



REPORT OF THE 7TH SESSION OF THE IALA ATON ENGINEERING AND SUSTAINABILITY (ENG) COMMITTEE

9 to 13 October 2017

Report of the 7th Session of the IALA
AtoN Engineering and Sustainability (ENG) Committee
9 to 13 October, 2017
Executive Summary

The seventh meeting of the ENG Committee (ENG7) was held from 9th to 13th October 2017 in IALA HQ.

The session was attended by 51 participants from 22 countries, of which 31 were National Members, 12 were Industrial Members, 7 were Associate Members, 1 was an observer. Seven participants attended for the first time.

Working in three working groups, the Committee considered 88 input papers including presentations and produced 36 output documents including 6 revised Academy model courses, 5 draft Recommendations, 13 draft Guideline, 2 draft manuals, 1 draft calculator tool and 8 working papers. All Recommendations and Guidelines considered were aligned with the proposed seven Standards.

The Committee produced the following Recommendations, Guidelines and Manuals:

- Draft Recommendation R0200-1 (E-200-1) Ed.2 on Marine Signal Lights - Colour
- Draft Recommendation R0200-2 (E-200-2) on Marine Signal Lights - Calculation, Definition and notation of Luminous Range
- Draft IALA Guideline G1065 Ed.3 on Marine AtoN Signal Light Beam Vertical Divergence
- Draft Recommendation R0200-4 (E-200-4) Marine Signal Lights - Determination and Calculation of Effective Intensity
- Draft Recommendation R0108 (E-108) Surface Colours used as Visual Signals on Aids to Navigation
- Draft Guideline G1073 Ed.2 on Conspicuity of Marine AtoN Lights at Night
- Draft IALA Guideline on Commissioning Ed.1 December 2017
- Draft Guideline G1136 Ed.1 on Providing Marine Aton Services In Extremely Hot and Humid Climates
- Draft Guideline 1092 Ed2 Safety Management for AtoN Activities
- Draft Guideline 1067-3 Ed.1 Electrical Energy Storage for AtoN
- Draft IALA Guideline 1067-2 Ed.1 Power Sources
- Draft IALA Guideline 1067-0 Ed1.1 on Selection of Power Systems for AtoN and Associated Equipment
- Guideline 1067-1 Ed.1 Total Electrical Loads of Aids to Navigation
- Draft Guideline G1100 on The Accreditation and Approval Process for AtoN Personnel Training
- IALA Recommendation R0141 (E-141) Ed.4 Standards for Training and Certification of AtoN Personnel
- Draft Guideline G1134 Ed.1 Surface Colours used as Visual Signals on Aids to Navigation
- Draft Guideline G1135 Ed.1 on Marine Signal Lights - Determination and Calculation of Effective Intensity
- Draft IALA Complimentary Lighthouse Use Manual Ed.2

The following liaison notes were prepared:

- Liaison Note to Secretariat for Solar Size Tool website content
- Liaison Note to Secretariat re Revision of book Lighthouses of the World (1998)
- Liaison Note to ARM on Mobile AtoN
- Liaison Note to ARM on Disparity between Editions of G1041
- Liaison Note to ARM re Navguide Updates

An update of the Solar Power System Calculation Tool was completed with the following papers:

- IALA Solar Power System Calculation Tool Ed.2 December 2017
- IALA Guideline Ed.2 1039 Designing Solar Power Systems for Aids to Navigation December 2017
- Draft Manual for Meteorological Data for IALA Solar Power System Calculation Tool

Review of relevant sections of the NAVGUIDE was completed.

A demonstration of potential mobile AtoN light characters was given to the Committee to assist with the proposal of a character for Mobile AtoN for the ARM Committee.

Under the Academy distance learning programme, two participants passed modules of the level 1 AtoN managers' course during ENG7. A further three participants studying will attend the module 3 training at Trinity House in December 2017.

Support for the Academy continued with revision of six model courses and preparation of one Recommendation and one Guideline on training and certification.

- Draft IALA Model Course L2 Module 10.1&2 Remote monitoring of AtoN Ed.2 December 2017
- Draft IALA Model Course L2 Module 11.1-5 AtoN structures, materials, corrosion and protection Ed.2 December 2017
- Draft IALA Model Course L2 Module 11.6 Preservation of structures Ed.2 December 2017
- Draft IALA Model Course L2 Module 11.7 Maintenance Planning and Records Ed.2 December 2017
- Draft Model Course L2.8.1 AIS AtoN Operations Ed.1
- Draft IALA Model Course L1.1 Aids to Navigation Manager Training Ed.3

The Heritage Forum made good progress in preparing for the heritage exhibition at the 19th IALA Conference in 2018. Preparation of text for the IALA Complementary Lighthouse Use Manual was completed.

The ENG Committee work plan for the work period 2014-2018 was updated in the light of progress made during the session. The work plan for 2014-2018 is substantially complete. The following table shows a summary of progress made during the four year work period. A draft work plan for the work period 2018-2022 aligned with the seven draft Standards was prepared for consideration at PAP34.

Task	Number Tasks	Progress Indicator			Status Overview
		Green	Yellow	Red	
TD#1 – Light and vision physics	8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks complete.
TD#2 – AtoN design and maintenance	8	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks except 3 tasks which are extended to next work period.
TD#3 – Global capacity building and training	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	All tasks complete.
TD#4 – Civil engineering and environment	4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Tasks extended to next work period.
Across all domains	18	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	All tasks complete except 4 tasks which are extended until first session of the 2018-22 work period.

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Report of the 7th Session of the IALA ENG Committee

GENERAL

The 7th session of the IALA AtoN Engineering and Sustainability Committee (ENG) was held from 9th to 13th October 2017 at IALA. The Chairman was Simon Millyard and the Vice Chairman was David Jeffkins. The Secretary for the meeting was Seamus Doyle.

1. OPENING

Simon Millyard introduced himself and the WG chairs and welcomed both newcomers and those returning to IALA.

1.1 Approval of the agenda

The agenda (ENG7-1.2) was adopted.

1.2 Welcome from the IALA Deputy Secretary-General

The Secretary-General of IALA, Mr Zachariae, welcomed all participants to IALA. He referred to the newly refurbished IALA offices and hoped that the new facilities will aid the work of IALA and the committees. He noted an increase of 37 in IALA membership in the last 2.5 years, of whom 8 were national members. He recalled the IALA meeting hosted by the Commissioners of Irish Lights at which IALA core values were drawn up and which are on display in the lounge. He welcomed the addition of Minsu Jeon to the IALA team in the role of Technical Operations Manager, starting on 15th November 2017.

He briefed the meeting on the progress of IALA transition from NGO to IGO status following the successful diplomatic conference with attendance of 200 people from 60 countries. A further diplomatic conference is planning for 7th to 8th February 2018 in Marrakesh, Morocco.

1.3 Administration and safety brief

Seamus Doyle provided a Safety and Administration briefing. Paper ENG7-1.3 refers.

1.4 Introductions and Apologies

The session was attended by 51 participants from 22 countries, of which 31 were National Members, 12 were Industrial Members, 7 were Associate Members, 1 was an observer. Seven participants attended for the first time.



The list of Committee Members who attended ENG7 is shown in ANNEX B. The Committee noted apologies from Members who were unable to attend as noted in ANNEX B.

1.5 Programme for the week

The programme for the week, paper ENG7-1.4, was approved.

2. REVIEW OF ACTION ITEMS FROM ENG6

Input paper ENG7-2.1 refers. Action items for the IALA Secretariat from ENG6 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. It was observed that the input papers for each Working Group (WG) were identifiable from the document number. The Committee considered 88 input papers including presentations.

3.2 Identify input papers suitable for uploading to the IALA Wiki

Two papers were identified for uploading to the IALA Wiki.

It was noted that the Commissioners of Irish Lights have a full set of proceedings of IALA conferences from 1960 which are available to any administration who would like to have them.

Action

David Jeffkins is requested to upload ENG7-9.14.1 and ENG7-9.12.3 to the IALA Wiki.

4. REPORTS FROM OTHER BODIES

4.1 Reports from IALA Council – 64th Session

The Committee noted the report of the 64th Session of the IALA Council held in Incheon, Republic of Korea, from 13th to 16th June 2017. Paper ENG7-4.1 refers.

4.2 Report of the 32nd Session of the IALA Policy Advisory Panel

The Committee noted the report of the 33rd Session of the IALA Policy Advisory Panel (PAP33), from 5th to 7th April 2017 in IALA HQ. Paper ENG7-4.2 refers. The Deputy Secretary-General described the structure and objectives of the PAP and outlined work planned for PAP34 in October 2017. He advised that the committees' work plans would be considered at PAP35 in February 2018 in preparation for Council approval in May 2018. He noted coming meetings of the IMO-IHO HGDM, FERNS26, seminar on Arctic Navigation, EfficienSea2 workshop on the MCP and Council 65.

4.3 Setting up of a new PIANC-ICOMIA Joint Working Group 202 on “Influence of Recreational Navigation Infrastructures (RNI) on Waterfront Projects”

The Committee noted the letter regarding the setting up of a new PIANC-ICOMIA Joint Working Group 202 on “Influence of Recreational Navigation Infrastructures (RNI) on Waterfront Projects”. Paper ENG7-4.3 refers.

4.4 Report on IMO NCSR4 March 2017

The Committee noted the report of the fourth session of the IMO Sub-committee on Navigation, Communications and Search and Rescue (NCSR) held from 6th March to 10th March 2017 presented by Mahdi Al Mosawi. Paper ENG7-4.4 refers.

4.5 IALA Patent Policy

The Committee noted the report on information on patents and the IALA Patent Policy from the IALA Legal Advisory Panel (LAP), presented by Michael Card. Papers ENG7-4.5.1 and ENG7-4.5.2 refer.

4.6 S-200 Status Report

The Committee noted the report on the status of the IALA S-200 Domain. Paper ENG7-4.6 refers.

5. REPORTS FROM RAPPORTEURS

5.1 Developments in Renewable Energy Sources

Peter Dobson reported that there were no notable developments in renewable energy sources.

5.2 Developments in Battery Technology

Jonas Lindberg reported on developments in Lithium ion batteries as replacements for lead acid batteries and an aluminium / water based hydrogen generator which may be useful for fuel cells. He also reported on possible future battery developments Papers ENG7-5.5.1 and ENG7-5.5.2 refer.

In discussion it was noted that the price of Lithium Ion batteries is between the present cost of lead acid and nickel cadmium. The operating range minimum temperature is about -15°C. Batteries cannot be connected in series due to the built-in cell charge balancing in each battery.

5.3 Developments in New Light Sources

Alwyn Williams report that there is incremental improvement in LED technology but no major developments.

5.4 CIE-IALA Liaison

Alwyn Williams reported on progress in CIE in relation to photometry and CIE divisional organisation.

5.5 Developments in AtoN Simulation Systems

Jimin Yeo provided an update on the Korean AtoN simulation system which can support decision making for AtoN planning with safety and efficiency by considering the topographical and environmental characteristics of the target area, navigating vessels, and maritime traffic. He proposed that the development of a Guideline and manuals on the AtoN simulation system be added to the 2018-2022 work plan.

5.6 Developments in remote control and monitoring

Peter Schneider reported on developments in the plc controller and lights monitor discussed at the Koblenz workshop. He noted on-going work on low power lights monitoring and interfaces.

5.7 IALA Dictionary

David Jeffkins gave a short update on the IALA Dictionary.

Action

Committee Members are requested to ensure that definitions in IALA documents are consistent with the Dictionary.

Committee Members are invited to volunteer as translators for Dictionary terms.

5.8 IALA Bulletin liaison

David Jeffkins briefed the Committee on the need for contributions to the IALA Bulletin. Bulletin issues will be in June and December each year with eBulletin issues at two month intervals.

Action

ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet.

6. PRESENTATIONS

Seven presentations were made during the opening plenary session. The presentations are available on the IALA Committee website.

6.1 IALA World-Wide Academy (WWA) – Omar Frits Eriksson

Omar Frits Eriksson described the recent activity in the Academy since ENG6. Input paper ENG7-6.1 refers.

6.2 RTCM Overview and activities 2017

Simon Millyard provided a description of the structure and activities of the RTCM. Paper ENG7-6.2 refers.

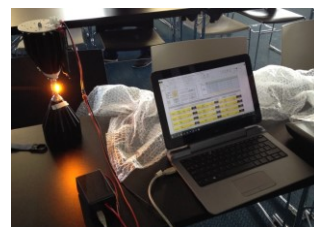
6.3 PIANC-ICOMIA Joint Working Group 202

Geoffroy Caude, President PIANC, provided a description of the structure of PIANC and activities in ports, dredging, recreational navigation and climate change. He described the vision and mission of PIANC and discussed PIANC and IALA common field of interests. He noted that PIANC provides a Water Dictionary analogous to the IALA Dictionary. Mr Caude expressed an opinion that there is an opportunity for updating of the PIANA-IALA MoU arising from the changes in both PIANC and IALA. Paper ENG7-6.3 refers.

In discussion it was noted that some of the main challenges for marine infrastructure are sea level rise, weather changes and current changes. Cooperation between IALA and the PIANC Climate Change working group may be beneficial. Some of the IALA model courses refer to PIANC documents.

6.4 Mobile AtoN (MAtoN) and demonstration

Alwyn Williams provided a demonstration of potential mobile AtoN light characters to the Committee to assist with the proposal of a character for Mobile AtoN for the ARM Committee. He referred to input paper ENG7-9.7 and a liaison note ENG7-11.1.31 to the ARM Committee on Marking of Mobile AtoN was prepared.



6.5 Apparent Intensity Model

Noting thanks to Ian Tutt, Alwyn Williams described work carried out to explore the effect of pulse shape on apparent intensity of AtoN lights. Paper ENG7-6.5 refers.

6.6 AtoN flash simulator

Pärtel Keskküla described flash simulator software as an aid for testing and selecting AtoN light characters. Paper ENG7-6.6 refers.

6.7 Invitation to the 19th IALA Conference 2018

Yong Chan Bae issued an invitation to all participants to attend the 19th IALA conference in Incheon, Republic of Korea, from May 27 (Sun) - June 2 (Sat), 2018 with the theme “Successful voyages, sustainable planet - A New Era for Marine Aids to Navigation in a Connected World”. Paper ENG7-6.7 refers.

7. REVIEW OF WORK PROGRAMME AND WG EXPECTATIONS

7.1 Work review

The ENG Committee Workplan, was updated. Paper ENG7-11.2.1 refers.

The ENG Work Programme Task Register for 2014-18 was updated. Paper ENG7-11.2.8 refers.

A draft ENG work plan for work period 2018-2022 was prepared. Paper ENG7-11.1.36 refers.

Action

The Secretariat is requested to forward the draft ENG Committee Workplan for 2018-2022, ENG7-11.1.36, to PAP34.

8. ESTABLISH WORKING GROUPS

8.1 Establishing working groups

Two working groups were established, as outlined below:

Working Group		Working Group Chair	Working Group Vice Chair
WG 1	Visual & Physical AtoN	Malcolm Nicholson	Frank Hermann
WG 2	Technical Knowledge & Sustainability	Adam Hay	Peter Schneider Jorg Unterdeuweide
	Heritage Forum	Neil Jones	

9. WORKING GROUP 1 – VISUAL & PHYSICAL ATON

The Committee considered 27 input papers, including two liaison notes. Some of the papers received were for information. The two liaison notes from the ARM Committee, one on Mobile AtoN and the other on a disparity in Guideline 1041 on Sector Lights were considered and responses prepared.

Action Item

Dave Jeffkins is requested to place the input papers ENG7-9.14.1 & ENG7-9.12.3 on the IALA Wiki.

The Secretariat is requested to forward output papers ENG7-11.1.31 & ENG7-11.1.32 to the ARM Committee.

9.1 Develop guidance on Marine Signalling (Task 1.1.1)

Refer to Task 1.1.2 & 1.1.3

9.2 Populate the S100 registry for relevant AtoN classes (Task 2.5.1)

This task was due to commence at ENG6. However, at ENG7, due to the number of input papers and other priorities this task was not started.

9.3 Navguide updates (Task 5.1.1)

The Committee provided updates as per the Navguide update schedule.

9.4 Review of IALA documents (ref ENG1 input paper on document ownership) (Task 5.1.2)

Refer to Tasks 5.1.3-5.1.13.

9.5 Review and Update E200 on Marine Signal Lights (Task 5.1.3)

This task continued at ENG7 with input papers from the UK and Germany. The series is being revised into four short recommendations on colour, range, measurement and effective intensity and the remainder of the information from the annexes of the old Recommendations will be transferred to Guidelines. Recommendations on Colour, range and effective intensity are complete and are ready to be sent to Council for approval. A new Guideline of the determination and calculation of effective intensity was completed. Work progressed on a new Guideline on the calculation of luminous intensity and range, but needs additional work to be completed. The Recommendation on measurement was presented, but again more work is required to complete.

It was noted that content from the annex of Recommendation E-200-2 is being transferred to Guideline G1133 which will not be available until completed in the next work period. Association between

Recommendations and Guidelines will be shown on the IALA website via a visual presentation map which is being developed.

Action Item

The Secretariat is requested to forward output papers ENG7-11.1.1, ENG7-11.1.2, ENG7-11.1.4 & ENG7-11.1.30 to Council for approval. Remaining parts 3 and 5 of Recommendation E-200 should be retained.

The Secretariat is requested to forward the working papers ENG7-11.2.5 & ENG7-11.2.6 to ENG8.

Alwyn Williams is requested to prepare an article for the IALA Bulletin on revisions to the Recommendation E-200 suite of documents.

9.6 Update E-106 for the use of retro-reflecting material on aids to navigation marks within the IALA Maritime Buoyage System (Task 5.1.4)

The Committee completed the task of updating the Recommendation at ENG6 taking into account the suggestions from the ARM Committee. A separate Guideline was developed with the intention to complete at ENG7. Work continued on the Guideline, but was not completed.

Action Item

The Secretariat is requested to forward ENG7-11.2.7 the Draft Guideline on Retroreflecting Material to ENG8.

9.7 Review and Update Recommendation E108 Ed 2 for the Surface Colours used as visual signals on aids to navigation (Task 5.1.5)

Frank Hermann submitted two input papers on Surface Colours, converting the existing Recommendation into a Recommendation and a Guideline. Both were completed.

Action Item

The Secretariat is requested to forward output papers ENG7-11.1.5 & ENG7-11.1.28 to Council for approval.

9.8 Review of IALA Recommendation E-110 for the Rhythmic Characters of Lights on Aids to Navigation (2012) (Task 5.1.6)

It was noted that there are a number of errors in table 2 of Recommendation R0110 where I is erroneously replaced by 1.

Action

The Secretariat is requested to correct the errors in Table 2 of Recommendation R0110.

9.9 Update Recommendation E-111 for port traffic signals (Task 5.1.7)

This task was due to commence at ENG4. However, due to the amount and quality of input papers at ENG5/ENG6 work on this task did not begin. A working paper has been received from South Africa and will be considered when dealing with this update. The task will be carried forward to the next four year work period.

Action Item

The Secretariat is requested to hold the input paper ENG6-9.5 indefinitely until this task is started.

ENG Committee Members are requested to submit input papers in support of the revision of Recommendation E-111 on Port Traffic Signals for the next work programme.

9.10 Update Recommendation E-112 for Leading Lights and Guideline 1023 for the design of leading lights (Task 5.1.8)

To align with the proposed workshop on sustainable light and power (IALABATT/IALALITE) Task 5.1.9 was delayed to commence at ENG3. Seven input papers were received at ENG4 and work began on this task.

The input papers were amalgamated into a single working paper. It was decided that the Recommendation is more guidance and that it should be converted to a Guideline.

Work continued on this task as further input papers were received and it was identified that the Excel spread sheet provided by IALA requires updating.

Due to the number of input papers and other priorities work on this task did not progress and the task is extended to the next work programme.

Action Item

Simon Millyard and Dave Jeffkins are requested to note the request to move the task of updating Guideline 1023 and Recommendation E-112 to the next work programme.

9.11 Merge and update Guideline 1043 On Light Sources and Guideline 1048 on LED Technologies and Guideline 1049 on the Use of Modern Light Sources in Traditional Lighthouses (Task 5.1.9)

This task was due to commence at ENG2. However, to align with the IALABATT/IALALITE workshop, Task 5.1.9 was transferred to nearer the end of the work program to allow for the most up to date information to be included in the update. A re-formatted version of Guideline 1043 was received and was reviewed at the IALABATT/IALALITE workshop and was merged with 1048. However, it was agreed that 1049 should remain a standalone document. The output was forwarded to ENG6. However, due to the number of input papers and other priorities work did not continue on this task. No further work on this task was undertaken during ENG7. It is requested that this task be moved to the next work programme for completion.

Action Item

Simon Millyard and Dave Jeffkins are requested to note the request to move task 5.1.9 (Merge and update Guideline 1043 On Light Sources and Guideline 1048 on LED Technologies and Guideline 1049 on the Use of Modern Light Sources in Traditional Lighthouses) to the next work programme.

9.12 Update 1061 Illumination of Structures (Task 5.1.11)

The revision of this Guideline has not progressed as envisaged. It is proposed to move this task to the next ENG work programme.

Action

Simon Millyard and Dave Jeffkins are requested to note the request to move task 5.1.11 (Update 1061 Illumination of Structures) to the next work programme.

9.13 Update 1065 on Aids to Navigation Signal Light Beam Vertical Divergence (Task 5.1.12)

A re-formatted version of this Guideline was received as an input paper which was reviewed and completed as ENG7-11.1.3.

Action Item

The Secretariat is requested to forward ENG7-11.1.3 to Council for approval.

9.14 Review and Update of Guideline 1073 on Conspicuity of AtoN at Night (Task 5.1.13)

Following the IALABATT/LITE workshop in Koblenz a review of Guideline 1073 was completed at ENG7 with the Annexes to the Guideline being removed to the IALA Wiki, and is ready to submit to Council for approval.

Action Item

The Secretariat is requested to forward ENG7-11.1.6 to Council for approval.

The Secretariat is requested to update the IALA Dictionary in accordance with paper ENG7-11.1.35 when Guidelines G1073 is approved.

Dave Jeffkins is requested to put the Annexes of Guideline 1073 on to the IALA Wiki for access by members.

The WWA is requested to amend its documentation to comply with section 8.2 in Guideline G1073 when G1073 is approved by Council.

9.15 Review and update 1069 on synchronisation of lights (Task 5.1.14)

This task is being amalgamated into selection of characters and the majority of the relevant information has been captured in the new Guideline on the selection of rhythmic characters. As such, Guideline 1069 is no longer required. However, there were some relative examples in the annex to this document that the Committee felt would be informative to members and that the IALA Wiki would be the place to put them.
COMPLETE

10. WORKING GROUP 2 – TECHNICAL KNOWLEDGE & SUSTAINABILITY

10.1 Workshop on Sustainable Lights and Power Systems – IALABATT/IALALITE (Task 1.5.2)

The workshop on Sustainable Light & Power for the Next Generation (IALABATT/IALALITE) was successfully completed the week preceding ENG6.

10.2 Develop further guidance on Plastic Buoys, Systems & Sensors (Task Number 2.1.1)

Work continued with further review and development of Guideline 1006 on Plastic Buoys.

Due to the substantial amount of new information received as input to ENG7, there was insufficient time to complete the Guideline for approval at ENG7. Development of the guideline will be continued during the next ENG work plan.

Action Item

The IALA Secretariat is requested to forward working paper ENG7-11.2.4 to the next Committee session.

Committee participants are requested to provide any relevant information from their respective regions regarding the use of plastic buoys in hot climate and high UV exposure environments, power supply for buoys and remote control technologies to the next Committee session.

10.3 Engineering guidance on the implementation of e-navigation systems. (Task Number 2.1.2)

There was no additional input to ENG7 relating to this work task. It was agreed that e-navigation was still in development and further progress was needed before the ENG Committee could provide specific written guidance on its practical aspects. There will be further dialogue with the ENAV committee before this is considered in the committee's next work plan.

10.4 Develop guidance on the commissioning of AtoN equipment and systems and engineering audits. (Task Number 2.2.2)

The development of the Guideline on the commissioning of AtoN equipment and systems and Engineering audits was continued and completed at ENG7. The document was reviewed and submitted to Council for approval.

Action Item

The IALA Secretariat is requested to forward output paper ENG7-11.1.7 to Council for approval.

10.5 Develop guidance on AtoN design & maintenance for hot climates (Task Number 2.3.1)

Development of the draft Guideline on Providing AtoN Services in Extremely Hot and Humid Climates was completed at ENG7.

Action Item

The IALA Secretariat is requested to forward output paper ENG7-11.1.8 to the IALA Council for approval.

10.6 Review and update guidance on safety of personnel (Task 2.4.1)

The review of the Guideline on the safety of personnel was completed at ENG7.

Action Item

The IALA Secretariat is requested to forward output paper ENG7-11.1.9 to Council for approval.

10.7 Support the WWA in updating Recommendations and Guidelines on standards for training and certification of AtoN personnel (Task 3.1.1)

The Committee noted input paper ENG7-10.8 and as a result, ENG7-11.20 (Draft IALA Recommendation R0141 Standards for Training and Certification of AtoN Personnel) was reviewed and completed for submission to Council for approval.

It was noted that two Participants passed modules of the level 1 AtoN managers' course during ENG7.

Actions

The IALA Secretariat is requested to forward output paper ENG7-11.1.20 to the IALA Council for approval.

The Secretariat is requested to seek Council approval to revoke Model Course E-141/2 (Senior Manager Awareness Training).

The Committee Chairman is requested to include review of Recommendation R0141 in the 2018-2022 work plan with a view to further focusing the Recommendation.

The IALA Secretariat is requested to add the definitions from Recommendation R0141 to the IALA Dictionary.

10.8 Support the WWA in updating model courses on standards for training and certification of AtoN personnel as training courses are undertaken (Task 3.2.1)

The Committee noted input paper ENG7-10.8, detailing the model courses requiring review or clarification. Papers ENG7-11.1.14 (Draft IALA Model Course L2 Module 10.1&2 Remote monitoring of AtoN), ENG7-11.1.15 (Draft IALA Model Course L2 Module 11.1-5 AtoN structures, materials, corrosion and protection), ENG7-11.1.16 (Draft IALA Model Course L2 Module 11.6 Preservation of structures), ENG7-11.1.17 (Draft IALA Model Course L2 Module 11.7 Maintenance Planning and Records Ed.2 December 2017), ENG7-11.1.18 (Draft IALA Model Course L2 Module 8.1 AIS AtoN Operations Ed.2 December 2017), ENG11-1.19 (Draft Guideline 1100 on the Accreditation and approval Process for ATON Personnel Training) and ENG7-11.1.21 (Draft Course L1.1 Aids to Navigation Manager Training) were reviewed and completed for submission to Council for approval.

Actions

The IALA Secretariat is requested to forward output paper ENG7-11.1.14, ENG7-11.1.15, ENG7-11.1.16, ENG7-11.1.17, ENG7-11.1.18, ENG11-1.19 and ENG11-1.21 to the IALA Council for approval.

The Secretariat is requested to include the definitions and acronyms from output Recommendations and Guidelines in the IALA Dictionary.

10.9 Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems (Task Number 4.1.1)

No further work was done on the draft Guideline on the Use of Heritage Lighthouses for Modern AtoN Equipment, due to the lack of intersessional input and comment. This task item shall be forwarded for inclusion in the Committee's next work plan.

Further intersessional assistance will be sought from Committee participants to develop the Guideline before the next session of the committee.

Action Item

The IALA Secretariat is requested to forward working paper ENG7-11.2.2 to the next session of the Committee.

Committee participants are requested to provide input on any relevant experience with the use of modern AtoN equipment and systems in heritage lighthouses to the next session of the Committee.

10.10 Develop guidance on the maintenance of AtoN structures (Task Number 4.1.2)

Work on the draft Guideline on Maintenance of AtoN Structures was continued at ENG7. The Committee agreed it required further development before it could be considered for approval and that it would be forwarded for inclusion in the Committee's next work plan.

Further intersessional assistance will be sought from Committee participants to develop the Guideline before the next session of the Committee.

Action Item

The IALA Secretariat is requested to forward working paper ENG7-11.2.3 to the next session of the committee.

Committee participants are requested to provide input to the next session of the Committee on maintenance techniques and systems, for possible inclusion in the draft Guideline on the maintenance of AtoN structures.

10.11 Navguide updates (Task 5.1.1)

The review of the NAVGUIDE sections assigned to the ENG Committee was completed at ENG7.

Input papers relating to the Navguide update were reviewed and the recommended changes were accepted and the online Wiki was updated. The NAVGUIDE Update Plan, provided by the ARM Committee, was updated to reflect progress and has been sent back to ARM.

Action Item

The IALA Secretariat is requested to forward Liaison Note ENG7-11.1.34 and ENG7-11.1.33 to the ARM Committee.

10.12 Review of IALA documents (ref ENG1 input paper on document ownership) (Task 5.1.2)

Review of Guideline 1067 was completed at ENG7. All four of the documents that comprise the power supply suite have been reviewed and updated to reflect the new guideline format. Some additional information has been added to take into account developments in power supply technology and application. The Guideline will be forwarded to Council for approval.

The review of Guideline 1039 and the Solar Sizing Tool was completed at ENG7. Suggested content for the IALA Solar Sizing Tool download page was completed. A short Manual, with instructions on how to access meteorological data for input into the Tool, was completed. This Manual will be available on the website to provide guidance to users on how to access meteorological data according to their geographical location.

Development on Guideline 1006 on Plastic Buoys was continued at ENG7. Due to the substantial amount of new information received as input to ENG7, that there was insufficient time to complete the Guideline for approval at ENG7. Development of the Guideline will be forwarded to the next ENG work plan.

Action Item

The IALA Secretariat is requested to forward Working Paper ENG7-11.2.4 to the next session of the Committee.

The IALA Secretariat is requested to forward Output Papers ENG7-11.1.10, ENG7-11.1.11, ENG7-11.1.12, ENG7-11.1.13, ENG7-11.1.22, ENG7-11.1.23, ENG7-11.1.26 and ENG7-11.1.27 to the IALA Council for approval.

Peter Dobson is requested to prepare an article for the IALA Bulletin on revisions to power system Guidelines suite.

11. HERITAGE FORUM

11.1 World Lighthouse Heritage Committee

The Heritage Forum convened on 10 October with Bae Yong Chan, Kim Jong Hun and Kim Byung-Kuk from Republic of Korea to make up the World Lighthouse Heritage Committee. The committee discussed a number of issues pertinent to the layout and content of the proposed exhibition, reflecting on the initial floor plan shown to the committee. It was concluded that the opening area of the exhibition could stand to fill some of the empty space with more visually appealing use of the walls, namely a display of small Fresnel lenses.

The Forum also discussed the design and tone of the interpretation, given that the Korean design team has sensibly chosen a prescriptive design (i.e. it sends the visitor down a plotted route) rather than a completely open design.

The Forum also discussed the themes and proposed schedule for a three-day lecture series, opting to limit lectures to a one hour period during the day, during which a number of speakers would speak for 10 minutes on their interpretation of the day's theme. The themes decided upon are:

- Day One: Lighthouses of the world and their physical build;
- Day Two: Our organisation's history as seen through one unique object (where an organisation describes a bit of their history as presented by one artefact unique to their country, for example Trinity House could describe the history of their lighthouses in terms of the development and usage of the significantly large Bishop Rock Lighthouse hyper radial optic and its subsequent history as a museum piece);
- Day Three: Lighthouses in popular culture (where an organisation finds numerous examples of different ways in which their country has an affectionate relationship with lighthouses, and how they manifest over the years in general everyday items and popular art and media).

The Forum also advised on how to encourage IALA member states to send exhibition materials, emphasising requests for small items and digital items (such as photographs, books and archival footage) instead of large rare items such as optics. Bae Yong Chan will approach Council to re-address members with the rephrased request.

Action

Committee participants are encouraged to consider sending heritage AtoN artefacts for the 2018 IALA Conference and to contact members of the Heritage Forum for further details.

11.2 Incheon Declaration

The Council-approved revision of the Incheon Declaration was reviewed. There were no further comments on the draft.

11.3 IALA Complementary Lighthouse Use Manual

The Heritage Forum reviewed the revised draft of the *IALA Complementary Lighthouse Use Manual* that was submitted to Heritage Forum members intersessionally. There were no further comments and the wording for the Draft IALA Complementary Lighthouse Use Manual ENG7-11.1.25 was submitted for Council approval.

A final version prepared using a desktop publisher will be produced in IALA livery for print as a commemorative handout at the 2018 Conference. This will be prepared by Neil Jones intersessionally for review by IALA. It will require that IALA requests a number of IALA member states to provide historical lighthouse photographs for inclusion; the credited images will be included in the one-off production that will be given out at the conference, and may subsequently live as a PDF on the IALA website. The Committee agreed that Neil Jones will complete the preparation of the IALA Complementary Lighthouse Use Manual intersessionally and forward to the IALA Secretariat for publication.

Action

The IALA Secretary-General is requested to forward a request to all IALA Members to provide historical lighthouse photographs for inclusion in the IALA Complementary Lighthouse Use Manual which will be published at the 19th IALA Conference in Korea in May 2018.

Neil Jones is requested to complete the preparation of the IALA Complementary Lighthouse Use Manual which will be published at the IALA Conference in the Republic of Korea in 2018.

The Secretariat is requested to forward Paper ENG7-11.1.25 to Council for approval of the wording of the IALA Complementary Lighthouse Use Manual.

Committee Participants are requested to send, or upload to the File Share, historical lighthouse photographs with resolution of at least 150 dpi for inclusion in the IALA Complementary Lighthouse Use magazine which will be published at the IALA Conference in the Republic of Korea in 2018.

11.4 Proposal to run a L1.5 model course on lighthouse heritage

The Vice Dean of the WWA asked the Heritage Forum to consider whether the Forum would support in principle running the L1.5 model course on lighthouse heritage during 2018. The Forum agreed that it did support in principle running the course during 2018, and awaits further specifics on when/where it would be appropriate to deliver the course.

11.5 Revision of book Lighthouses of the World (1998)

The Forum also addressed input paper ENG7-10.24 Revision of book Lighthouses of the World (1998) which asked that the Heritage Forum propose themes for a new book on lighthouses of the world, taking account of IALA members' point of view regarding what aspects would be more likely to attract interest. The group came up with the following themes:

- Photographs submitted by members of the public, collected through national appeals from member states' websites;
- Travelling to lighthouses in remote, difficult or unusual locations (for example, images of lighthouses as seen when approaching by helicopter or ship);
- Lighthouses by night.

Action

The Secretariat is requested to forward Liaison Note ENG7-11.1.29 to the Publisher of the IALA book Lighthouses of the World.

12. REVIEW OF OUTPUT AND WORKING PAPERS

The Committee considered 88 input papers including presentations and produced 36 output documents including 6 revised Academy model courses, 5 draft Recommendations, 13 draft Guidelines, 2 draft manuals, 1 draft calculator tool and 8 working papers. Output papers were reviewed and their disposition agreed as indicated in ANNEX E.

The following question was asked of all attendees:

Does anyone present have the 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?

13. ANY OTHER BUSINESS

Participants enjoyed a number of social events. On Tuesday evening, the Committee bid farewell to Mahdi Al Mosawi who had worked at IALA on secondment for the past three years. On the same evening, participants savoured other cultures through shared typical food and drink from their home countries. Following a football match on Wednesday evening the Committee dinner was well attended in the Café Joules.

An appeal was made for heritage items for display in the World Lighthouse Heritage Exhibition at the 19th IALA Conference in May 2018.

14. REVIEW OF SESSION REPORT

The report of the meeting (ENG7-13.1) was considered. Committee Participants were requested to advise any corrections / amendments within one week, following which the final version will be issued via the IALA web site.

Action item

The Secretariat is requested to forward the ENG7 Committee report (ENG7-13.1) to Council to note.

15. DATE AND VENUE OF NEXT MEETING

The next session of the Committee is expected in October, 2018 at IALA Headquarters. Date will be agreed at PAP34 and advertised on the web site.

16. CLOSING OF THE MEETING

The Committee Chairman thanked the Vice-Chair, working group chairs, all Participants for their hard work and effective output during the session and the four year work period. He paid tribute to the late Adrian Wilkins who had made a significant contribution to the Committee over many years. He thanked the IALA Secretariat for their support.

The Deputy Secretary-General thanked the ENG participants, chair, vice chair and working group leaders for their hard work and achievements. He recalled the coming PAP34 meeting and the work planned for the meeting. He noted that the ENG name will be retained for the Committee which will be joined by WG5 from the ENAV Committee in the next work period with the transfer of radionavigation work to the ENG Committee. The Committees' work plan will be prepared at PAP35 in early 2018. Axel Hahn and Dave Lewald will represent IALA at the coming meeting of the IMO-IHO Harmonisation Group on Data Modelling (HGDM). Updating of the MoU between PIANC and IALA is progressing as are arrangements for the IALA change of status to an IGO. A second pre-diplomatic conference to progress the transition of IALA to IGO status is planned for 2018. Noting the good progress on preparation and revision of IALA documents, he observed that the IALA documents are used world-wide, showing the importance of the Committee work.

He concluded by thanking all participants, the Chair, Vice Chair and secretariat for the hard work, wished everyone a safe journey home and hoped to see everyone at the next meeting.

17. 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 Working Group Participants
 A list of working group participants is at ANNEX C.
- 4 Input Papers
 A list of input papers is at ANNEX D.
- 5 Output and Working papers
 A list of output and working papers is at ANNEX E.
- 6 Work programme progress

A summary of progress in completing the work programme and progress with deliverables is at ANNEX F.

7 Action Items

A list of action items is at ANNEX G.

7th Meeting of the AtoN Engineering and Sustainability Committee (ENG7)

The 7th meeting of the **AtoN Engineering and Sustainability Committee (ENG7)** will be held from 9 – 13 October, 2017 at IALA, St Germain en Laye, France.

The opening plenary will commence at 1300 on Monday 9 October and the closing plenary will end at approximately 1300 on Friday, 13 October.

Committee Chair, Vice-Chair and Working Group Chairpersons are requested to meet at 0900 on Monday, 9 October 2017.

AGENDA

1. Opening
 - 1.1. Approval of the agenda
 - 1.2. Welcome address from the Secretary-General/Deputy Secretary-General
 - 1.3. Administration and safety briefing
 - 1.4. Introductions and apologies
 - 1.5. Programme for the week
2. Review of action items from ENG6
3. Review of input papers
 - 3.1. Input papers
 - 3.2. Identify input papers suitable for uploading to the IALA Wiki
4. Reports from other bodies
 - 4.1. Report on 64th Session of the IALA Council 2017-06
 - 4.2. Report of the 33rd Session of the IALA Policy Advisory Panel 2017-03
 - 4.3. Setting up of a new PIANC-ICOMIA Joint Working Group 202 on “Influence of Recreational Navigation Infrastructures (RNI) on Waterfront Projects”
 - 4.4. Report on IMO NCSR4 March 2017
 - 4.5. Patent documents from IALA LAP
 - 4.6. S-200 Status Report
5. Reports from Rapporteurs

5.1.	Developments in Renewable Energy Sources	Peter Dobson
5.2.	Developments in Battery Technology	Jonas Lindberg
5.3.	Developments in New Light Sources	Malcolm Nicholson / Alwyn Williams
5.4.	CIE-IALA Liaison	Alwyn Williams
5.5.	Developments in AtoN Simulation Systems	Jimin Yeo
5.6.	Developments in remote control and monitoring	Peter Schneider
5.7.	IALA Dictionary	David Jeffkins
5.8.	IALA Bulletin liaison	David Jeffkins
6. Presentations (15 minutes duration)

6.1.	Brief on WWA	Omar Frits Eriksson
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|------|---------------------------------------|---------------------------------|
| 6.2. | RTCM Overview and activities 2017 | Simon Millyard |
| 6.3. | PIANC-ICOMIA Joint Working Group 202 | Geoffroy Caude, President PIANC |
| 6.4. | Mobile AtoN (MAtoN) (with demo later) | Alwyn Williams |
| 6.5. | Apparent Intensity Model | Alwyn Williams |
| 6.6. | AtoN flash simulator | Pärtel Keskküla |
| 6.7. | IALA Conference 2018 | Yongchan Bae |
7. Review of Work Programme and WG expectations
 - 7.1. 2018-2022 work plan
 8. Establish Working Groups
 9. WG 1 - Visual & Physical AtoN
 10. WG 2 - Knowledge & Sustainability
 11. Review of output and working papers
 12. Any other business
 13. Review of session report
 14. Date and venue of next meeting
 15. Close of meeting

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Apologies

Apologies were received from the following.

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Eoghan Lehane	CIL	Ireland
Alan Cran	NLB	Scotland
Andrew Mulhern	NLB	Scotland

Working Group 1

Visual & Physical AtoN

	Members	Organisation / Country
1	Malcolm Nicholson (Chair)	Sealite, Australia
2	Frank Hermann (Vice Chair)	German Federal Waterways & Shipping Administration, Germany
3	Alwyn Williams	General Lighthouse Authorities, R&RNAV, UK
4	Colin Day	Commissioners of Irish Lights, Ireland
5	Fernando Romero	Meditteraneo Senales Maritimus, Spain
6	Jonas Haarder	Terma, Denmark
7	Jonas Lindberg	Sabik, Finland
8	Jorgen Royal Petersen	Danish Maritime Authority, Denmark
9	Manuel Santos	Portuguese Lighthouse Authority, Portugal
10	Marcos Filipe Marinhos Moura	Centro De Sinalizacao Nautica Almirante Moraes Rego (Brazil Maritime Authority), Brazil
11	Michel Cousquer	CEREMA, France
12	Pärtel Keskküla	Estonian Maritime Administration, Estonia
13	Sami Lasma	Finnish Transport Agency, Finland
14	Sigge Gustafsson	SMA, Sweden

Working Group 2

Technical Knowledge & Sustainability

	Name	Organisation / Country
1	Adam Hay (Chair)	Nawae Construction / Papua New Guinea
2	Jörg Unterderweide (Vice Chair)	German Federal Waterways & Shipping Administration/ Germany
3	Peter Schneider (Vice Chair)	German Federal Waterways & Shipping Administration/ Germany
4	Alimuddin Amirudin	Marine Department, Malaysia
5	Alessio Chianura	Italian Navy, Italy
6	Alex Vendrig	Tideland Signal, Netherlands
7	David Cassidy	Go Deep International Inc., Canada
8	Ho-Jin Lee	Ministry of Oceans & Fisheries, Republic of Korea
9	Ikeda Tamotsu	JANA, Japan
10	Jimin Yeo	Korea Association of Aids to Navigation, Republic of Korea
11	Joel Tourbot	Inter-regional Maritime Directorate (DIRM), France

	Name	Organisation / Country
12	Jordan Lane-Beveridge	Canadian Coast Guard, Canada
13	Marco Krings	German Federal Waterways & Shipping Administration, Germany
14	Mariano Luis Marpegan	Hidrovia S.A., Argentina
15	Mohamed Khurshid	MENAS, Bahrein
16	Monica Herrero Morillo	Mediterraneo Senales Maritimas S.L., Spain
17	Nicolas Fady	CEREMA, France
18	Peter Dobson	Trinity House Lighthouse Service, UK
19	Philippe Renaudin	CEREMA, France
20	Rafael Montilla	Panama Maritime Authority, Panama
21	Ronan Autret	CEREMA, France
22	Ruggero Giovannini	Italian Navy, Italy
23	Samir Benouda	Mobilis, France
24	Tony Taylor	Pharos Marine/ Automatic Power, UK
25	Yong Su Yu	Korea Association of Aids to Navigation, Republic of Korea

Working Group 3

Heritage Forum

	Name	Organisation / Country
1	Neil Jones (Chair)	Trinity House, UK
2	Jong Hun Kim	Pai Chai University, Republic of Korea
3	Byung Kuk Kim	Republic of Korea
4	Marisa Marco	Puertos del Estado, Spain
5	Neil Jones	Trinity House, UK
6	Santiago Tortosa	Puertos del Estado, Spain
7	Bae Yongchan	Ministry of Oceans and Fisheries, Republic of Korea

All papers were posted to the Committee website

Number	Input Paper Title	Source	Presented by / WG
ENG7- 1.1	Draft Agenda 20171009	IALA Secretariat	Simon Millyard
ENG7- 1.2	Safety & Admin briefing	IALA Secretariat	Seamus Doyle
ENG7- 1.5	Programme for the week 20171009	IALA Secretariat	Simon Millyard
ENG7- 2.1	Action Items from ENG5	ENG5	Seamus Doyle
ENG7- 3.1	Input paper Committee template February 2017	IALA Secretariat	Simon Millyard
ENG7- 4.1	Report of the 64th session of the IALA Council	IALA Secretariat	Seamus Doyle
ENG7- 4.2	Report of the 33rd Session of the IALA Policy Advisory Panel 2017-03	IALA Secretariat	Simon Millyard
ENG7- 4.3	Letter Re Setting new PIANC-ICOMIA Joint Working Group 202 on "Influence of RNI on Waterfront Projects"	PIANC	Simon Millyard
ENG7- 4.3.1	WG 202 TOR - PIANC RecCom-ICOMIA IMG Influence of RNI on waterfront project	PIANC	Simon Millyard
ENG7- 4.4	Report on IMO NCSR4 March 2017	IALA Secretariat	Mahdi Al Mosawi
ENG7- 4.5.1	ENG7-4.5.1 (LAP18-22.3) Information on patents	LAP	Michael Card
ENG7- 4.5.2	(LAP17-23.5) IALA Patent Policy approved by LAP	LAP	Michael Card
ENG7- 4.6	S-200 Status Report	Nick Ward	Simon Millyard
ENG7- 5.2.1	Rapporteur report-Developments in Battery Technology	Jonas Lindberg	Jonas Lindberg
ENG7- 5.2.2	Futuristic Fantastic Batteries	Jonas Lindberg	Jonas Lindberg
ENG7- 5.5	Rapporteur report-Current Status of Development of AtoN simulation 20170912	Ji-Min Yeo	Ji-Min Yeo
ENG7- 5.5.1	Presentation Current Status of Development of AtoN Simulator 171005	Ji-Min Yeo	Ji-Min Yeo
ENG7- 6.1	Brief on WWA	Stephen Bennett	Stephen Bennett
ENG7- 6.2	Presentation RTCM Overview and activities 2017	Jorge Arroyo	Simon Millyard
ENG7- 6.3	PIANC-ICOMIA Joint Working Group 202	Geoffroy Caude	Geoffroy Caude
ENG7- 6.4	Mobile AtoN (MAtoN)	Alwyn Williams	Alwyn Williams
ENG7- 6.5	Apparent Intensity Model	Alwyn Williams	Alwyn Williams
ENG7- 6.6	AtoN flash simulator	Pärtel Keskküla	Pärtel Keskküla
ENG7- 6.7	IALA Conference 2018	Yong Chan Bae	Yong Chan Bae
ENG7- 7.1	(ENG6-11.2.11) ENG Committee Workplan 2014-18 - Updated at ENG6.	ENG6	Simon Millyard

Number	Input Paper Title	Source	Presented by / WG
ENG7- 7.2	(ENG6-11.2.12) ENG Committee Workplan 2014-18 Task Register - Updated at ENG6	ENG6	Simon Millyard
ENG7- 7.3	(ENG6-11.2.20) ENG work plan ideas for 2018-2022 post plenary	ENG6	Simon Millyard
ENG7- 7.4	(PAP33-18.10) Strategic Vision 2018-2026	PAP33	Michael Card
ENG7- 9.1	(ENG6-11.2.17) Draft Recommendation Marine Signal Lights Colours	ENG6 WG1	WG1
ENG7- 9.2	(ENG6-11.2.18) Draft Recommendation Marine Signal Lights Luminous Range	ENG6 WG1	WG1
ENG7- 9.3	(ENG6-11.2.19) Draft Recommendation E-200-4	ENG6 WG1	WG1
ENG7- 9.4	(ENG6-11.2.21) Draft Guideline On Intensity Calculations 20170330	ENG6 WG1	WG1
ENG7- 9.4.1	Draft Guideline On Luminous Intensity Calculations 20170830	Frank Hermann	WG1
ENG7- 9.5	(ENG6-9.7) Draft IALA Guideline 1065 Ed.2 Vertical Divergence December 2013 rev3	ENG6 WG1	WG1
ENG7- 9.6	(ENG6-9.26 & SLP1-15.3) Draft IALA Guideline 1073 Ed.1 Conspicuity of AtoN Lights at Night June 2011 rev2 Koblenz	ENG6 WG1	WG1
ENG7- 9.7	(ARM6-12.1.12) Liaison ARM to ENG on Marking of Mobile AtoN	ARM6	WG1
ENG7- 9.8	(ARM6-12.1.15) Liaison ARM to ENG on disparity between editions of guideline 1041_v2	ARM6	WG1
ENG7- 9.9	(ARM6-12.1.17) Liaison to all committees and Secretariat - reminder on the NAVGUIDE 02	ARM6	WG1
ENG7- 9.10	(ARM6-12.1.23) Liaison ARM to all Committees on mobile AtoN	ARM6	WG1
ENG7- 9.11	Input paper Draft IALA Recommendation on Surface Colours	Frank Hermann	WG1
ENG7- 9.11.1	Draft IALA Recommendation E-108 Surface Colours used as Visual Signals on AtoN 20170901	Frank Hermann	WG1
ENG7- 9.11.2	Draft IALA Guideline 1xxx Ed.1 on Surface Colours Used As Visual Signals On Aids To Navigation reformatted 20Oct16	Frank Hermann	WG1
ENG7- 9.12	Cover Note for Effective Intensity Papers	Alwyn Williams	WG1
ENG7- 9.12.1	Draft Recommendation E-200-4 Ed.2 v2	Alwyn Williams	WG1
ENG7- 9.12.2	Draft IALA Guideline xxxx - Determination and Calculation of Effective Intensity Ed.1 v3	Alwyn Williams	WG1
ENG7- 9.12.3	Alternative Effective Intensity Calculation Technique	Alwyn Williams	WG1
ENG7- 9.13	Cover Note for Measurement Papers	Alwyn Williams	WG1
ENG7- 9.13.1	Draft Recommendation E-200-3 Ed.2	Alwyn Williams	WG1
ENG7- 9.13.2	Draft IALA Guideline xxxx - Measurement of Marine Light Performance Ed.1	Alwyn Williams	WG1
ENG7- 9.14	Cover Note for Trial of Conspicuity Scale Paper	Alwyn Williams	WG1
ENG7- 9.14.1	RPT-06-AW-17 Trial of Conspicuity Scale	Alwyn Williams	WG1
ENG7- 9.15	Input paper ENG6 action item 37	Fernando Romero	WG1

Number	Input Paper Title	Source	Presented by / WG
ENG7- 9.16	20170908 Cover Note for Draft Guideline on Application of Retroreflective Material on AtoN	Jørgen Royal Petersen	WG1
ENG7- 9.16.1	20170908 Draft Guideline on Application of Retroreflecting Materials on AtoN	Jørgen Royal Petersen	WG1
ENG7- 9.17	NAVGUIDE Chapter Updates	Peter Dobson	WG1
ENG7- 10.1	(ENG5-10.39) Report-Quality Certification according to enactment of the Korean Industrial Standards for Lanterns-rev1	ENG5	WG2
ENG7- 10.2	(ENG6-11.2.3) WG2 Sub Working Group Buoys and Moorings - Report	ENG6 WG2	WG2
ENG7- 10.3	(ENG6-11.2.4) 170330 Draft Guideline 1006 on Plastic Buoys	ENG6 WG2	WG2
ENG7- 10.4	(ENG6-11.2.13) Draft IALA Guideline Ed.1 on Commissioning reformatted - ENG6	ENG6 WG2	WG2
ENG7- 10.5	(ENG6-11.2.5) Draft Guideline on Providing Aton Services In Extremely Hot And Humid Climates 29 March 2017	ENG6 WG2	WG2
ENG7- 10.5.1	Draft Guideline on Providing Aton Services In Extremely Hot Climates amendments	Shaheen Mirza	WG2
ENG7- 10.5.2	Tropospheric Ducting Forecast	Shaheen Mirza	WG2
ENG7- 10.6	Draft Guideline 1100 on the Accreditation and approval Process for ATON Personnel Training 20170728	WWA	WG2
ENG7- 10.7	Draft IALA Recommendation R0141 Standards for Training and Certification of AtoN Personnel Ed.4 20170721 shgb	WWA	WG2
ENG7- 10.8	WWA Documents for review at ENG7 v1	WWA	WG2
ENG7- 10.8.1	Draft IALA Model Course L2 Module 10.1&2 Remote monitoring of AtoN Ed.2 December 2017	WWA	WG2
ENG7- 10.8.2	Draft IALA Model Course L2 Module 11.1-5 AtoN structures, materials, corrosion and protection Ed.2 December 2017	WWA	WG2
ENG7- 10.8.3	Draft IALA Model Course L2 Module 11.6 Preservation of structures Ed.2 December 2017	WWA	WG2
ENG7- 10.8.4	Draft IALA Model Course L2 Module 11.7 Maintenance Planning and Records Ed.2 December 2017	WWA	WG2
ENG7- 10.8.5	Draft IALA Model Course L2 Module 8.1 AIS AtoN Operations Ed.2 December 2017	ENAV21	WG2
ENG7- 10.8.6	Draft Model Course L1.1 Aids to Navigation Manager Training Ed.2 December 2017 20170824	WWA	WG2
ENG7- 10.9	(ENG6-11.2.1) Draft Guideline 1092 Ed2 Safety Management for AtoN Activities March 17	ENG6 WG2	WG2
ENG7- 10.10	(ENG6-11.2.2) Draft Guideline on Use of Modern Equipment on Heritage Lighthouses	ENG6 WG2	WG2 Heritage
ENG7- 10.11	(ENG6-11.2.6) Draft IALA Guideline Ed.1 Maintenance of AtoN Structures ENG6	ENG6 WG2	WG2
ENG7- 10.12	(ENG6-11.2.7) IALA Guideline 1067-3 Ed.1 Electrical Energy Storage for AtoN 30-3-17 rev b	ENG6 WG2	WG2

Number	Input Paper Title	Source	Presented by / WG
ENG7- 10.13	(ENG6-11.2.8) Draft IALA Guideline 1067-2 Ed.1 Power Sources 30-3-17 rev d	ENG6 WG2	WG2
ENG7- 10.14	(ENG6-11.2.9) Draft IALA Guideline 1067-0 Ed1.1 on Selection of Power Systems for AtoN and Associated Equipment Jun2011 rev3 - 28-03-17	ENG6 WG2	WG2
ENG7- 10.15	(ENG6-11.2.10) IALA Guideline 1067-1 Ed.1 Total Electrical Loads of Aids to Navigation_May2009 rev3 - 16-03-17 rev f	ENG6 WG2	WG2
ENG7- 10.16	(ENG6-11.2.14) IALA Guideline 1039 Ed.2 Designing Solar Power Systems for Aids to Navigation March 2017 rev2	ENG6 WG2	WG2
ENG7- 10.17	(ENG6-11.2.15) IALA Solar Tool	ENG6 WG2	WG2
ENG7- 10.18	(ENG6-11.2.16) Suggested content for the IALA Solar Sizing webpage	ENG6 WG2	WG2
ENG7- 10.19	(ENG6-11.1.20.1) Navguide 2015 tracking table - updated ENG6	ENG6 WG2	WG2
ENG7- 10.20	Proposal for updating Guideline 1006 on plastic buoys	Monica Herrero / Fernando Romero	WG2
ENG7- 10.20.1	Proposed update of elastomer technology in plasticbuoys in Guideline 1006	Monica Herrero / Fernando Romero	WG2
ENG7- 10.21	Report-Uniformity of terminology for Spar Buoy and Buoyant Beacon 170912	Ji-Min Yeo	WG2
ENG7- 10.22	The 2nd Meeting of the 19th IALA Conference World Lighthouse Heritage Exhibition	Yong Chan Bae	WG2 Heritage
ENG7- 10.23	The 2nd Meeting of INCHEON DECLARATION Committee	Kim Jonghun	WG2 Heritage
ENG7- 10.24	Revision of book Lighthouses of the World (1998)	IALA Secretariat	WG2 Heritage

ANNEX E LIST OF OUTPUT AND WORKING PAPERS

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

Meeting	Output Paper Title	Source	Action
ENG7- 11.1.1	Draft Recommendation R0200-1 (E-200-1) Ed.2 on Marine Signal Lights - Colour	WG1	To Council 65
ENG7- 11.1.2	Draft Recommendation R0200-2 (E-200-2) on Marine Signal Lights - Calculation, Definition and notation of Luminous Range	WG1	To Council 65
ENG7- 11.1.3	Draft IALA Guideline G1065 Ed.3 on Marine AtoN Signal Light Beam Vertical Divergence	WG1	To Council 65
ENG7- 11.1.4	Draft Recommendation R0200-4 (E-200-4) Marine Signal Lights - Determination and Calculation of Effective Intensity	WG1	To Council 65
ENG7- 11.1.5	Draft Recommendation R0108 (E-108) Surface Colours used as Visual Signals on Aids to Navigation	WG1	To Council 65
ENG7- 11.1.6	Draft Guideline G1073 Ed.2 on Conspicuity of Marine AtoN Lights at Night	WG1	To Council 65
ENG7- 11.1.7	Draft IALA Guideline on Commissioning Ed.1 December 2017	WG2	To Council 65
ENG7- 11.1.8	Draft Guideline G1136 Ed.1 on Providing Marine Aton Services In Extremely Hot and Humid Climates	WG2	To Council 65
ENG7- 11.1.9	Draft Guideline 1092 Ed2 Safety Management for AtoN Activities	WG2	To Council 65
ENG7- 11.1.10	Draft Guideline 1067-3 Ed.1 Electrical Energy Storage for AtoN	WG2	To Council 65
ENG7- 11.1.11	Draft IALA Guideline 1067-2 Ed.1 Power Sources	WG2	To Council 65
ENG7- 11.1.12	Draft IALA Guideline 1067-0 Ed.1.1 on Selection of Power Systems for AtoN and Associated Equipment	WG2	To Council 65
ENG7- 11.1.13	Guideline 1067-1 Ed.1 Total Electrical Loads of Aids to Navigation	WG2	To Council 65
ENG7- 11.1.14	Draft IALA Model Course L2 Module 10.1&2 Remote monitoring of AtoN Ed.2 December 2017	WG2	To Council 65
ENG7- 11.1.15	Draft IALA Model Course L2 Module 11.1-5 AtoN structures, materials, corrosion and protection Ed.2 December 2017	WG2	To Council 65
ENG7- 11.1.16	Draft IALA Model Course L2 Module 11.6 Preservation of structures Ed.2 December 2017	WG2	To Council 65
ENG7- 11.1.17	Draft IALA Model Course L2 Module 11.7 Maintenance Planning and Records Ed.2 December 2017	WG2	To Council 65
ENG7- 11.1.18	Draft Model Course L2.8.1 AIS AtoN Operations Ed.1	WG2	To Council 65
ENG7- 11.1.19	Draft Guideline G1100 on The Accreditation and Approval Process for AtoN Personnel Training	WG2	To Council 65
ENG7- 11.1.20	IALA Recommendation R0141 (E-141) Ed.4 Standards for Training and Certification of AtoN Personnel	WG2	To Council 65
ENG7- 11.1.21	Draft IALA Model Course L1.1 Aids to Navigation Manager Training Ed.3	WG2	To Council 65
ENG7- 11.1.22	IALA Guideline Ed.2 1039 Designing Solar Power Systems for Aids to Navigation December 2017	WG2	To Council 65 To website

Meeting	Output Paper Title	Source	Action
ENG7- 11.1.23	Liaison Note to Secretariat for Solar Size Tool website content	WG2	To Secretariat
ENG7- 11.1.25	Draft IALA Complimentary Lighthouse Use Manual Ed.2	Heritage	To Council 65
ENG7- 11.1.26	IALA Solar Power System Calculation Tool Ed.2 December 2017	WG2	To Council 65 To website
ENG7- 11.1.27	Draft Manual for Meteorological Data for IALA Solar Power System Calculation Tool	WG2	To Council 65 To website
ENG7- 11.1.28	Draft Guideline G1134 Ed.1 Surface Colours used as Visual Signals on Aids to Navigation	WG1	To Council 65
ENG7- 11.1.29	Liaison Note to Secretariat re Revision of book Lighthouses of the World (1998)	Heritage	IALA Secretariat
ENG7- 11.1.30	Draft Guideline G1135 Ed.1 on Marine Signal Lights - Determination and Calculation of Effective Intensity	WG1	To Council 65
ENG7- 11.1.31	Liaison Note to ARM on Mobile AtoN	WG1	To ARM7
ENG7- 11.1.32	Liaison Note to ARM on Disparity between Editions of G1041	WG1	To ARM7
ENG7- 11.1.33	(ENG6-10.19) Navguide 2015 tracking table - updated ENG7	Vice Chair	To ARM7
ENG7- 11.1.34	Liaison Note to ARM re Navguide Updates	Vice Chair	To ARM7
ENG7- 11.1.35	Dictionary amendment proposal from Guideline 1073	WG1	To Secretariat
ENG7- 11.1.36	ENG Committee Workplan ideas for 2018- 22 - Updated at ENG7 V2	Chair	To PAP34
ENG7- 13.1	Report on session 6 of the ENG Committee (ENG6)	IALA Sec	To Council for noting

Working Papers are documents that will remain within the committee for further review.

Number	Working Paper Title	Source	Action
ENG7- 11.2.1	Workplan updated at ENG7	Vice Chair	Complete
ENG7- 11.2.2	(ENG7-10.10) Draft Guideline on Use of Modern Equipment on Heritage Lighthouses	WG2	To ENG8
ENG7- 11.2.3	(ENG7-10.11) Draft IALA Guideline Ed.1 Maintenance of AtoN Structures ENG7	WG2	To ENG8
ENG7- 11.2.4	Draft Guideline on plastic buoys	WG2	To ENG8
ENG7- 11.2.5	Draft Recommendation R0200-3 (E-200-3) Marine Signal Lights - Measurement	WG1	To ENG8
ENG7- 11.2.6	Draft Guideline G1133 Ed.1 on Marine Signal Lights - Calculation of Luminous Intensity and Range	WG1	To ENG8
ENG7- 11.2.7	Draft Guideline XXXX Ed.1 on Application of Retroreflecting Materials on Marine AtoN	WG1	To ENG8
ENG7- 11.2.8	(ENG6-11.2.12) ENG Committee Workplan 2014-18 Task Register - Updated at ENG6	Vice Chair	Complete

Task		Start Session	Planned End Session	Revised End Session	Progress Indicator			Status Overview
					Green	Yellow	Red	
WG1 – Visual & Physical AtoN								
1.1.1	Produce a Guideline on Marine Signalling	2	5	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
1.1.2	Develop guidance on the selection of rhythmic characters including 1069 Synchronisation	2	5		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG5
1.1.3	Update / Replace 1038 On Ambient Lights Levels	2	5		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG5
2.5.1.	Populate the S100 registry for relevant AtoN classes	3	6	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Task deferred to 2018-22 Work Plan
5.1.1	Update the Navguide as requested by ARM Committee	5	6	2-7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
5.1.2	Review of IALA documents	1	7		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	
5.1.3	Review and Update E200 On Marine Signal Lights	3	6	4-7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Parts 1,2,&4 Completed
5.1.4	Update E-106 For the use of retro-reflecting material on aids to navigation marks within the IALA Maritime Buoyage System	4	5	6	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG6
5.1.5	Review and Update E108 Ed 2 For the Surface Colours used as visual signals on aids to navigation	6	6	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
5.1.6	Review of IALA Recommendation E-110 for the Rhythmic Characters of Lights on Aids to Navigation (2012)	6	7		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG5
5.1.7	Update Recommendation E-111 For port traffic signals	4	5	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Deferred to next work period
5.1.8	Update E-112 For Leading Lights and 1023 for the design of leading lights	4	6	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Deferred to next work period
5.1.9	Merge and update 1043 On Light Sources and 1048 On LED Technologies and 1049 On The Use of Modern Light Sources in Traditional Lighthouses	2	4	5-7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Deferred to next work period
5.1.10	Update 1041 On Sector Lights	1	3		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed ENG4
5.1.11	Update 1061 Illumination of Structures	1	2	5	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Deferred to next work period
5.1.12	Update 1065 On Aids to Navigation Signal Light Beam Vertical Divergence	6	6	7	<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
5.1.13	Review and Update of Guideline 1073 on Conspicuity of AtoN at Night	5	7		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
5.1.14	Review and Update Guideline 1069 on Synchronisation of Lights	2	5		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG5
5.2.1	Identify current documents as potential Standards, Recommendations, Guidelines & Manuals	5	7		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed ENG4
5.3.1	Presentation to ENG committee on new developments in AtoN & related topics	1	7		<div><div></div></div>	<div><div></div></div>	<div><div></div></div>	Completed at ENG7
WG2 – Knowledge & Sustainability								

Task	Start	Planned	Revised	Progress Indicator			Status
1.5.2. Workshop on Lights and Batteries – IALABATT/IALALITE	1	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
2.1.1. Develop further guidance on plastic buoys, systems & sensors	1	6	7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Task deferred to 2018-22 Work Plan
2.1.2. Engineering guidance on the implementation of e-Navigation systems	3	7		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Task deferred to 2018-22 Work Plan
2.2.1. Develop guidance on sustainable AtoN design & maintenance.	3	6		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete at ENG6
2.2.2. Develop guidance on the commissioning of AtoN equipment and systems and engineering audits.	2	5	7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
2.3.1. Develop guidance on AtoN design & maintenance for hot climates.	4	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
2.3.2. Workshop on AtoN delivery and maintenance in extreme heat	3	4		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
2.4.1. Review and update guidance on safety of personnel	4	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
3.2.1. Support the WWA in updating model courses on standards for training and certification of AtoN personnel	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
4.1.1. Develop guidance on the use of heritage lighthouses for modern AtoN equipment & systems.	3	6		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Deferred to 2018-22
4.1.2. Develop guidance on Maintenance of AtoN structures	2	6		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Deferred to 2018-22
5.1.1. Navguide updates	3	6	7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
5.1.2. Review of IALA documents (ref ENG1 input paper on document ownership)	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Completed at ENG7
5.3.1. Presentation to ENG committee on new developments in AtoN & related topics	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Complete
5.3.2. Develop the IALA Wiki	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ongoing
5.3.3. Develop the IALA Dictionary	1	7		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Ongoing

Action Items for Secretariat

1. The Secretariat is requested to forward the draft ENG Committee Workplan for 2018-2022, ENG7-11.1.36, to PAP34. 10
2. The Secretariat is requested to forward output papers ENG7-11.1.31 & ENG7-11.1.32 to the ARM Committee. 10
3. The Secretariat is requested to forward output papers ENG7-11.1.1, ENG7-11.1.2, ENG7-11.1.4 & ENG7-11.1.30 to Council for approval. Remaining parts 3 and 5 of Recommendation E-200 should be retained. 11
4. The Secretariat is requested to forward the working papers ENG7-11.2.5 & ENG7-11.2.6 to ENG8. 11
5. The Secretariat is requested to forward ENG7-11.2.7 the Draft Guideline on Retroreflecting Material to ENG8. 11
6. It was noted that there are a number of errors in table 2 of Recommendation R0110 where I is erroneously replaced by 1. 11
7. Action 11
8. The Secretariat is requested to correct the errors in Table 2 of Recommendation R0110. 11
9. The Secretariat is requested to hold the input paper ENG6-9.5 indefinitely until this task is started. 11
10. The Secretariat is requested to forward ENG7-11.1.3 to Council for approval. 12
11. The Secretariat is requested to forward ENG7-11.1.6 to Council for approval. 12
12. The Secretariat is requested to update the IALA Dictionary in accordance with paper ENG7-11.1.35 when Guidelines G1073 is approved. 12
13. The WWA is requested to amend its documentation to comply with section 8.2 in Guideline G1073 when G1073 is approved by Council. 13
14. The IALA Secretariat is requested to forward working paper ENG7-11.2.4 to the next Committee session. 13
15. The IALA Secretariat is requested to forward output paper ENG7-11.1.7 to Council for approval. 13
16. The IALA Secretariat is requested to forward output paper ENG7-11.1.8 to the IALA Council for approval. 13
17. The IALA Secretariat is requested to forward output paper ENG7-11.1.9 to Council for approval. 14
18. The IALA Secretariat is requested to forward output paper ENG7-11.1.20 to the IALA Council for approval. 14
19. The Secretariat is requested to seek Council approval to revoke Model Course E-141/2 (Senior Manager Awareness Training). 14
20. The IALA Secretariat is requested to add the definitions from Recommendation R0141 to the IALA Dictionary. 14
21. The IALA Secretariat is requested to forward output paper ENG7-11.1.14, ENG7-11.1.15, ENG7-11.1.16, ENG7-11.1.17, ENG7-11.1.18, ENG11-1.19 and ENG11-1.21 to the IALA Council for approval. 14
22. The Secretariat is requested to include the definitions and acronyms from output Recommendations and Guidelines in the IALA Dictionary. 14
23. The IALA Secretariat is requested to forward working paper ENG7-11.2.2 to the next session of the Committee. 14
24. The IALA Secretariat is requested to forward working paper ENG7-11.2.3 to the next session of the committee. 15
25. The IALA Secretariat is requested to forward Liaison Note ENG7-11.1.34 and ENG7-11.1.33 to the ARM Committee. 15

26.	The IALA Secretariat is requested to forward Working Paper ENG7-11.2.4 to the next session of the Committee.	15
27.	The IALA Secretariat is requested to forward Output Papers ENG7-11.1.10, ENG7-11.1.11, ENG7-11.1.12, ENG7-11.1.13, ENG7-11.1.22, ENG7-11.1.23, ENG7-11.1.26 and ENG7-11.1.27 to the IALA Council for approval.	15
28.	The IALA Secretary-General is requested to forward a request to all IALA Members to provide historical lighthouse photographs for inclusion in the IALA Complementary Lighthouse Use Manual which will be published at the 19 th IALA Conference in Korea in May 2018.	17
29.	The Secretariat is requested to forward Paper ENG7-11.1.25 to Council for approval of the wording of the IALA Complementary Lighthouse Use Manual.	17
30.	The Secretariat is requested to forward Liaison Note ENG7-11.1.29 to the Publisher of the IALA book Lighthouses of the World.	17
31.	The Secretariat is requested to forward the ENG7 Committee report (ENG7-13.1) to Council to note.	18

Action Items for Participants

32.	David Jeffkins is requested to upload ENG7-9.14.1 and ENG7-9.12.3 to the IALA Wiki.	7
33.	Committee Members are requested to ensure that definitions in IALA documents are consistent with the Dictionary.	8
34.	Committee Members are invited to volunteer as translators for Dictionary terms.	8
35.	ENG Committee members are requested to submit articles for the IALA Bulletin to Marie-Helene Grillet.	9
36.	Dave Jeffkins is requested to place the input papers ENG7-9.14.1 & ENG7-9.12.3 on the IALA Wiki.	10
37.	Alwyn Williams is requested to prepare an article for the IALA Bulletin on revisions to the Recommendation E-200 suite of documents.	11
38.	The Secretariat is requested to forward output papers ENG7-11.1.5 & ENG7-11.1.28 to Council for approval.	11
39.	ENG Committee Members are requested to submit input papers in support of the revision of Recommendation E-111 on Port Traffic Signals for the next work programme.	11
40.	Simon Millyard and Dave Jeffkins are requested to note the request to move the task of updating Guideline 1023 and Recommendation E-112 to the next work programme.	12
41.	Simon Millyard and Dave Jeffkins are requested to note the request to move task 5.1.9 (Merge and update Guideline 1043 On Light Sources and Guideline 1048 on LED Technologies and Guideline 1049 on the Use of Modern Light Sources in Traditional Lighthouses) to the next work programme.	12
42.	Simon Millyard and Dave Jeffkins are requested to note the request to move task 5.1.11 (Update 1061 Illumination of Structures) to the next work programme.	12
43.	Dave Jeffkins is requested to put the Annexes of Guideline 1073 on to the IALA Wiki for access by members.	12
44.	Committee participants are requested to provide any relevant information from their respective regions regarding the use of plastic buoys in hot climate and high UV exposure environments, power supply for buoys and remote control technologies to the next Committee session.	13
45.	The Committee Chairman is requested to include review of Recommendation R0141 in the 2018-2022 work plan with a view to further focusing the Recommendation.	14
46.	Committee participants are requested to provide input on any relevant experience with the use of modern AtoN equipment and systems in heritage lighthouses to the next session of the Committee.	15

- 47. Committee participants are requested to provide input to the next session of the Committee on maintenance techniques and systems, for possible inclusion in the draft Guideline on the maintenance of AtoN structures. 15
- 48. Peter Dobson is requested to prepare an article for the IALA Bulletin on revisions to power system Guidelines suite. 15
- 49. Committee participants are encouraged to consider sending heritage AtoN artefacts for the 2018 IALA Conference and to contact members of the Heritage Forum for further details. 16
- 50. Neil Jones is requested to complete the preparation of the IALA Complementary Lighthouse Use Manual which will be published at the IALA Conference in the Republic of Korea in 2018. 17
- 51. Committee Participants are requested to send, or upload to the File Share, historical lighthouse photographs with resolution of at least 150 dpi for inclusion in the IALA Complementary Lighthouse Use magazine which will be published at the IALA Conference in the Republic of Korea in 2018. 17



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