General Lighthouse Authorities
The United Kingdom and Ireland

Contributing towards the
"Marine Aids to Navigation Strategy - 2025 and beyond"

GLA Joint Navigation Requirements Policies

JNRP

Introduction

The three General Lighthouse Authorities (GLAs) of the Commissioners of Irish Lights, the Northern Lighthouse Board and Trinity House, operate an integrated aids to navigation service throughout the coastal waters of Britain and Ireland. This service is delivered to recognised standards set by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) so as to meet the responsibilities of the British and Irish Governments under the International Maritime Organization (IMO) Safety of Life at Sea Convention (SOLAS).

The purpose of this document is two-fold. First, it records in one publication the joint approach of the General Lighthouse Authorities (GLAs) in navigational matters, to meet their statutory duties and for the purpose of planning and managing a cost effective Aids to Navigation (AtoN) service. Second, the publication provides the members of the Joint User Consultative Group (JUCG) with information regarding the GLAs' AtoN provision.

The GLAs attach great importance to the formulation of joint policies for AtoN provision in consultation with their users. It is intended that this publication will be periodically updated to take into account developments in shipborne technology and AtoN provision, for the purposes outlined above.

Navigation Requirement

POLICIES

Contents

1. ORGANISATION & DOCUMENT MANAGEMENT

Introduction

The GLAs share a common Vision Statement:

> *'To deliver a reliable, efficient and cost-effective Aids to Navigation service for the benefit and safety of all Mariners.'*

The GLAs work together to achieve common objectives and policies regarding their areas of responsibility.

The GLAs have a structure of Committees reporting to the Chief Executives as follows:

INTER-GLA COMMITTEE STRUCTURE
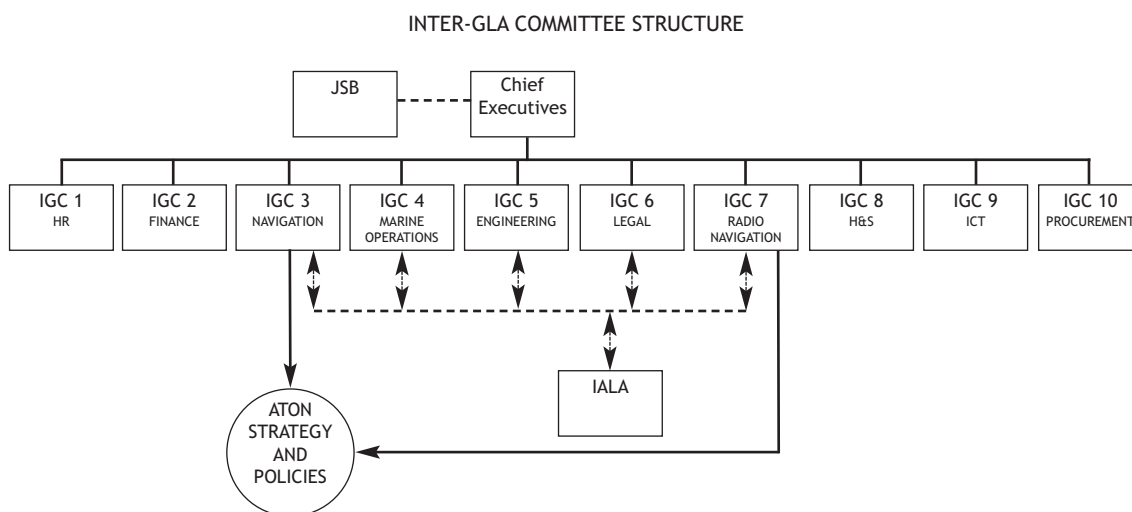
The GLAs operate three levels of common documentation with regard to Aids to Navigation (AtoN) Requirements:

Level 1– *'2025 & Beyond'* represents the overarching Aids to Navigation strategy

Level 2 – Documents – Joint Navigation Requirements Policies
                 Radio Navigation Plan
                 Visual AtoN Plan
                 Five yearly AtoN Review

Level 3 – Ongoing AtoN Review and Work Instructions e.g. GLA DGPS Operators Manual

These can be depicted as follows:

ATON STRATEGY AND POLICIES
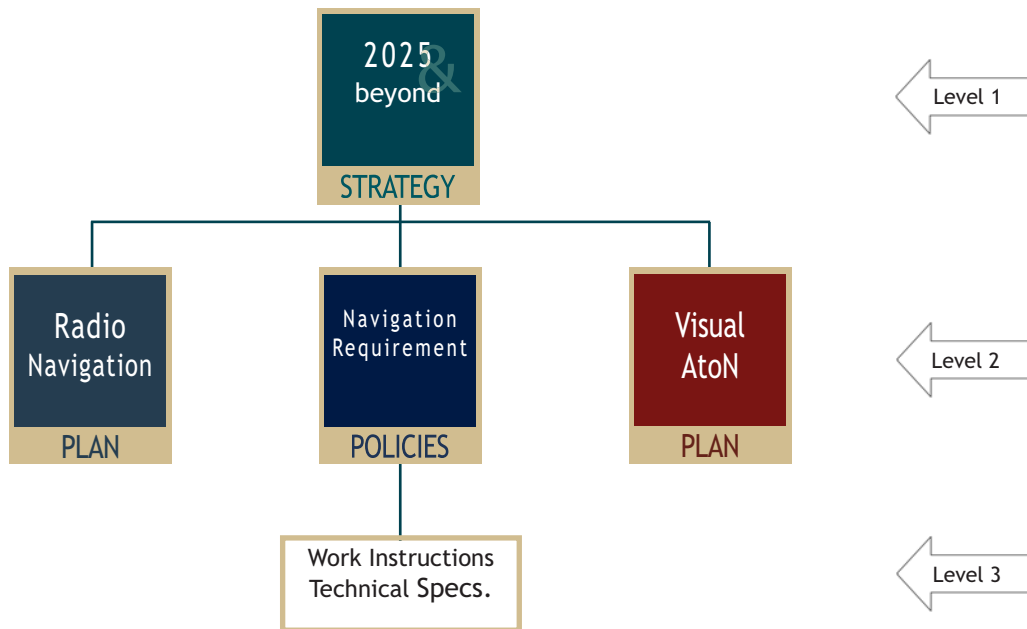
Level 1 & 2 documentation is available via the GLA websites, or can be sought directly from the Navigation departments of the individual GLAs.

Background

The three GLAs comprise the Commissioners of Irish Lights (CIL), the Commissioners of Northern Lighthouses (NLB), and the Corporation of Trinity House (THLS).

The GLAs consult regularly with each other to ensure the seamless provision of a modern cost-effective mix of Aids to Navigation around the coasts of the UK & Ireland.

The GLAs are National Members of the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and follow IALA Recommendations and Guidelines as required by SOLAS Chapter V.

Requirements

The GLAs will co-operate in the compilation and dissemination of common documentation with regard to AtoN Requirements.

Each Level 1 & 2 document issued by the GLAs will have an issue date, sponsor and a review period. The issue date and sponsor will be annotated on the footer of every document and the review period will be not more than five years. Each Document will have an Inter-GLA Committee (IGC) who will be responsible for its publication and review.

Each policy document within the JNRP has a common structure as follows:
- Introduction
- Background
- Requirements
- Service Level Parameters (where applicable)
- References

The current Joint Navigation Requirements Policy documents issued by the GLAs are:

1. Document Management Policy

Navigation Policy
2. Navigation Policy
3. AtoN Review Process
4. The User Consultation Process
5. Navigational Risk Management
6. Emergency Response Policy

Superintendence & Management of Local Aids to Navigation
7. Superintendence & Management of LLAs
8. Offshore Oil & Gas
9. Offshore Renewable Energy
10. Aquaculture
11. Coastal Development

Service Provision
12. Service Availability
13. e-Navigation
14. DGNSS
15. Resilient Position, Navigation & Timing
16. AIS
17. Buoyage
18. Monitoring of Aids to Navigation

Research and Radionavigation
19. Research and Radionavigation

NAVIGATION POLICY

2. NAVIGATION POLICY

Introduction

The GLA's Navigation Policy is:-

To determine that the Aids to Navigation (AtoN) provided by the General Lighthouse Authorities of the United Kingdom and Ireland in the interest of general navigation, and local AtoN provided by Local Lighthouse Authorities, Harbour Authorities and Offshore Operators, meet the requirements of the present and changing needs of all mariners and comply with IALA and other internationally accepted standards.

Background

The coastlines within the GLAs' areas of responsibility rank with the most heavily trafficked and hazardous in the world. The coastlines vary from isolated rocks and the steep Atlantic coastline to the low lying relatively featureless coastline of South East England, off which are shifting sandbanks and channels. The tidal ranges in GLA waters are significant and currents can reach well in excess of four knots in a number of places.

Man made hazards such as wrecks and structures in the sea add to the difficulties of navigation in the GLA areas. Overall, the weather adds significantly to the hazards of navigation; there are frequent gales and periods of low visibility.

Ships carrying hazardous cargoes and high-speed passenger vessels regularly transit the GLA areas. A number of Traffic Separation Schemes have been established and there are areas where heavy concentrations of crossing shipping traffic may be encountered.

The economies of the United Kingdom and Ireland depend heavily on sea trade. More than 95% of imports and exports move by sea, and a very considerable proportion of shipping bound to and from the ports of Northern Europe also passes our shores. The fishing fleets and an increasing number of leisure users must also be able to navigate in safety. It is paramount that all of these ships transit our waters in safety. Our priorities are:-

• The safety of life at sea
• The safe passage of shipping
• The protection of the marine environment for our own and future generations
• The maintenance of trade

Requirements

The GLAs will work together, and in conjunction with IALA, to develop standards regarding appropriate levels of service for the provision of Aids to Navigation.

The GLAs will work together, and with Local Lighthouse Authorities and other service providers, to ensure a seamless mix of Aids to Navigation are provided around our coasts.

Each GLA shall be responsible for determining appropriate levels of service provision of Aids to Navigation within their Area of Responsibility.

The GLAs will jointly review their own levels of AtoN service on a regular basis.

Each GLA shall provide a user forum for discussions of changes to AtoN to meet the changing needs of all mariners. User Consultation will be regulated and controlled in accordance with the User Consultation Procedure.

Each GLA is responsible for determining the relevant Availability Categories and Casualty Response Priorities applicable to individual AtoN, based on IALA guidance.

GLA and local AtoN shall be maintained such that the required Availability criteria is met at all times. Each authority responsible for the provision of local AtoN shall establish procedures for responding to casualties to local AtoN.

Selected GLA AtoN will be monitored and controlled to meet navigational, operational and legal considerations.

Service Level Parameters

Formal inspection/audit of all AtoN will be effected by the GLAs to confirm that AtoN provided meet the needs of the mariner and that they comply with internationally agreed standards.

A report of annual audits and local inspections of local AtoN availability statistics and response times to casualties shall be carried out by the GLAs and be submitted to the relevant Government Minister.

References

IALA Aids to Navigation Manual (Navguide), 2010 (Chapter 8)

Merchant Shipping Act 1894 (ROI)

Merchant Shipping Act 1995 (UK)

Harbours, Docks and Piers Clauses Act 1847

Port Marine Safety Code, DfT October 2009

3. ATON REVIEW PROCESS POLICY

Introduction

The General Lighthouse Authorities (GLAs) Navigation Policy requires that the AtoNs they provide meet the requirements of the present and changing need of all mariners. User requirements change with time and changes in technology. It is necessary to review AtoN provision on a regular basis to assess current and future requirements in order to provide a basis for planning the provision of a cost effective AtoN system that will meet present and future requirements.

Background

It should be recognised that the nature of shipping, and the marine environment in which mariners operate, is continually changing. This means that the aids to navigation infrastructure requires periodic review to ensure that the AtoNs provided are appropriate to the degree of risk and volume of traffic. The rate of change varies geographically and within the GLA area it is considered that a Strategic Plan (ie. 2025 and Beyond) and Operational Plan (i.e. 5 year AtoN Review) caters for the review requirements. The GLAs priorities are:-

- The safety of life at sea
- Safe passage of shipping
- The protection of the marine environment
- The maintenance of trade

Requirements

The GLAs will jointly undertake a Review of Aids to Navigation Strategy every 5 years with a projected forward strategic vision for 15 years. The most recent Strategy was *'2025 & Beyond'* published in July 2011.

The GLAs will jointly and separately undertake an Operational Review of aids to navigation provision every 5 years. Each GLA will review the AtoNs in its own area of responsibility and joint consultations will be conducted over areas of common or overlapping interest. A chartlet depicting areas of common interest is appended. The most recent operational review was published in 2010.

Together with the formal five-yearly review process, each GLA will assess the AtoNs within their jurisdiction on an ongoing basis to ensure a timely and appropriate response to any changing circumstances that may affect the safety of the mariner.

The Operational Review criteria are as follows:

- To ensure that the AtoNs provided by the GLAs are cost effective and continue to meet the present and changing need of all mariners and comply with internationally accepted standards.

- To assess developments in the field of navigation and their likely effect on the GLAs AtoN requirements.

- To assess shipping traffic, including changing patterns of trade, and vessel types and volumes within the GLAs areas, together with the sensitivities of the marine environment within which this traffic operates.

- To identify and assess hazards e.g. developments in offshore renewable energy.

- To specify the type and mix of AtoN required such that the degree of risk requires and the volume of traffic and protection of the environment justifies.

- To consult widely with users regarding the proposed AtoN provision.

- Each GLA shall be responsible for determining appropriate levels of service provision of Aids to Navigation within their Area of Jurisdiction.

Service Level Parameters

The GLAs will undertake and publish their strategic and operational reviews as specified above.

The GLAs will undertake documented risk assessment of any proposed changes to service provision within the Operational Review. The joint procedure and risk assessment form are given at Appendices B & C.
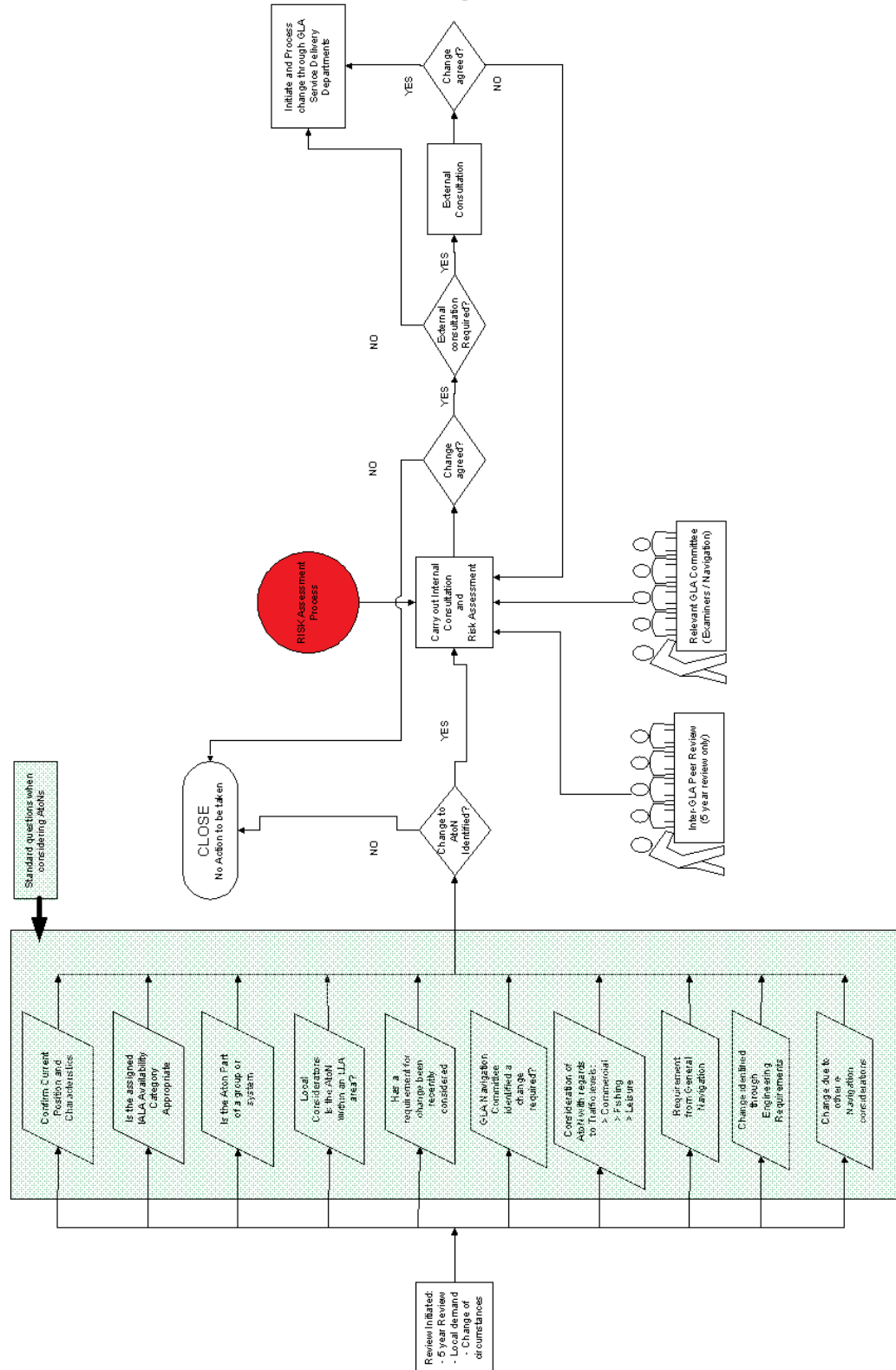
References

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.5)

2025 & Beyond, Marine Aids to Navigation Strategy, GLAs, 2011

Appendix A - GLAs Areas of Consultation
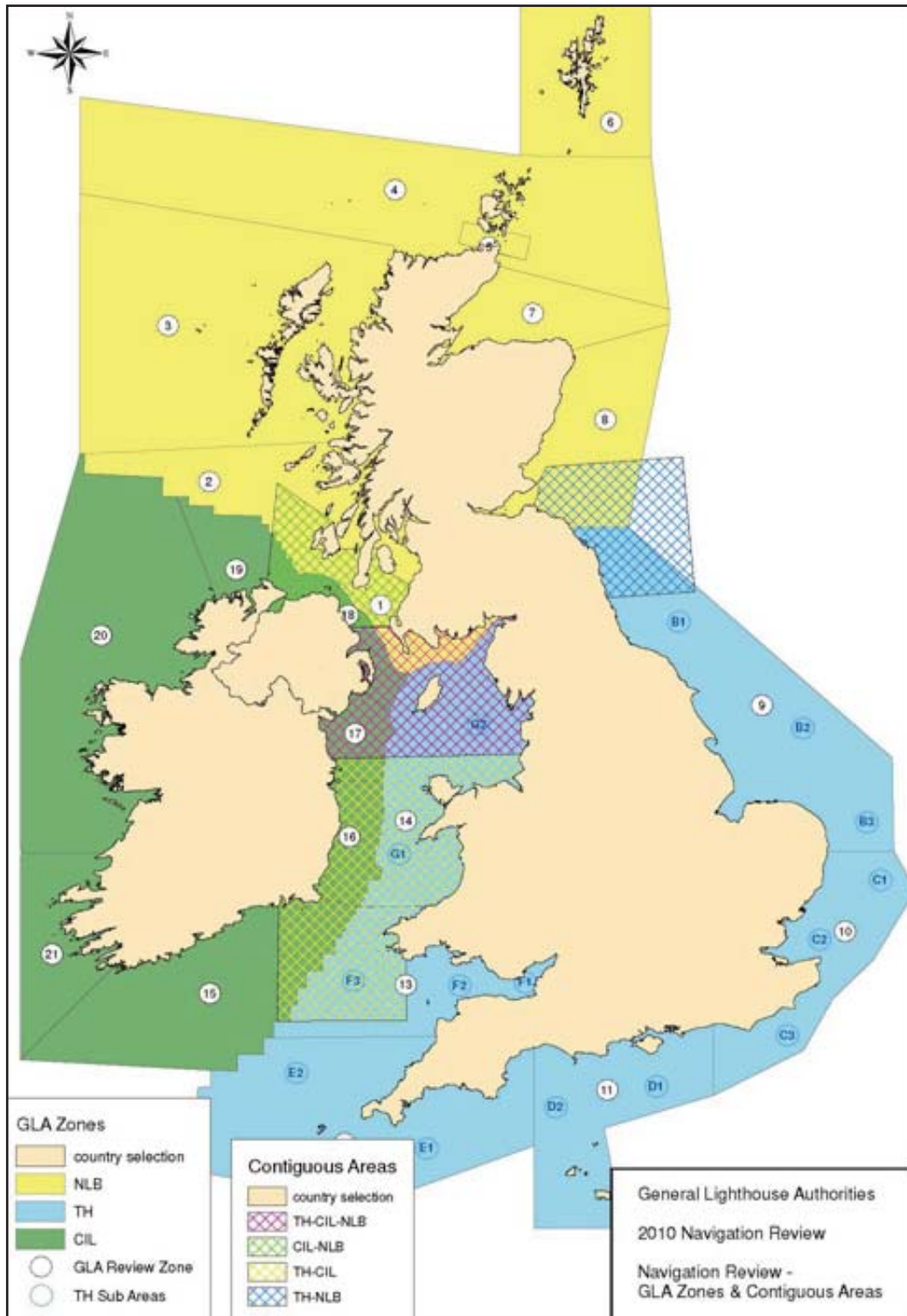
Appendix B - GLAs Aid to Navigation Review Process

Appendix C – GLAs Aid to Navigation Review Form

NAVIGATION RISK ASSESSMENT – *To be completed for each Aid Changed*

Name of Aid to Navigation		Items Considered	
Location			
Date Considered			

IMPACT / LIKELIHOOD matrix

IMPACT			LOW 1	MEDIUM 2	HIGH 3
	Severe 3		3	6	9
	Moderate 2		2	4	6
	Minor 1		1	2	3
			LOW 1	MEDIUM 2	HIGH 3
				LIKELIHOOD	

(red)	Unacceptable Level of Risk
(amber)	Acceptable Level of Risk with Caution
(green)	Acceptable Level of Risk

Process: Make an assessment of all the risks involved, considering at least the items in the adjacent table and assessing both before and after the proposed change. Having made your assessment enter the appropriate number against Impact and Likelihood. Use the table above to determine the consequential overall risk level.

Trinity House

Title	Name /Signature	Date
INTERNAL		
Director/Navigation Manager		
GLA APPROVAL		
TH		
CIL		
NLB		

Overall Impact and Likelihood Assessment

	Considerations will include but not be limited to the following:		Considered	Record of amplifying comments against consideration number – if required
1	Is the AtoN a significant part of a group of Aids which will be affected by the change?			
2	Assessment of local bathymetry against the proposed change			
3	Frequency and accuracy of hydrographic surveys			
4	Traffic Density, type, size, draft and speed.			
5	Traffic patterns to be considered in relation to conflict between routes and types of vessel			
6	Existing Obstructions and developments			
7	Planned new obstructions or developments			
8	IMO international and Local Charted Traffic routing measures			
9	Port and Local Information Systems	VTS		
		Information Service		
		Sailing Directions and Local notices to Mariners		
10	Local knowledge of users including the availability of Pilotage			
11	Requirement in prevailing weather conditions including luminous range, sea conditions and background lighting			
12	Accident or Incident History recorded for this station			
13	Any other considerations			

Risk Assessment	Before Change	After Change	DECISION
IMPACT			
LIKELIHOOD			
ASSESSED RISK			

4. USER CONSULTATION PROCESS POLICY

Introduction:

The General Lighthouse Authorities (GLAs) attach great importance to the formulation of joint policies for aids to navigation (AtoN) provision in consultation with their users.

Three levels of user consultation are employed as follows:

•	Joint User Consultative Group

•	GLA User Group

•	Local User Consultation

Background:

Joint User Consultative Group (JUCG)

The JUCG is drawn from Merchant, Fishing, Leisure and Specialist marine bodies with authority to speak on Marine Navigation, to discuss the broader policy matters involved in the determination of the provision of Aids to Navigation.

The JUCG terms of reference are:-

•	To provide a user forum for the discussion of major policy matters of mutual concern in the field of aids to navigation.

•	To enable the GLAs to formulate policy consistent with the users' requirement and resources available and to make recommendations to Government.

•	Chief Executives and appropriate senior officers of selected organisations are invited to participate at this forum.

•	JUCG concerns itself with strategic issues rather than individual aids to navigation.

GLA National User Group

Each GLA has established a user group within its own area of responsibility to ensure that there is comprehensive representation of marine interests concerned with aids to navigation provision. The role of the GLA user group is:

•	To provide a user forum for the discussion of marine matters relating to aids to navigation.

•	To provide the user group with a forum to raise issues for consideration by the GLA.

Local User Consultations

Local Users will be consulted as appropriate to discuss or obtain advice on a specific issue.

Requirements:

The JUCG is consulted on:

- User requirements for systems of AtoN

- The technical merits of various systems of AtoN

- Major GLA Policy in providing AtoN

The JUCG is also appraised of:

- IMO Resolutions and IALA Recommendations and Guidelines

- National Statutory Requirements affecting AtoN

- Changes in technology afloat and ashore

The GLA User Group is consulted on:

- Significant alterations to AtoNs

- Proposals for new projects

- Policy decisions

- Current and planned AtoN reviews

The GLA User Group is appraised of:

- Lists of significant events

- Technological advances affecting AtoNs

A Local User Consultation meeting may be convened, or a consultation process instigated, where a specific matter of importance requires further clarification or promulgation.

References:

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.2.4)

5. NAVIGATIONAL RISK MANAGEMENT POLICY

Introduction

Risk management is a term applied to a structured (logical and systematic) process for:

- identifying, analysing, assessing, treating, monitoring and communicating risks for any activity, and;
- achieving an acceptable balance between the costs of an incident, and the costs of implementing measures to reduce the risk of the incident happening.
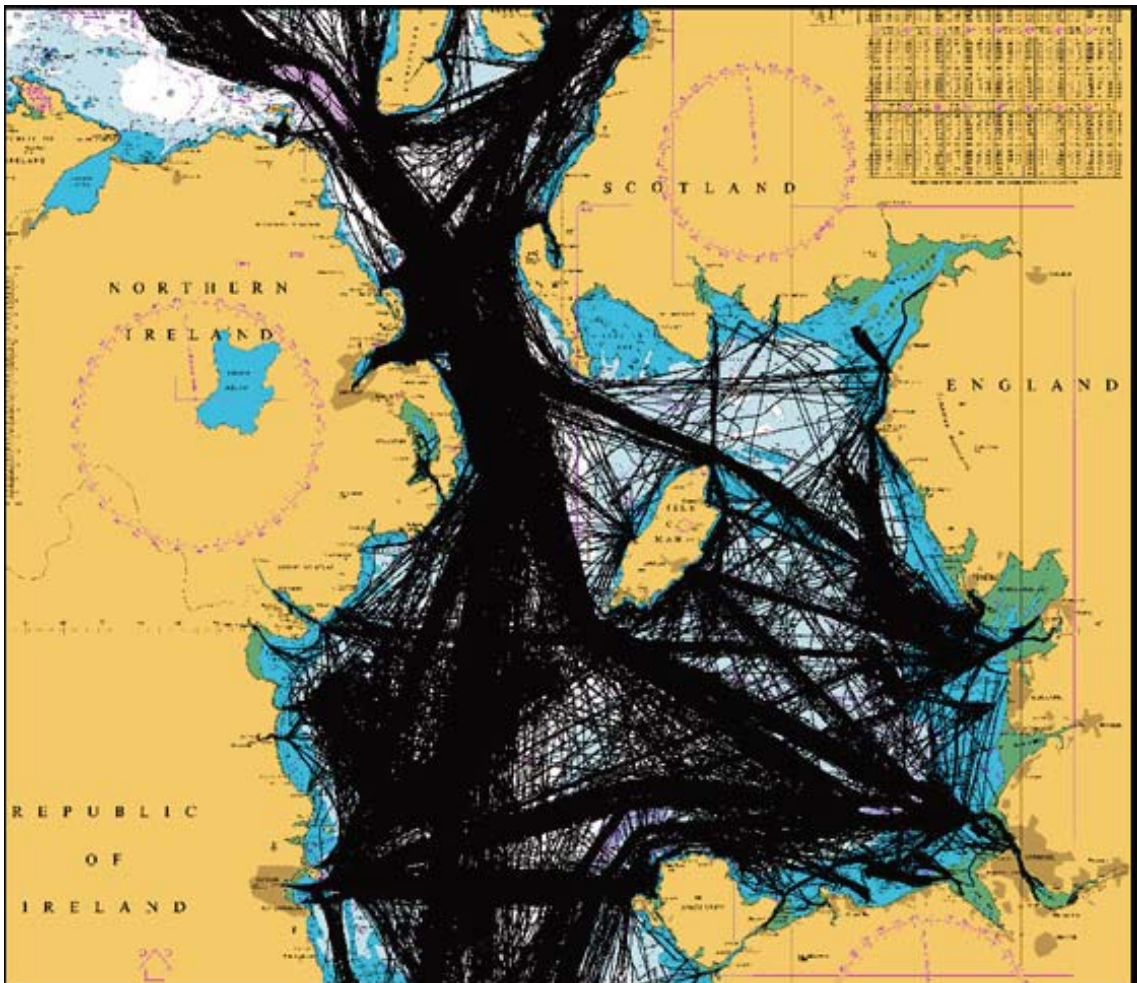
Navigation Requirement

POLICIES

Background

The Risk Management process comprises six steps that follow a standardised management or systems analysis approach:

  a)   Identify risks/hazards;
  b)   Assess risks;
  c)   Specify risk control options;
  d)   Make a decision; and
  e)   Take action
  f)   Monitor and review

To assist with the management of navigational risk, IALA have endorsed the qualitative (PAWSA) risk assessment tool and the quantitative (IWRAP) tool, for use by their members. Either or both models may be used to assist with navigational risk assessment.

Requirements

Each GLA will institute a system of delegation to ensure that decisions appertaining to navigation issues are delegated to an appropriate level of experience and qualification.

Each GLA will apply formal navigational risk assessment and management procedures to AtoN planning as considered appropriate, and will monitor and communicate actions and effects of any changes to the users.

The GLAs will monitor international developments in navigational risk assessment with a view to using appropriate tools as required. Such tools may include:
The USCG/IALA PAWSA Model
  The IALA IWRAP Model
  Ship Routeing Patterns software
  Radar tracking tools
  The RYA Coastal Atlas of Recreational Boating
  AIS derived traffic data
  User Consultation
  Voyage Simulation techniques
  Geographic Information Systems
  Charts & Sailing Directions
  Aerial & Satellite photography

References

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.3)

IALA Recommendation O-134, On the IALA Risk Management Tool for Ports and Restricted Waterways, May 2006

IALA Recommendation O-138, on the Use of GIS and Simulation by Aids to Navigation Authorities, December 2007

IALA Guideline 1018, On Risk Management, December 2008

6. EMERGENCY RESPONSE POLICY

Introduction

The General Lighthouse Authorities are required to provide emergency response to wrecks and new dangers, and to Aid to Navigation casualties.

Background

The Merchant Shipping Acts lay requirements upon GLAs to mark, destroy, remove or raise any vessels which are sunk, stranded or abandoned (wrecks) that in their opinion are an obstruction or pose a danger to navigation and which lie outside areas controlled by harbour or conservancy authorities.

In addition, the Wreck Removal Convention Act 2011 gives the Secretary of State (SoS) powers to instruct a GLA to mark or remove a sunken or stranded ship; or any part of a sunken or stranded ship, including any object that is or has been on board such a ship; or any object that is lost at sea from a ship and that is stranded, sunken or adrift at sea; or a ship that is about, or may reasonably be expected, to sink or to strand, where effective measures to assist the ship or any property in danger are not already being taken. The implementation of these powers is subject to an MOU between the GLAs and SoS and limits the use to when a navigational hazard exists.

Requirements

The GLAs shall give timely consideration to all the circumstances of a reported wreck and take actions determined by initial risk assessment or actions as directed by SoS.

If required by the initial risk assessment GLAs shall endeavour to locate and survey the wreck, with a view to forming an opinion as to whether the wreck is, or is likely to become, an obstruction or danger to navigation.

If the assessment is in the affirmative and the wreck is not in or near the approach to a harbour or conservancy authority with wreck removal powers, the GLAs may:

- In the case of a wreck as defined and covered by the MSA take immediate possession, mark and if necessary subsequently remove or disperse the wreck as appropriate and practicable in all the circumstances, in accordance with the powers conferred by the relevant Section of the Merchant Shipping Acts.

- In the case of a wreck as defined and covered by the Wreck Convention Act. As directed by SoS mark and if necessary subsequently remove or disperse the wreck as appropriate and practicable.

In determining the specific marking requirements the GLAs will consider the use of all available means to warn the Mariner including guard ships, emergency wreck marking buoy(s), cardinal marks, racons and AIS as appropriate.

The GLAs will, where feasible, seek recovery of the expenses of surveying, marking and removing or dispersing the wreck in each case where possession is taken.

Where a GLA learns of a previously unknown hazard or obstruction which may impinge upon the safety of navigation (i.e. new shoal or rock or other obstruction with an unknown clearance), and there is no harbour or conservancy authority with jurisdiction, the relevant GLA shall; where determined necessary by risk assessment, endeavour to locate and survey the hazard, with a view to forming an early assessment as to whether the hazard is, or is likely to become, an obstruction or danger to navigation. If it is such a danger the GLA shall if it is considered necessary mark the hazard.

With regard to AtoN casualties, each GLA must ensure that taking into account the necessary means of access (road, air, local boat & GLA tender) and the distribution of AtoN of each category, that resources are in place to ensure the maximum AtoN casualty period permissible is not exceeded. The level of resource will be informed by the AtoN availability record of each AtoN and historic frequency of response.

The GLAs will ensure that appropriate action is taken to inform the Mariner of wrecks, new dangers and AtoN casualties through Navigation Broadcasts and Notices to Mariners via the relevant authority.

References:-

- Wreck Removal Convention Act 2011 (UK)

- Salvage & Wreck Act 1993 (ROI)

- Merchant Shipping Act 1894 (ROI)

- Merchant Shipping Act 1995 (UK)

- Harbours Docks and Piers Clauses Act 1847

- SOLAS Convention 1974 – Chapter V.

- IALA Aids to Navigation Manual (Navguide), 2010 (Annex A)

- IALA Guideline 1046, on the response plan for marking of new wrecks, June 2005

- IALA Recommendation O-133 on Emergency Wreck Marking Buoy, December 2005

- GLAs' Emergency Response Criteria, 2012

- IMO Convention on the Removal of Wrecks, 2007

SUPERINTENDENCE & MANAGEMENT OF LOCAL AIDS TO NAVIGATION

7. SUPERINTENDENCE & MANAGEMENT OF LOCAL LIGHTHOUSE AUTHORITIES (LLAs) POLICY

Introduction

The GLAs are required to ensure that aids to navigation (AtoNs) provided by Local Lighthouse Authorities (LLAs) meet the requirements of the present and changing needs of all mariners, and that LLA AtoNs comply with internationally accepted service availability criteria.

Background

The Merchant Shipping Acts define that it shall be the duty of the GLA for any area to inspect all lighthouses, buoys and beacons situated within their area belonging to or under the management of any local lighthouse authority; and make such enquiries about them and their management as they think fit.

A GLA may, within their area, direct a LLA to lay down buoys; remove or discontinue any lighthouse, buoy or beacon; or make any variation in the character of any lighthouse, buoy or beacon.

The GLAs are required to make the results of their inspection known to the LLA.

The GLAs are required to make the results of their inspections of LLAs known to the appropriate Government Minister.

Under the Port Marine Safety Code, all LLAs are required to maintain their local AtoN in accordance with the availability criteria laid down by the GLAs and these AtoNs must be subject to periodic review. In addition, the characteristics of these AtoNs must comply with guidelines and recommendations laid down by IALA.

Requirements:

Each GLA will organise a programme of regular inspections of all local aids to navigation within their area of jurisdiction. The frequency of inspections should be determined based upon an assessment of the navigation risk within the local area, as defined by the degree of risk, volume of traffic, and the availability records of the individual AtoN and providing authority. The maximum interval between inspections of any aid to navigation shall be three years.

Such Inspections may comprise of:
- Physical inspection of the AtoNs both by night and day
- Requirement for the AtoN provider to make a regular return of the performance of their AtoNs which will include availability statistics
- Confirmation that the deployed AtoNs comply with IALA recommendations and are fit for purpose

In addition to the above noted inspections, LLAs may also be audited against the requirements laid down in the Port Marine Safety Code for provision of AtoNs. Such an audit may include:

• Regular review of Safety Management System regarding AtoNs
• Evidence of formal risk assessment
• Availability of AtoNs according to IALA standards
• Casualty response
• Maintenance procedures
• Sample inspection re. colour, range and daymark integrity to ensure that the deployed AtoN is fit for purpose

Service Level Parameters

Each GLA will produce an annual report noting the results of Inspections undertaken, and other relevant activities concerning local aids to navigation. The report will be submitted to the relevant government department, as required by the Merchant Shipping Acts.

Each GLA will produce reports of audits undertaken and will supply such reports to the relevant LLA. Any non-conformities with the Merchant Shipping Acts or Port Marine Safety Code will be clearly identified within the report, and follow up action will be undertaken as required. The results of audit may also be included in the Annual Report.

References

Port Marine Safety Code - DfT October 2009

Merchant Shipping Acts – 1894 and 1995

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.2.1)

8. OFFSHORE OIL & GAS POLICY

Introduction

The Offshore Oil & Gas industry is a major economic activity in the North and Irish Seas, and is increasing in the Atlantic area.

Offshore installations represent collision hazards to shipping, with potential subsequent explosion, fire or pollution hazards. In addition undersea pipework represents a hazard to fishing vessels engaged in bottom trawling.

Offshore installations require a Safety of Navigation consent from National Government. The relevant GLA is consulted regarding marking and lighting issues in this process.

Background

Offshore installations are marked in accordance with IALA recommendations or National regulations, principally with lights flashing morse 'Uniform' and fog signals of the same character. Mobile platforms should also be marked in accordance with the International Rules for the Prevention of Collisions at Sea. Platforms may also utilise radar, AIS or standby vessels as additional risk mitigation.

Specific undersea hazards are generally marked with lit yellow special mark buoys. Pipelines are marked on Admiralty charts and automatic proximity warning devices are available to the fishing industry.

Requirements

The GLAs will work together, and in conjunction with government, to develop legislation regarding appropriate levels of marking and lighting of Offshore Installations.

Each GLA will monitor Offshore Oil & Gas developments within their area of jurisdiction, through the seaward inspection process. Any deficiencies of lighting or marking will be reported to the relevant Operator and National Government department.

Each GLA will seek to influence the Safety of Navigation consent process within their area of jurisdiction, in order to minimise interaction between Offshore Oil & Gas installations and other users of the sea.

Each GLA will seek to establish links with the Offshore Oil & Gas industry and other relevant parties, and will promote appropriate levels of marking and lighting of Offshore Oil & Gas installations, to provide greater safety of navigation for vessels within their area of jurisdiction.

Service Level Parameters

Each Offshore Oil & Gas Installation shall be inspected by the relevant GLA on an annual basis and the results communicated to the Offshore Operator and relevant Government Department.

References

IALA Recommendation O-139, On the Marking of Man-made Offshore Structures, December 2008

Standard Marking Schedule for Offshore Installations, DECC, 2011 (UK)

International Rules for the Prevention of Collisions at Sea, 1972, as amended

9. OFFSHORE RENEWABLE ENERGY POLICY

Introduction

The GLAs recognise that development of Renewable Energy Projects is a fundamental part of the UK and Irish Governments' strategies to reduce reliance on fossil fuels, reducing carbon emissions accordingly.

EU policy requires at least 20% of energy requirements are met by renewable energy sources by 2020. UK and Irish waters contain a large proportion of European wind and wave energy resources.

Background

There are three types of offshore renewable energy installations (OREI):
• Wind Turbines
• Tidal/Current
• Wave

Wind turbine developments run from a single turbine to fields of several hundred devices. In general the turbine towers are pile driven into the seabed but floating structures with appropriate moorings are also being considered.

Wave/Current and Tidal devices can be piled towers with underwater turbines or surface/subsurface structures anchored to the seabed. These devices are often semi or completely submerged and may be of significant size and hazard.

To meet Government deadlines the numbers of devices and size of fields required will be substantial.

Requirements

The GLAs will monitor all offshore developments to ensure that siting does not conflict with the safety of the Mariner, or impose unreasonable restriction of right of passage. Offshore renewable developers are encouraged to consider cumulative impacts and combination effects with other local marine infrastructure.

The GLAs will stipulate marking schedules to ensure that the risk of a ship to installation or ship to ship conflict caused by the development is reduced to as low as reasonably practical, and is in accordance with best international practice and as recommended by IALA.

The GLAs will seek to influence International and National Policy regarding the siting and marking of offshore renewable energy devices.

The GLAs will organise the regular inspection of all offshore renewable energy sites to confirm compliance with marking requirements, consistent with the overall superintendence and management policy.

The GLAs will assign availability requirements to, and collate availability returns from, offshore renewable energy providers.

References

IALA Recommendation O-139, On the Marking of Man-made Offshore Structures, December 2008

10.   AQUACULTURE POLICY

Introduction

Aquaculture, or fish farming, represents a major economic, and growing, activity on the remote West Coasts of Ireland and Scotland, and in the outer island groups, with over 2,000 sites active in these areas.

Current aquaculture technology is limited to inshore areas, which limits the interaction of larger vessels with sites, however these sites pose a significant navigational hazard to inshore fishing and leisure traffic, and it is incumbent on the GLAs to monitor the lighting and marking of these sites.

Background

Aquaculture sites may farm finfish, such as salmon or trout, in rings or cages, usually with an attached barge supplying automatic feeding. Alternatively shellfish, usually mussels, may be farmed on long-lines or fixed nets. Seaweed may also be farmed by the same methods. Oysters may also be farmed on trestles in the inter-tidal zone. Each of these sites poses direct or indirect dangers to navigation, of collision with solid objects, or by fouling propellers on long-lines or trailing lines. Aquaculture sites may also restrict channel width or obstruct charted anchorages.

Aquaculture sites are generally marked with lit or unlit yellow Special Mark buoys or poles. Feed barges are generally marked with an anchor light appropriate to the vessel size. Other aids to navigation (eg. Lateral or Cardinal marks) may be used in appropriate circumstances. The site areas are charted, however the actual sites may be dormant and the marking is not usually depicted on Admiralty charts.

Aquaculture sites generally require planning approval through the Local Authority, a site lease, discharge consents from the relevant Environmental Agency and a Safety of Navigation consent or Foreshore Licence from National Government. The relevant GLA is consulted regarding the marking and lighting issues in some of these processes.

Requirements

The GLAs will work together, and in conjunction with IALA, to develop recommendations regarding appropriate levels of marking and lighting of aquaculture sites.

Each GLA will monitor aquaculture developments within their area of jurisdiction, through the seaward and landward inspection processes. Any hazards resulting from deficiencies of lighting or marking will be reported to the relevant site operator and Government department.

Each GLA will seek to influence the Safety of Navigation consent process within their area of jurisdiction, in order to minimise interaction between aquaculture sites and other users of the sea.

Each GLA will seek to establish links with the aquaculture industry and other relevant parties, and will promote appropriate levels of marking and lighting of aquaculture sites, to provide greater safety of navigation for vessels within their area of jurisdiction.

References

IALA Recommendation O-139, On the Marking of Man-made Offshore Structures, December 2008

Marine and Coastal Access Act 2009

Marine (Scotland) Act 2010

Merchant Shipping Act 1894 (ROI)

Merchant Shipping Act 1995 (UK)

11. COASTAL DEVELOPMENT POLICY

Introduction

Coastal developments below the High Water Mark generally require approval from the relevant Government department. This department is required to form an opinion as to whether the application will cause or is likely to result in obstruction or danger to navigation, and either refuse consent or give consent subject to conditions, having regard to the nature and extent of the obstruction or danger which would otherwise be caused or be likely to result.

The relevant General Lighthouse Authority is invited to make recommendations regarding the provision of any lights, signals or other aids to navigation.

Where such recommendations are accepted and incorporated into the consent granted to the developer, such aids become Local Aids to Navigation and will require sanction from the GLA. Any failure by the developer to implement requirements incorporated within their consent should be referred to the relevant Government department for enforcement action.

Background

Coastal Developments are generally classed as:

(a)   the construction, alteration or improvement works on, under or over any part of the seashore lying below the level of mean high water springs,

(b)   the deposition of any object or any materials on any part of the seashore, or

(c)   the removal of any object or any materials from any part of the seashore lying below the level of mean low water springs, if the operation causes or is likely to result in obstruction or danger to navigation.

Requirements

Each GLA will monitor coastal developments within their area of jurisdiction, through the seaward and landward inspection processes. Any hazards resulting from deficiencies of lighting or marking will be reported to the relevant site operator and National Government department.

Each GLA will seek the influence the Safety of Navigation consent process within their area of jurisdiction, in order to minimise interaction between coastal developments and other users of the sea.

Each GLA will seek to promote appropriate levels of marking and lighting of all coastal developments within their area of jurisdiction, consistent with IALA practice, to provide greater safety of navigation for vessels within their area of jurisdiction.

Each GLA shall review any applications submitted to them, and develop appropriate recommendations, noting the following considerations:

a)   Nature and duration of foreseeable hazard
b)   proximity to known shipping routes
c)   nature and volume of local traffic
d)   other activities or potential developments within the surrounding area
e)   available sea-room and alternative routing options
f)   prevailing meteorological and local hydrological conditions
g)   potential mitigation measures, which may include temporary or permanent AtoN; local or National press releases, Notices or Mariners or Navigation Warnings; and depiction on charts

Service Level Parameters

Applications for Coastal Developments will be responded to in accordance with each GLA's internal correspondence procedures.

Each Coastal Development will be assessed and, if considered necessary, a post-installation site inspection will be undertaken.

References

IALA Recommendation O-139, On the Marking of Man-made Offshore Structures, December 2008

Marine and Coastal Access Act 2009

Marine (Scotland) Act 2010

Merchant Shipping Act 1894 (ROI)

Merchant Shipping Act 1995 (UK)

Navigation Requirement

POLICIES

SERVICE PROVISION

12. SERVICE AVAILABILITY POLICY

Introduction

The GLAs aim to provide levels of service availability of Aids to Navigation, as the volume of traffic justifies and the degree of risk requires, and in keeping with international best practice.

Background

IALA provides a method to categorise and calculate aids to navigation availabilities for both individual aids to navigation and systems of aids to navigation:

CATEGORY	AVAILABILITY OBJECTIVE	CALCULATION
1	99.8%	Availability Objectives are calculated over a three-year continuous period, unless otherwise specified
2	99.0%	
3	97.0%	

The Recommendation also states that the absolute minimum level of availability of an individual aid to navigation should be set at 95%.

Requirements

The GLAs have adopted the IALA definitions of each Category of AtoN as follows:

Category 1: An Aid to Navigation (AtoN) or system of AtoN that is considered by the Competent Authority to be of vital navigational significance. For example, lighted aids to navigation and racons that are considered essential for marking landfalls, primary routes, channels, waterways or new dangers or the protection of the marine environment.

Category 2: An AtoN or system of AtoN that is considered by the Competent Authority to be of important navigational significance. For example, it may include any lighted aids to navigation and racons that mark secondary routes and those used to supplement the marking of primary routes.

Category 3: An AtoN or system of AtoN that is considered by the Competent Authority to be of necessary navigational significance.

Individual GLAs may further define the IALA Availability Categories if required.

Each GLA shall calculate the availability achieved for each Aid to Navigation, and publish overall performance achieved as a Key Performance Indicator in their Annual Report.

References

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.4)

IALA Recommendation O-130, On categorisation and availability objectives for short range aids to navigation, Edition 2, June 2011

IALA Guideline 1035, To Availability and Reliability of Aids to Navigation, Theory and Examples, Edition 2, December 2004

IALA Guideline 1037, On data collection for aids to navigation performance calculation, Edition 2, December 2009

13. e-NAVIGATION POLICY

Introduction

e-Navigation is a concept defined by IMO as *"e-Navigation is the harmonised collection, integration, exchange, presentation and analysis of maritime information onboard and ashore by electronic means to enhance berth-to-berth navigation and related services, for safety and security at sea and protection of the maritime environment."*

Background

Today, around 80% of all accidents at sea are attributable to human error, ships are getting larger and the seas are becoming more congested. e-Navigation is intended to make navigation at sea both easier and safer, by improved data presentation onboard and better data exchange between ship and shore-based infrastructure. The fundamental components of e-Navigation are considered to be:

a)   worldwide availability of vector electronic charts (ENCs), to agreed international standards
b)   failsafe position, navigation and time inputs into onboard and shore support systems
c)   reliable worldwide data communications between vessels and ship-shore

Requirements

The GLAs will work together, and in conjunction with Governments and IALA, to develop the e-Navigation concept.

The GLAs will provide component services of e-Navigation, including AtoN AIS, DGNSS, racons and eLoran, to agreed International Standards.

The GLAs will promote new technologies developed as components of e-Navigation, to provide greater safety of navigation for vessels within their areas of jurisdiction.

References

IALA Aids to Navigation Manual (Navguide), 2010 (Chapter 4)

14. DGNSS OPERATING POLICY

Introduction

The GLAs jointly operate a network of Medium Frequency transmission sites for Differential GNSS. The sites continuously assess the performance of all GPS satellites in view, to warn users of erroneous ranging messages (the 'integrity function') and to improve the accuracy of calculated positions. DGNSS operates to a minimum range of 50 nautical miles from the coastline. The network incorporates 14 transmission sites, 3 control centres and 6 remote monitoring sites. The GLAs continue to monitor the development of Galileo and GLONASS.

Background

Differential GNSS (DGNSS) functions by having a fixed receiver at a known ground-based reference station that continually calculates the current GNSS errors and transmits corrections to the pseudo-range measurements taken by mobile receivers operated by users of the system. The system has been adopted by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) and implemented by some 40 authorities worldwide.

Requirements

The GLAs will work together to achieve IALA standards for broadcast availability, continuity, accuracy and integrity, by operating and maintaining their individual system components, and by liaising with regard to planned and unplanned system outages.

The GLA DGPS service is operated as an integrated network with Trinity House providing overnight monitoring of all transmission sites, and system co-ordination via a single System Director.

The GLAs will appoint a System Director to co-ordinate DGNSS activities and report to the Chief Executives regarding service performance.

The GLAs will jointly carry out monitoring, maintenance, periodic signal validation and both internal and external audit of the service provided.

The GLAs will review developments in the field of DGNSS in order to provide a service compatible with best international practice.

Each GLA may also enter into agreements with other National Administrations providing DGNSS services.

Service Level Parameters

1) Accuracy. The absolute horizontal accuracy should be better than 5m at the 95% probability level within the coverage area.

2) Integrity. The criterion for issuing an integrity warning to users will be an error of greater than 5m persisting for more than 20 seconds. The integrity warning is transmitted in the header of every message. The maximum time for issuing an integrity warning to the user from the time the integrity criterion is breached is 10 seconds.

3) Integrity Failure. An integrity failure of the system is defined as a failure to detect an out of limits situation within 10 seconds of its occurrence.

4) Availability. The GLAs provide a DGPS service in accordance with IALA recommended availability, based on overlapping coverage between adjacent stations. In the event of failure of one transmitter, service to the mariner is maintained from the adjacent stations. A DGPS service failure is considered to occur only when adjacent stations have failed. The GLAs have set a target for signal availability of their DGNSS Service of 99.8% level measured over two years.

5) Continuity. The probability that the service will continue to function for a period of any 15 minutes without failure is 99.97%, excluding downtime periods advertised in advance.

6) Coverage. Overlapping dual station coverage will be maintained at a signal strength of 50μV/m (±3dB) out to a minimum range of 50 nautical mile from the British and Irish coasts.

References

GLA Memorandum of Understanding regarding Differential Global Positioning Services, September 2000

GLA DGPS Operators' Manual

GLA DGPS Maintenance Manual

GLA DGPS System Managers' Manual

IALA Recommendation R-115, On the provision of maritime radionavigation services in the frequency band 283.5-315kHz in Region 1 and 285-325 kHz in region 2 and 3, December 1999

IALA Recommendation R-121, For the performance and monitoring of a DGNSS Service in the band 283.5 - 325 kHz, December 2004

IALA Recommendation R-135, The Future of DGNSS, Edition 2, December 2008

IALA Guideline 1016, On bilateral agreements and inter-agency memorandums of understanding on the provision of DGNSS services in the frequency band 283.5 325kHz, June 2001

15. RESILIENT POSITION, NAVIGATION & TIMING POLICY

Introduction

The GLAs consider it essential to provide a terrestrial alternative source of PNT (position, navigation and time) information to reduce the mariner's dependence on GNSS. As part of this requirement we will transmit an eLoran signal in conjunction with our European partners, initially on a trial basis.

Background

The GLA consider the provision of a complementary, internationally standardised back-up system to be essential to e-Navigation.

eLoran (enhanced Loran) is a low frequency terrestrial navigation system based on a number of transmission stations, which emit precisely timed and shaped radio pulses centred at the 100 kHz radio frequency. eLoran represents a move away from the hyperbolic Loran of old; it works in much the same way as GNSS, and is an independent and complementary system with no failure modes in common with GNSS.

Utilising improved Additional Secondary Factor (ASF) provision and a differential service eLoran can offer increased accuracy and integrity to provide backup and integrity for GNSS. A prototype service, in continuous operation at Harwich since 2008, is providing an accuracy of around 10m (95%). Better accuracy could be expected in the context of a more comprehensive European service.

eLoran allows users to retain GNSS levels of navigational safety when satellite services are disrupted. The GLAs have undertaken studies and trials to understand the effect of GPS jamming on safe navigation at sea. These trials have demonstrated the potential failure modes of GPS-fed onboard navigation systems and the potential for hazardously misleading information.

Requirements

The GLAs will work with international partners to establish viable long-term institutional and commercial arrangements for a European eLoran service. This includes encouraging and supporting the realisation of the European Radio-Navigation Plan (ERNP). It also includes seeking wider support from other user segments and public sector domains in order to share future costs on an equitable basis.

The GLAs will continue the operation of our trial eLoran service and aim to achieve eLoran initial operational capability (IOC) in a limited region of GLA waters by 2013. On achievement of IOC we will review European support with a view to advancing to FOC.

The GLAs will make the eLoran business case and results of GLA trials to regional and international stakeholders

The GLAs will monitor the development of other potential complementary and internationally standardised back-up systems that will enable the GLAs to maintain their existing service levels until 2025.

References

IALA Aids to Navigation Manual (Navguide), 2010 (Section 4.12)

16. AUTOMATIC IDENTIFICATION SYSTEM (AIS) POLICY

Introduction

AIS aids to navigation enhance the functionality of existing Aids to Navigation, improve monitoring, provide early marking of new dangers and meet the marking needs of specialised users.

Improved traffic analysis using AIS data will allow for more accurate assessment of the level of AtoN service required to meet the needs of the Mariner.

Background

AIS is a mandatory carriage requirement on all SOLAS ships over 300gt and ships engaged on international voyages. Other vessels in certain areas are also required to carry AIS and regulations further expanding mandatory carriage are under development.

AIS is an integral component of e-Navigation and is an evolving technology with regard to Aids to Navigation.

AIS has the potential to be a highly effective AtoN, however it's full potential onboard is still limited by the frequent absence of Radar/ECDIS overlay and the limitations of the Minimum Keyboard Display.

The GLAs recognise that a significant number of Marine Users are not required to carry or use AIS equipment, and will therefore be unable to benefit from AIS AtoN information. Marine Users may also choose to restrict the display of certain AIS signals.

Requirements

The GLAs will monitor developments in AIS technology and usage.

The GLAs will develop and implement a programme to install AIS on selected fixed and floating AtoN

The GLAs will monitor the performance and effectiveness of AIS:

- as an AtoN indicating identity, real time position and status information
- as a platform for enhanced services such as meteorological or hydrological information
- as an AtoN monitoring tool
- as a synthetic AtoN (where a nearby base station transmits the message but it appears to the mariner to have come from the aid)
- as a virtual AtoN (where there is no physical aid to navigation on the water but a message is transmitted from a shore station which appears on the ship's receiver as an AIS target).
- as a traffic analysis tool

The GLAs will work closely with the National Administrations to make AIS data and transmission facilities available to each other and to maximise the potential of AIS.

The GLAs will make use of AIS traffic analysis software to assist with Aid to Navigation provision, reviews and incident analysis.

The provision of AIS AtoN by other authorities requires the approval of the relevant GLA.

References

GLA Radio Navigation Plan, 2012
GLA AIS Manual
IALA Aids to Navigation Manual (Navguide), 2010   (Section 4.18)
IALA Recommendation A-124, On Automatic Identification System (AIS) Shore Station Networking Aspects relating to the AIS Service Ed1.3, December 2008
IALA Recommendation A-126, On the Use of the Automatic Identification System (AIS) in Marine Aids to Navigation Service, Edition 1.5, June 2011
IALA Recommendation A-123, On the Provision of Shore Based Automatic Identification Systems (AIS), Edition 2, June 2007
IALA Guideline 1050, On the Management and Monitoring of AIS Information, December 2005
IALA Guideline 1028, On the automatic identification system (AIS) - Volume 1 - Part 1 operational issues, December 2004
IALA Guideline 1029, On universal automatic identification (AIS) - Volume 1 - Part 2 technical issues, December 2002
IALA Guideline No. 1084, On Authorisation of AIS AtoN, Edition 1, June 2011

17. BUOYAGE POLICY

Introduction

The GLAs maintain some 760 floating aids to enhance the safety of navigation, by marking hazards and channels to improve spatial awareness.

Background

In recent years the number of buoy designs in GLA utilisation has been harmonised, to improve efficiency and inter-GLA maintenance. This leads to a standardised description of buoyage requirements as detailed below.

Requirements

The following nomenclature will be used across the GLAs describe GLA buoys. The generic nomenclature provides a broad categorisation suitable for general reports while the detailed nomenclature provides more precise description of buoys including the navigation and power systems.

Generic Nomenclature
The main buoy types are categorised as:
- Type 1 (Focal Plane over 5m)
- Type 2 (Focal Plane 3-5m)
- Type 3 (Focal Plane 2-3m)
- Type 4 (Focal Plane less than 2m)

Detailed Nomenclature

Buoy Types (GLA)	1, 2, 3 and 4
Power Systems	Solar (S), Wave (WAG), Wind (Wi) and Primary battery (B)
Range	3,4,5,7 and 9 nautical miles
Type/Application	North Cardinal (NC), South Cardinal (SC), East Cardinal (EC), West Cardinal (WC), Safe Water (SW), Port Llateral (PL), Starboard Lateral (SL), Modified Port Lateral (MPL), Modified Starboard Llateral (MSL), Isolated Danger (ID), Special Mark (SM), Emergency Wreck (EM)
Fittings	RACON (R), Automatic Identification System (AIS), Meteorological/ Hydrological Data (MH)

Example of Buoy Code

Type   Power   Range   Type   Fittings

2S5NC-R/AIS
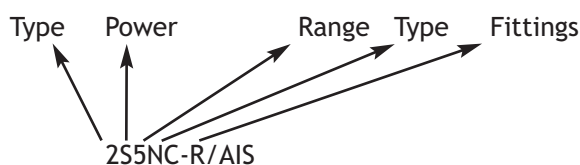
References

GLA Buoyage Manual

18. Monitoring of Aids To Navigation Policy

Introduction

To enable the provision of effective Aids to Navigation Service, it is the policy of the GLAs to monitor and control selected AtoN to fulfil each service's navigational, operational and legal requirements.

Background

Remote monitoring and control of distant or isolated AtoN can improve the quality of service provided by decreasing response times to a casualty. Monitoring can also allow for trend analysis of AtoN performance, allowing early prediction of failures, and hence precautionary attendance on site to prevent failures. It can also save on the cost of responding to what is later found to be a false outage report.

There is no specific requirement to monitor any AtoN by electronic means. When specifying the Navigational requirement of an AtoN in regard to availability it is sufficient to state the required availability in terms of IALA Category. The aim of IALA categorisation is to ensure an AtoN is available for the mariner for not less than the specified time eg. a Category 1 light must be genuinely physically operational for not less than 99.8% of the time.

How the availability is achieved is the responsibility of the delivery function of the respective organisation. This may involve a mixture of engineered reliability, maintenance regime, redundancy, remote monitoring, timely reliable user/observer reporting, along with timely fault rectification arrangements as appropriate. The overall cost both of installation and of response rectification must also be considered.

The delivery function part of the organisation must be able to demonstrate that the arrangements in place are suitable and sufficient and cost effective.

Requirements

The GLAs will progress the development of monitoring and control requirements for selected AtoN.

The GLAs will ensure that the most expedient reaction to a casualty can be progressed by having in place a monitoring system on significant AtoNs.

To further improve the safety of the mariner, selected fixed and major floating aids will have remote control to enable switch over to secondary AtoN provision or switch off if appropriate. Selection of secondary systems is in general automatic except for off station light systems for MFAs.

References

IALA Aids to Navigation Manual (Navguide), 2010 (Section 8.8.3)

IALA Guideline 1008, On Remote Monitoring and Control of AtoN, June 2009

RESEARCH AND RADIONAVIGATION

19. RESEARCH & RADIONAVIGATION POLICY

Introduction

The core business of the tri-GLA Research & Radionavigation (R&RNAV) directorate is the research and development of physical and radio aids to navigation (AtoN) and support systems and their integration to support the GLAs' mission to deliver a reliable, efficient and cost-effective AtoN service for the benefit and safety of all mariners.

Background

R&RNAV activities will address four areas:

- The delivery of projects aligned to the objectives stated in the GLAs' Strategic Plans as appropriate
- Interaction with the tri-GLA stakeholders (i.e. TH, CIL, NLB, DfT and DoT)
- External liaison with various entities (e.g. IALA, MCA, industry) to progress the objectives of the GLAs
- The development of technology strategy, together with the GLAs, for radionavigation and physical AtoNs and their integration

Requirements

- The GLA Chief Executives shall maintain a tri-GLA R&RNAV Directorate to be their source of research and a centre of excellence for radionavigation, lights, AtoN support systems and their integration;
- R&RNAV shall report to the GLA Chief Executives at least twice per annum;
- R&RNAV shall report to the Executive Chair of Trinity House for day-to-day matters;
- R&RNAV shall be a member of IGC3 (Navigation), IGC5 (Engineering) and IGC7 (Radionavigation);
- R&RNAV shall maintain its tri-GLA identity with the support of the GLA Chief Executives;
- R&RNAV shall be hosted by Trinity House and shall be supported by Trinity House's back-office functions (finance, human resources, IT, legal & risk, procurement);
- R&RNAV shall contract through Trinity House when required and shall ensure that the preamble to such contracts references "The General Lighthouse Authorities of the United Kingdom and Ireland's Research & Radionavigation Directorate contracting through The Corporation of Trinity House" or similar;
- There shall be an annual R&RNAV Policy Committee meeting attended by the GLA Chief Executives, R&RNAV Senior Management and appropriate GLA Directors. The R&RNAV Policy Committee shall approve the R&RNAV Work Plan for the current year including the strategic objectives;
- The Chair of the GLA R&RNAV Policy Committee will report the outcome of each meeting to the Joint Strategic Board;
- R&RNAV Strategic Objectives shall be stated in the Trinity House Strategic Plan as a minimum;
- R&RNAV shall publish the Work Plan for delivery of the R&RNAV strategic objectives;

Definitions & Acronyms

AIS	Automatic Identification System
ASF	Additional Secondary Factors
AtoN	Aid(s) to Navigation
CIL	Commissioners of Irish Lights
DfT	UK Department for Transport
DGNSS	Differential Global Navigation Satellite System
DGPS	Differential Global Positioning System
DLoran	Differential Loran
DTTAS	Irish Department of Transport, Tourism and Sport
ECDIS	Electronic Chart Display Information System
eLoran	enhanced LOng RANge Navigation (service)
ENC	Electronic Navigation Chart (to IHO standard)
ERNP	European Radio-Navigation Plan
GLA	General Lighthouse Authority
GNSS	Global Navigation Satellite System
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IGC	Inter-GLA Committee
IHO	International Hydrographic Organization
IMO	International Maritime Organization
IWRAP	IALA Waterways Risk Assessment Programme
JSB	Joint Strategic Board
JUCG	Joint User Consultative Group
LLA	Local Lighthouse Authority
LORAN	LOng RAnge Navigation (service)
MCA	UK Maritime and Coastguard Agency
NLB	Northern Lighthouse Board
OREI	Offshore Renewable Energy Installation(s)
PAWSA	Ports and Waterways Safety Assessment
PMSC	Port Marine Safety Code
R&RNAV	Research & Radionavigation
RYA	Royal Yachting Association
SOLAS	International Convention on Safety of Life at Sea
TH	Trinity House Lighthouse Service
UK	United Kingdom
USCG	United States Coast Guard

JNRP

POLICIES

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