



IALA TRAINING SEMINAR ON RISK MANAGEMENT: PAWSA, IWRAP Mk2 & SIMULATION

5 - 9 November 2012

Four Points by Sheraton Hotel, Sydney

Draft Report

Executive Summary

The seminar was held at the Four Points by Sheraton Hotel, Sydney and was attended by sixty-six delegates from eighteen countries. Fifty-one delegates were local to the region.

The seminar began with a series of presentations, including a scene setting presentation on the importance of Australia's maritime interests, an introduction to the IALA Risk Management Toolbox, which includes Ports and Waterways Safety Assessment (PAWSA), IWRAP Mk2 and simulation.

Following a more in depth introduction to IWRAP Mk2, the delegates began to gain 'hands on experience' with the updated commercial program. Presentations were made as the seminar developed, introducing additional topics and addressing aspects of the theory underlying IWRAP Mk2.

Delegates were also given the opportunity to explore a more detailed and complete pre-processed model of Hatter Barn, using automatic input of AIS data. The use of the software by the delegates identified a number of potential improvements. The delegates then went on to develop their own models of one of three Australian ports.

A full day was devoted to the PAWSA process, during which not only the method of conducting the workshops was explained but also the detailed planning required to prepare for and then support it. There was then a practical exercise, based on the Port of Gladstone, which demonstrated the purposes of the first of the four PAWSA workbooks.

Two sessions were devoted to simulation, which included case studies, current practice and the potential for future development.

In the final discussion, the complementarity of the three components in the toolbox (PAWSA, IWRAP Mk2 & simulation) was reviewed and a way in which each could play its part in a combined approach to risk management of a waterway was presented.

The seminar provided an excellent opportunity for delegates to get to know and discuss the theory and practice of the IALA Risk Management toolbox, drawing on the expertise of the instructors and the other delegates, whilst developing their own skills.

Feedback from the seminar was that the majority of participants found that the seminar had met or exceeded their expectations in most categories.

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1 INTRODUCTION

The IALA Training Seminar on Risk Management, featuring the Ports and Waterways Safety Assessment (PAWSA), IALA Waterways Risk Management Program (IWRAP) Mk2 and simulation, was held from 5 to 9 November 2012 at the Four Points by Sheraton Hotel, Sydney, Oman. Sixty-six delegates attended it, from eighteen countries; fifty-one delegates were local to the region.



The objective of the seminar was to introduce the delegates to the IALA Risk Management Toolbox and instruct them in its use, as well as to familiarise them with the strengths and weaknesses of the constituent parts. Considerable emphasis was placed on case studies.

All presentations made during the seminar are available from the IALA Workshop FTP.

Day One – Opening of the Workshop and Introduction

2 SESSION 1 OPENING OF THE SEMINAR

The session was chaired by Gary Prosser, Secretary-General of IALA.

2.1 Welcome by AMSA

Mick Kinley, Deputy CEO of the Australian Maritime Safety Authority (AMSA) welcomed the delegates to Sydney and the seminar. He expressed the hope that all would benefit professionally and also enjoy the social programme. Specific thanks were given to IMO and AusAID for the support provided to the seminar.



The full text of Mick Kinley's address is at ANNEX E

2.2 Welcome by IALA

Gary Prosser thanked AMSA for hosting the seminar



He provided a brief view of IALA's current activities the bedding down into its new offices and formation of the IALA World Wide Academy (WWA) and its considerable success in beginning its capacity building role and the creation of model training courses.

With regard to the seminar, he acknowledged the instructors are world class, noted that the seminar is endorsed by IMO and that its content is kept under constant review. Use of the IWRAP Mk2, PAWSA and simulation components of the IALA Risk Management Toolbox allows a proactive approach, which is necessary, not least because of the paradigm

shift that is taking place in shipping and the increasing interest of the public in shipping incidents. This has the effect of making the regulators more accountable. There is also the increasing interaction with other forms of transport.

In closing, Gary Prosser acknowledged the support from AMSA, AusAID, IMO and the IALA members from Denmark, Germany, UK and the USA.

2.3 Welcome by IMO

Bekir Sitki Ustaoğlu, Head, Asia and Pacific Section of the Technical Co-operation Division of the International Maritime Organization (IMO), said that he was delighted to be at the seminar, which was an opportunity to get ahead of a series of seminars that are being planned to start in 2013 and will combine the efforts of the IMO, IHO and IALA. He mentioned the responsibility of IMO member states in regard to risk and its mitigation in respect to ship routing measures.

2.4 IALA and the IALA World Wide Academy

Stephen Bennett provided an overview of IALA before describing the setting up of the IALA World Wide Academy, its objectives, activities to date and future tasks.

2.5 Safety brief

Mike Hadley provided information about emergency procedures and various administrative matters.

3 SESSION 2 - 3 – PRESENTATIONS

This session was chaired by RAdm Jean-Charles Leclair, Dean of the IALA World Wide Academy.

3.1 Shipping Growth and Risk Management in Australia

This presentation was given by Mahesh Alimchamdani, Head of Navigation, AMSA. This presentation comprehensively showed the important place that maritime trade holds in Australia and highlighted the need for consideration of the risks involved.

The speaking notes for this presentation are at ANNEX F.

3.2 Introduction to the IALA Risk Management Toolbox

This presentation was given by Ómar Frits Eriksson, DMA and seminar chairman.

Ómar Frits Eriksson began with a brief overview of IALA and its activities. He then provided a short introduction to the constituent parts of the IALA Risk Management Toolbox and the reasons why IALA is involved in risk management. He then briefly introduced IWRAP Mk2,

which is a quantitative approach to risk management, the Ports and Waterways Safety Assessment (PAWSA), which is a qualitative approach, and then said that the two tools complement one another and can also benefit from the use of simulation. He then went on to speculate where simulation may develop.



4 SESSIONS 4 - 5 – IWRAP MK2

This session was chaired by Ómar Frits Eriksson. Support was provided by Erik Sønne Ravn, (DMA) and Per Christian Engberg (Gatehouse).

The introduction began with the background to the development of the IALA Waterway Risk Assessment Program (IWRAP), which could be traced back to at least 1974, with significant steps forward being made in the mid to late 1990s, leading to the introduction of IWRAP Mk1 in 2006. The design rules and probabilistic approach taken were described. Brief mention was made of the selection of AtoN, the derivation of the effects of wind and current, the basis for the assessment of minimum safe channel width and the desirability of the channel width ratio being greater than 1.0. The development of probabilistic models was then described. It was explained that at a verification workshop in Copenhagen the Steering Group realized that the results obtained with IWRAP Mk1 were too pessimistic. The Steering Group then decided to start from scratch with the probabilistic modelling part. This had resulted in IWRAP Mk2, which has now been evaluated by the Steering Group, and found to be working well. Ómar Frits Eriksson stressed that IWRAP Mk2 only addresses the probabilistic part of the 'Risk = Probability x Consequences' equation, and that proper training of analysts is essential for the successful application of IWRAP Mk2.

4.1 Programme Installation & Licensing Scheme

Ómar Frits Eriksson ran through the installation process, the creation of a new project and then the definition of the model to be used. This included the creation of legs, the input of the traffic distribution, the entry of ship data and causation factors. Delegates were able to undertake these tasks, simultaneously, on their own laptops, using programs provided on USB memory sticks.

With regard to licensing, Ómar Frits Eriksson said that the basic version is freely available to IALA members on a one-year license, renewable with continuing membership of IALA.

END OF DAY

Day Two – IWRAP MK2

5 SESSIONS 6 - 9 – IWRAP MK2

Given the large number of delegates, some of whom had attended a previous seminar, it was not surprising that there was a noticeable difference in pace at the speed at which delegates were comfortable to proceed. To accommodate this situation, a second seminar room was organised and after a joint first exercise the delegates split into two groups, with Ómar Frits Eriksson guiding one group and Knud Benedict and Erik Sonne Ravn guiding the other, larger group.

One session was mentored by Ómar Frits Eriksson and the second jointly by Knud Benedict and Erik Sonne Ravn.

5.1 Demonstrate the IWRAP Mk2 Software (basic)

The commercial version of IWRAP Mk2, which is essentially the basic, free version but with the ability to automatically accept AIS data, was demonstrated.

5.2 Running your first IWRAP Test Case

Delegates were then guided through an initial, low complexity test case.

5.3 The theoretical foundation behind IWRAP Mk2 (Part 1)

The session was run as a joint theory explanation and practical exercise. It began with an introduction to the background to the current development, the test cases to be used and the IWRAP Wiki site (<http://www.iala-aism.org/wiki/iwrap/index.php>). The site was further explained and the delegates told to feel free with suggestions to contribute, saying that this would require them to be registered as contributors. However, anyone can open a discussion page. The session then continued with a description of the theoretical background to IWRAP Mk2 and the process to be followed for the current session, beginning with test case A.

5.4 IWRAP Test Cases A, B & C (Collisions)

The moderator ran through test case A, the simplest case.

The seminar then moved on to test case B, which brought out the need for proper analysis of what the traffic is actually doing and the need for appropriate choices of nodes between legs in the model.

The moderator then ran through a practical example of test case B, including the use of the share and copy function. The point was made that where default values are changed this should be recorded to avoid inadvertent use in the future and misinterpretation by other users.

The theory flowed naturally into a practical demonstration of test case C, following which it was said that application of the theory, so far, should enable the modelling of any scenario for collision risk assessment.

5.5 The theoretical foundation behind IWRAP Mk2 (Part 2)

This session also comprised joint theory explanation and practical exercise. It began with an introduction to the theory of the powered and drifting grounding components of IWRAP Mk2 and outlined the associated test cases.

5.6 IWRAP Test Cases D & E (Groundings)

The moderator then ran through test case D. This led to discussion of Causation Factors and the values assigned to them and the need to keep track of changes made to default values. Just how drifting grounding is modelled provoked considerable discussion and attention was drawn to the chapter on this topic on the IWRAP Wiki site. It was acknowledged that the model does not yet handle drifting in confined waters and strong currents sufficiently well and that this is an area identified for further development. There was also a reminder that the model is not a ship simulator.

The moderator then ran through test case E.

5.7 Introduction of the differences between the free and commercial versions of IWRAP Mk2

The differences between the free and commercial versions, the main one of which is the automated importation of AIS data, were explained and temporary commercial licenses provided to the delegates. The full details are contained in the IWRAP Mk2 help file, under 'extended version'.

5.8 Overview of an IWRAP Analysis (using the Commercial version)

Using a case study, the session covered the following topics:

- Defining area to be analysed
- Gather information (charts, traffic volume, casualty data)
- Using Sea Chart Overlays
- Polygon Generation
- Defining route legs
- Allocating traffic to route legs
- Performing baseline analysis
- Performing What-If analysis

The moderator illustrated the process for introducing and overlaying charts into the IWRAP Mk2 model. It was explained that the basic model does not cater for electronic charts as there are licence issues involved. However, it is expected that electronic charts will be able to be incorporated in a commercial version of the model, although there are significant challenges to be overcome first.

It was noted that 'IWRAP Mk2 is a flexible tool but must be used wisely'.

With regard to the next exercise, it was explained that a density map, sea chart and information about traffic would be provided.

For those who like programming, Erik Sonne Ravn then showed how changes can be made by modifying an .xml file, rather than using the graphical user interface. It was then observed that this would be one way of incorporating AIS information into the model.

5.9 Local custom



In deference to local custom, a break was made in the afternoon's proceedings so that the delegates could view the running of the Melbourne Cup.

END OF DAY

Day Three – Theory, Test cases and Case Studies

6 SESSIONS 10 – 13 PAWSA

These sessions were chaired by Burt Lahn, United States Coast Guard (USCG).

6.1 General overview

After an introduction from Ómar Frits Eriksson, Burt Lahn spoke to a presentation that gave an introduction to the PAWSA process and the topics to be covered in the succeeding PAWSA sessions.

The presentation also covered the goals for conducting a PAWSA workshop.

It was noted that there is a shortage of experienced PAWSA facilitators, who are key to the successful running of a PAWSA seminar, and that this is something the IALA WWA would like to tackle.

6.2 Pre-workshop logistical planning

The importance of the preparations for the workshop and the time required for adequate preparation were presented.

6.3 Roles and responsibilities of the seminar sponsor, lead facilitator and support staff

The roles and interplay between those who organise a PAWSA workshop were covered. This included the role of the PAWSA program manager and the sponsor for the workshop, who is the local (USCG) Captain of the Port. Others involved and described in some depth were:

- 1 Lead facilitator;
- 2 Workshop / Venue Co-ordinator;
- 3 Port Data Display Specialist;
- 4 Workshop Note taker;
- 5 Workshop Data Co-ordinator / Venue Co-ordinator;
- 6 ECS Display Specialist / Note taker.

The presentation was based on the PAWSA workshop being a turnkey event but it was explained that the ability for locally organised workshops is provided for in the PAWSA Implementation Guide.

It was made clear that getting the right balance between the stakeholders is essential, to avoid bias, but with that caution in mind the useful input provided by pilots was noted.

6.4 Identifying data sources and compiling port statistical information for presentation during the facilitation process

The importance of the data gathering process was emphasised and the capability now being provided by the use of an electronic charting system was introduced. How the data is presented during a PAWSA workshop was then covered.

The ability to drill down into the data gathered for a PAWSA workshop and the educational role that this enables emerged, as did the potential for the inclusion of AIS data.

6.5 Data sources and methods, facilitation techniques & risk factors

An overview of the equipment capability required, the basic functions available from the use of an ECS in PAWSA, what data is needed and how it is then used to capture comments of workshop participants, was followed by a practical example.

As only a briefing about PAWSA was being given, it was possible to complete the topic during session 4.

6.6 Practical exercise – Port of Gladstone

As a medium for showing the purpose of the first four PAWSA workbooks a partially pre-planned demonstration of a PAWSA was conducted, with active participation from the delegates.

6.7 Preparation and content of the assessment seminar report

The process of compiling and analysing the information required for a PAWSA report was covered, as was the preparation of the report. The establishment of baseline risk levels and the participant / team expertise cross-assessment were mentioned, as well as the effectiveness of existing risk mitigating factors. Additional interventions were identified, followed by a breakdown of finalised risk factors and the actions to mitigate them. Extensive use was made of the 2012 PAWSA analysis of Chicago.

The composition of the various appendices to the report were covered, ending with the participant recommendations arising from the workshop. The topic ended with a review of the process for reviewing and then presenting the report, together with its dissemination.

There then followed an overall question and answer session. Subsequent discussion focussed on the desirability of the results of a PAWSA analysis being made available to the Competent Authority. To enable this would require a change to IALA guidance.

END OF DAY

Day Four – IWRAP Mk2 (continued) & Simulation

The Chairman began the day by giving a short presentation on satellite AIS

Erik Sonne Ravn then briefed the next task; modelling one of three places in Australia: Gladstone, Mackay and Melbourne. The choice was up to the delegate.

7 SESSIONS 14 - 15 – REAL CASE STUDIES USING IWAP MK2

Again the delegates split into two groups, one being moderated by Ómar Frits Eriksson and the second being moderated jointly by Knud Benedict and Erik Sonne Ravn.

7.1 Real Case Studies

The exercise was an opportunity for the delegates to establish a route, based on charted data and extend their knowledge of the use of the various components of the IWRAP Mk2 tool. It naturally generated much discussion and need for advice from the experts.

The sequence of events followed during the exercise was to:

- Import charted data;
- Define coastline with polygons with depth = 0;
- Define route legs;
- Define lateral distributions on legs;
- Enter traffic volume into legs;
- Define relevant grounding [polygons];
- Run model;
- Assess results – modify model etc.

The development of the models continued for the remainder of the session, with several issues being raised with the session supervising team.

The session ended with a survey of results from the delegate's construction and running the models they had developed.

8 SESSIONS 16 - 17 INTRODUCTION TO SIMULATION TECHNIQUES

The session was chaired by Ómar Frits Eriksson and led by Peter Jensen Schjeldahl (Force Technology).

The Chairman completed the work on IWRAP by showing the IWRAP Wiki, indicating its content and encouraging delegates to use it.

Before the planned presentations were made, Roger Barker made a short presentation about the use of simulation in the UK, with regard to the planning for the development of large windfarms and the part being played by AIS data and IWRAP Mk2. He highlighted some of the issues arising from dependence on terrestrial AIS base stations and the factors that need to be considered when planning routes for heavy traffic in narrow waters.

8.1 Introduction to various simulation tools and to IALA Guideline 1058

Peter Jensen Schjeldahl began with a brief overview of Force Technology before introducing IALA Guideline 1058 on the use of simulation as a tool for waterway design and AtoN planning, which it was emphasised is at a reasonably high level. A broad definition of simulation was given, from which it was concluded that IWRAP Mk2 can be considered to be a simulation tool.

The various types of simulation and their uses were described, together with their advantages and disadvantages, as was the need to ensure that those participating in simulation need to be suitably briefed. The importance of visualisation and the key role of projector technology were highlighted.

8.2 Use of simulators for AtoN design and planning in the future

Peter Jensen Schjeldahl, drawing on the previous presentation, asked “when commissioning simulation, can the simulator provide the required visualisation”. From which it emerged that a further, more detailed Guideline may be required, so that commissioners of simulation for AtoN design can understand what a simulator may be able to do for them. The work involved will require consideration of projection technology, taking into account conspicuity and other features that were itemised. This initiated several practical comments about conditions that a simulator now needs to be able to represent and practical functionality that it will need to provide. However, there needs to be a recognition of what is technically feasible.

8.3 Fast Time Simulation

Knud Benedict built on Peter Jensen Schjeldahl's presentation, basing his comments on his own facilities at Wismar University. He highlighted the benefits and difficulties of fast time simulation techniques before moving on to simulation of fast time simulation and presenting his conclusions.

In discussion, it was asked how the navigator can monitor a plan during its execution and it was explained that the system provides information one manoeuvring point ahead, although sensitivity can be a problem in gusting wind. It was also noted that the system is used to train navigators for movements in specific ports and in specific conditions. It was also noted that the simulation can be used to improve on the static information of manoeuvring posters, as it takes into account a large number of data and can accommodate different conditions.

8.4 SW Pacific Regional Hydrography Programme

Adam Greenwood of Land Information New Zealand (LINZ) and the New Zealand Hydrographer, presented work that New Zealand is leading to provide accurate and adequate charting coverage in the South West Pacific, which is aimed at to collaborate with appropriate regional organisations and national authorities to strengthen maritime safety with a focus on sustainable economic development in the SW Pacific Region.

END OF DAY

Day Five – Simulation (continued), Discussion & Closing

9 SESSION18 IALA RISK TOOLBOX 'IN THE ROUND'

This session was chaired by Ómar Frits Eriksson.

9.1 Stadt ship tunnel, Njord Roger Svinoe Kystverket

Njord Roger Svinoe gave a brief presentation on the proposed Stadt ship tunnel, which would bypass the exposed Stadt peninsula.

9.2 Modelling Nautical Safety in the Netherlands, Ernst Bolt, Dienst Verkeer en Scheepvaart

Ernst Bolt gave a presentation on the preparation of a revised Netherlands' model for nautical safety and the challenges met during development. The model has been developed from the SAMSON model, which was presented at the 2011 Risk Management seminar.

There was an observation about automatic assessment of near misses covering deliberate and safe manoeuvres. This led to the suggestion of a possible solution that is currently being developed by the aviation industry and the combination with work done in the EU project MarNIS.

9.3 Finalisation of IWRAP modelling exercise

Erik Sonne Ravn presented the main points arising from the modelling exercise undertaken during the previous day, with a lively exchange of comment and views.

Due to the comments raised, Ómar Frits Eriksson stressed the flexibility of IWRAP Mk2, which requires considerable skill on the part of the operator when making changes. He then reintroduced the IALA Wiki site, using it to show how a question can be raised, allowing others to provide their views / expertise.

9.4 IWRAP Mk2 & PAWSA facilitator accreditation procedure

Stephen Bennett introduced this topic, starting with the responsibility of the Competent Authority; the new WWA website (January 2013) will show those Competent Authorities that have accredited training institutes. He then ran through the accreditation process and the use of IALA endorsed experts. He concluded with comments about the development of a possible simplified PAWSA course.

9.5 The components of the IALA Risk Management toolbox and how they interact:

Ómar Frits Eriksson set the scene, using a presentation prepared jointly with Burt Lahn (USCG), programme leader for the PAWSA project.

A comparison was made between PAWSA and IWRAP Mk2 and the complementarity of the three components.

9.5.1 IWRAP Mk2

It was accepted that IWRAP Mk2 can be considered as a simulation tool and that the current IALA Recommendation O-134 now needs to be updated; this is planned for the next work programme (2014 – 2018). IWRAP Mk2 continues to be developed but delegates should have seen that it is producing reasonable results.

It was suggested that use of IWRAP before a PAWSA would make its data available to the PAWSA workshop and would, therefore, inform the stakeholders. It was also indicated that the USCG may find additional applications (i.e. Port Access Routes studies) for the software.

9.5.2 PAWSA

Despite the obvious differences in timespan and resources required there are similarities between PAWSA and IWRAP Mk2 and the two processes do complement one another. Again it was asked, 'do you do an IWRAP analysis before or after a PAWSA workshop?' As a result of the subsequent discussion, an additional slide was created for the presentation and the

answer to the question is 'possibly both'. The revised presentation is on the IALA ftp workshop server.

9.5.3 Simulation

Simulation can be used both before and after a PAWSA workshop and IWRAP assessment, as a feasibility and then validity mechanism. This found favour with the seminar. It was reported that MARIN is already combining simulations with risk analysis. This gave rise to a discussion about whether the simulation and risk assessment are conducted separately or together and the advantages and disadvantages of each approach.

It is envisaged that IWRAP analysis, together with feasibility studies, which could utilise simulation, would lead into a PAWSA, the results of which could be verified by simulation. It was agreed that the slide that showed this would have been useful on the first day, as would the slide showing the flow diagram.

10 SESSION 19 SEMINAR DISCUSSION AND CLOSING

This session was chaired by Jean-Charles Leclair.

10.1 Seminar debrief

Mike Hadley updated the meeting on how the output from the meeting can be accessed and Ómar Frits Eriksson itemised the significant changes to the IWRAP Mk2 programme that have been included in the program available on the post seminar memory stick. He then remarked about the process for registration and the need to delete chart and AIS data that had been used during the seminar. He also encouraged the delegates to share any models that they may create.

In response to a query about response to a specific model, it was said that this could be done via the IALA IWRAP Wiki.

Ómar Frits Eriksson said that it was not his intention to run through the draft report; the current version of which was on a USB stick prepared for each of the delegates and also on the ftpworkshop server (see 10.2). He showed the content of the USB stick, briefly. It was intended that the draft report would be e-mailed to all delegates and also be posted on the IALA Workshop FTP server by 11 November, providing that access to it can be achieved; it would be available for comment until 18 November. Given the timing, the draft report would be used to brief the Council meeting to be held on 3-7 December 2012.

Ómar Frits Eriksson presented the details about e-Navigation Underway (29 – 31 January 2013) www.e-navigation.net/. He then showed the promotional video produced by the EU sponsored project Mona Lisa, which sparked a spirited debate about a master's autonomy.

Before the presentation of certificates, Knud Benedict insisted that the course was incomplete without reference to the Risk Management songbook, from which he gave a spirited rendition.

10.2 Presentation of certificates

At the session end a USB memory stick, containing electronic copies of all input programs, photographs and presentations, was provided to each delegate. Mike Hadley said that all the material would also be posted on the ftp workshop site and would remain there until the end of the year. The co-ordinates for the ftp site are:

<ftp://212.234.38.41>

User name: ftpworkshop

Password magdalena

Each delegate then received, from the assembled team of presenters, an Aid to Navigation, Level 1 certificate from the World-Wide Academy, indicating successful participation in the seminar.

10.3 Closing of the seminar

10.3.1 Remarks by AMSA

These were presented by Gerry Brine, who gave apologies from Mick Kinley. The topic of the seminar is seen as important by AMSA. The tools now available will now need to be used and it was pleasing to see the representation from the ports industry and the states' administrators. Thanks were given to the trainers, IALA, especially the World Wide Academy, IMO. The regional technical co-operation sponsored by IMO and AusAID and as represented by the New Zealand Hydrographer. This was followed by presentations to the trainers.

10.3.2 Remarks by IALA

Jean-Charles Leclair expressed his thank to the trainers, who continue to provide a successful course. He expressed his thanks to the sponsors who made the seminar possible; IFAN, AMSA, AusAid, and IMO, especially for the ability for regional representatives to attend the seminar, which is a principle aim of the WWA. He also expressed thanks to the organisations that had allowed their representatives to attend and teach on the course.

said that the idea of combining PAWSA, IWRAP and simulation was a good one and would enable national authorities to better meet their obligations under SOLAS. As the majority of delegates were technical specialists he said that it is important that the word about the seminar is spread to colleagues, some of whom will have regulatory responsibilities and this is given added emphasis by the approaching mandatory IMO audit scheme.

Presentations to each of the presenters had been made during the seminar dinner.

10.3.3 Closure

Jean-Charles Leclair concluded proceedings by thanking everyone for their participation and hard work, saying that he hoped that they had all benefited from the week. He then wished everyone a pleasant weekend in Sydney, a safe journey home or a safe onward journey to Brisbane, as appropriate. The seminar was then declared closed.

11 CRITIQUE FORMS

11.1 Forms used

Because of the provision of IMO sponsorship of the seminar an IMO critique form was distributed to delegates, along with the standard IALA form. 38 IALA and 39 IMO Feedback Critiques were analysed by The Academy.

11.2 Feedback Summary

Detailed analysis of the 40 combined IALA and IMO feedback forms revealed that the majority of participants found that the seminar had met or exceeded their expectations in most categories. There was a generally high level of satisfaction with presentations and presenters alike. Overall content was considered to be appropriate and to have been delivered successfully. No major changes to the next risk management seminar are considered necessary, although some positive feedback was received about merging the three risk management tools into one process

ANNEX A LIST OF PARTICIPANTS

Australia

DPTI

Mr Joe ROSITANO
Marine Services, P O Box 2526
Regency Park, South Australia 5942
Australia

Phone +61 8 8348 9575
Fax +61 8 834 89 674
Mobile phone: +61 407 793 095
e-mail joe.rositano@sa.gov.au

DPTI

Mrs Maxine GRAY
Marine Services, P O Box 2526
Regency Park, South Australia 5942
Australia

Phone +61 8 8348 9575
Fax +61 8 8124 4695
Mobile phone: +61 407 617 876
e-mail maxine.gray@sa.gov.au

Gippsland Ports

Mr David HOLDING
97 Main Street
Bairnsdale Victoria 3875
Australia

Phone +61 3 5155 6915
Mobile phone: +61 428 381 928
e-mail davidh@gippslandports.vic.gov.au

Roads and Maritime Services

Mr Drew JONES
Locked Bag, 5100
Camperdown, NSW, 1450
Australia

e-mail drew.jones@rms.nsw.gov.au

Roads and Maritime Services

Mr James GREEN
Locked Bag, 5100
Camperdown, NSW, 1450
Australia

Phone +61 2 6691 9501
Fax +61 2 669 9599
Mobile phone: +61 427 654 732
e-mail james.green@rms.nsw.gov.au

Roads and Maritime Services

Mr Rod McDONAGH
Locked Bag, 5100
Camperdown, NSW, 1450
Australia

Phone +61 2 427 479 14
Fax +61 2 427 48 017
Mobile phone: +61 418 494 153
e-mail rod.mcdonagh@rms.nsw.gov.au

Roads and Maritime Services

Mr Peter MAUNDER
Locked Bag, 5100
Camperdown, NSW, 1450
Australia

Phone +61 2 9563 8848
Fax +61 2 9563 8844
Mobile phone: +61 418 215 028
e-mail peter.maunder@rms.nsw.gov.au

Roads and Maritime Services

Mr Fazal KHAN
Locked Bag, 5100
Camperdown, NSW, 1450
Australia

Phone +61 2 9563 8857
Fax +61 2 9563 8844
Mobile phone: +61 438 469 234
e-mail fazal.khan@rms.nsw.gov.au

Port Hedland Port Authority

Mr John FINCH
P O Box 2, Port Hedland
WA 6721
Australia

Phone +61 8 9173 0018
Mobile phone: +61 419 926 426
e-mail john.finch@phpa.com.au

Jeppesen

Miss Celine ROUX
Unit 1,41-43 Higginbotham Road
Gladesville, NSW, 2111
Australia

Phone +61 298 086 200
Fax +61 298 086 233
Mobile phone: +61 466 130 015
e-mail celine.roux@jeppesen.com

Port Kembla Port Corporation

Capt Roger KIRK
Level 3/91 Foreshore Road
Port Kembla, NSW, 2505
Australia

Mobile phone: +61 411 115 014
e-mail rvk@portkembla.com.au

Port Kembla Port Corporation

Mr Kelly DILLON
Level 3/91 Foreshore Road
Port Kembla, NSW, 2505
Australia

Mobile phone: +61 412 423 112
e-mail kjd@portkembla.com.au

Newcastle Port Corporation

Mr Bruce COOPER
P O Box 663
Newcastle, NSW, 2300
Australia

Phone +61 2 4985 8320
Mobile phone: +61 448 858 320
e-mail bruce.c@newportcorp.com.au

North & Trew Pty Ltd

Ms Joanna CARSON
52 View Bay Drive
Leopold Victoria 3224
Australia

Phone +61 3 5250 6323
Mobile phone: +61 468 38 866
e-mail joanna@northandtrew.com

North & Trew Pty Ltd

Capt David SHENNAN
52 View Bay Drive
Leopold Victoria 3224
Australia

Phone +61 3 5250 6323
Mobile phone: +61 466 888 601
e-mail david@northandtrew.com

Port of Melbourne Corporation

Capt Gary WILSON
GPO Box 261
Melbourne Victoria 3001
Australia

Phone +61 3 96 83 1463
Mobile phone: +61 409 899 471
e-mail gary.wilson@portofmelbourne.com

Australian Maritime Safety Administration

Mr Alexander VON BRANDENSTEIN
82 Northbourne Avenue
Braddon, GPO Box 2181 ACT 2601
Australia

Australian Maritime Safety Administration

Dr Sabine KNAPP
82 Northbourne Avenue
Braddon, GPO Box 2181 ACT 2601
Australia

Phone +61 466 827 029
e-mail sabine.knapp@amsa.gov.au

Australian Maritime Safety Administration

Ms Meredith CLARK
82 Northbourne Avenue
Braddon, GPO Box 2181 ACT 2601
Australia

Phone +61 2 6279 5807

Australian Maritime Safety Authority

Ms Kerrie ABERCROMBIE
Level 21
41 George Street
Brisbane QLD 4001
Australia

Phone +61 (0)7 3120 7416
Fax +61 (0)7 3120 7440
Mobile phone: +61 (0)438 451 612
e-mail kerrie.a.abercrombie@msq.qld.gov.au

Australian Maritime Systems

Mr David McGILVRAY
655 MacArthur Avenue Central
Pinkenba QLD 4008
Australia

Phone +61 7 3633 4146
Fax +61 7 3633 4199
Mobile phone: +61 4 2777 0143
e-mail david.mcgilvray@marsys.com.au

Australian Maritime Systems Ltd.

Mr Peter SATCHELL
655 MacArthur Avenue Central
Pinkenba, Brisbane
Queensland 4009
Australia

Phone +61 7 3633 4105
Fax +61 7 3633 4199
Mobile phone: +61 408 709 307
e-mail pjs@marsys.com.au

Australian Maritime Safety Authority

Mr David JEFFKINS
Level 5
82 Northbourne Avenue
Braddon, ACT 2612
Australia

Phone +61 2 6279 5677
Fax +61 2 6279 5002
Mobile phone: +61 438 635 797
e-mail djj@amsa.gov.au

Australian Maritime Safety Authority

Mr Gerry BRINE
Aids to Navigation Maritime Standards Division
82 Northbourne Avenue, Braddon ACT 2612
GPO Box 2181, Canberra ACT 2601
Australia

Phone +61 2 6279 5049
Fax +61 2 6279 5966
Mobile phone: +61 408 769 400
e-mail gerry.brine@amsa.gov.au

Australian Maritime Safety Authority

Mr Mahesh ALIMCHANDANI
GPO Box 2181
Canberra ACT 2601
Australia

Phone +61 2 6279 5927
Fax +61 2 6279 5966
Mobile phone: +61 419 668 264
e-mail mahesh.alimchandani@amsa.gov.au

AMPI

Capt Peter LILEY
P O Box 576, Albion
Queensland 4010
Australia

Phone +61 7 3262 9893
Fax +61 7 5438 1530
Mobile phone: +61 407 655 926
e-mail president@ampi.org.au

Transport for NSW

Mr Kendall CARTER
P O Box K659
Haymarket, NSW, 1240
Australia

Phone +61 2 8202 3741
Fax +61 2 8202 3574
Mobile phone: +61 458 310 803
e-mail kendall.carter@transport.nsw.gov.au

Transport Safety Victoria

Mr Geoffrey SWANTON
Level 11, 121 Exhibition St
Melbourne, Victoria, 3000
Australia

e-mail geoffrey.swanton@transportsafety-vic.gov.au

Dale Cole & Associates Pty Ltd

Capt Roger WARD
27 Grace Street
Mont Albert, Victoria, 3127
Australia

Phone +61 3 9898 5636
e-mail rjkw@bigpond.net.au

Maritime Safety Queensland

Mr Paul FINGER
41 George St
Brisbane, Qld., 4000
Australia

Phone +61 7 3120 7041
Fax +61 7 3120 7079
Mobile phone: +61 488 907 7041
e-mail paul.finger@msq.qld.goc.au

Thompson Clarke

Mr Chris RALEY
97 Pacific Highway North
Sydney, NSW, 2060
Australia

Mobile phone: +61 419 333 550
e-mail craley@thompsonclarke.com.au

Australian Hydrographic Office

CMDR John McGANNON
8 Station Street
Wollongong NSW 2500
Australia

Phone +61 2 4223 6659
Fax +61 2 4223 65 99
Mobile phone: +61 428 115 722
e-mail john.mcgannon@defence.gov.au

Belgium

Shipping Assistance

Mr Antoine DESCAMPS
Maritiem Plein 3
9400 Oostende
Belgium

Phone +32 59 255 440
Fax +32 59 255 441
Mobile phone: +32 475 55 99 05
e-mail antoine.descamps@mow.vlaanderen.be

Cook Islands Ministry of Transport

Mr Steve SIMPSON
P.O. Box 61
Rarotonga
Cook Islands

Phone +682 28810
Mobile phone: +682 28816
e-mail maritime1@transport.gov.ck

Denmark**Force Technology**

Mr Peter Jensen SCHJELDAHL
Hjortekaersvej 99
2800 Kgs. Lyngby
Denmark

Phone +45 72 15 77 15
Mobile phone: +45 29 29 18 18
e-mail psj@force.dk

Danish Maritime Authority

Mr. Michael SKOV
Head of Division
Vermundsgade 38C
DK-2100 Copenhagen OE
Denmark

Phone + 45 39 17 44 30
Fax + 45 39 17 44 01
Mobile phone: + 45 20 53 25 84
e-mail msk@dma.dk

GateHouse A/S

Mr Per ENGBERG
Lindholm Brygge 31
9400 Noerresundby
Denmark

Mobile phone: +45 40 90 74 02
e-mail pch@gatehouse.dk

Danish Maritime Safety Authority (DaMSA)

Mr Erik Sonne RAVN
Over Gaden oven Vandet 62B
P.O. Box 1919
DK-1023 Copenhagen K
Denmark

Phone: +45 32 68 96 3
e-mail esr@dma.dk

Danish Maritime Authority

Mr. Omar Frits ERIKSSON
Overgaden Oven Vandet 62 B
P. O. Box 1919
1023 Kobenhavn K
Denmark

Phone + 45 32 689 598
Fax + 45 32 689 634
Mobile phone: + 45 21 676 644
e-mail ofe@dma.dk

Fiji**Secretariat of the Pacific Community**

Capt Hakaumotu FAKAPELEA
Level 2, Lotus Building, Ratu Mare Road
Nabu Private Mail Bag
Suva
Fiji

Phone +679 3378 296
Mobile phone: +679 9067 705
e-mail hakumotouf@sps.int

Germany**Hochschule Wismar**

Prof Knud BENEDICT
Faculty of Engineering, Dept of Maritime Studies
Richard-Wagner Strasse, 31
Wismar
Germany

Phone +49 381 498 5891
Fax +49 381 498 5890
Mobile phone: +49 178 280 4484
e-mail knud.benedict@hs-wismar.de

IALA**Secretary General**

Mr Gary PROSSER
10 rue des Gaudines
78100 Saint-Germain-en-Laye
France

Phone +33 1 34 51 70 01
Fax +33 1 34 51 82 05
e-mail gary.prosser@iala-aism.org

Accredited Representative of IALA to IMO / Dean, IALA WWA

R-Adm. Jean-Charles LECLAIR
10 rue des Gaudines
78100 Saint Germain en Laye
France

Phone +33 4 93 88 25 25
Mobile phone: +33 6 62 29 02 74
e-mail jean-charles.leclair@iala-aism.org

Programme Manager, WWA

Mr Stephen BENNETT
10 rue des Gaudines
Saint Germain en Laye
France

Phone +44 243 533 148
Fax +33 1 34 51 82 05
Mobile phone: +44 7787 320 761
e-mail Stephen.Bennett@iala-aism.org

Technical Co-ordination Manager

Dr. Mike HADLEY
10 rue des Gaudines
78100 Saint Germain en Laye
France

Phone +33 1 34 51 70 01
Fax +33 1 34 51 82 05
Mobile phone: +44 7887 548 227
e-mail mike.hadley@iala-aism.org

IMO IMO, Head Asia & Pacific Section

Mr B. Sitki USTAOGU
4, Albert Embankment
London SE1 7SR
UK

Phone +44 207 7587 3204
Fax +44 207 463 4257
Mobile phone: +44 785 776 723
e-mail ustaoglu@imo.org

Republic of Korea Woori Marine Co.

Miss Jinju LEE
C-1104 Woorim Lions Vally 425
Cheongchun-dong, Bupyong-gu
Incheon
Republic of Korea

Phone +82 32 623 6690
Fax +82 32 623 6698
Mobile phone: +82 10 6301 6690
e-mail jj.lee@woorimarine.com

Republic of Nauru Maritime Office

Mr Kemp DETENAMO
Airport Building
Yaren District
Republic of Nauru

Phone +674 5573122
Mobile phone: +674 5573089
e-mail kemp.detenamo@naurugov.nr

The Netherlands Dienst Verkeer en Scheepvaart

Mr Ernst BOLT
Postbus 5044
2600 GA Delft
The Netherlands

Phone +31 88 7982 508
Fax +316 513 312 06
Mobile phone: +31 6 513 312 06
e-mail ernst.bolt@rws.nl

New Zealand Land Information NZ

Mr Stuart CAIE
P O Box 5501
Wellington 6145
New Zealand

Phone +64 4496 5409
Mobile phone: +64 21 681 9536
e-mail scaie@linz.govt.nz

Land Information NZ

Mr Adam GREENLAND
P O Box 5501
Wellington 6145
New Zealand

Phone +64 4 460 0136
Mobile phone: +64 21 243 1577
e-mail a.greenland@linz.govt.nz

Marico Marine

Mr John RIDING
Level 11, 156 Willis St., P O Box 27006
Wellington
New Zealand

Phone +64 4 917 4959
Fax +64 4 917 4958
Mobile phone: +64 29 555 4420
e-mail john.riding@marico.co.nz

Maritime New Zealand

Mr Jim FOYE
P O Box 27006
Wellington 6141
New Zealand

Phone +64 4 494 1211
Mobile phone: +64 27 431 3935
e-mail jim.foye @maritimenz.govt.nz

Norway**Safec Nordic AS**

Mr Martin HASSEL
Sluppenveien 12E
7037 Trondheim
Norway

Phone +47 73 90 05 00
Mobile phone: +47 920 11 745
e-mail mha@safetec.no

Safec Nordic AS

Mr Bard Anders ROUNGE
P O Box 119 Lileaker
0216 Oslo
Norway

Phone +47 67 57 27 00
Mobile phone: +47 924 33 381
e-mail bar@safetec.no

Norwegian Coastal Administration

Mr Njord Roger SVINOE
P.O. Box 1502
Aelesund
Norway

Phone +47 7016 0160
Mobile phone: +47 9912 9960
e-mail roger.nord.svino@kystverket.no

**Papua New
Guinea****National Maritime Safety Authority**

Capt Nurur RAHMAN
LVL2 MMI Building
P O Box 668, Port Moresby NCD 121
Papua New Guinea

Phone +675 321 1244
Fax +675 321 0873
Mobile phone: +675 7661 5594
e-mail nrahman@nmsa.gov.pg

National Maritime Safety Authority

Mr Eric PETRUS
LVL2 MMI Building
P O Box 668, Port Moresby NCD 121
Papua New Guinea

Phone +675 321 1244
Fax +675 321 0873
Mobile phone: +675 7661 5594
e-mail epetrus@nmsa.gov.pg

National Maritime Safety Authority

Ms Rhonda AMOS
LVL2 MMI Building
P O Box 668, Port Moresby NCD 121
Papua New Guinea

Phone +675 321 1244
Fax +675 321 0873
Mobile phone: +675 7661 5594
e-mail ramos@nmsa.gov.pg

Portugal**Direcção de Faróis**

Lt Cdr Jorge TELES
Estrada Marginal
2720-210 Paço de Arcos
Portugal

Phone +351 21 446 1666
Mobile phone: +351 9166 30653
e-mail santos.teles@marinha.pt

Direcção de Faróis

Mr Arlindo SANTOS
Estrada Marginal
2770-210 Paço de Arcos
Portugal

Phone +351 21 44 61 660
Fax +351 21 44 10 193
e-mail dirfarois@sapo.pt

Samoa**Tokelau Government**

Mr Asofa FERETI
Savalalo
P.O. Box 865
APIA
Samoa

Phone +685 20822
Fax +685 21761
Mobile phone: +685 777 4464
e-mail director_tss@lesamoa.net

**Solomon
Islands****SI Maritime Safety Administration**

Mr Edward TOKURU
P.O. Box G32
Solomon Islands

Phone +677 28157
Fax +677 23798
Mobile phone: +677 7654381
e-mail etokuru@hotmail.com

Sweden**Danish Manager SOUND VTS**

Mr Per Baek HANSEN
Hans Michelsensgatan 9
Bos 855
SE-201 Malmoe
Sweden

Phone +45 22 91 06 29
Mobile phone: +45 22 91 06 29
e-mail pbh@frv.dk

Tonga**Ministry of Infrastructure**

Mr Patelesio MANUKEU
O.G. Sanft Building, Tayfaahau Road
P.O. Box
Nukualofa
Tonga

Phone +676 22 555
Fax +676 28032
Mobile phone: +676 77 98 227
e-mail pmanukeu@infrastructure.gov.to

Ministry of Infrastructure

Capt Lisiate Vuni LATU
O.G. Sanft Building, Tayfaahau Road
P.O. Box
Nukualofa
Tonga

Phone +676 22 555
Fax +676 28032
Mobile phone: +676 27 55 813
e-mail latul@infrastructure.gov.to

Tuvalu**Marine Department**

Mr Talieulu ITALELI
Government Building
Vaiaku
Funafuti
Tuvalu

Phone +688 22055 / +688 901570
e-mail titaleli@gov.tv

Marine Department

Capt Leupena PAUELI
Government Building
Vaiaku
Funafuti
Tuvalu

e-mail lpaueli@gmail.com

UK**Trinity House Lighthouse Service**

Capt Roger BARKER
Diretor of Navigational Requirements
Tower Hill
EC3N 4DH
UK

Phone +44 207 481 6917
Fax +44 207 480 7662
Mobile phone: +44 7785 111 519
e-mail roger.barker@thls.org

Marico Marine

Mr Andrew RAWSON
Marico House
Bramshaw, Southampton
UK

Phone +44 23 80 811133
Fax +44 23 80 81177
Mobile phone: +44 778 859944
e-mail andrew.rawson@marico.co.uk

Northern Lighthouse Board

Mr. Peter DOUGLAS
84 George Street
Edinburgh
EH2 3DA
UK

Phone + 44 131 473 3100
Fax + 44 131 220 2093
Mobile phone: +44 7836 787 898
e-mail peterd@nlb.org.uk

USA**US Coast Guard**

Mr Burt LAHN
Commandant (CG-5413)
2100 2nd Street SW
Washington DC 20593-7581
USA

Phone +1 202 372 1526
Fax +1 202 372 1931
e-mail burt.a.lahn@uscg.mil

Vanuatu**Ports and Marine**

Mr Henry WONEK
PMB 9046
Port Vila
Vanuatu

Phone +678 22108
Fax +678 22475
Mobile phone: +678 77 43 972
e-mail plo@vanuato.com.vn

ANNEX B PROGRAMME

**IALA TRAINING SEMINAR ON RISK MANAGEMENT
PAWSA, IWRAP Mk2 & SIMULATION**



Australian Government

Australian Maritime Safety Authority



5 - 9 November 2012

**Four Points by Sheraton
Darling Harbour
Sydney, NSW
Australia**

DAY 1 - MONDAY 5 NOVEMBER 2012

<i>Time</i>	<i>Activity</i>	
0900 - 1000	Registration / Welcome tea or coffee	
1000 - 1100	Session 1 - Opening of the Seminar	Chair: Gary Prosser
	Welcome from AMSA Welcome from IALA Welcome from IMO Introduction to IALA and the WWA Administration (Health & Safety Brief)	Mick Kinley – Deputy CEO, AMSA Gary Prosser – Secretary-General, IALA Bekir Sitki Ustaoglu Stephen Bennett – Programme Manager, IALA WWA Mike Hadley - Technical Co-ordination Manager IALA
1100 - 1130	Break – Group photograph	
1130 - 1200	Session 2 - Presentations	Chair: Jean-Charles Leclair
	Shipping growth and risk management in Australia	Mahesh Alimchandani
1200 - 1300	Session 3 –IALA Risk Management Toolbox	Chair: Ómar Frits Eriksson
	Introduction & General overview	Ómar Frits Eriksson
1300 - 1400	Lunch	
1400 - 1530	Session 4 – IWRAP Mk2	Chair: Ómar Frits Eriksson
	Introduction to IWRAP Mk2	Ómar Frits Eriksson
1530 - 1600	Break	
1600 - 1730	Session 5 – IWRAP Mk2 (continued)	Chair: Ómar Frits Eriksson
	Programme Installation & Licensing Scheme	Ómar Frits Eriksson

1800 – 1930

Welcome reception at Australian National Maritime Museum, Darling Harbour

(Drinks and finger food will be served)

Free evening

DAY 2 - TUESDAY 6 NOVEMBER 2012

<i>Time</i>	<i>Activity</i>	
0900 - 1030	Session 6 – Simple cases running IWRAP Mk2	Chair: Ómar Frits Eriksson
	Administrative Details (as required)	Mike Hadley
	The theoretical foundation behind IWRAP Mk2 (Part 1) IWRAP Test Cases	Knud Benedict (Wismar University) & Erik Sonne Ravn (DMA)
1030 - 1100	Break	
1100 - 1230	Session 7 – Simple cases running IWRAP Mk2 (Continued)	Chair: Ómar Frits Eriksson
	The theoretical foundation behind IWRAP Mk2 (Part 2) IWRAP Test Cases	Knud Benedict & Erik Sonne Ravn
1230 - 1400	Lunch	
1400 - 1530	Session 8 – More complex cases running IWRAP Mk2	Chair: Ómar Frits Eriksson
	Overview of an IWRAP Analysis using Hatter Barn Case: <ul style="list-style-type: none"> - Defining area to be analysed - Gather information (charts, traffic volume, casualty data) - Using Sea Chart Overlays - Polygon Generation - Defining route legs - Allocating traffic to route legs - Performing baseline analysis - Performing What-If analysis 	Knud Benedict & Erik Sonne Ravn
1530 - 1600	Break	
1600 - 1730	Session 9 – More complex cases running IWRAP Mk2 (Continued)	Chair: Ómar Frits Eriksson

Free evening

DAY 3 - WEDNESDAY 7 NOVEMBER 2012

<i>Time</i>	<i>Activity</i>	
0900 - 1030	Session 10 – PAWSA	Chair: Burt Lahn
	Administrative Details (as required)	Mike Hadley
	General overview, logistical planning, references, use of workshop survey books.	Burt Lahn
	Data sources and methods, facilitation techniques & risk factors	Burt Lahn
1030 - 1100	Break	
1100 - 1230	Session 11 – PAWSA (continued)	Chair: Burt Lahn
	Practical exercise - (Port of Gladstone)	Mahesh Alimchandani, Burt Lahn
1230 - 1400	Lunch	
1400 - 1530	Session 12 – PAWSA (continued)	Chair: Burt Lahn
	Practical exercise - continued	Mahesh Alimchandani, Burt Lahn
1530 - 1600	Break	
1600 - 1730	Session 13 – PAWSA (continued)	Chair: Burt Lahn
	Preparation and content of the workshop report	Burt Lahn

**Harbour Cruise & Seminar Dinner
1900 - 2200
Boarding at Kings Street wharf**

Dress Code: Smart Casual (no tie required)

DAY 4 - THURSDAY 8 NOVEMBER 2012

<i>Time</i>	<i>Activity</i>	
0900 -1030	Session 14 – Real Case Studies using IWRAP Mk2	Chair: Ómar Frits Eriksson
	Administrative Details (as required)	Mike Hadley Knud Benedict & Erik Sonne Ravn
1030 – 1100	Break	
1100 – 1230	Session 15 – Real Case Studies using IWRAP Mk2 (continued)	Ómar Frits Eriksson
		Knud Benedict & Erik Sonne Ravn
1230 – 1400	Lunch	
1400 – 1530	Session 16 – Introduction to simulation techniques	Ómar Frits Eriksson
	Introduction to various simulation tools and to IALAs Guideline 1058 on the use of simulators for design of waterways and planning of AtoN	Peter Jensen Schjeldahl (Force Technology) Roger Barker (THLS)
1530 – 1600	Break	
1600 – 1730	Session 17 – Simulation techniques (continued)	Ómar Frits Eriksson
	Use of simulators for AtoN design and planning in the future	Peter Jensen
	Discussion and participants input to features important and relevant to include in future development of simulation tools used for AtoN planning and design	Roger Barker, Peter Jensen Schjeldahl

Free evening

DAY 5 - FRIDAY 9 NOVEMBER 2012

<i>Time</i>	<i>Activity</i>	
0900 – 1030	Session 18 – IALA Risk toolbox ‘in the round’	Chair: Ómar Frits Eriksson
0900 – 0905 0905 – 0925 0925 - 1030	Administrative Details (as required) IWRAP Mk2 & PAWSA facilitator accreditation procedure The components of the IALA Risk Management Toolbox and how they interact: IWRAP Mk2 PAWSA Simulation	Mike Hadley Stephen Bennett Omar Frits Eriksson
1030 – 1100	Break	
1100 – 1230	Session 19 – Seminar discussion & Closing	Chair: Gary Prosser, Secretary-General, IALA
	Discussion & Seminar Debrief Presentation of certificates Closing of the seminar	Ómar Frits Eriksson Jean-Charles Leclair Burt Lahn Peter Jensen Schjeldahl Roger Barker Ómar Frits Eriksson Jean-Charles Leclair Jean-Charles Leclair Jean-Charles Leclair
1230 – 1400	Lunch	

ANNEX C VISITS & SOCIAL EVENTS

- 1 On Monday, 5 November, a welcome reception, hosted by AMSA, was held at the Australian National Maritime Museum in Darling Harbour.



- 2 On Wednesday 7 November, a seminar dinner, hosted by AMSA, was held on a harbour cruise on the vessel Matilda III.



Some almost didn't make it!

ANNEX D LIST OF PROGRAMS DOCUMENTS & PRESENTATIONS PROVIDED TO DELEGATES

IWRAP Mk2 Program

- 1 IWRAPMK2SETUP_v4_0_0_BETA_20121104c.exe
- 2 Exercise7, including Hatter Barn

IWRAP Mk2 Documents

- 1 IWRAP distributions.docx
- 2 IWRAP exercises.pdf
- 3 IWRAP Theory.pdf
- 4 iwrap_brochure_purchase_order.pdf
- 5 iwrapmk2.pdf

Presentations

- 1 IALA & the WWA.pptx
- 2 Safety & Admin brief.pptx
- 3 Shipping growth and risk assessments in Australia.ppt
- 4 IALA Risk Management Toolbox Introduction
- 5 Introduction to IWRAP.pdf
- 6 IWRAP creating a model.ppt
- 7 Omar on AAUSAT3.pdf
- 8 PAWSA overview presentation - 07 November 2012
- 9 PAWSA workshop reports - 07 November 2012.ppt
- 10 IWRAP as a planning tool.pptx
- 11 Simulation techniques.pptx
- 11A BIMCO article Fehmern Ship Simulations.pdf
- 12 Fast Time Simulation.pptx
- 13 SW Pacific Regional Hydrography Programme.ppt
- 13A SW Pacific Regional Hydrography Programme.pdf
- 14 PAWSA-IWRAP-Simulation.ppt
- 15 SAMSON MarNIS_Risk index.pptx

ANNEX E OPENNING ADDRESS BY MICK KINLEY, DEPUTY CEO OF AMSA

Good morning everyone.

My name is Mick Kinley and I am the Deputy Chief Executive Officer of AMSA.

I'd like to begin by acknowledging that this event is being held on the traditional land of the Cadigal people of the Eora nation; and I pay my respects to their elders, both past and present.

It is a great pleasure for me on behalf of AMSA to welcome you to this training seminar, being run by IALA. I'd like to pass on the best wishes of AMSA's CEO Mr Graham Peachey who couldn't be here today due to IMO commitments in London.

In particular, I'd like to welcome those that have travelled from other countries, both near and afar, to participate. I note we have participants from as far away as Norway and some very remote countries in the southwest Pacific region.

It is also very pleasing to see good representation from Australian state maritime agencies and port authorities. I trust you will find IALA's risk assessment toolbox to be of similar benefit to you as it is to AMSA.

I would like to acknowledge the generous financial support of the International Maritime Organisation (IMO) and the Australian Agency for International Development (AusAID) which has assisted the participation of countries from the southwest Pacific region.

The southwest Pacific is a strong focus for the IMO and IALA in technical cooperation and capacity building initiatives. AMSA is working closely with the IMO and IALA in this regard.

[Shipping growth and the role of aids to navigation]

As a large island continent, Australia is surrounded by vast oceans. Almost all our big cities are located on the coastline.

Our busy ports manage about 10 per cent of the world's sea trade; and over 99 per cent of our imports and exports are carried by ships. Therefore, the importance of shipping to Australia's economy cannot be overstated.

Over the last decade, Australia has experienced a 'resources boom', characterized by strong growth in demand from emerging economies in Asia and high commodity prices.

Although Australia is currently experiencing some moderation in export volumes, in broad terms, trade at our ports is predicted to triple in the next two decades.

Given the growing importance of shipping to the national and local economies, we cannot rest on our laurels in terms of the factors that can affect the safety of shipping. As the volume of shipping increases, the risk of accidents increases commensurately.

In the last four years, Australia has had three major marine oil spills and a grounding (the latter in the Great Barrier Reef region involving the bulk carrier *Shen Neng 1*). Understandably, these created an outcry within the community and required significant response on the part of governments.

By providing situational awareness for the mariner, aids to navigation assist ships in navigating safely to and from our ports and along our pristine coastline. As shipping activity grows, so does the importance of aids to navigation.

As per the SOLAS Convention, Contracting Governments undertake to provide aids to navigation as the volume of traffic justifies and degree of risk requires. In Australia's case, these obligations are spread across the Commonwealth government and state, port and territory marine authorities.

The costs of providing and maintaining the AMSA aids to navigation network are met by the commercial shipping industry through the Marine Navigation Levy. To ensure that AMSA's network continues to meet the needs of the levy paying shipping industry it needs to be reviewed regularly in the context of the degree of risk and the level of traffic.

Until now, organisations have used their own methods to assess 'the degree of risk'. Invariably, these assessments have been subjective or have involved the use of a variety of models.

With the aim of harmonising and improving aids to navigation globally, IALA has developed a risk management toolbox, which comprises a set of proven, contemporary risk assessment models – PAWSA (Ports and Waterways Risk Assessment) and IWRAP Mk2 (IALA Waterways Risk Assessment Program).

Training in the use of these models is an opportunity to gain practical skills & knowledge for application in navigational safety planning processes. Effective planning can identify the most appropriate measures to mitigate the risk of shipping incidents thereby helping to avoid the loss of life, environmental damage and costly response measures.

The aim of this week's seminar is to train you in the use of the IALA Risk Management Toolbox. An impressive line-up of expert trainers will deliver a course which, apart from training, should stimulate thinking and discussion.

Your active participation is crucial to the success of this training seminar. I encourage you to participate whole-heartedly in the program and enjoy the social events.

And do make some time to explore our wonderful harbour city.

I'd like to thank the organising team from AMSA and IALA for their hard work in putting this seminar together.

Finally, I would now like to present the IALA Secretary-General, Mr Gary Prosser with a plaque commemorating this significant event in terms of enhancing safety of navigation in the region.

ANNEX F SPEAKING NOTES – MAHESH ALIMCHANDANI

Slide	Notes
Opening	<p>Thank you for that introductionand good morning, everyone</p> <p>In my presentation today, I will start by outlining, in broad terms, Australia’s resources boom ...and the consequent growing shipping task that our nation faces</p> <p>Growth in shipping volumes leads to a corresponding increase in riskwhich then obliges maritime authorities to assess and mitigate such risks</p> <p>I will conclude with an overview of Australia’s use of IALA’s risk assessment models</p>
<i>Shipping in Aus</i>	<i>As per slide</i>
Two ships @ Dampier	<p>Over the last decade, mining has been a key driver of economic activity in Australia.</p> <p>This period, commonly referred to as the ‘Resources Boom’, has been characterized by strong growth in demand from emerging economies in Asia ...and high commodity prices.</p> <p>Australia, with its large endowment of natural resources, has benefited greatly from the ‘boom’especially in terms of export income and investment in mining.</p> <p>Australia now produces close to a billion tonnes of minerals each year – and that’s only counting the finished product.</p> <p>TWO STATISTICS STAND OUT</p> <p><i>As you can see, the resources sector figures prominently in Australia’s economy.</i></p> <p>Despite the current slowdown of global economies and the gyrations of the global financial markets, the long term trend for the demand of Australia’s commodity exports seems to be intact - in particular, the demand for our iron ore, coal and natural gas, as you will see shortly.</p>
Braemar x 1	<p>I’d like to acknowledge Braemar Seascope as the source of the next two slides.</p> <p>As you can see, dry bulk exports, mainly coal and iron ore, have increased from about 400 million tonnes in the year 2000 to about 900 million tonnes this year.</p> <p>That’s over a 100% in 12 years.</p>
Braemar x 2	<p>A key driver for this growth has been the increase in steel consumption by China, as it economy powers ahead. Steel consumption has almost quadrupled in 10 years.</p>
Economic benefits to Australia	...have been substantial

Slide	Notes
State of WA	<p>Two Australian states have symbolised the resources boom.</p> <p>The State of WA, which makes up about 40% of our island continent has enjoyed a big increase in investments in major mining projects</p>
Dampier and Port Hedland	<p>Australia has two of its main commodity exporting ports in WA - Port Hedland and Dampier.</p> <p>PH is now the world's largest bulk portand Australia's largest tonnage port.</p> <p>In the last FY, the port shipping some 246 million tonnes – largely iron ore ...</p> <p>In shipping terms, a record one million tonnes on a single tide (on six ships) was achieved.</p> <p>-----</p> <p>Dampier is the world's second largest bulk export port.</p> <p>In the last FY, some 171 million tonnes transited through the port.</p> <p>Dampier is also a major port for rig tenders servicing the offshore gas fields.</p>
The State of Queensland	<p>On the eastern side of Australia, lies the State of Queensland....which has also enjoyed similar boom conditions.</p>
Three ports	<p>Three ports – Abbot Point, Hay Point and Gladstone have been at the center of increasing shipping volumes.</p> <p>The Port of Gladstone handles the export of resources from Central Queensland and the import of raw materials. It is Queensland's largest multi-commodity port, featuring the world's fourth largest coal export terminal.</p> <p>It is worth remembering that the Great Barrier Reef Marine Park, listed on the World Heritage register for its outstanding natural qualities, lies off the coast of Queensland.</p>

Slide	Notes
<p>It was not always like this..!</p>	<p>Some of you may have heard of Bill Bryson...a best-selling American travel author...he writes humorous books on travel.</p> <p>In his book on Australia, titled Down Under, and written in 2000, he makes this startling revelation</p> <p>I'll read the relevant bit</p> <p>...that up until the early 1950's, conventional wisdom held that ...wait for itAustralia was deficient in almost all natural resources</p> <p>...Iron ore, for instance, was considered to be in such short supply, that for two decades, it was illegal to export it!</p> <p>Fast forward to today</p>
<p>Impact on shipping</p>	<p>So what does all this mean for shipping?</p>
<p>Growth outlook 2010-25</p>	<p>The world demand for commodities is forecast to grow strongly.</p>
<p>Increased activity = increased risk</p>	<p>And so, all of this increased activity is leading to a commensurate increase in the risk to maritime safety and environmental protection</p>
<p>Growing risk</p>	<p>AMSA and the states recognised this issue and adopted a pro-active stance...as a first step, three-broad based risk assessments were conducted in 2009.</p> <p>But, before I go into the PAWSA risk assessments, I'd like to talk a bit about the development of the risk assessment models at IALA.</p>
<p>IALA Guidelines</p>	<p>In keeping with its aim of harmonizing and improving aids to navigation, IALA, responding to the needs of its membership, developed guidelines on risk management in the year 2000.</p> <p>The guideline provides a general description on risk assessment for Aids to Navigation (AtoN) and Vessel Traffic Services (VTS).</p> <p>As you can see, it advocates the following of a generic five-step process for risk management.</p> <p>Around the same time, IALA started work to develop generic risk models that could be used in any waterway.</p> <p>A special working group with experts from universities and research institutes in Canada, Denmark, UK, Turkey and Germany was formed.</p>
<p>IALA Risk Assessment Toolbox</p>	<p>It was agreed that the IALA Risk Assessment Toolbox would consist of two risk models.</p>
<p>PAWSA</p>	
<p>IWRAP Mk 2</p>	<p>Why Mk2, you might ask?</p> <p>Well, when soon after the first IWRAP model was released, it was found to yield an unrealistically high number of collisions and groundings.</p> <p>In 2007, IALA decided to develop a second version (Mk2) from scratch.</p>

Slide	Notes
Australian workshops	<p>I'd like to point out that there are three ways to organise PAWSA workshops</p> <ol style="list-style-type: none"> 1. US – contract out the whole lot 2. Aus approach – facilitation team contracted in, rest of the planning and preparation was done in house 3. Fully done in house – facilitation included
North – west risk improvements	<p>Some of the additional risk reductions measures identified were</p> <ul style="list-style-type: none"> • active traffic management (routeing measures and coastal VTS) • improved inter-agency coordination • dedicated response teams for petroleum discharge, and • expanding ship vetting programs and increase PSC w.r.t crew competency
Gladstone risk improvements	<ul style="list-style-type: none"> • Channel duplication with separation • Carriage of AIS Class B equipment on non-SOLAS vessels • Response workshops and the documenting of contingency plans to deal with the release of hazardous material • Ship vetting program to improve deep draught vessel quality
Central Queensland	<ul style="list-style-type: none"> • Carriage of AIS Class B equipment on non-SOLAS vessels • Small craft operators - increase educational information available • Expand VTS coverage to include the Port of Abbot Point and associated passages • Ship vetting program to improve deep draught vessel quality • Better coordination of schedules between charterers and terminals
Lesson learnt	
In closing ...	<p>The safety and efficiency of the shipping are critical to Australia's economic prosperity ...and risk assessments are a vital process to assist in the management of day-to-day activities and shape strategic planning.</p> <p>The PAWSA process has proved to be a sound model for reviewing risks in Australian waterways and in comparing and deciding on appropriate mitigation measures to reduce risk.</p> <p>In Australia's north-west, the outcome of the PAWSA workshop informed a review of maritime safety and environment protection measures that the Commonwealth and state governments undertook two years ago. I'm pleased to report that good progress is being made in implementing the nine recommendations of that review.</p> <p>In Queensland, the results of the PAWSA workshops are being dealt with in existing risk management initiatives already in place. Additionally, work is underway to develop a new shipping management plan for the NE region of Australia – this includes, the GBR, Coral Sea and TS.</p> <p>Ladies and gentlemen, thank you for your attention.</p>

ANNEX G THE RISK MANAGEMENT SONGBOOK

IWRAP-Anthem

Words and music by Knud Benedict

Introduction:

This is a sort of “wrap up” of our first IALA-seminar of the risk tool IWRAP Mk II, held in Kuala Lumpur from 20-25th April 2009 for the first time – and now ready to be used as an “IWRAP anthem” at any following IWRAP-seminar, like this one in Sydney.

Its style is made like a rap song – and it was therefore named IWRAP. Enjoy!

Refrain: (to start with)

IWRAP – This is an IALA tool!

IWRAP – Keeps you smart and cool.

IWRAP – Better book a seminar!

IWRAP – Software make you a star!

Song Text:

If you will ever need some risk control,
There is a nice tool to save your soul.
It is simple and easy to use – maybe...
But you better should join our seminar to see:

Refrain: IWRAP – This is an IALA tool...

We put a traffic leg here and we put a leg there,
and then we add some traffic we might have to share.
And after some seconds – amazingly ...,
It turned all red! What could that be?

Refrain: IWRAP – This is an IALA tool...

You might have forgotten in our recipe,
There's a man on the bridge - very luckily!
This human will be thinning probability
To improve the traffic – accidentally...

Refrain: IWRAP – This is an IALA tool...

Causation factors were blowing up our head,
how we should better call it – Another name instead?
“Reduction of Default” – this was driving us mad.
We should better name it “Omar's-Factor” – not so bad! ☺

Refrain: IWRAP – This is an IALA tool...

And now the week is over and our mission is done,
We had a lot of work - but also some fun.
Finally our thanks go to IALA,
And to Mahesh and all the staff here in Australia!

Refrain: IWRAP – This is an IALA tool...

Many thanks for these remarkable days in Sydney/ Australia....
to all who have supported this very fruitful Seminars!

Take PAWSA – you'll be fine!

Words by Knud Benedict;
Music by Jerry Leiber and Mike Stoller from Searchers "Love potion No 9"

You need to know there is some risk around
In ports and waterways and in a sound
We need a clever tool to control the risk in line
And all what you need is: Take PAWSA – you'll be fine!

We need no gypsy with a gold-capped tooth
No magic wand to find out the truth
No Harry Potter, Dumbledore no magic lamp to shine
The only thing you need is: Take PAWSA – you'll be fine!

Chorus:

We've had the ancient bible and we've had the Koran
And then we got the message in KL and Oman
In Sydney it was introduced to us by Burt Lahn:
We've got another five books - To turn us on!

You need to know there is some risk around
In ports and waterways and in a sound
So you go find a good facilitator - not to shy!
And all what you need is: Take PAWSA – you'll be fine!
Take PAWSA – you'll be fine...
Take PAWSA – you'll be fine...
Thanks IALA we'll be fine!

SIMULATOR ALLIGATOR

Words and music Bill Haley?
(adapted by Knud Benedict)

Introduction:

Our simulators appear to be sometimes like beasts: They do not behave as they should!
That's why we could appreciate a sort of happiness being far away within this week...
In this way the song is telling again a story about our life with simulators. Enjoy!

Song Text:

See you later simulator
We are off for a week
See you later simulator
We are here to meet
Here in Sydney
And we had big fun...

See you later simulator
There is a lot do
See you later simulator
So I ask you
So please join in
Let the party begin!
IWRAP – IWRAP...

See you later simulator
We have learnt many things...
See you later simulator
And we were asked what it brings
To supersede our colleagues
It will raise us up to peaks!

See you later simulator
Before we have to leave
See you later simulator
We ask Mahesh to receive
A lot of our thanks
And give him some big hands...
IWRAP – IWRAP...