Sealite®

WHITE PAPER

Assessing the Degree of Risk: IALA Risk Assessment Tools

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The Pandemic Brings Risk Assessment to the Forefront for Operations

The marine industry is currently facing many challenges as it navigates a world during a global pandemic. The current situation has highlighted to us all, the reliance we have on maritime transport. The whole industry and its supply chain were recognised as an essential service, continuing to operate at full capacity when many others were forced to close.

What the pandemic also raised was a new perspective and focus for business in relation to risk. There has been a paradigm shift towards assessing operational risk and developing strategies and contingency plans ahead of time, to help businesses manage and cope with the unexpected.

Why Undertake a Risk Assessment?

For Aids to Navigation (AtoN) managers, identifying and averting risk is a top priority. Their obligation is to provide AtoN service reliability to ensure the smooth passage of vessels and safety of their crew. The challenge is growing as authorities face increasing congestion in their ports and need to accommodate vessels that are larger and faster than ever before.

It is also useful for AtoN managers to assess risk associated with the construction of new projects (such as windfarms). Risk assessment can identify the traffic demand and the impact of redirecting this traffic into a smaller corridor.

Under the Safety of Lives at Sea (SOLAS) Convention, Chapter V specifically refers to the safety of navigation for all vessels at sea. It is published by the International Maritime Organisation (IMO).

The legislation states that each "Contracting Government undertakes to provide, as it deems practical and necessary either individually or in co-operation with other Contracting Governments, such Aids to Navigation as the volume of traffic justifies and the degree of risk requires".

Risk in a maritime sense is evaluated on the level of probability and the potential consequence should an event occur. The need for AtoN providers to undertake a thorough risk assessment has never been so important. Any disruption to service, impact on safety or the environment can have a heavy financial cost for operators.

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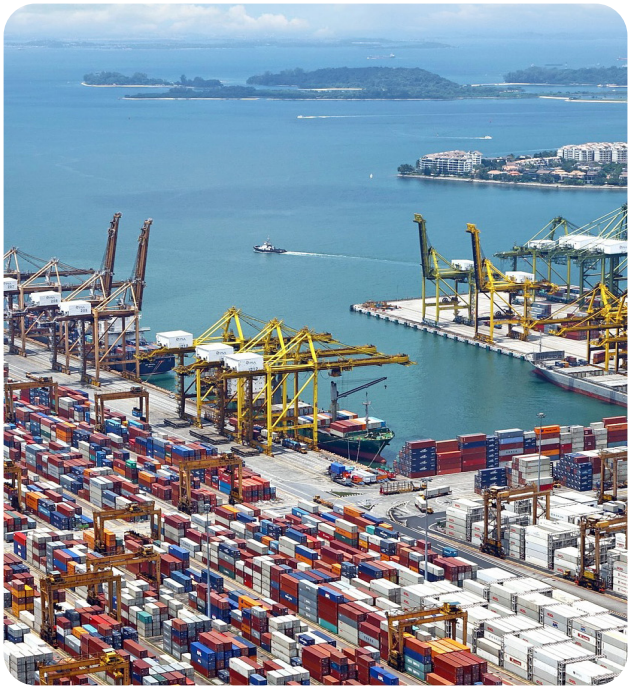
>
> ~ SOLAS Convention, Chapter V

When Should a Risk Assessment be Undertaken?

Before establishing a new AtoN, when replacing an existing AtoN or when risk changes, a risk assessment should be undertaken. It should involve relevant stakeholders and assess the current need, the required range, traffic density, and accommodate for the size and types of vessels entering the port. It should consider the initial capital investment but also the potential cost over the expected life of the AtoN.

Advancements in new technology can improve AtoN visibility and reduce operational and maintenance costs over the long term. AIS, Bluetooth Connectivity and Satellite monitoring and control are all features that can be considered. Managed by a central asset management system with reporting and alerts provides the visibility and tools for a quick response.



***Refer to the appropriate recommendations and guidelines of IALA and SN/Circ.107.**

~ Maritime Buoyage System

Quantitative Assessment IWRAP

What Tools are Available to Help Assess Risk?

The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) has developed international recommendations and guidelines*. Specifically, the IALA Maritime Buoyage System forms part of SOLAS Chapter V. It should be used as a reference to ensure there is a uniform approach by industry, when establishing aids to navigation provision.

In addition, IALA offers three Risk Assessment Tools (IWRAP, PAWSA and SIRA) to help measure and evaluate risk.

IWRAP Risk Assessment Tool - Quantitative

The IALA Waterway Risk Assessment Program (IWRAP) involves developing a model of the waterways to be analysed. It is used with Automatic Identification System (AIS) to estimate the frequency of collisions and groundings in a given waterway. It is based on information about traffic volume/composition and route geometry and allows for different scenarios to evaluate the impact in a varying mix of AtoN.

A free version and commercial version of the IWRAP tool is available, however undertaking training on how to use the tool through IALA is essential.

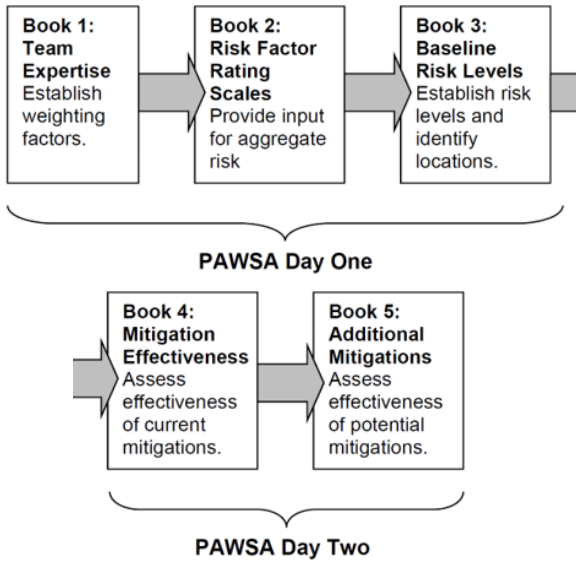
(IALA Guideline 1123).

PAWSA Risk Assessment Tool - Qualitative

The Ports and Waterways Safety Assessment (PAWSA) tool provides assessment of risk in a defined waterway, structured as a two-day workshop. It is a subjective assessment of probable risk based on the experience of teams of maritime experts and other stakeholders with the assistance of a facilitator.

The PAWSA tool uses local knowledge to determine the level of risk, and evaluation of measure to implement to reduce the risk. Contact IALA directly for further details.

(IALA Guideline 1124)



SIRA Risk Assessment Tool – Simplified Qualitative

The Simplified Risk Assessment Model (SIRA) was developed as a cost-effective means to assess risk. It is based on the probability of an undesired incident occurring and in the event that it happens, the severity or consequence of its impact.

SIRA uses risk criteria to determine a probability ranking. Based on the risk value SIRA provides the proposed action to be taken.

(IALA Guideline 1018)

1. Select the waterway to be analysed.
2. Define assessment zones and describe each area.
3. Identify hazards within each zone and develop associated scenarios.
4. Assess the probability and impact of each scenario.
5. Identify and prioritise possible risk control options.
6. Produce a comprehensive report of the risk assessment.
7. Communicate result to decision makers.

What factors should you consider?

Risk Assessment Considerations

Many factors should be considered as part of a risk assessment:

- The general location, day or night time approach and the capability and awareness of the pilot.
- The size and manoeuvring capabilities of the vessels expected to transit the waterway.
- The provisions that may be required in the event of a mechanical failure, including support services.
- Expected weather conditions, water depth, sea and tidal conditions at the location.
- That different risk factors apply to various vessel types and locations.
- Other traffic that will share the waterway, such as a concentration of fishing vessels or leisure traffic, that could impede larger vessels to manoeuvre.
- Other infrastructure or obstacles at sea eg. windfarms, shipwrecks.
- Radar interference that may justify the need for additional marking.
- For the best result, IALA's toolbox of quantitative and qualitative risk assessment tools should be used in combination.
- That IWRAP captures AIS data and that not all traffic is required to use AIS.
- For a a true representation, AIS data should be overlayed with qualitative information.
- When using qualitative tools, ensure experienced, local knowledge is utilised.
- Skills are required to develop the IWRAP model – Refer to the IALA Training Academy for guidance.

Risk Assessment Records and Their Value

A risk assessment is a valuable record for AtoN managers. It captures the risks identified at a single point in time and helps to justify why a decision was made to proceed/not proceed with the project.

The risk assessment record can be referred back to when reassessing risk at the same site, or to help in the evaluation of other sites with similar navigational requirements.

Risk Assessment Training

IALA's World Wide Learning Academy offers Level 1 training to AtoN managers and other interested parties.

The IALA Risk Management Toolbox course provides the theoretical and practical training necessary to have a satisfactory understanding of:

- IALA Waterway Risk Assessment Program (IWRAP Mk2)
- Port and Waterway Safety Assessment tool (PAWSA)
- Simplified IALA Risk Assessment Method (SIRA)
- Simulation

Further details on IALA's World Wide Training Academy can be found here.

Risk Mitigation in the Real World

As an example, a lighthouse is run off mains power. The region is known for experiencing regular power outages and historically the lighthouse has used diesel generators as a back-up. A risk assessment identified:

- A high probability of the lighthouse losing power in poor weather.
- The back-up diesel generator had a short run time of only four hours. It was also expensive and labour intensive to maintain.
- There was no mechanism in place to identify when the lighthouse light was out, unless it was reported by the public.

A risk assessment was undertaken and identified the site was critical for mariner safety. The following measures were put in place:

- LED light technology was installed at the site for operational efficiency.
- Solar panels were installed to charge back-up batteries in the event mains power was cut.
- AIS was installed with a satellite-enabled, third party gateway that now provides live reporting and alerts.

The upgrade undertaken at the lighthouse has ensured that power is always available at the site. The critical asset can now be monitored and managed remotely and preventative maintenance can be scheduled based on the overall health of the equipment. Most importantly, the safety of mariners is no longer compromised.

Want to Learn More?

Sealite has developed a series of on-demand webinars in collaboration with industry leading professionals. They are hosted by Malcolm Nicholson, Global Product Manager for Sealite who has over thirty years experience in the marine industry.

In Webinar #2, "The Practicalities of Risk Assessment & the IALA Toolbox" we feature Captain Roger Barker (former Director of Navigation Requirements at Trinity House) as our guest presenter.

Roger discusses risk assessment in greater detail and extends on the topics discussed in this white paper. The practical examples he provides are useful for Aids to Navigation managers. The recording is free to view. Visit: www.sealite.com/on-demand-webinars/.

The Sealite Difference

Sealite is known in the industry for delivering what the others can't. This is the convenience of a complete packaged solution.

The business is in the unique position of being able to match aids to navigation buoys with marine lanterns, mooring, hardware and sinkers to deliver a complete packaged product.

With satellite connectivity and Star2M, the customer can then manage the solution from anywhere at any time.

For customers that require something outside of the range, bespoke products can be designed and manufactured to meet customer specific requirements.

With authorised distributors located in most countries across the globe, the support you need with local knowledge and expertise is not far away.

We are committed to the manufacture and delivery of quality products that are built to last.

About Sealite

Sealite is a global manufacturer of marine aids to navigation. The company is headquartered in Australia, with manufacturing and office locations in the United States, Singapore and the United Kingdom.

The Sealite team is dedicated to servicing the marine industry through the efficient design and production of leading-edge products.

Through close working relationships, maritime authorities and private customers around the globe now trust Sealite to enhance the safety of their operations.

For more information about Sealite, please visit our website at www.sealite.com, email us at info@sealite.com, or call us on one of the numbers below.

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All Sealite products are manufactured to exacting standards under strict quality control procedures. Sealite's commitment to research and development, investing in modern equipment and advanced manufacturing procedures has made us an industry leader. By choosing Sealite you can rest assured you have chosen the very best.

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