



# IALA GUIDELINE

1051

## PROVISION AND IDENTIFICATION OF AIDS TO NAVIGATION IN BUILT-UP AREAS

**Edition 1.0**

**December 2005**



# DOCUMENT REVISION

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Revisions to this IALA Document are to be noted in the table prior to the issue of a revised document.

Date	Page / Section Revised	Requirement for Revision



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## 1. INTRODUCTION

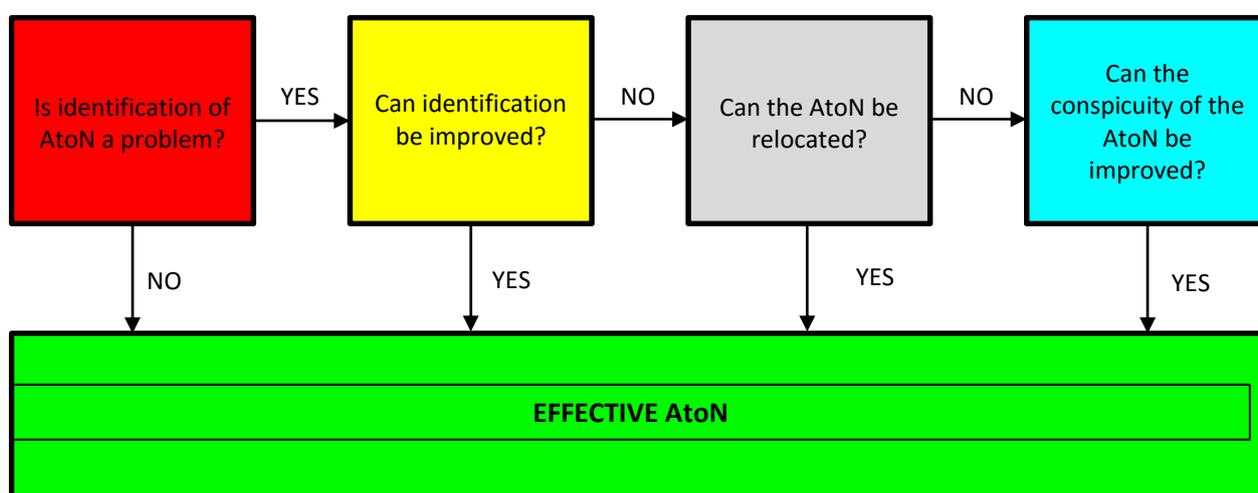
The identification of Aids to Navigation (AtoN) is increasingly affected by the proliferation of urban developments in and around ports and harbours. The purpose of this guideline is to provide responsible authorities with techniques on how to help improve the conspicuity of AtoN in built up areas.

## 2. SCOPE

This information provides guidance for AtoN authorities when assessing the level of AtoN effectiveness in built up areas and potential methods for improving the conspicuity of the AtoN.

## 3. OPTIONS FOR PROVISIONS OF EFFECTIVE AIDS TO NAVIGATION

Authorities should consider the actions described in the following flow chart, as related to the examples given in section 4. (For the more technical aspects of the options provided in the conspicuity section please refer to IALA Naviguide)



*Figure 1 Improvement options schematic*

### 3.1. IS IDENTIFICATION OF AtoN A PROBLEM?

General problems often associated with identification are:

- background lighting;
- atmospheric pollution;
- shadowing;
- obstruction;
- restricted visibility.

### 3.2. CAN IDENTIFICATION BE IMPROVED?

Background lighting is a significant contributing problem to AtoN recognition. Reducing or eliminating background lighting should be the initial aim of the authority and every effort should be made to liaise with other authorities.



Similarly, the approach mentioned above should be adopted to deal with atmospheric pollution, shadowing or obstruction.

### 3.3. CAN THE AtoN BE RELOCATED?

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In addition to the mitigating measures identified above, authorities should not dismiss the option of relocating an AtoN to maintain its effectiveness.

(Any relocation should not in any way reduce the prime navigational objective of the AtoN)

### 3.4. CAN THE CONSPICUITY OF THE AtoN BE IMPROVED?

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There are many ways to improve the conspicuity of an AtoN. The following measures should be considered:

- alter the colour of the light and/or structure within the colour boundaries;
- alter the rhythmic characteristics of the light;
- alter the intensity of the light;
- alter the light source of the AtoN;
- alter the size/shape of the AtoN;
- provide an additional AtoN or AtoN;
- sequence and/or synchronise AtoN lights.

### 3.5. OVERALL

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The above measures are not exhaustive and any one or combination can be used.

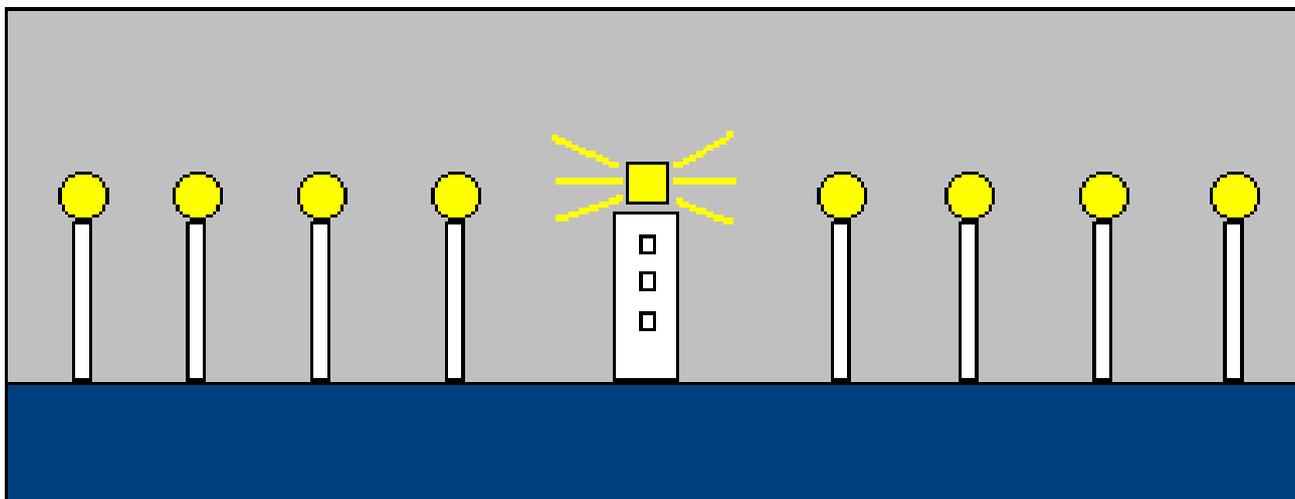
**Note** – Particular care should be exercised with the introduction of blue lights.

- 1 In many countries flashing blue lights are already associated with law enforcement and emergency services. Care should therefore be taken to ensure that the blue AtoN signal lights are not confused with these other lights. Where flashing blue lights are to be used as aids to navigation, their rhythmic character should be restricted to 'on' periods of one second or greater. A long presentation time would further reduce the risk of colour confusion.
- 2 If it is decided to utilise blue lights in harbours and land facilities where background lighting is an issue, they must be fixed lights.
- 3 The number of blue lights should be kept to a minimum so as to prevent them becoming too commonplace. Should this happen, their conspicuity and effectiveness will be significantly reduced.

## 4. EXAMPLES

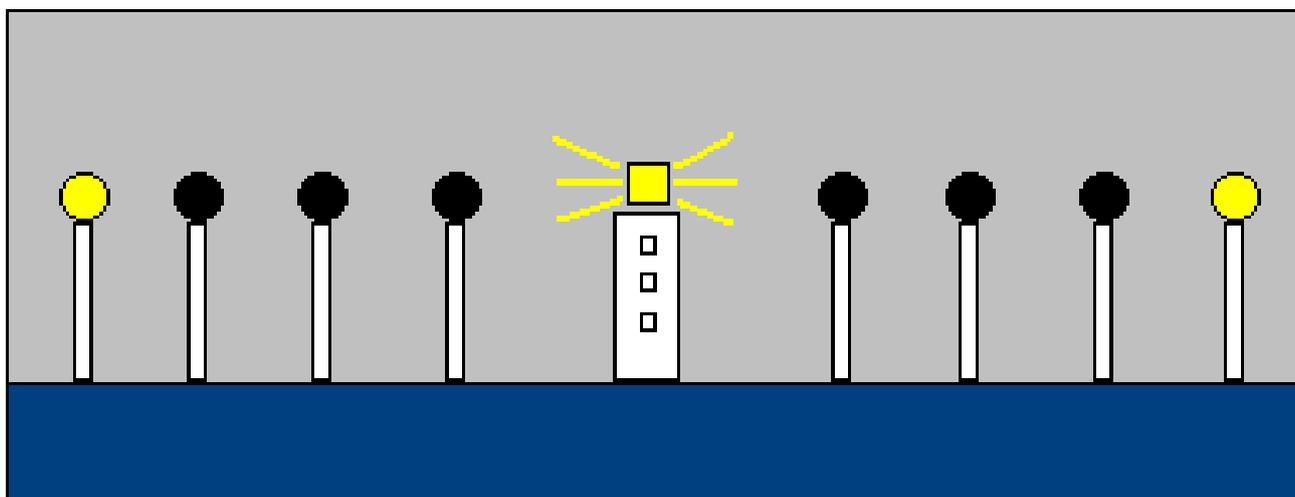
### 4.1. EXAMPLE 1

The problem: AtoN light signal is at same height and colour as local street lighting.



*Figure 2 AtoN light at same height as street lighting*

Solution: Liaise with local authorities to limit street lighting or establish seaward screening of street lighting in the vicinity of the affected AtoN.

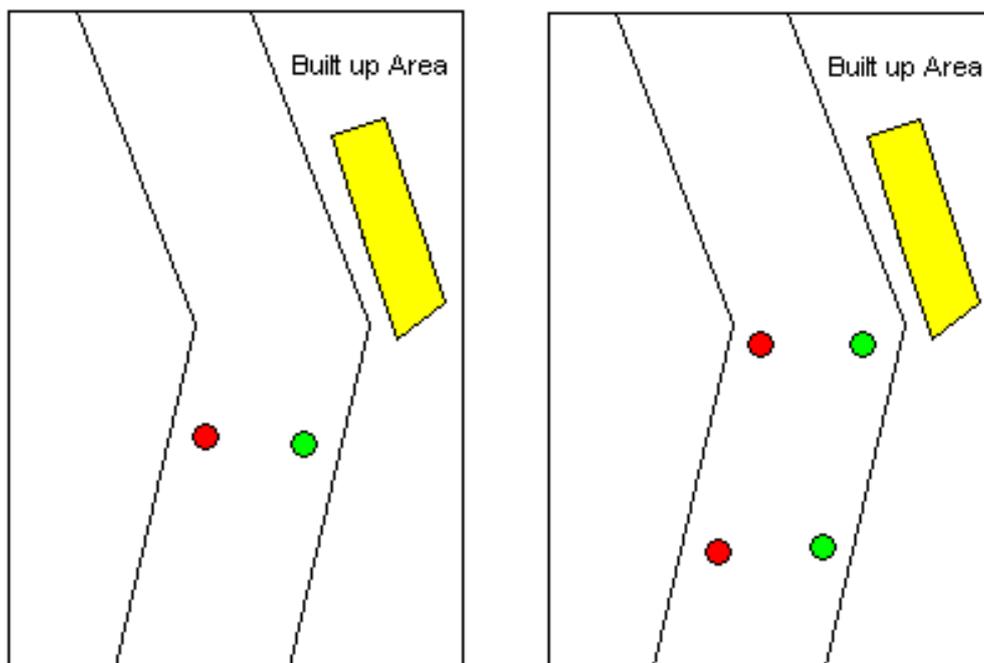


*Figure 3 Nearby street lighting dimmed /screened from seaward / switched off*

## 4.2. EXAMPLE 2

The problem: Starboard channel light lost in background lighting.

Solution: Additional AtoN and Sequence lights.

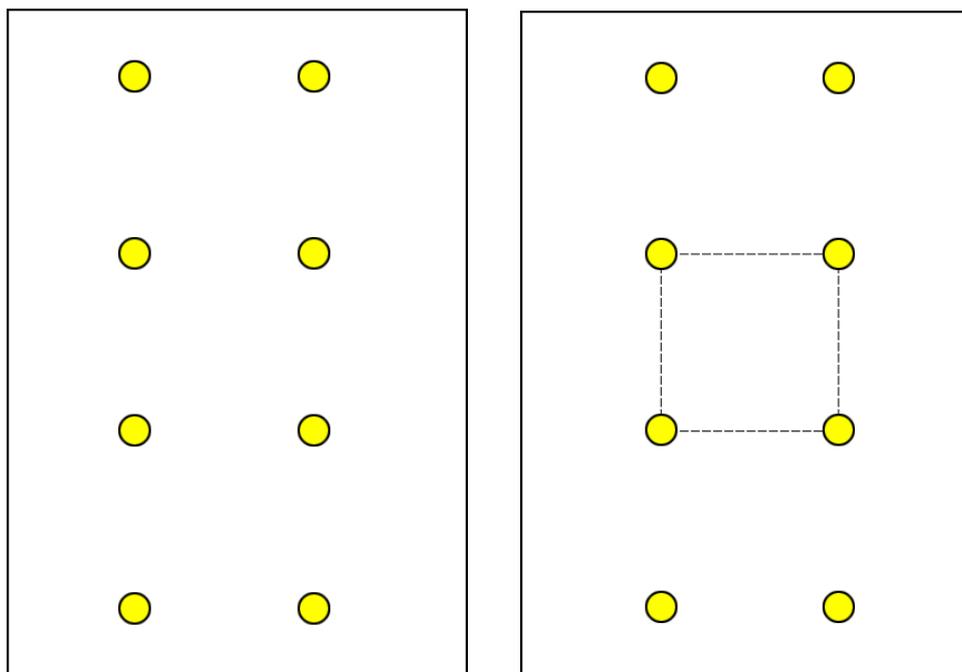


*Figure 4 Addition of AtoN and sequencing of lights*

## 4.3. EXAMPLE 3

The problem: Special Marks light lost in background lighting.

Solution: Synchronise AtoN lights.



*Figure 5 Synchronisation of lights*



## 5. CONCLUSIONS

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Authorities can improve the effectiveness of their AtoN in built up areas by using the methods described in this guideline. There may be other ways that authorities are able to improve the conspicuity of their AtoN. Authorities are encouraged to provide further examples to IALA. This guideline will be updated as further experience is gained with operating AtoN in built up areas.

## 6. DEFINITIONS

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<b>Conspicuity</b>	The descriptor used for how well something stands out from its surroundings.
<b>Background Lighting</b>	Encompasses ambient lighting either directly behind or adjacent to the AtoN having regard to the range of perspectives or directions of intended viewing.
<b>Synchronised</b>	A number of AtoN flashing together in character.
<b>Sequenced</b>	A number of AtoN flashing one after the other with the same character.

## 7. ACRONYMS

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AtoN	Aid(s) to Navigation
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities - AISM