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**Technical domain/ Task number** S1020 AtoN Design and Delivery

**Author(s)/Submitter(s)** IALA World-Wide Academy

Draft Guideline for sustainable structural design of marine aids to navigation

# Summary

This document introduces a new draft Guideline, the purpose of which is to provide a practical response to a request for assistance and to assist AtoN managers in complying with Recommendation *R1018 Responsible Design, Operation and Maintenance in the Provision of Marine Aids to Navigation*.

The draft Guideline describes the AtoN structural design process to assist Marine Aids to Navigation managers (AtoN managers) in their understanding of concepts and structural design procedures. It highlights the typical types of design codes that should be used in AtoN structural design and discusses other considerations to ensure sustainability is considered throughout the design process.

The document is provided as an input paper for ENG14 with the desire to finalize its completion by the end of the session.

## Purpose of the document

The purpose of this document is to introduce ENG14-X.x which is a new draft Guideline on Sustainable Structural Design of Marine Aids to Navigation.

## Related documents

* S1020 [3] and R1018 [1]
* ENG14-X.x Gnnnn Ed1.0 Sustainable Structural Design of Marine Aids to Navigation DRAFT v1.0.

# Background

For some time, the Academy has been working on developing guidance on the sustainable structural design of Marine Aids to Navigation. This is in response to a request from the Maritime Safety Authority of Fiji (MSAF) who experience several tropical storms and cyclones every year, which regularly destroy their AtoN structures. The draft Guideline is now in a stage of preparation where it is considered appropriate and useful for the ENG committee to review and hopefully finalise the document.

# Discussion

The MSAF (and the Academy) believe that there is a general lack of application of appropriate design and construction codes in the design of AtoN in the Southwest Pacific region. The draft Guideline is in response to a request for clearer information for the AtoN manager on the AtoN structural design process and what appropriate codes should be considered.

In addition to this practical request, *R1018* [1]recommends that AtoN managers should:

* Implement systematic procedures for AtoN to meet or exceed the required performance.
* Use appropriate design and building codes and sound engineering principles to ensure fit for purpose assets.
* Seek to reduce environmental impact and improve safe working environments.

Undertaking AtoN design that complies with relevant national and international design regulations, codes, standards and best practice guidelines is considered fundamental to help achieve these recommended aims.

It is important that the AtoN manager understands:

* The requirement for and benefits of, appropriate AtoN design, using geographically appropriate design criteria.
* The value of identifying and providing clear AtoN design requirements that can be understood by suppliers and held with the AtoN records; this is referred to as “requirement traceability” in *G1133*[2].
* When there may be a need to request appropriately qualified assistance, to undertake the design and construction of new AtoN or structural assessment of existing AtoN.

The draft Guideline attempts to simply introduce the concepts of structural design, as they may be encountered by the AtoN manager. Amongst other topics, the document discusses:

* The outline structural design process
* Specifications
* Typical AtoN loads, forces and structural reactions
* Typical design codes
* Non-structural design criteria including durability, sustainability, maintenance and safety
* Design documentation

The draft Guideline is not intended as a design manual, but it is hoped the content will positively influence the approach to structural design by AtoN managers and ultimately result in more durable structures.

The Guideline fits well under Standard S1020 [3], below R1018 [1]. In the Committee Work Program this would be in section 2.3 Design implementation and maintenance.

# References

1. IALA. Recommendation R1018 Responsible Design, Operation and Maintenance in the Provision of Marine Aids to Navigation
2. IALA. Guideline G1133 Requirement Traceability
3. S1020 Marine Aids to Navigation Design and Delivery

# Action requested of the Committee

The Committee is requested to:

1. Appraise the draft Guideline and work through the current Committee session with the assistance of the Academy to produce a final version that can be edited ready for the December2021 IALA Council.

1. Leave open if uncertain [↑](#footnote-ref-2)