Jan 25</i>		<i>5</i>
C-4 ^a -v	<i>Chapter 5 – Seafloor Classification</i>	<i>HSWG</i>	<i>L</i>	<i>Review Amended Content</i>	<i>Mar 25</i>	<i>Mar 25</i>		<i>7</i>
C-4 ^a -vi	<i>Chapter 6 – Feature Detection</i>	<i>HSWG</i>	<i>L</i>	<i>Review Amended Content</i>	<i>Apr 25</i>	<i>Apr 25</i>		<i>6</i>
C-4 ^a -vii	<i>Chapter 7 – Hydrographic Practise</i>	<i>HSWG</i>	<i>H</i>	<i>Review Amended Content</i>	<i>May 24</i>	<i>May 24</i>	<i>P</i>	<i>1</i>
C-4 ^a -viii	<i>Chapter 8 – Topographic and Imagery Surveying</i>	<i>HSWG</i>	<i>L</i>	<i>Review Amended Content</i>	<i>Apr 25</i>	<i>Apr 25</i>		<i>8</i>
C-4 ^a -ix	<i>Annexes and Appendices</i>	<i>HSWG</i>	<i>L</i>	<i>Review Amended Content</i>	<i>Mar 24</i>	<i>Apr 25</i>		<i>9</i>
C-5	<i>IHO Review of revised C-13</i>				<i>May 25</i>	<i>Dec 25</i>	<i>P</i>	
C-5 ^a	<i>HSWG Review and Approval</i>				<i>May 25</i>	<i>May 25</i>		<i>Intersessional Review</i>
C-5 ^b	<i>HSSC Review</i>				<i>Jun 25</i>	<i>Jul 25</i>		<i>Incorporate observations prior to next stage</i>

C-5c	<i>Review by Member States</i>				<i>Aug 25</i>	<i>Oct 25</i>		<i>Incorporate Member state observations</i>
C-5d	<i>Develop C-13 promotional material</i>				<i>Aug 25</i>	<i>Oct 25</i>		
C-6	Release of C13				<i>Nov 25</i>	<i>Dec 25</i>		
C-7	Identify translation opportunities for C13		L	Identify volunteers	<i>2026</i>	<i>On going</i>	P	

Annex D – SDBPT Workplan

Key Tasks

A	Conducting regular meetings of SDB-PT
B	Maintaining an SDB Best Practice Guideline, preparing and proposing revisions and amendments to reflect changes in the demands of hydrographic and other SDB data users, particularly those pertaining to data quality and standards;
C	Supporting IHO's Hydrographic Surveys Working Group (HSWG) and project teams pertaining to all relevant aspects of SDB
D	Supporting Capacity Building and promoting benefits/opportunities on SDB
E	Identifying new concepts, technologies, and methodologies on SDB and fostering the exchange of experience, best practice and challenges amongst the Members.

Work item	Title	Priority H-high M-medium L-low	Next mile-stones	Start Date	End Date	Status P-planned O-ongoing C-completed S-Superseded	Contact Person(s)	Related Pubs / Standard	Remarks
A-1	B-13 final release as official IHO publication	H	Publication of 1 st Version	31.09.2022	30.03.2024	O	Chair		
A-2	Maintain SDB-PT and submission of updated versions for HSWG review	H	Establishment of an inter-meeting team for maintaining B-13		15.02.2025	P	Chair and Vice Chair		
A-3	Maintain SDB-PT and submission of updated versions for HSWG review	H	-		15.02.2026	P	Chair and Vice Chair		
A-8	Review of other related materials/documents	M	consolidate existing material which can support on structure or content, such as IHO B-12, C-13 and Gebco CookBook	01.06.2021	ongoing	O	Chair		
B-1	Present and participate at HSWG meetings	H	Invite HSWG members to participate at SDB-PT, collect HSWG demand on SDB	2021-06-29	ongoing	O	Chair and Vice Chair		
B-2	Engage with C-13 project team	M	Identify synergise and required input to interact with C-13 project team at the HSWG meetings	2021-06-29	ongoing	O	Chair and Vice Chair		
B-3	Outreach, engagement	M	Engage with other organisation which are/might be stakeholders of SDB and SDBPT	2024-04-01	ongoing	P	Chair		
B-4	Outreach, publication	M	Joint abstracts, articles or similar promoting SDB and SDBPT	2024-04-01	ongoing	P	Chair		
D-1	Maintaining SDB-PT TOR and Work Plan and member lists	H	TOR, Work Plan and member list available at IHO webpage	2021-06-23	ongoing	O	Chair		
E-1	Contribution to regional IHO meetings	M	Engage with regional IHO chairs to check interest	Ongoing	ongoing	P	Chair and Vice Chair		
F-1	Identification of actions for SDB technology/innovation exercises	L	Prioritization of technological aspects which shall be addressed by SDBBWG	Q3 2023	ongoing	P	Chair and Vice Chair		