



## IALA ENG COMMITTEE

# REPORT OF THE 17TH SESSION OF THE IALA ATON ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

16 to 27 October 2023

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28 October 2022

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International Association of Marine Aids to Navigation and Lighthouse Authorities  
Association Internationale de Signalisation Maritime

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**Report of the 17<sup>th</sup> Virtual Session of the IALA  
AtoN Engineering and Sustainability (ENG) Committee  
16 to 27 October 2023  
Executive Summary**

The 17<sup>th</sup> meeting of the ENG Committee (ENG16) was held from 17 to 27 October 2023.

The session was attended by 112 registered participants from 32 countries. 27 participants attended for the first time.

Working in four working groups, the Committee considered 63 inputs and produced 6 output documents.

The Committee reviewed and produced the following guidelines:

- ENG17-13.2.1 Draft IALA Guideline on Resilient PNT

The Committee produced the following liaison notes:

- ENG17-13.1.1 Liaison note to DTEC on Developments on the Maritime Internet of Things
- ENG17-13.1.2 Liaison note to ARM on General Overview of Floating AtoN
- ENG17-13.1.3 Liaison note to ARM on the progress of cybersecurity tasks.

The WG2 provided comments to ARM on the draft Guideline on cybersecurity (ENG17-13.2.2)

The Committee produced the following input paper to Council 79:

- ENG17-13.3.1 Input to Council 79 on the ENG17 commendation of Faro di Genova 'Lanterna' as IALA HLY2024

Planned intersessional work:

- The draft Guideline on MF R-Mode signal should be further developed through intersessional meetings with the aim to provide a mature input to ENG18. Committee members which are interested to contribute to this guideline are invited to provide their interest by e-Mail to [stefan.gewies@dlr.de](mailto:stefan.gewies@dlr.de).
- The draft Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service should be further developed intersessionally with the aim to provide an input to ENG18. Committee members which are interested to contribute to this guideline are invited to provide their interest by e-Mail to [qbcouple@163.com](mailto:qbcouple@163.com).

**After some discussion, ENG17 WG4 determined to commend Faro di Genova 'Lanterna', Italy to IALA Council as IALA Heritage Lighthouse of the Year 2024.**

The following table shows a summary of the ENG Committee task plan for the work period 2023-2027 and the progress made to date.

### Overall status of the ENG Committee 2023-2027 Work Programme after ENG17:

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
S1010 Marine AtoN								
1.1.1	Compile new Guideline on AtoN Buoy Tender requirements and specification	17						On going
1.1.2	Review relevant sections of NAVGUIDE in cooperation with the Secretariat	17						On going
1.1.3	Develop guidance on the provision of Marine AtoN for autonomous vehicle/vessel operations (MASS).	17						On going
1.2.1	Consider developing guidance on the certification of technical equipment, information systems and technical infrastructure related to MASS in the domain of IALA	17						On going
1.2.2	Develop guidance on cyber security for Marine AtoN	17						On going
S1020 AtoN design and delivery								
2.1.1	Update G1043 Light sources used in visual AtoN	17						On going
2.1.2	Update G1048 LED technologies and their use in signal lights	17						On going
2.1.3	Develop guideline on Port Traffic Signals	17						On going
2.1.4	Update R0112 Leading lights	17						On going
2.1.5	Update G1061 Light application illumination of structures	17						On going
2.1.6	Update R0203(E200-3)	17						On going
2.1.7	Develop Guidance on monitoring of function and degradation of AtoN light sources	17						On going
2.1.8	Update G1041 Sector Lights	17						On going
2.2.1	Update G1037 Data collection for AtoN performance calculation	17						On going
2.2.2	Update G1077 Maintenance of AtoN	17						On going
2.2.3	Develop Guideline on complimentary use of AtoN	17						On going
2.2.4	Update and Amalgamate the Guidelines G1108 and G1136	17						On going
2.5.1	Update G1064 Integrated power system lanterns (Solar LED lanterns)	17						On going
2.2.5	Full review of A-126, G1084 and other AIS associated documentation	17						On going
2.3.1	Develop guidance quantifying floating AtoN characteristics	17						On going
2.3.2	Creating an overview guidance on floating AtoN	17						On going
2.3.3	Update Recommendation R0107 (E-107) Moorings for floating AtoN	17						On going

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
2.3.4	Update G1066 Design of floating AtoN moorings	17						On going
2.4.1	Review and update as necessary G1036, the Green Guide	17						On going
2.4.2	Guidance on through life environmental impact	17						On going
2.6.1	Maintain the Heritage web page on the IALA website	17						On going
2.6.2	Develop Guidance on modern equipment in traditional lighthouses	17						On going
2.6.3	Heritage Lighthouse of the Year award	17						On going
2.6.4	Write the Heritage lecture for the WWA L1.1 AtoN Manager course	17						On going
2.6.5	Review of documents pertinent to heritage reviewed	17						On going
2.6.6	Update G1063 ENG Dec 2008 Agreement for complementary use of lighthouse property. What should the agreement contain and safety aspect of the agreement including examples of few countries.	17						On going
2.6.7	Review Guidelines 1074, 1075 on Branding, and Business plans for content and relevance.	17						On going
<b>S1030 Radionavigation services</b>								
3.5.1	Develop Guidance on timing and synchronization	17						On going
3.5.2	Review and updates of documents related to the PNT topics.	17						On going
3.5.3	PNT technology review	17						On going
3.5.4	Review the WWRNP	17						On going
3.5.5	Develop the Liaison note with sister organisations	17						On going
3.1.1	Finalise the resilient PNT guideline	17						On going
3.2.1	Develop the Guideline on R-Mode (MF)	17						On going
3.2.2	Develop the Recommendation and Guideline on R-Mode implementation (MF & VDES)	17						On going
3.2.3	Develop the Recommendation for the Coordination for Group Repetition Intervals (GRI)	17						On going
3.3.1	Review the Radar & Enhanced Racon positioning Guideline	17						On going
3.4.1	Monitoring DGNSS developments, both SBAS and marine Radiobeacon and update IALA documents as necessary and Complete (Future of) DGNSS Guideline	17						On going
3.4.2	Develop Guideline on how to implement SBAS within VDES(ASM-VDE)/AIS	17						On going

Task	Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
				Green	Yellow	Red	
3.4.3 Develop Guideline on new systems related to High accuracy positioning systems	17						On going
<b>S1050 Training and certification</b>							
5.1.1 Review and update of the WWA Lesson plans as requested by the Academy	17						On going
5.1.2 Training in implementation of digital solutions (data analytics & maritime informatics)	17						On going
<b>S1060 Digital communication technologies</b>							
6.3.1 Review and update G1008 Remote control and monitoring of AtoN	17						On going
<b>S1070 Information Services</b>							
7.1.x Develop product specifications Review and maintain S-24x product specifications. Development of DGNS and R-Mode product specifications	17						On going

**Legend:**

**Green** – progress as planned

**Yellow** – task needs more time, target time prolonged

**Red** – very little progress on the task, target time prolonged

**Grey** – task completed / deleted

**Blank** – task not started

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# Report of the 17<sup>th</sup> Session of the IALA ENG Committee

## 1. GENERAL

The 17<sup>th</sup> meeting of the ENG Committee (ENG17) was held from 16 to 27 October 2023, chaired by Alwyn Williams and vice-chaired by Michel Cousquer. The Secretary for the meeting was Jaime Alvarez.

The session was attended by 112 registered participants from 32 countries. 27 participants attended for the first time. Working in three working groups, the Committee considered 63 inputs and produced 6 output documents.

### 1.1 Welcome from the IALA Deputy Secretary-General

The Deputy Secretary-General, Omar Frits Eriksson, welcomed all participants to the ENG17 session which is the first session of the work period 2023-2027 after the successful Conference and General Assembly in Rio de Janeiro (May – June 2023). The Deputy Secretary-General thanked the Brazilian Navy for the excellent organisation of the Conference and the Industry members for having organised the exhibition and evening night. The highlights of the Conference are available as input paper for the session. The Deputy Secretary-General recalled that the next Conference will be held in India in 2027.

The Deputy Secretary-General, noted with special interest the input paper from Sabik on IoT and IoT AtoN protocol, the dual intensity lanterns from Singapore Maritime Port Authority, the use of drones and AtoN management system in South Korea, batteries matters and many inputs on the scope of resilient PNT that have been received. Equally, other inputs from industrials and China MSA on various relevant topics are expected to be addressed to develop content for the WWA. The Deputy Secretary-General must thank all the contributors for the tremendous work that lies behind these input papers, schedule of meetings and commitment over the ENG meeting.

As Dean of the World-Wide Academy, he thanked the inputs on model courses and training proposals. As all know knowledge and education are key to developing those coastal States who need assistance to fulfil their international obligations such as those stipulated in SOLAS Chapter five regulation 12 and 13.

The Deputy Secretary-General addressed the Inter-Governmental project developments. Twenty-six ratifications or accessions were formally received and several more are coming in the near future. After the reception of 30 ratifications or accession, IALA will transform into an Inter-Governmental Organization. The Secretariat is working on all the new structures and administrative issues that need to be in place for the new Organization and Singapore has generously offered to host the first General Assembly of the new IGO.

The Deputy Secretary-General wished all the participants good luck and thanked them once again for their contribution in the well-known spirit of the IALA family to the global safety of navigation over this busy period.

### 1.2 Approval of the agenda

The agenda (ENG17-1.2.1) was adopted.

### 1.3 Apologies and Introductions

The list of Committee Members who attended ENG17 is shown in ANNEX B. New participants were welcomed in addition to those returning to the Committee.

The committee received the apologies from Fernando Romero, president of MSM who has been attending the ENG Committee since its creation and IALA since 1998.

### 1.4 Working arrangements for ENG17

The following statements were read to Committee members:

*IALA is required to comply with the General Data Protection Regulations of the European Union. In the report of this meeting, IALA will include a list of participants with their contact information. Any participant who*

wishes to remove their personal information from the participants' list should advise the Committee Secretary as soon as possible.

*If anyone present has knowledge of any patents, including pending Patents, held either by themselves or by other organisations or individuals, the use of which may be required to practice or implement the content of IALA Documents being developed or worked on in this Committee to inform the IALA Secretariat.*

The Secretary briefly presented the Dashboard developed by IALA staff which will continue to be the One-Stop-Shop for conducting the Committees and centralised all the information, status and meeting needs for the member during the Committee working period.

#### 1.4.1 Style Guide

The Secretary recalled the [IALA Style Guide](#) designed to assist those members in preparing and reviewing IALA documentation. The purpose of this guide is to provide a common language, structure, and appearance.

This document is divided into three main parts:

- Style - Content (section 2) - this includes the preferred standards for grammar, language, punctuation, and spelling.
- Structure – Structure and formatting (section 3) - this includes how documents should be structured and ordered and includes the use of customised styles and fields in Microsoft Word.
- Appendices – including a supplementary table of spelling, a summary of the styles applied within the document templates and an extract from the IALA Brand Guidelines to illustrate the corporate colours.

### 1.5 ENG committee structure

The Chair then introduced and gave the floor to the Working Group Chairs and Vice Chairs:

- WG1 Visual and Physical Marine Aids to Navigation chaired by Malcolm Nicholson
- WG2 Radionavigation Services chaired by Michael Hoppe
- WG3 Heritage and Culture chaired by Peter Hill

## 2. REVIEW OF ACTION ITEMS FROM ENG16

Input paper ENG17-2.1.1 refers. Action items for the IALA Secretariat from ENG16 were noted as complete. WG chairs were requested to review Members actions.

## 3. REVIEW OF INPUT PAPERS

### 3.1 Input papers

It was noted that all input papers were available on the IALA website. The Committee considered 63 input papers, some of them were received the week before the opening plenary. The chairman requested participants to forward the input papers before the deadline in order to provide enough time to be read.

Jaime Alvarez summarised the content of the input papers highlighting those who have been received in the past days:

- ENG17- 3.0.7.1 Draft Guideline on Cyber Security - Post DTEC1
- Late update on ENG17- 3.1.2.13 BDS PPP offshore test and application suggestions
- ENG17- 3.1.2.12 Cover note for SouthPAN declaration
- ENG17- 3.1.2.12.1 Draft SBAS declaration for IALA.

## 4. REPORTS FROM OTHER BODIES

### 4.1 Reports from IALA

#### 4.1.1 20th Conference

Minsu Jeon, IALA Technical Manager, informed participants that the IALA Conference provided a remarkable platform for delving into a wide array of presentations encompassing various technical aspects within IALA's scope. Over the course of this event, approximately 140 presentations were delivered, spanning both plenary sessions and the speaker's corner, and all of these presentations can be accessed via the file-sharing platform. This opportunity proved invaluable for staying abreast of ongoing technical advancements and gaining insights into forthcoming developments.

Upon examining the conclusions drawn from the conference, some trends were prominently discussed, with a notable focus on sustainability, in alignment with the United Nations Sustainable Development Goals (SDGs). The cooperative relationship between the International Hydrographic Organization (IHO) and IALA was emphasized as well.

A considerable number of presentations delved into the realm of autonomy and the human dimension, a topic magnified by the influence of digitalization in the maritime field. The Conference also highlighted that it is equally crucial not to lose sight of the importance of physical Aids to Navigation (AtoN) for mariners.

The input documents ENG17-4.1.1 Report 20th IALA Conference 2023 and ENG17-4.1.1.1 IALA Conference summary reference the outcomes of the 20<sup>th</sup> IALA Conference in Rio de Janeiro – May 2023. The conveyed conclusions were:

- **Sustainability** and its link to the **UN SDGs** is of increasing importance and IALA is duty bound to raise the profile of this area in the committees. Members should continue to **innovate sustainable approaches** by recognizing, developing and reviewing the whole lifecycle of AtoN services.
- To achieve **digital transformation** in the S-100 domain, the importance of **collaboration and continued dialogue between IHO, IALA** and other domain controllers is necessary. IALA should stand ready to assist coastal authorities with their transition to S-100 related products.
- **Autonomy** is a driver to leverage the development of digital products. AtoN has a role in support of autonomous vessels and technology needs to be standardized to meet the future requirements of all vessels.
- VTS technology needs to take into account **human factors with increased digitalization**, including **AI in VTS**.
- IALA acknowledges that **virtual tools** and the **use of e-learning** contributes to flexible, efficient and sustainable training. In addition, IALA recognizes its role in promoting the use of language testing tools to improve the communication capabilities of VTS operators.
- **Physical AtoN remains important to the mariner**. IALA members should continue to pursue **emerging technologies and approaches** such as big data analytics, Internet of Things (IoT), machine vision technology and drones to make their services more effective and meet the future needs of the mariner.

#### 4.1.2 General Assembly

The General Assembly took place the third of June 2023 in Rio de Janeiro, Brazil. The main outcomes of the GA were:

- Approval of amendments to the constitution and adopted the associated Resolution A14-01
- Approval of the Standards Ed 2.0
- Approval of the MBS Ed2.0
- Approval of the Strategic vision

- Consideration of proposals received from members
- Election of the council - as a result of these votes the following National members were elected:
  - Australia: Australian Maritime Safety Authority (54)
  - Canada: Canadian Coast Guard (56)
  - Chile: Directorate General of the Maritime Territory and Merchant Marine (Directemar) (48)
  - Denmark: Danish Maritime Authority (52)
  - Finland: Finnish Transport Agency (47)
  - Germany: Federal Waterways and Shipping Agency (49)
  - Ireland: Commissioners of Irish Lights (41)
  - Italy: Italian Coast Guard (54)
  - Japan: Japan Coast Guard (60)
  - Malaysia: Light Dues Board, Peninsular Malaysia (53)
  - Morocco: Direction des ports et du Domaine public maritime (53)
  - Norway: Norwegian Coastal Administration (52)
  - People's Republic of China: Maritime Safety Administration (48)
  - Republic of Korea: Ministry of Oceans and Fisheries (58)
  - Singapore: Maritime and Port Authority (60)
  - Spain: Puertos del Estado (57)
  - Sweden: Swedish Maritime Administration (51)
  - The Netherlands: Ministry of Infrastructure and the Environment, Directorate of Maritime Affairs (51)
  - Türkiye: Directorate General of Coastal Safety (52)
  - United Kingdom: Trinity House (51)

USA: US Coast Guard (48)

#### 4.1.3 Council

Minsu Jeon, provided the committee with the report of Council 76 (ENG17-4.1.3.0, .1, .2 Report Council 76, 77 and 78), which were held in December 2022, May and June 2023 in Rio de Janeiro (Brazil). The following points are relevant to note for the ENG Committee:

Council 76: last meeting of the previous working programme which occurred 12 – 16 December 2022. The Council approved a substantial number of draft documents encompassing standards, recommendations, and guidelines. These documents were subsequently endorsed by the General Assembly. Among these approved documents were ones pertaining to the strategic vision, an amendment to the constitution, Recommendation R1001 Maritime Buoyage System Edition 2.0, and a suite of standards Edition 2.0. Furthermore, Guideline G1139, which addressed the Technical Specification of VHF Data Exchange System (VDES), was revoked. Additionally, the VTS Committee requested the Council to withdraw two documents: Recommendation R0120 (VTS in Inland Waterways) and Recommendation R1014 (Portrayal of VTS Information and Data). The following recommendation and guidelines are of interest of ENG participants:

- R001 Ed2.0 Maritime Buoyage System
- R0203 Ed 2.0 Definition on marine signal lights terms and measurement
- G1172 Ed1.0 Marking of bridges and other structures over navigable waters.

- G1173 Ed1.0 Marine AtoN awareness and training for mariners.
- G1174 Ed1.0 Radar reflectors on marine aids to navigation.
- G1175 Ed1.0 AtoN equipment and structures exposed to extreme environmental conditions.

The Council also approved a proposal from the ARM Committee for the second IHO IALA workshop on S 100 and 200, scheduled to take place in Annapolis, USA, in 2024. Lastly, the council designated Cap Spartel Lighthouse in Morocco as the Heritage Lighthouse of the Year for 2023.

Council 77 convened on May 28 this year in Brazil, during this session, the group made note of the report from PAP49 and an extraordinary session of the ENAV committee.

Finally, the 78th session of the Council was held on June 3 in the same location, with newly elected councillors participating. This session marked the approval of the committee structure for the work period spanning from 2023 to 2027. A significant change involved the renaming of the ENAV Committee to the DTEC Committee. The Council also endorsed the appointment of new chairs for the ENG and ARM committees, along with a new vice-chair for the ARM committee, as well as re-appointing chairs and vice-chairs for VTS and ENAV committees and vice-chair for ENG Committee.

#### 4.1.3.1 Documents approved by Council

- Draft Strategic Vision (C76-8.1.1.2)
- Amendment to the Constitution (C76-10.1.2.1)
- Revised R1001 Ed2.0 Maritime Buoyage System (C76-10.3.2).
- Revised Standard Ed2.0 S1010 to S1070 (C76-14.2.3.1 - C76-14.2.3.7)
- G1172 Ed1.0 Marking of bridges and other structures over navigable waters.
- G1173 Ed1.0 Marine AtoN awareness and training for mariners.
- G1174 Ed1.0 Radar reflectors on marine aids to navigation.
- G1175 Ed1.0 AtoN equipment and structures exposed to extreme environmental conditions.
- G1130 Ed2.0 Technical aspects of information exchange between VTS and allied or other services.
- G1111 Ed2.0 Establishing functional and performance requirements for VTS systems and equipment.
- G1111-1 Ed1.0 Producing requirements for the core VTS system.
- G1111-2 Ed1.0 Producing requirements for voice communication.
- G1111-3 Ed1.0 Producing requirements for radars.
- G1111-4 Ed1.0 Producing requirements for AIS.
- G1111-5 Ed1.0 Producing requirements for environment monitoring sensors.
- G1111-6 Ed1.0 Producing requirements for electro-optical systems.
- G1111-7 Ed1.0 Producing requirements for radio detection finders.
- G1111-8 Ed1.0 Producing requirements for long range sensors.
- G1111-9 Ed1.0 Framework for acceptance of VTS systems.
- G1176 Ed1.0 How to promote safety culture in VTS.
- G1177 Ed1.0 Portrayal of VTS information.
- C0103-1 Ed3.0 VTS operator training.
- C0103-3 Ed3.0 VTS on-the-job training.
- G1157 Ed2.0 Web service based S-100 data exchange.

- G1107 Ed3.0 Planning and reporting of testbeds in the maritime domain.
- G1117 Ed3.0 VHF data exchange (VDES) overview.
- G1178 Ed1.0 An introduction to artificial intelligence from an IALA perspective.
- G1179 Ed1.0 An introduction to The Internet of Things from an IALA perspective.

#### 4.1.3.2 Heritage Lighthouse of the Year

WG3 Chair Peter Hill recalled the importance of the culture and the heritage that these lighthouses provide beyond their function as AtoN. This link is at IALA members disposal <https://heritage.iala-aism.org/> for more information and get the template to submit information for the next IALA HLY nomination. The WG3 will be looking at the nominations received for the HLY 2024 during this session.

#### 4.1.3.3 Technical Documents Catalogue

The edition 6 of the [technical document catalogue](#) is available on the website with the latest updates.

#### 4.1.4 Policy Advisory Panel (PAP)

Minsu Jeon, reported that the 50<sup>th</sup> session of PAP was held between 6 - 8 September 2023.

The PAP agreed to the adoption of an online work programme database. This database will be helpful in the management of tasks assigned to the various committees. It promises to streamline committee operations and enhance efficiency within the organization.

The PAP also considered the draft new terms of reference for the committees and subsidiary bodies in the newly established intergovernmental organization (IGO).

Furthermore, discussion considered establishing a liaison with the International Civil Aviation Organization (ICAO) regarding the marking of seaplane operational areas. This liaison aims to foster collaboration and ensure the smooth functioning of seaplane operations in alignment with international standards.

The PAP session provided valuable updates on IALA's involvement in the ongoing Standards of Training, Certification, and Watchkeeping (STCW) review, the review of the Automatic Identification System (AIS) documents, developments related to S-200, and progress with MRN.

Next PAP 51 will be held the 6 to 8 February 2024 in the IALA HQ.

#### 4.1.4.1 Sustainability workshop

The ENG Chair, Alwyn Williams, provided an update of the sustainability workshop which is a cross committee task with the involvement of the (vice)Chairs of the four committees in the steering group meetings to build the technical programme, flyer and all the arrangements. The target date to run the workshop is the 1st week of October 2025 and the purposes are:

- Promote knowledge of environmental impact of AtoN provision
- Provide guidance on the assessment of the environmental impact of AtoN provision to enable providers and manufacturers to make an informed choice when designing, specifying and buying AtoN & AtoN systems.
- Gather information to develop an IALA Sustainability Assessment Tool Box, to assess environmental impact from AtoN provision.

#### 4.1.4.2 AtoN engineering WS

David Jeffkins, principal advisor AtoN asset management from AMSA presented the workshop on AtoN Engineering which will be held in Sydney 14 – 18 October 2024, back-to-back with the 19<sup>th</sup> session of ENG Committee that will also take place in Sydney 21 – 25 October 2024. The both IALA meetings will be hosted by AMSA in the Parkroyal Darling Harbour, Sydney. The topics and objectives are depicted as follows:

- AtoN lights and power supply systems



- A regional perspective – Pacific region experience and solutions
- Emerging technologies – PNT, MASS and AtoN, MRN etc
- Review of IALA WWA lesson content for technicians and Level 1 Manager training

The technical program is almost finished with just a few details to finalised and have the below overview:

Date	Programme
Day 1 – Monday, 14 <sup>th</sup> October 2024	<ul style="list-style-type: none"> <li>• Session 1 - Opening of the Workshop</li> <li>• Session 2 - Regional Perspective</li> <li>• Session 3 - A glimpse into the future</li> <li>• Welcome Reception – Evening Function</li> </ul>
Day 2 – Tuesday, 15 <sup>th</sup> October 2024	<ul style="list-style-type: none"> <li>• Session 4 - Lights</li> <li>• Session 5 - Power</li> <li>• Session 6 - Position, Navigation &amp; Timing</li> <li>• Session 7 - PNT Candidate Technologies</li> </ul>
Day 3 – Wednesday, 16 <sup>th</sup> October 2024	<ul style="list-style-type: none"> <li>• To review all WWA model courses</li> <li>• Session 8 – Working Environment</li> <li>• Session 9 – WWA</li> <li>• Session 10 – Working Groups x 4</li> <li>• Session 11 – Working Groups x 4</li> <li>• Session 12 – Working Groups x 4</li> <li>• Evening social event – TBC</li> </ul>
Day 4 – Thursday, 17 <sup>th</sup> October 2024	<ul style="list-style-type: none"> <li>• Session 8 – Working Groups x 4</li> <li>• Session 9 – Working Groups x 4</li> <li>• Session 13 – WG Feedback</li> <li>• Session 14 – Workshop Conclusions</li> </ul>
Day 5 – Friday, 18 <sup>th</sup> October 2024	<ul style="list-style-type: none"> <li>• Optional technical visit - Macquarie Lighthouse</li> </ul>

Registration is already open and is required:

- [Workshop](#)
- [Committee](#)

The flyer will be published and sent shortly containing more details on the framework, process, logistic arrangement, social events and visits.

#### 4.1.5 2023-2027 Work Plan and task register

The vice Chair of the ENG Committee, Michel Cousquer, explained the content of the work programme for the 2023-2027 period. The main tasks of ENG Committee are under the standards S1010, S1020, S1030 and S1050. Before the end of the session, the task register will be presented aiming at providing the status of the different tasks.

#### 4.1.6 World Wide Academy

Omar Fritz Erikson, Dean of the Academy provided a summary of the objectives of the WWA (based on the second goal of IALA) and the just passed activities and short-term commitments with the competent authorities for the provision of Marine AtoN and VTS in terms of training and capacity building. He highlighted the importance of finalizing the cooperation with such competent authorities by engaging them for future activities in IALA and the WWA. The different courses built and provided by the WWA were also identified and the schedule presented. It was also noted that the Academy is ready to act when an eventuality (as a war or any other issue occurs) in order to help the IALA national members. The Academy is an independent entity in IALA so that is independently founded, income from IALA members is always very welcome.

Other relevant information provided is the fact that all the presentations and summaries are available in the following file share [link](#).

## 4.2 Update on MASS task group

A number of activities concerning the development of autonomous technologies in the maritime environment are taking place in the frame of IALA to keep an outstanding role to provide guidance to competent authorities and IALA members in general on MASS:

- IALA Guideline on developments and implications of maritime autonomous surface ships for coastal authorities. This guideline is led by the DTEC Committee, however, the contributions of all committees are requested. The following table shows the draft roadmap for developing the guideline:

Meetings	Work plan
TF 4 (Sep 2022)	Consider and finalize the draft roadmap and the framework
PAP 47 (Sep 2022)	Approve the draft roadmap and the framework
Committees and LAP (2 <sup>nd</sup> half 2022)	Continue drafting the relevant chapters
Council (December 2022)	Note the development
TF 5 (1st half 2023)	Consider the development and provide inputs
Committees and LAP (1st half 2023)	No meetings
TF 6 (2 <sup>nd</sup> half 2023)	Consider the development and provide inputs
Committees and LAP (2 <sup>nd</sup> half 2023)	Continue drafting the relevant chapters
TF 7 (1st half 2024)	Consider the development and provide inputs
Committees and LAP (1st half 2024)	Continue drafting the relevant chapters
TF 8	Consider the development and provide inputs
Committees and LAP (2 <sup>nd</sup> half 2024)	Finalize the IALA MASS guideline
Council (2 <sup>nd</sup> half 2024)	Approve the IALA MASS guideline

The content of the document is allocated like below;

Committees	Section to develop in the Guideline
<b>DTEC</b>	<ul style="list-style-type: none"> <li>• General</li> <li>• Communication</li> <li>• Data transfer standards</li> <li>• Cyber Security</li> </ul>
<b>VTS</b>	<ul style="list-style-type: none"> <li>• VTS interaction with MASS</li> <li>• Safe and efficient operations</li> </ul>
<b>ARM</b>	<ul style="list-style-type: none"> <li>• Management</li> <li>• Portrayal</li> <li>• Spatial Awareness</li> <li>• Interaction with manned vessels</li> <li>• Risk Management &amp; Assessment</li> </ul>
<b>ENG</b>	<ul style="list-style-type: none"> <li>• PNT</li> <li>• Position augmentation</li> <li>• Power availability</li> <li>• Conventional AtoN visibility to MASS</li> </ul>
<b>LAP</b>	<ul style="list-style-type: none"> <li>• Legal aspect</li> </ul>

- **MASS Task Force:** The purpose of the group is to facilitate MASS related work within IALA and focus the work on developing relevant guidance to members. The group meets periodically to discuss MASS developments, study national and regional MASS projects and progress MASS related work across the technical committees. The group reports to the Policy Advisory Panel which assigns the groups work and decides on its composition. The initial deliverables of the group are:
  - a schedule of the work indicating deadlines for deliverables.
  - a report on possible MASS scenarios and their impact on Marine Aids to Navigation;

- a scoping exercise and a report on the impact of MASS on IALA publications; and
- a report on possible MASS related work items for the IALA committees;
- MASS workshop: (2-3 October 2023) with important stakeholders from users (ICS and BIMCO) and IMPA, shipbuilders like Hyundai, Navantia, maritime authorities and other industry to make possible scenario on why invest in MASS, types of ships from 5-20 years from now.

### 4.3 IMO Meetings

Hideki Noguchi and Minsu Jeon provided a summary of milestones reached during the recent IMO meetings – The input paper ENG17-4.3 IALA report on IMO NCSR10 refers to NCSR relevant discussions for IALA:

- IALA has submitted five papers on different topics as maritime resource names, Maritime Services descriptions, Auditor's Manual for the IMO Member State Audit Scheme, Guideline G1117 on VDES) Overview and the past workshop on Digital maritime communication.
- Related to the Maritime Services, IALA proposed the update and new descriptions on Maritime Services for VTS and Aids to Navigation. This submission was approved without any changes. As an outcome, VTS 1, 2, and 3 have been consolidated into a singular description on VTS under MS1. The updated AtoN description is now the second point on the list of the descriptions (MS2).
- NCSR also approved a revision of resolution MSC.530(106) on Performance standards for ECDIS that introduces new ECDIS functionalities for a standardized digital exchange of ships' route plans between ships and shore. This approval may signify an opening step, potentially paving the way for broader data exchanges between ECDIS systems and coastal States.
- NCSR10 considered the development of amendments to SOLAS IV and V and performance standards on VDES as instructed by MSC 103
- Considering the revision of Recommendation ITU-R M.1371-5, the tasks on navigational Status (mainly editorials), inclusion of MAToNs in AIS Message 21, a new single slot AIS AtoN message and a text message for AIS SART, MOB and EPIRB when manually deactivated was agreed.
- The provision of the NAVDAT service by coast stations would be optional and the existing system (i.e. NAVTEX) and the new proposed system (i.e. NAVDAT) were expected to co-exist for a long time. The draft performance standards on NAVDAT should be re-considered at NCSR 11 based on the outcome of WRC-23
- Some concerns were expressed in regards with the availability of radio equipment in compliance with the revised performance standards set out in resolutions MSC.511(105) and MSC.512(10), which are now delayed to 1 January 2028.
- NCSR10 discussed the issue of unlawful practices associated with the fraudulent registration and registries of ships, including manipulation of AIS data transmissions and tampering of AIS transponders.
- Generic performance standards for shipborne satellite navigation system receiver equipment seeking for integrating performance standards of all existing recognized satellite-based radionavigation systems. Expected completion year of this output was defer to 2024.

In addition, Hideki Noguchi orally reported that MSC 107 agreed to include the new work item of the development of dual-frequency multi-constellation (DFMC) SBAS and advanced RAIM (A-RAIM) receiver performance standards proposed by co-sponsors including IALA into the IMO work plan.

### 4.4 IHO

Minsu Jeon, reported that regarding International Hydrographic Organization (IHO) matters, IALA continues to be actively engaged in several initiatives. IALA is active in IHO Hydrographic Services and Standards Committee (HSSC) meetings and additionally, the World-Wide Academy (WWA) has joined regional hydrographic Commission meetings, demonstrating a cooperative approach to regional discussions.

A second joint workshop between IHO and IALA has been scheduled for next year and IALA is poised to resume its regular technical cooperation meetings with the IHO later in the current year: 2nd Joint IALA-IHO Workshop on S-100 and S-200, 09 – 13 September 2024 in Annapolis (Maryland, USA).

## 4.5 ITU

Stefan Bober, IALA representative in ITU-R Working Party 5B (WP 5B) - Maritime mobile service including Global Maritime Distress and Safety System (GMDSS); aeronautical mobile service and radiodetermination service reported the status of relevant discussions for IALA during the meetings from 10<sup>th</sup> to 21<sup>st</sup> July 2023 in Geneva.

The full report is available under the reference ENG17-4.5 Report on ITU-R WP5B meeting 10 to 21 July 2023. The following points resume the report:

- Revision of Recommendation ITU-R M.1371-5 (Automatic Identification System - AIS), IMO agreed with (competition of the review of Recommendation ITU-R M.1371-5 is not expected before end of 2024):
  - Changes in Navigational Status description
  - Introduction of MAtoN in AIS Message 21 Aids to navigation Report
  - a new Single Slot AtoN Report in general but leave the technical solution to ITU
  - clarification of safety related text messages for AIS-SART, MOB\_AIS and EPIRB-AIS
  - VDES capability indicator need further consideration by IMO
- Revision of Recommendation ITU-R M.493-15 and ITU-R M.541-10 (Digital selective-calling DSC): some modifications of the recommendation were addressed.
- New report on digital voice communication in the VHF maritime band to investigate the possible expansion of the number of VHF maritime voice channels based on the introduction of digital technology, reliability, GMDSS, mode of operation (simplex/duplex), bandwidth, range, etc.
- New report on the impact of the possible introduction of a R-Mode on the VDES including the need for an Alternative Positioning Navigation and Timing system, identification of spectrum and timing requirements, a technical description of VDES R-Mode, interoperability and resource sharing of VDES R-Mode and VDES Communication Services and Testing, demonstrations and measurements.
- A new ITU study question was raised on the coexistence of VHF data exchange system with a Ranging-Mode in the VHF data exchange system: what technical conditions are necessary for a radio navigation application to ensure their coexistence (R-Mode in the VDES) when using a common frequency band or adjacent frequency bands with VDES.
- New ITU study question “Introduction of Digital Voice Communications in the VHF maritime frequency channels”
- These and other topics are further explained in the input paper ENG17-4.5.

## 4.6 RTCM

Stig Erik provided a summary of the RTCM 10402.4 DGNSS standard during the previous meetings last years and the last one in end of September 2023. IALA send a liaison note to his meeting requesting the publication of the RTCM 10402.4 DGNSS standard. During the meeting in RTCM, some reluctance to such publication was expressed due to the fact that such standard is considered obsolete (15 years of work on it) and it just imply the DGNSS / IALA beacons and the extensions proposed in the v2.4 standard are for dual frequency multi-constellation (considering all the signals and all the systems available) so that there is no capacity enough in the current system to send out the related data. The recommendation will be to look for alternatives to this standard aiming at retransmitting other signals from the beacons: integrity support messages, R-Mode messages. An official reply from RTCM to IALA is expected to be received.

A new RTCM special committee is working now on the matter.

## 4.7 PIANC

Minsu Jeon briefed about the monitoring activity of IALA in the work in PIANC, any subject in the scope of IALA will be coordinate with them. Latest publications of interest are:

- Infrastructure for decarbonisation of the IWW transport
- Beneficial use for the sustainable waterborne transport infrastructure project
- Design of terminal for Ro-Ro and Ro-PAX
- Criteria for acceptable of ships at berth

## 4.8 CIE

Alwyn Williams provided a summary of relevant topics for ENG: Division 4 of CIE works on service condition factors (named there, lighting degradation factor), the updates on such division will be provided. Alwyn Williams submitted to CIE, the G1148 Ed1.1 Determination of Required Luminous Intensity for Marine Signal Lights which will be the reference document for CIE in the marine environment.

Division 2 on measurement has also been monitored by Alwyn Williams.

## 5. ADVERTISING PRESENTATIONS

The following presentations were scheduled during the working period:

Working Group	Date	Room	Time	Subject	Presenter
WG1	16/10/2023	Plenary	16:00	Sabetoflex buoy innovations	Ed Steijn (Sabetoflex)
			16:20		
			16:40		
			17:00		
WG2	17/10/2023	Caralbe	09:00	Galileo High Accuracy Service: Maritime Testing Campaign 2023	Pedro Pintor (EUSPA)
			09:20	Upcoming IEC standard for SBAS L1 shipborne receivers	Elisabet Lacarra (ESSP)
			09:40	Development of Procedures and Requirements for the Recognition of Augmentation Systems in the WWRNS	José Luis Martín (ESSP)
			10:00	Retransmission of SBAS data through VDES	José Luis Martín (ESSP)
			11:00	Proposal on R0101 Marine Radar beacons (RACON) Modification	Chunhai (China MSA)
WG3	17/10/2023	Artic	11:20	Qingyu Lighthouse	Xiaoye Wang (China MSA)
			11:40	The 5th International Aids to Navigation Forum in the Republic of Korea	Mr. Son, National Lighthouse Museum (K-AtoN)
			12:00	The 4th IALA Heritage Seminar Report	Bae YongChan (K-AtoN)

## 6. OVERVIEW OF PLANNED WORK FOR ENG17

The working group Chairs informed participants about the tasks expected to be developed during the Committee session. Such tasks and activities could be consulted in the ENG16 action plan section of the Dashboard.

- 7.1. WG 1 - Visual and Physical AtoN - Malcolm Nicholson
- 7.2. WG 3 - Radionavigation Services – Michael Hoppe
- 7.4. WG 4 - Heritage & Culture - Peter Hill

## 7. ESTABLISH WORKING GROUPS

### 7.1 Establishing working groups

Four working groups were established, as outlined below.

Working Group		Working Group Chair	Working Group Vice Chair
WG 1	Visual & Physical AtoN	Malcolm Nicholson	Lingyan Wang
WG 3	Radionavigation Services	Michael Hoppe	Jeffrey van Gills
WG 4	The Heritage & Culture	Peter Hill	Jonghun Kim / Sarah-Jane Lakshman

## 8. WORKING GROUP 1 – VISUAL & PHYSICAL ATON

The working group consisted of 44 members and considered 29 input papers. The main task of the group was to complete the task plan and update the task register. The group received three liaison notes, prepared three liaison notes and a level 2 model course as outputs. A request from the Dean of the WWA to conduct a robin light measurements was presented.

### Action Item

The **Secretariat** is requested to forward the Liaison Note ENG17-13.1.1 on Developments on the Maritime Internet of Things (IoT) to DTEC.

The **Secretariat** is requested to forward the Liaison Note ENG17-13.1.3 on Progress on Cyber Security guideline to ARM17.

The **Secretariat** is requested to forward the Output Paper ENG17-13.2.2 on Cyber Security guideline to ARM17.

### 8.1 ENG-2.1.1 Update G1043 Light sources used in visual AtoN

<b>Objectives of the task</b>	Amalgamate G1049 the use of modern light sources in traditional lighthouse optics Into G1043 light sources used in visual Aids to Navigation Update new version of G1043 light sources used in Aids to Navigation
<b>Expected outcome</b>	Updated and amalgamated guideline G1043 light sources used in visual Aids to Navigation
<b>Compelling need</b>	There has been significant change in light source technology since publication of these guidelines.  There is also significant overlap in the subject areas between the publications.  It is beneficial to collate this information into a single publication and update with present practices and technology.

### 8.2 ENG-2.1.2 Update G1048 LED technologies and their use in signal lights

<b>Objectives of the task</b>	To update Guideline 1048 LED Technologies and their use in signal lights
<b>Expected outcome</b>	Updated Guideline

<b>Compelling need</b>	This guideline was released in 2005. LED technologies and application practices have evolved since then. This guideline should be updated to incorporate these developments.
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### 8.3 ENG-2.1.3 Develop guideline on Port Traffic Signals

<b>Objectives of the task</b>	To develop guideline on Port Traffic Signals
<b>Expected outcome</b>	Postponed -
<b>Compelling need</b>	To provide guidance on port traffic signals to mariners & authorities

#### Action Item

That **Committee participants** with an interest in Port Traffic Signals are requested to submit input papers to ENG18 to help support the development of the Guideline on Port Traffic Signals.

### 8.4 ENG-2.1.4 Update R0112 Leading lights

<b>Objectives of the task</b>	Improved document structure and guidance
<b>Expected outcome</b>	Revised documents on leading lights and leading lines
<b>Compelling need</b>	<p>Main reasons for reviewing the documents include:</p> <ul style="list-style-type: none"> <li>• There are some inconsistencies in the advice provided in the Recommendation, Guideline and Excel workbook calculation tool. These inconsistencies could lead to calculation errors.</li> <li>• There is information contained within the Recommendation that is better placed within a Guideline.</li> <li>• The information as presented is not intuitive for those accessing the documents for the first time and a user-friendly guide is required.</li> </ul>

### 8.5 ENG-2.1.5 Update G1061 Light application illumination of structures

<b>Objectives of the task</b>	Update Guideline 1061 (2008) on Illumination of Structures
<b>Expected outcome</b>	Revised Guideline
<b>Compelling need</b>	It has been 15 year since publication and this document has been flagged as requiring update. WSV has provided additional formulas and calculations to assist with design of these systems. These will be assessed and incorporated as appropriate.

### 8.6 ENG-2.1.6 Update R0203(E200-3)

<b>Objectives of the task</b>	To produce a Guideline for R0203 measurement and a guideline for R0203 uncertainty.
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<b>Expected outcome</b>	Two Guidelines to supplement R0203  It is noted this area can become very complex. Effort will be made to ensure the content is as concise and accessible as possible for marine AtoN measurement facilities.
<b>Compelling need</b>	E200-3 contains some outdated content relating to light sources, measurement techniques and equipment. This requires updating to reflect the latest research results from other international organizations such as IEC and CIE. Furthermore, best light measurement practices from marine AtoN measurement facilities around the world will be included within the guideline.  Uncertainty is a large topic and will be captured in a separate guideline to give focussed, more accessible publications.

### **8.7      ENG-2.1.7 Develop Guidance on monitoring of function and degradation of AtoN light sources**

<b>Objectives of the task</b>	Add to G1077 and develop Guidance on monitoring of function and degradation of AtoN light sources
<b>Expected outcome</b>	Enhanced G1077
<b>Compelling need</b>	Members have developed monitoring techniques beyond what G1077 presently covers. It will be beneficial to include these updated practices/techniques in the guideline.

### **8.8      ENG-2.1.8 Update G1041 Sector Lights**

<b>Objectives of the task</b>	Revise Guideline 1041
<b>Expected outcome</b>	Revised Guideline
<b>Compelling need</b>	The guideline contains conflicting information on angle of uncertainty with R0203.

### **8.9      ENG-2.2.1 Update G1037 Data collection for AtoN performance calculation**

To be reviewed during ENG18

### **8.10     ENG-2.2.2 Update G1077 Maintenance of AtoN**

Update G1077 Dec 2009 Maintenance of AtoN 1.0 Information to help develop a maintenance strategy. Several annexes are attached to provide detailed information on the activities involved in the maintenance.

1. Recommend title change to G1077 Developing a Maintenance Strategy for Aids to Navigation.
2. Identify standard and recommendation G1077 should sit under
  - a. Standard S1020
  - b. Recommendation R1018
3. Review G1077 and determine new structure & content for the document. Identify and link related documents.



4. Make recommendations for further updates to associated documents or identify areas that require documents to be created.

#### 8.11 ENG-2.2.3 Develop Guideline on complimentary use of AtoN

This task requires a review of its purpose, which will be carried out during EN G18.

#### 8.12 ENG-2.2.4 Update and Amalgamate the Guidelines G1108, G1136 and G1175

Progress was made on this task by amalgamating the Guidelines on Hot climates, polar climates and extreme climates with a view to provide members with a coordinated document.

#### 8.13 ENG-2.5.1 Update G1064 Integrated power system lanterns (Solar LED lanterns)

Objectives of the task	Update G1064 Dec 2008 Integrated power system lanterns (Solar LED lanterns)
Expected outcome	Revised guideline
Compelling need	Document revision

#### 8.14 ENG-2.3.1 Develop guidance quantifying floating AtoN characteristics

The Task Group met four time during ENG17 working period, where renaming and substantial editing work on the Guideline was completed. The meetings were hybrid and attended by 6 participants from 6 different countries (two online, four in person).

A liaison note from ARM 16 (ENG17-3.0.5) was reviewed, although ARM were only able to have initial comments on the Guideline content and structure. The ARM comments were reviewed and considered within the work undertaken on the Guideline during the working sessions.

The content of the draft Guideline was reviewed with duplications and surplus information being removed from the draft.

Members of WG1 with an interest in this draft Guideline are requested to review the document as it currently stands and comments and corrections are welcomed.

A response Liaison Note to ARM has been drafted to request comments on the whole content of the renamed Guideline.

##### Action Item

*The **Secretariat** is requested to forward ENG- 13.1.2 Liaison note on General Overview of Floating AtoN to ARM.*

#### 8.15 ENG-2.3.2 Creating an overview guidance on maintenance of floating AtoN

This task is an amendment to provide members with guidance on maintenance of floating AtoN.

##### Action Item

*That **Committee participants** are requested to submit input papers to ENG18 on their experiences of maintaining floating AtoN.*

#### 8.16 ENG-2.3.3 Update Recommendation R0107 (E-107) Moorings for floating AtoN

Objectives of the task	To review and update recommendation on moorings for floating AtoN
Expected outcome	Revised recommendation
Compelling need	Low, to be completed after task 2.3.4.

#### 8.17 ENG-2.3.4 Update G1066 Design of floating AtoN moorings

Objectives of the task	To review and update G1066
Expected outcome	Updated Guideline on Design of floating AtoN moorings
Compelling need	<b>High</b> , Input paper 3.1.1.2 indicates that G1066 contains typos in equation 7 – G1066 should be reissued with corrected equation before the next ENG18 as the document could lead potentially to user miscalculations. <b>Medium</b> , the working group reviewed the document as is and to their opinion, it needs a general update to add clarification and details. Additionally input paper 3.1.1.1 would be addressed.

##### Action Item

The **Secretariat** is requested to amend the published G1066 with the correct formula as described in ENG17-3.1.1.2 G1066 on The Design of Floating Aids to Navigation Swinging Radius.

#### 8.18 ENG-2.4.1 Review and update as necessary G1036, the Green Guide

This task will be considered during the Sustainability Workshop to be held in October 2025.

#### 8.19 ENG-2.4.2 Guidance on through life environmental impact

This task will be considered during the Sustainability Workshop to be held in October 2025.

#### 8.20 ENG-5.1.1 WWA lesson plans to review

The working group reviewed the input paper ENG17-3.1.1.6 Model Course Level 2 Module12 ENG16-3.1.2.5 and approve the content for a model course.

This task will be further considered during the AtoN Workshop to be held in October 2024.

##### Action Item

The **Secretariat** is requested to forward the level 2 model course ENG17- 13.1.4 on beaconing of waterways and fairways channels to the WWA for further review.

The **Secretariat** is requested to forward the input paper ENG17-3.0.4 on Ocean Literacy to the AtoN Engineering Workshop in October 2024.

The **Secretariat** is requested to forward the input paper ENG17-3.1.1.10 Qualification and Basic Knowledge Course for Light Keepers ENG16-3.1.2.12 to the AtoN Engineering Workshop in October 2024.

#### 8.21 ENG-6.3.1 Update G1008 Remote control and monitoring of AtoN

Objectives of the task	To rewrite the guideline to reflect modern approaches, implementation and management of remote control and monitoring systems. How data is exchanged and the reliability of the information.
Expected outcome	updated Guideline
Compelling need	Technology and approaches have evolved significantly of the period and these need to be integrated into a new guideline.

## 9. WORKING GROUP 2 – RADIONAVIGATION

The WG2 Chair and Vice Chair express their gratitude to WG participants for their hard work and perseverance this week. The WG Chair and Vice Chair would also like to thank all the Task Group leaders for their time and effort in progressing their work items. WG2 reviewed the working plan for the new working period and provided an update and implemented a new numbering according to the IALA catalogue in close cooperation with the secretariat. The updated tasks are reflected in the report for the specific task. As the new IALA document share will not be cleared after each meeting, working documents have been placed in a folder marked as such within each task's sub-folder on the IALA file share.

### 9.1 Resilient PNT (Task 3.1.1)

The Committee received the input papers (ENG17-3.1.2.1, 3.1.2.2 and 3.1.2.3) including a well-developed draft guideline on resilient PNT. The Guideline was further reviewed and amended during the meeting and a final version was generated which should become an output of ENG-17. The committee thanks The Task Group for their huge effort they spend to developing the guideline.

#### *Action item*

*The **Secretariat** is requested to forward ENG17-3.1.2.2 “Guideline on Resilient PNT” to Council for approval.*

### 9.2 Terrestrial radionavigation systems (Task 3.2.1)

#### 9.2.1 R-Mode (MF)

The committee received a number of input papers according to the Guideline on “Working paper ENG-17 13.2.3 MF R-Mode signal structure and navigation message” (Input papers ENG-17 3.1.2.4, 3.1.2.4.1, 3.1.2.5, 3.1.2.6 and 3.1.2.6.1) including a well-developed draft guideline on “MF R-Mode signal structure and navigation message”.

During this session the draft guideline on “MF R-Mode signal structure and navigation message” was reviewed and further progressed. The latest version of the draft has been uploaded to the file share and will be carried over as a working document.

It is planned that the Guideline on MF R-Mode signal should be further developed intersessional with the aim to provide a mature input to ENG18. The work will be performed in correspondence between interested members. Committee members which are interested to contribute to this guideline are invited to provide their interest by e-Mail to [stefan.gewies@dlr.de](mailto:stefan.gewies@dlr.de).

#### *Action item*

*That **Committee participants** interested in supporting the development of the ENG-17 13.2.3 Guideline on MF R-Mode signal structure and navigation message between sessions are invited to contact the task leader Stefan Gewies ([Stefan.Gewies@dlr.de](mailto:Stefan.Gewies@dlr.de)).*

### 9.3 Develop and maintain relevant product specifications (Task 7.1.x)

No work was progressed during this session on product specification. Nevertheless, the committee reviewed the work plan and identified work to be carried out over the next sessions with respect to R-Mode. The work plan was updated accordingly.

### 9.4 Guidance on timing and synchronisation (Task 3.5.1)

No work was progressed during this session on the Timing and Synchronisation Guideline. The latest version (ENG16) is available on the file share as a working paper. It is planned that this work will continue during succeeding sessions. The work plan was updated accordingly.

### 9.5 eRacon (standard approach); Review recommendations ENAV146 & R-101 & Guideline 1010 (Task 3.3.1)

The Committee received input paper ENG17-3.1.1.14 together with a presentation from China MSA according to “Proposal on R0101 Marine radar beacons modification”.

The Committee reviewed the work of the ERPS Workshop (paper ENG15-3.2.8) and discussed what is needed to complete the Liaison Note to IMO on the Enhanced Radar Positioning System. It is anticipated that this Liaison Note will be an output of ENG19.

The Committee discussed the updating of existing IALA Racon documents (R0101, G1010, R0146) and noted that the work is planned for 2023-2027.

## 9.6 Augmentation Systems (Task 3.4.1)

### 9.6.1 Review of existing DGNSS infrastructure and provision of guidance for current system

The DGNSS guideline was not discussed further in this meeting. The feedback from RTCM SC-104 regarding an update of the RTCM 10402.3 standard was presented by Stig Erik and further discussed. The committee had a general discussion on the topic and felt that the DGNSS guideline needs to be adapted to new alternatives on how to use the beacon band in the future, taking into account the feedback from RTCM and developments of new proposed RTCM messages for integrity and R-Mode. It is planned to discuss the guideline at the next meeting with the goal of finalizing it in 2024. It was also discussed that ITU-R M-823 needs to be updated to reflect the latest version of RTCM SC10402.3 Amendment 1 message type 27. The work plan has been updated accordingly.

### 9.6.2 Consideration on how and when to use SBAS

The committee received a number of inputs relating to recent developments regarding SBAS as following:

- ENG17-3.1.2.7 “Upcoming IEC standard for SBAS L1 shipborne receivers”. The committee noted the input paper and the given presentation, which showed that the standardization within IEC will be finished most likely by end 2023/beginning of 2024 with first type approved receivers most likely being available by end of 2024.
- ENG17-3.1.2.8 “Retransmission of SBAS data through VDES”. The committee noted the input paper and the given presentation. Work on a future Guideline was added to the work plan. It was agreed that DTEC committee should be informed when work on that guideline will start to enable a timely interaction between both Committees according to coordination of used VDES channel capacity.
- ENG17-3.1.2.9 “IMO Recognition for Augmentation Systems”. The committee noted the input paper and the given presentation. A discussion took place to consider if an appropriate input could be provided to enable a submission to IMO NCSR11. Due to the challenging time schedule the Committee recommends working on an IMO submission at ENG18 to enable a timely submission to NCSR12 in 2025. It was suggested to provide a draft input paper to ENG18, which could be developed by correspondence. Committee members which are interested in contributing to this IMO submission are invited to provide their interest by E-Mail to the WG2 chair ([Michael.Hoppe@wsv.bund.de](mailto:Michael.Hoppe@wsv.bund.de)).
- ENG17-3.1.2.12 and ENG17-3.1.2.12.1 “SouthPAN declaration”. The committee reviewed the input paper and the submitted declaration. The Committee is of the view that the submitted declaration is in line with the Recommendation R1022 and the annexed template. Within a discussion the committee considered the following topics:
  - The WG2 mentioned that a type approved receiver might be required when using the SouthPAN service.
  - The Secretariat shall check if it is possible to publish the Declaration (as provided) on the IALA Webpage with LAP.
  - If approved by LAP this declaration could be published on the IALA web page.

### Action item

That **Committee participants** interested in supporting the development of “IMO Recognition for Augmentation Systems” between ENG17 and ENG 18 are invited to contact the WG2 chair ([Michael.Hoppe@wsv.bund.de](mailto:Michael.Hoppe@wsv.bund.de)).

The **Secretariat** is invited to bring the planned publication of the SouthPAN declaration to the attention of LAP. If approved by LAP the IALA Secretariat is invited to publish the SouthPAN declaration on the IALA Web page.

### 9.7 High accuracy positioning systems (Task 3.4.3)

The committee noted the input paper ENG17-3.1.2.13 “BDS PPP offshore test and application suggestions” and the given presentation. Further, the committee noted the input paper ENG17-3.1.2.10 and a presentation on “Galileo High Accuracy Service for Maritime”.

A task group was established to review both inputs and to start first work on a draft guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service, which should be continued over the next sessions. The work plan has been updated accordingly.

It is planned that the draft guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service should be further developed intersessionally with the aim to provide an input to ENG18. It is planned that the work will be progressed in correspondence between interested members. Committee members which are interested to contribute to this guideline are invited to provide their interest by E-Mail to [gbcouple@163.com](mailto:gbcouple@163.com).

#### Action item

That **Committee participants** interested in supporting the development of the ENG17-13.2.4 draft Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service between sessions are invited to contact the task leader Qian Sun ([gbcouple@163.com](mailto:gbcouple@163.com)).

### 9.8 Review and update current documentation under the purview of PNT WG (Task 3.5.2)

The Committee had planned to review and to update the IALA WWRNP. No work was carried out during this session. A discussion took place, recognizing that there are some intersections between radionavigation systems and communication systems. This is especially true for the transmission of GNSS correction data e.g., via communication systems like AIS/VDES or others. In addition, the VDES-R-Mode is also a topic that affects both fields. Further, it was discussed that there is the need for clarification how to use radio communication for PNT and radio navigation systems for communication. It was proposed to think about a common ENG/DTEC workshop, which could work on an update of the WWRNP maintained in the ENG Committee and the WWRCP maintained in the DTEC Committee. A proposal for such a workshop could be further considered at ENG18 and DTEC2.

#### Action item

That **Hideki Noguchi** is invited to submit the workshop proposal on how to use radio communication for PNT and radio navigation systems for communication to ENG18 and DTEC2 and

That **Committee participants** interested in drafting the workshop proposal on how to use radio communication for PNT and radio navigation systems for communication are invited to contact him ([hideki.noguchi@gmail.com](mailto:hideki.noguchi@gmail.com))

### 9.9 Monitor developments in GNSS, DGNSS, radar, resilient PNT, e-Pelorus, terrestrial systems, R-Mode, inertial and any other relevant areas etc. (Task 3.5.3)

No work was progressed during this session.

### 9.10 Liaison with sister organisations (IMO, ITU, IEC, RTCM etc.) on related topics (Task 3.5.5)

The Committee reviewed ENG17-4.5.1 “IMO-ITU EG 19-6-1 - Liaison statement from ITU-R Working Party 5B Comments on WPT studies”. The Committee realized the potential interference of future high power WPT (Wireless Power Transfer) to existing maritime radio systems especially in the lower frequency bands. Future

work might be necessary to inform ITU-R (WP5B) with regard to the effects on systems like the MF DGNSS radio beacon, eLoran, MF R-Mode and others. More work on this might be necessary on upcoming meetings with possible liaison with ITU.

### 9.11 Input to Maritime Services in the context of eNavigation, Integrity considerations for resilient PNT, cybersecurity impact for PNT data, datum considerations

The WG2 reviewed an appropriate Liaison note from ARM Committee (ENG17-3.0.7) on Progress on Cyber Security Guideline, with the task to revisit the draft guideline section on PNT. Some amendments were made and the updated section was forwarded to WG1 of the ENG Committee, which has the lead of the document within this committee.

## 10. WORKING GROUP 3 – THE HERITAGE & CULTURE

ENG WG3 – Heritage Forum considers its overall objective to be:

*“To further the declaration and recommendations contained within the Incheon Declaration and within IALA Recommendation R1005 – ‘Conserving the built heritage of lighthouses and other aids to navigation’.*

Over the course of ENG 17, WG3 received the participation of 17 people for all or part of the WG’s work or presentations (including online participants).

Name		Nation	Organisation
BAE	Yong Chan	Republic of Korea	Ministry of Oceans and Fisheries
BURNS	Gillian	Scotland	Northern Lighthouse Board
GUO	Zhenyu	People's Republic of China	China Maritime Safety Administration (MSA)
HILL	Peter	UK - England	Trinity House
KIM	Jonghun	Republic of Korea	Ministry of Oceans and Fisheries - Paichai University
LAKSHMAN	Sarah-Jane	Australia	Australian Maritime Safety Authority (AMSA)
LIU	Juan (Echo)	People's Republic of China	China Maritime Safety Administration (MSA)
MAJOURAU	Solange	France	Secrétariat d'État chargé de la Mer
MUSOLINO	Guiuseppe	Italy	Italian Navy - Direzione Fari e Segnalamenti
RANXUAN	Ke	People's Republic of China	Navigation Institute of JiMei University
SCULLY	Chris	Ireland	Commissioners of Irish Lights
SIM	Jiwon	Republic of Korea	Korea Institute of Aids to Navigation
SON	Seong Woo	Republic of Korea	Korea Institute of Aids to Navigation
TAKEUCHI	Kinji	Japan	Japan Coast Guard
WANG	Xiaoye (Echo)	People's Republic of China	China MSA
LI	Wei	People's Republic of China	China Maritime Safety Administration
YOO	Naehyuk	Republic of Korea	Korea Institute of Aids to Navigation

The meetings were chaired by **Peter Hill**, **Jonghun Kim** and **Sarah-Jane Lakshman** were joint Vice-Chair.

### 10.1 Presentations

WG3 were pleased to receive the following presentations, which were all well received and generated some interesting discussion;

- G1063 Ed.1 Agreements for Complementary use of Lighthouses, Dec 2008 – Input papers 3.1.3.2 & 3.1.3.2.1 summary (Juan Liu, China Maritime Safety Administration (MSA))
- Qingyu Lighthouse (Xiaoye Wang, China MSA)
- ENG17-3.0.3 The 5th International Aids to Navigation Forum in the Republic of Korea (Seong Woo Son, National Lighthouse Museum, K-AtoN)
- ENG17-3.1.3.3 The 4th IALA Heritage Seminar Report (Bae YongChan, Ministry of Oceans and Fisheries)



- AMSA Heritage Management update (Sarah-Jane Lakshman, Australian Maritime Safety Authority – AMSA)

## 10.2 ENG TASK Register / Work Plan 2023-2027

WG3 went through tasks in the Task Register that were relevant to it and assigned Task Leaders to each task.

### 10.2.1 ENG-2.6.1 Maintain the Heritage web page on the IALA website

Task Leaders: Seong Woo Son, Korea Institute of Aids to Navigation and Gillian Burns, NLB.

#### Action Items

*That **Seong Woo Son** and **Gillian Burns** are requested to coordinate WG3 work Maintaining the Heritage Web Page through to completion within the Task Period*

*That **Korea Institute of Aids to Navigation** and **NLB** respectively are requested to support WG3 work Maintaining the Heritage Web Page through to completion within the Task Period.*

*The **Secretariat** is requested to assist the editing team with the IALA Heritage website editing as required.*

### 10.2.2 ENG-2.6.3 Manage the process for the IALA HLY accolade

Task Leader: Peter Hill, Trinity House

#### Action Items

*That **Peter Hill** is requested to coordinate WG3 work Managing the process for the IALA HLY Accolade through to completion within the Task Period and **Trinity House** is requested to support them in this.*

### 10.2.3 ENG-1.1.2 NAVGUIDE review - To review the relevant NAVGUIDE section for updates

Task Leader: Sarah-Jane Lakshman, AMSA

It was noted that the NAVGUIDE is now a living document and may be updated regularly.

#### Action Items

*That **Sarah-Jane Lakshman** is requested to coordinate WG3 work To Review the (Heritage & Culture) sections of the NAVGUIDE by Spring 2024 (ENG18)*

*That **AMSA** is requested to support WG3 work To Review the (Heritage & Culture) sections of the NAVGUIDE by Spring 2024 (ENG18).*

### 10.2.4 ENG-2.6.4 Write the Heritage module for the WWA L1.1 AtoN Manager course

Task Leader: Ke Raxuan, Navigation Institute of Jimei University.

Initial thoughts and outline of timeframes to be provided at ENG18.

#### Action Items

*That **Ke Raxuan** is requested to coordinate WG3 work in creating the Heritage Module for the WWA L1.1 AtoN Manager Course through to completion within the Task Period and Navigation Institute of JiMei University is requested to support them in this.*

### 10.2.5 ENG-2.6.7 Review Guidelines

[G1074 Ed.1](#) Branding and Marketing of Historic Lighthouses, Dec 2009

[G1075 Ed.1](#) A Business Plan for the complementary use of a Historic Lighthouse.

Task Leader: Zhenyu Guo, China Maritime Safety Administration (MSA)

Zhenyu Guo produced and presented an initial scoping document (available to view in fileshare) setting out the purpose of these documents, initial ideas for review and program for review. It was commented that these guidance documents each should commence by referring to the high level objectives, cross referencing [R1005](#) and UN Sustainability Target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural

and natural heritage”. Some thought needs to be given to the use of the word ‘Complementary’ in the title of G1075 to ensure that the scope of the guideline is clear to all.

#### *Action Items*

*That **Zhenyu Guo** is requested to coordinate WG3 work in reviewing the Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22)*

*That **China Maritime Safety Administration (MSA)** is requested to support WG3 by reviewing the Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22).*

#### 10.2.6    ENG-2.6.6 Review Guideline

G1063 Ed.1 Agreements for Complementary use of Lighthouses, Dec 2008

Task Leader: Juan Liu, China Maritime Safety Administration (MSA)

Juan Liu had taken the initiative in producing an initial assessment of G1063 and suggested changes in input documents.

ENG17-3.1.3.2 Proposal for updating G1063 on Agreements for Complementary use of Lighthouses

ENG17-3.1.3.2.1 Annex Draft updated G1063 on Agreements for Complementary use of Lighthouses

WG3 were grateful for this excellent work and agreed to view the papers during or immediately after ENG17 and provide comments to Juan Liu.

Juan Liu further produced a document assessing the overall purpose of the guidance document and a plan for review which can be viewed on fileshare. Expected completion of task will be Autumn 2025 (ENG21). It was commented that these guidance documents each should commence by referring to the high level objectives, cross referencing R1005 and UN Sustainability Target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural and natural heritage”

#### *Action Items*

*That **Juan Liu** is requested to coordinate WG3 work in reviewing Guidance document G1063 Ed.1 through to completion in Autumn 2025 (ENG21)*

*That **China Maritime Safety Administration (MSA)** is requested to support WG3 in reviewing Guidance document G1063 Ed.1 through to completion in Autumn 2025 (ENG21).*

#### 10.2.7    ENG-2.6.5 Review Guideline

G1080 Ed.1 The Selection and Display of Heritage Artefacts, Dec 2011

Task Leader: Jiwon Sim, Korea Institute of Aids to Navigation

It was agreed that an initial review (including timeframes) would be provided at ENG18 with a view to task completion by Autumn 2025 (ENG21). It was commented that these guidance documents each should commence by referring to the high level objectives, cross referencing R1005 and UN Sustainability Target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural and natural heritage”

#### *Action Items*

*That **Jiwon Sim** is requested to coordinate WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion by Autumn 2025 (ENG21) and Korea Institute of Aids to Navigation is requested to support them in this.*

#### 10.2.8    ENG-2.6.5 Review Guideline

G1093 Ed.1 The Management of Surplus Lighthouse Property, Dec 2012

Task Leader: Naehyuk Yoo, Korea Institute of Aids to Navigation

It was agreed that a short survey would be useful to establish different nations’ experiences of this issue. This together with an initial first review, including time frames would be provided at ENG18 with a view to



completion of Task by Autumn 2025 (ENG21). It was commented that these guidance documents each should commence by referring to the high level objectives, cross referencing [R1005](#) and UN Sustainability Target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural and natural heritage”

#### Action Items

*That **Naehyuk Yoo** is requested to coordinate WG3 work in reviewing IALA Guidance G1093 Ed.1 for completion by Autumn 2025 (ENG21) and Korea Institute of Aids to Navigation is requested to support them in this.*

### 10.2.9 ENG-2.6.2 Production of Technical or Guidance document on ‘good practice in modernising heritage lighthouses whilst minimising negative heritage impact’

Task Leader: Sarah-Jane Lakshman, AMSA

Sarah-Jane Lakshman produced and presented an initial report scoping out this new document. It was agreed by WG3 that this would be a very valuable addition to IALA guidance documents. It was commented that these guidance documents each should commence by referring to the high level objectives, cross referencing [R1005](#) and UN Sustainability Target 11.4: “Strengthen efforts to protect and safeguard the world’s cultural and natural heritage”.

#### Action Items

*That **Sarah-Jane Lakshman** is requested to coordinate WG3 work in the production of a Technical or Guidance document on ‘good practice in modernising heritage lighthouses whilst minimising negative heritage impact’ for completion by Autumn 2026 (ENG25) and AMSA is requested to support them in this.*

### 10.2.10 Produce a book celebrating IALA HLY Award

Task Leader: Jonghun Kim, Paichai University

The first stage in this task will be to establish a scope, costings and plan – what will be the size of the book, what will be the production quantity and costs, will copies be sold and how, how will the content be produced.

#### Action Items

*That **Jonghun Kim** is requested to coordinate WG3 work on producing a book celebrating IALA HLY Accolade through to completion within the Task Period and is requested to develop a scope, costings and plan for its production at ENG18*

*That **Paichai University** is requested to support WG3 work on producing a book celebrating IALA HLY Accolade through to completion within the Task Period and is requested to develop a scope, costings and plan for its production at ENG18.*

## 10.3 Plaque for Heritage Lighthouse of the Year (IALA HLY) (Task 2.6.3)

It was re-confirmed that Korea will resource, produce, and dispatch a plaque for HLY 2024 based upon the design used for the 2023 accolade. WG3 are very grateful for Korea’s continued support.

#### Action Items

*That **Korea Institute of Aids to Navigation** is requested to send the IALA HLY plaque to IALA Headquarters by end of April 2024.*

## 10.4 IALA Heritage Webpages (Task 2.6.1)

WG3 was delighted to note that with 17 new nominations submitted there were now 63 IALA Heritage Lighthouse on the website, originating from 27 national members, across 6 continents. Gillian Burns (NLB) spent considerable time uploading all these new nominations to the Heritage webpages for which WG3 was very grateful. Previously uploaded nominations were also reviewed for consistency and with Secretariat help glitches in the webpage which prevented the use of the ‘Country’ filter were resolved. As described in section

1.2.1 of this report, Task Leaders were assigned to support the ongoing management of the IALA webpage content.

## **10.5 IALA HLY 2024 (Task 2.6.3)**

### **10.5.1 Nominations and means of arriving at a commendation**

All participants of WG3 were invited to complete a ranking sheet in respect to nominees. 10 Ranking sheets were received. These sheets were then collated to determine the three Heritage Lighthouses that WG3 would commend. A further discussion was held to reach a consensus as to which of the three it would commend as LHY 2024.

It was agreed by all participants that any one of the nominees considered warrants being an IALA HLY and it was acknowledged that comparing and contrasting lighthouses was almost an impossible task. WG3 was grateful to all who had taken part.

### **10.5.2 The three lighthouses commended for consideration at HLY 2024**

## Hook Head Lighthouse, Ireland



Many nations are blessed with historic lighthouses, but few can boast one as old as Hook Head Lighthouse in Ireland. Constructed some-time between the years 1210 and 1240, it is the second oldest operating lighthouse in the world existing largely in its original form - after the Tower of Hercules in Spain.

William Marshall, a Knights Templar, known as the greatest knight, built the lighthouse tower to protect and develop the shipping trade – a priority that is unchanged in 700 years. It was monks from a nearby monastery that likely undertook the construction work and became its lighthouse keepers for the next few centuries. The monks lived in the tower which served the additional function of monastery until 1641. Traces of their chapel which projected to the east of the building still survive. Architecturally, it is one of the most fascinating examples of medieval architecture in Ireland with its 4m thick walls, its stairway built within the walls and its rib-vaulted chambers.

Having been a lighthouse for so long, Hook Head Lighthouse has seen technologies come and go and is able to tell their story. Coal burning lanterns were replaced by whale oil, then gas (manufactured on-site), then Paraffin oil before giving way to electricity. Different optic and rotation systems similarly came and went as the tower remained constant through it all. Yet whilst accommodating this constant change, much has been conserved – testimony to the esteem in which the lighthouse is held and the care that has been taken of it.

Innovation extends to the way in which the lighthouse has been developed as a community asset and a tourist attraction. The Hook Heritage Community enterprise was established for this purpose and the lighthouse officially opened to the public in 2000 by the then President of Ireland Mary McAleese and is one of Irish Light's Great Lighthouses of Ireland – itself a commendable initiative by its operator the Commissioners of Irish Lights. Since 2019 it has attracted over 250,000 visitors from all over the world. Former keepers' houses now provide a retail gift shop, café and bakery offering local products and employment. Guided tours of the tower are offered where visitors get a fascinating insight into the workings of the lighthouse combined with stories and facts of this unique building, past, present and future. Interestingly it has been observed that such tours improve ventilation and so building conditioning – a great example of symbiosis between the interests of managing AtoN and complementary use.

## Lizard Lighthouse, England



Lizard Lighthouse's antiquity takes us back before the days of rotating optics when a distinctive character of a light could only be created either through the periodicity of the light – or by having more than one light. For this reason, Lizard Lighthouse acquired two towers in 1751. The two towers with their coal braziers necessitated more lighthouse keepers, and 7 cottages were built to accommodate them, making the site a hive of activity.

Once a rotating optic was introduced to the Eastern tower in 1903 (for a time making it the most powerful lighthouse in the world), the Western tower became redundant. In time, the fog signal and engine rooms also became redundant and on automation, the 7 cottages were no longer essential. With such a large but under-utilised compound, a comprehensive plan for the re-purposing of these parts of the site was put together. The engine room (still with much of its historic plant) was made into a heritage centre from which the public could tour the operational tower. The cottages were converted to holiday cottages. The expansive lawns were featured with buoys. Public toilets were created and the wider site is again the hive of activity that it used to be. This beautiful, ancient and fascinating lighthouse has become an essential stop for visitors at mainland Britain's most southerly point. In this site can be seen the story of lighthouse development over hundreds of years whilst in its exhibits the story is told of the continued importance of AtoN.

## Faro di Genova 'Lanterna', Italy



The “Lanterna” is the world’s third oldest operational lighthouse. Rising 77m above its 40m high rock, it was for a long time the highest lighthouse in the world and remains the highest lighthouse in the Mediterranean Sea, and the second highest in Europe. By coincidence or design, there are precisely 365 steps to the top!

Built for the first time in 1128, the original tower Lanterna was partially destroyed during the Genoese rebellion against France and then rebuilt in its current form in 1543. As with any lighthouse of this age, a wide variety of technologies have had their time and space within Lanterna - and the tower and its museum continue to tell that story. Whilst accommodating change, the lighthouse remains exceptionally well conserved with a well developed program of maintenance. It retains its rotating system with Fresnel lenses dating all the way back to 1840.

The tower dominates the skyline and its height combined with its longevity has made it a truly iconic feature of Genoa and its ancient port. For hundreds of years it has been the first site greeting visitors to the city. Today, it is more than ever connected with the life and culture of the Genoa. A highly developed website offers all sorts of perspectives and a Virtual Tour of the lighthouse. The tower is lit up different colours to represent various celebrations or commemorations and a calendar is provided to show which colours represent which event – yet another way that this tower is so highly integrated into the wider culture of the city and beyond.

Adjacent to the tower and part of the same complex are elements of the city walls and defensive system which contain the “Museo della Lanterna”. This museum covers (amongst other things) the history of navigation and navigational aids in Genoa and describing various signalling systems that have been used at sea. Part of a Fresnel lens, similar to that found in the lighthouse itself, is shown in such a manner as to display its inner workings.

An incredible history, great efforts in conservation, international significant, high local cultural value and innovation are what IALA HLY is all about. Lanterna has each an ample quantity!



After some discussion, ENG17 WG4 determined to commend Faro di Genova 'Lanterna', Italy to IALA Council as IALA Heritage Lighthouse of the Year 2024.

#### *Action Items*

The **Secretariat** is requested to forward the input paper ENG17-13.3.1 Input to Council 79 on the ENG17 commendation of Faro di Genova 'Lanterna' as IALA HLY2024 to the Council to consider the commendation of ENG17 of Faro di Genova 'Lanterna'.

The **Secretariat** is requested to organise a formal presentation of the IALA HLY award to the recipient at a suitable event to which the recipient is in attendance.

### **10.6 IALA Heritage Lighthouse of the Year (IALA HLY) 2025 and beyond (Task 2.6.3)**

The deadline for nominations to be considered for IALA HLY 2025 will be 30<sup>th</sup> September 2024.

#### *Action Items*

The **Secretariat** is requested to send an e-bulletin out in August 2024 reminding members of the opportunity to nominate lighthouses for IALA HLY and of the 30<sup>th</sup> September deadline for doing so to ensure consideration for the 2025 award.

That **Committee participants** are requested to raise awareness of the IALA HLY in their respective organisations and to submit nominations for lighthouses they consider to have heritage or cultural value.

### **10.7 Celebrating the 200 Year Anniversary of Fresnel's work at Cordouan Lighthouse**

WG3 were pleased to receive an update on the celebrations of the 200 year anniversary of Fresnel's work at Cordouan Lighthouse. Several participants from WG3 would be participating in the forthcoming 'Closing Seminar Fresnel 2023' in Le Verdon-sur-Mer which has been scheduled to run directly after ENG17 to maximise potential for ENG17 participants to attend. Jonghun Kim (Ministry of Oceans and Fisheries - Paichai University), Vice Chair of WG3 would be speaking at the event. WG3 were grateful for the efforts of IALA Secretariat in promoting the event which would be covering key topics affecting Lighthouse culture and heritage. A great selection of videos celebrating French Lighthouses with Fresnel lens can be found here;

<https://www.pharesdefrance.fr/fresnel-2023>

#### *Action Items*

That **Jonghun Kim** is requested to report back to WG3 at ENG18 on the key matters discussed at the 'Closing Seminar Fresnel 2023' in Le Verdon-sur-Mer.

## **11. REVIEW OF OUTPUT AND WORKING PAPERS**

The Committee reviewed and endorsed the reports of each Working Group. The Committee approved the output and working documents as indicated in ANNEX D.

## 12. REVIEW OF SESSION REPORT

The report of the meeting (ENG17-14.1) was considered and approved. Committee Participants were requested to advise any corrections/amendments within one week, following which the final version of the report will be issued via the IALA web site.

### *Action item:*

*The **Secretariat** is requested to forward the summary of the ENG17 Committee report (ENG17-14.1) to Council to note.*

## 13. DATE AND VENUE OF NEXT MEETING

The next session of the ENG Committee is planned to be held from 8 to 12 April 2024 at Headquarters, Saint Germain-en-Laye. Other IALA events will be publicised on the IALA [website](#).

## 14. CLOSE OF THE MEETING

## 15. LIST OF ANNEXES

- 1     Agenda  
      A copy of the agenda is at ANNEX A.
- 2     Participants  
      A list of participants is at ANNEX B.
- 3     Input Papers  
      A list of input papers is at ANNEX C.
- 4     Output and Working papers  
      A list of output and working papers is at ANNEX D.
- 5     Action Items  
      A list of action items is at 0.





## 17<sup>th</sup> Session of the AtoN Engineering and Sustainability Committee (ENG17)

### AGENDA

#### Opening Plenary

Start 10:00 CEST (08:00 UTC), 16<sup>th</sup> October 2023

1. Introduction
  - 1.1. Welcome address from the Deputy Secretary-General Omar F Erikson
  - 1.2. Approval of the agenda Alwyn Williams
  - 1.3. Apologies and Introductions Alwyn Williams
  - 1.4. Working arrangements Jaime Alvarez
  - 1.5. ENG committee structure Alwyn Williams
    - 1.5.1. WG1 Overview
    - 1.5.2. WG2 Overview
    - 1.5.3. WG3 Overview
2. Review of action items from last meeting Alwyn Williams / Jaime Alvarez
  - 2.1. Review of action items from ENG16
3. Review of input papers Alwyn Williams
  - 3.1. Review of input papers to ENG17 Jaime Alvarez
  - 3.2. Input papers for action/allocation
4. Reports from other bodies
  - 4.1. IALA
    - 4.1.1. 20th IALA Conference Minsu Jeon
    - 4.1.2. General Assembly Minsu Jeon
    - 4.1.3. IALA Council Minsu Jeon
      - 4.1.3.1. *Documents approved by Council* Minsu Jeon
      - 4.1.3.2. *Heritage Lighthouse of the Year* Peter Hill
      - 4.1.3.3. *Document catalogue* Minsu Jeon
    - 4.1.4. Policy Advisory Panel (PAP) Minsu Jeon
      - 4.1.4.1. *Sustainability WS* Alwyn Williams
      - 4.1.4.2. *AtoN engineering WS* David Jeffkins
    - 4.1.5. 2023-2027 Work Plan and task register Michel Cousquer
    - 4.1.6. WWA Omar F Erikson
  - 4.2. Update on MASS task group Minsu Jeon

- |      |       |                |
|------|-------|----------------|
| 4.3. | IMO   | Minsu Jeon     |
| 4.4. | IHO   | Minsu Jeon     |
| 4.5. | ITU   | Minsu Jeon     |
| 4.6. | RTCM  | Stig Erik      |
| 4.7. | PIANC | Minsu Jeon     |
| 4.8. | CIE   | Alwyn Williams |
5. Advertising Presentations (planned during the working period)
- 5.1. Working group presentations: Jaime Alvarez
- 5.1.1. WG1: Monday 17 – 16:00 CEST
- 5.1.2. WG2: Tuesday 18 – 09:00 CEST
- 5.1.3. WG3: Tuesday 18 – 11:00 CEST
6. Overview of planned work for ENG17
- |      |                                   |                   |
|------|-----------------------------------|-------------------|
| 6.1. | WG 1 - Visual & Physical AtoN     | Malcolm Nicholson |
| 6.2. | WG 2 - Radionavigation Services   | Michael Hoppe     |
| 6.3. | WG 3 - Heritage and culture forum | Peter Hill        |
7. Establish Working Groups and Task Groups

## **End of Opening Plenary**

**Approx. 13:00 CEST (11:00 UTC), 16<sup>th</sup> October**

## **Working Groups to Progress Work Plan**

**14:00 CEST (12:00 UTC), 16<sup>th</sup> October to 17:30 CEST (15:30 UTC), 19<sup>th</sup> October**

## **Closing of the physical week Plenary**

**Start 09:00 CEST (07:00 UTC), 20<sup>th</sup> October**

- |      |  |                   |
|------|--|-------------------|
| 8.   | Report from Working Groups and Secretariat |                   |
| 8.1. | WG 1 – Visual & Physical AtoN              | Malcolm Nicholson |
| 8.2. | WG 2 – Radionavigation Services            | Michael Hoppe     |
| 8.3. | WG 3 – Heritage and Culture forum          | Peter Hill        |
| 8.4. | Session Report                             | Jaime Alvarez     |
| 9.   | Summary of Output Papers for Review        | Jaime Alvarez     |
| 9.1. | Process for Comments                       | Jaime Alvarez     |
| 10.  | Close of Main Session                      | Alwyn Williams    |

## **Closing Plenary Adjourned for Approval Period of Output Documents**

**Session adjourns approximately 13:00 CEST (11:00 UTC), 20<sup>th</sup> October**

## **Closing Plenary Recommenced**

**Session recommences 12:00 CEST (10:00 UTC), 27<sup>th</sup> October on Microsoft Teams**

- |     |   |                |
|-----|---|----------------|
| 11. | Opening of Online Session                               | Alwyn Williams |
| 12. | Review of Documents with Comments or Outstanding Issues | Jaime Alvarez  |
| 13. | Review of Documents Approved                            | Jaime Alvarez  |
| 14. | Date and venue of next meeting                          | Alwyn Williams |
| 15. | Close of Session  | Alwyn Williams |

## **End of Closing Plenary and Session**

**Approx. 13:30 CEST (11:30 UTC), 27<sup>th</sup> October**

The list of ENG17 registered participants is available through this link: <https://www.iala-aism.org/committee-dashboards/eng-dashboard/resources-eng/>

## ANNEX C LIST OF INPUT PAPERS

All papers were posted to the Committee website

Meeting	Agenda Item	Output Paper Title	Source	Action
ENG17-	1.2.1	Draft Agenda ENG17	IALA Secretariat	All
ENG17-	1.2.2	Programme for the week	IALA Secretariat	All
ENG17-	2.1	Report of ENG16 (ENG16-14.1)	IALA Secretariat	All
ENG17-	2.1.1	Review of action items from ENG16	IALA Secretariat	All
ENG17-	3.0	Input paper Committee meeting template	IALA Secretariat	All
ENG17-	3.0.1	List of Input papers	IALA Secretariat	All
ENG17-	3.0.2	IALA report on IMO NCSR10	IALA Secretariat	All
ENG17-	3.0.3	The 5th International Aids to Navigation Forum in the Republic of Korea	KATON	All
ENG17-	3.0.4	Ocean Literacy	WWA	All
ENG17-	3.0.5	LN ARM to ENG on Navigational Requirements and Considerations for Establishment of Buoyage	ARM16	All
ENG17-	3.0.6	LN ARM to ENG on dictionary updates	ARM16	All
ENG17-	3.0.7	LN ARM ENG on Cyber Security guideline	DTEC1	All
ENG17-	3.0.7.1	Draft Guideline on Cyber Security - Post DTEC1	DTEC1	All
ENG17-	3.0.8	Metal Surface at Magnetic Substance wave	DTEC1	All
ENG17-	3.0.8.1	Metal Surface at Magnetic Substance wave	DTEC1	All
ENG17-	3.0.8.2	Completed Review of Radio-free wireless comms MS@MS	DTEC1	All
ENG17-	3.0.9	LN ARM ENG on Developments on the Maritime Internet of Things	DTEC1	All
ENG17-	3.0.9.1	Harmonized Visual AtoN IoT protocol	Sabik	WG1
ENG17-	3.0.9.2	Harmonized Visual AtoN IoT Protocol - Conference paper	Sabik	WG1
ENG17-	3.0.9.3	PPT Harmonized IoT for Marine Lanterns	Sabik	WG1
ENG17-	3.1.1.1	G1066 on The Design of Floating Aids to Navigation Typographical Errors	Paul Mueller	WG1
ENG17-	3.1.1.1.1	G1066 on The Design of Floating Aids to Navigation Ed1.2 corrected with notes	Paul Mueller	WG1
ENG17-	3.1.1.2	G1066 on The Design of Floating Aids to Navigation Swinging Radius	MSM	WG1
ENG17-	3.1.1.3	Singapore's Charting of Dual Intensity LED Lanterns	MPA	WG1
ENG17-	3.1.1.4	Introduction of the Luminous Intensity Measurement System Using Drone	KATON	WG1
ENG17-	3.1.1.5	The Status of Distribution for the AtoN Integrated Management System in Korea ENG16-3.1.2.2	KATON	WG1
ENG17-	3.1.1.6	Model Course Level 2 Module12 ENG16-3.1.2.5	MSM	WG1
ENG17-	3.1.1.6.1	Annex module 12 Beacons of waterway and fairways ENG16-3.1.2.5.1	MSM	WG1

ENG17-	3.1.1.7	Use of modern equipment in traditional lighthouses ENG16-3.1.2.6	China MSA	WG1
ENG17-	3.1.1.8	Application of 5G technology in tidal current data collection and display in Ningbo Zhoushan Port ENG16-3.1.2	China MSA	WG1
ENG17-	3.1.1.9	Suggestions on Training the Maintainer of AtoN for Bridge ENG16-3.1.2.10	China MSA	WG1
ENG17-	3.1.1.10	Qualification and Basic Knowledge Course for Light Keepers ENG16-3.1.2.12	China MSA	WG1
ENG17-	3.1.1.11	Proposal for Guideline on the collection, integration, and dissemination of oceanographic and meteorological data to mariners	MSM	WG1
ENG17-	3.1.1.12	Establish guidelines for safe management of lithium batteries	Quantum Solution	WG1
ENG17-	3.1.1.13	Cover Note on Draft IALA Guideline - Measurement of Marine Lights Performance	China MSA	WG1
ENG17-	3.1.1.13.1	ANNEX A Compilation Basis of Draft IALA Guideline Measurement of Marine Lights Performance	China MSA	WG1
ENG17-	3.1.1.13.2	ANNEX B Draft IALA Guideline - Measurement of Marine Lights Performance	China MSA	WG1
ENG17-	3.1.1.14	Proposal on R0101 Marine radar beacons modification	China MSA	WG1
ENG17-	3.1.1.15	Proposal on the Revision of Partial Chapter of IALA G1077 Maintenance of Aids to Navigation	China MSA	WG1
ENG17-	3.1.2.1	Task Group 3.1.1. Resilient PNT - Report	Intersessional work	WG2
ENG17-	3.1.2.2	Draft IALA Guideline on Resilient PNT	Intersessional work	WG2
ENG17-	3.1.2.3	Vulnerabilities vs mitigation	CCG	WG2
ENG17-	3.1.2.4	Intersessional task Guideline on MF R-Mode signal structure and navigation message	DLR / WSV / KRISO	WG2
ENG17-	3.1.2.4.1	Draft Guideline on Medium Frequency R-Mode signal structure and navigation message	DLR / WSV / KRISO	WG2
ENG17-	3.1.2.5	New RTCM Message Proposal for MF R-Mode	KRISO / MOF	WG2
ENG17-	3.1.2.6	Proposal for Signal Specification on MF R-Mode Guideline	KRISO / MOF	WG2
ENG17-	3.1.2.6.1	Draft G on MF R-Mode signal structure and navigation message_chapter3	KRISO / MOF	WG2
ENG17-	3.1.2.7	Upcoming IEC standard for SBAS L1 shipborne receivers	ESSP / EUSPA	WG2
ENG17-	3.1.2.8	Retransmission of SBAS data through VDES	ESSP / EUSPA	WG2
ENG17-	3.1.2.9	IMO Recognition for Augmentation Systems	EUSPA / GRAD / AMSA / BM	WG2
ENG17-	3.1.2.10	Galileo High Accuracy Service for Maritime	EUSPA / GSC / GRAD	WG2
ENG17-	3.1.2.11	IALA coordination of Loran GRI	GRAD	WG2
ENG17-	3.1.2.12	Cover note for SouthPAN declaration	AMSA	WG2

ENG17-	3.1.2.12.1	Draft SBAS declaration for IALA	AMSA	WG2
ENG17-	3.1.2.13	BDS PPP offshore test and application suggestions	China MSA	WG2
ENG17-	3.1.3	Plan for WG3 over ENG17	WG4 (vice)Chair	WG3
ENG17-	3.1.3.1	Punta del Este, Uruguay Lighthouse maintenance	Uruguay	WG3
ENG17-	3.1.3.2	Proposal for updating G1063 on Agreements for Complementary use of Lighthouses	China MSA	WG3
ENG17-	3.1.3.2.1	Annex Draft updated G1063 on Agreements for Complementary use of Lighthouses	China MSA	WG3
ENG17-	3.1.3.3	The 4th IALA Heritage Seminar Report	KATON	WG3
ENG17-	4.1.1	Report 20th IALA Conference 2023	IALA	All
ENG17-	4.1.2	General Assembly 14	IALA	All
ENG17-	4.1.3.0	Report Council 76	IALA	All
ENG17-	4.1.3.1	Report Council 77	IALA	All
ENG17-	4.1.3.2	Report Council 78	IALA	All
ENG17-	4.1.4	Report Policy Advisory Panel	IALA	All
ENG17-	4.1.5	Work programme 2023-2027	IALA	All
ENG17-	4.5	IALA Report on ITU-R WP5B meeting 10 to 21 July 2023	WSV	All
ENG17-	4.5.1	IMO-ITU EG 19-6-1 - Liaison statement from ITU-R Working Party 5BComments on WPT studies	ITU R WP5B	All

**Output documents** are submitted for review/action by a body other than the Committee initiating the document.

Meeting	Agenda Item	Output Paper Title	Source	Action
ENG17-	13.1.1	Liaison Note to DTEC on Developments on the Maritime Internet of Things	ENG17	DTEC
ENG17-	13.1.2	Draft Liaison note to ARM on General Overview of Floating AtoN	ENG17	ARM
ENG17-	13.1.3	Draft Liaison note to ARM the progress of cyber security tasks	ENG17	ARM
ENG17-	13.2.1	Resilient PNT	ENG17	Council
ENG17-	13.2.2	Comments from WG2 to the draft Cybersecurity guideline	ENG17	ARM
ENG17-	13.3.1	Input to Council 79 on the ENG17 commendation of Faro di Genova 'Lanterna' as IALA HLY2024	ENG17	Council

**Working papers** will remain within the Committee for further review during ENG18.

Meeting	Agenda Item	Output Paper Title	Source	Action
ENG17-	13.1.4	WP Draft model course on beaconing of waterways and fairways channels to the WWA for further review	ENG17	WWA / ENG18
ENG17-	13.2.3	WP MF R-Mode signal structure and navigation message	ENG17	ENG18
ENG17-	13.2.4	WP Draft Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service	ENG17	ENG18



*Action Items for Secretariat*

1. The **Secretariat** is requested to forward the Liaison Note ENG17- 13.1.1 on Developments on the Maritime Internet of Things (IoT) to DTEC. 22
2. The **Secretariat** is requested to forward the Liaison Note ENG17-13.1.3 on Progress on Cyber Security guideline to ARM17. 22
3. The **Secretariat** is requested to forward the Output Paper ENG17-13.2.2 on Cyber Security guideline to ARM17 22
4. The **Secretariat** is requested to forward ENG- 13.1.2 Liaison note on General Overview of Floating AtoN to ARM. 25
5. The **Secretariat** is requested to amend the published G1066 with the correct formula as described in ENG17-3.1.1.2 G1066 on The Design of Floating Aids to Navigation Swinging Radius. 26
6. The **Secretariat** is requested to send the level 2 model course ENG17- 13.1.4 on beaconing of waterways and fairways channels to the WWA for further review. 26
7. The **Secretariat** is requested to send the input paper ENG17-3.0.4 on Ocean Literacy to the AtoN Engineering Workshop in October 2024. 26
8. The **Secretariat** is requested to send the input paper ENG17-3.1.1.10 Qualification and Basic Knowledge Course for Light Keepers ENG16-3.1.2.12 to the AtoN Engineering Workshop in October 2024. 26
9. The **Secretariat** is requested to forward ENG17-3.1.2.2 "Guideline on Resilient PNT" to Council for approval. 27
10. The **Secretariat** is invited to bring the planned publication of the SouthPAN declaration to the attention of LAP. If approved by LAP the IALA Secretariat is invited to publish the SouthPAN declaration on the IALA Web page. 29
11. The **Secretariat** is requested to assist the editing team with the IALA Heritage website editing as required. 31
12. The **Secretariat** is requested to forward the input paper ENG17-13.3.1 Input to Council 79 on the ENG17 commendation of Faro di Genova 'Lanterna' as IALA HLY2024 to the Council to consider the commendation of ENG17 of Faro di Genova 'Lanterna'. 38
13. The **Secretariat** is requested to organise a formal presentation of the IALA HLY award to the recipient at a suitable event to which the recipient is in attendance. 38
14. The **Secretariat** is requested to send an e-bulletin out in August 2024 reminding members of the opportunity to nominate lighthouses for IALA HLY and of the 30<sup>th</sup> September deadline for doing so to ensure consideration for the 2025 award. 38
15. The **Secretariat** is requested to forward the summary of the ENG17 Committee report (ENG17-14.1) to Council to note. 39

*Action Items for Participants*

16. That **Committee participants** with an interest in Port Traffic Signals are requested to submit input papers to ENG18 to help support the development of the Guideline on Port Traffic Signals. 23
17. That **Committee participants** are requested to submit input papers to ENG18 on their experiences of maintaining floating AtoN. 25
18. That **Committee participants** interested in supporting the development of the ENG-17 13.2.3 Guideline on MF R-Mode signal structure and navigation message between sessions are invited to contact the task leader Stefan Gewies (Stefan.Gewies@dlr.de). 27

19. That **Committee participants** interested in supporting the development of “IMO Recognition for Augmentation Systems” between ENG17 and ENG 18 are invited to contact the WG2 chair (Michael.Hoppe@wsv.bund.de). 29
20. That **Committee participants** interested in supporting the development of the ENG17-13.2.4 draft Guideline on GNSS Satellite Based Precise Point Positioning (PPP) Maritime Service between sessions are invited to contact the task leader Qian Sun (qbcouple@163.com). 29
21. That **Hideki Noguchi** is invited to submit the workshop proposal on how to use radio communication for PNT and radio navigation systems for communication to ENG18 and DTEC2 and 29
22. That **Committee participants** interested in drafting the workshop proposal on how to use radio communication for PNT and radio navigation systems for communication are invited to contact him (hideki.noguchi@gmail.com) 29
23. That **Seong Woo Son** and **Gillian Burns** are requested to coordinate WG3 work Maintaining the Heritage Web Page through to completion within the Task Period 31
24. That **Korea Institute of Aids to Navigation** and **NLB respectively** are requested to support WG3 work Maintaining the Heritage Web Page through to completion within the Task Period. 31
25. That **Peter Hill** is requested to coordinate WG3 work Managing the process for the IALA HLY Accolade through to completion within the Task Period and **Trinity House** is requested to support them in this. 31
26. That **Sarah-Jane Lakshman** is requested to coordinate WG3 work To Review the (Heritage & Culture) sections of the NAVGUIDE by Spring 2024 (ENG18) 31
27. That **AMSA** is requested to support WG3 work To Review the (Heritage & Culture) sections of the NAVGUIDE by Spring 2024 (ENG18). 31
28. That **Ke Raxuan** is requested to coordinate WG3 work in creating the Heritage Module for the WWA L1.1 AtoN Manager Course through to completion within the Task Period and Navigation Institute of JiMei University is requested to support them in this. 31
29. That **Zhenyu Guo** is requested to coordinate WG3 work in reviewing the Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22) 32
30. That **China Maritime Safety Administration (MSA)** is requested to support WG3 by reviewing the Guidance documents G1074 Ed.1 for completion by Spring 2025 (ENG20) and G1075 Ed.1 for completion by Spring 2026 (ENG22). 32
31. That **Juan Liu** is requested to coordinate WG3 work in reviewing Guidance document G1063 Ed.1 through to completion in Autumn 2025 (ENG21) 32
32. That **China Maritime Safety Administration (MSA)** is requested to support WG3 in reviewing Guidance document G1063 Ed.1 through to completion in Autumn 2025 (ENG21). 32
33. That **Jiwon Sim** is requested to coordinate WG3 work in reviewing IALA Guidance document G1080 Ed.1 through to completion by Autumn 2025 (ENG21) and Korea Institute of Aids to Navigation is requested to support them in this. 32
34. That **Naehyuk Yoo** is requested to coordinate WG3 work in reviewing IALA Guidance G1093 Ed.1 for completion by Autumn 2025 (ENG21) and Korea Institute of Aids to Navigation is requested to support them in this. 33
35. That **Sarah-Jane Lakshman** is requested to coordinate WG3 work in the production of a Technical or Guidance document on ‘good practice in modernising heritage lighthouses whilst minimising negative heritage impact’ for completion by Autumn 2026 (ENG25) and AMSA is requested to support them in this. 33
36. That **Jonghun Kim** is requested to coordinate WG3 work on producing a book celebrating IALA HLY Accolade through to completion within the Task Period and is requested to develop a scope, costings and plan for its production at ENG18 33

37. That **Paichai University** is requested to support WG3 work on producing a book celebrating IALA HLY Accolade through to completion within the Task Period and is requested to develop a scope, costings and plan for its production at ENG18. 33
38. That **Korea Institute of Aids to Navigation** is requested to send the IALA HLY plaque to IALA Headquarters by end of April 2024. 33
39. That **Committee participants** are requested to raise awareness of the IALA HLY in their respective organisations and to submit nominations for lighthouses they consider to have heritage or cultural value. 38
40. That **Jonghun Kim** is requested to report back to WG3 at ENG18 on the key matters discussed at the 'Closing Seminar Fresnel 2023' in Le Verdon-sur-Mer. 38



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International Association of Marine Aids to Navigation and Lighthouse Authorities  
Association Internationale de Signalisation Maritime