

# General Lighthouse Authorities The United Kingdom and Ireland

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

## Risk Response Criteria

Risk  
Response

CRITERIA



IMPACT

RISK MANAGEMENT

WRECKS

DANGER

RESPONSE

## Glossary of Terms

---

AIS	Automatic Identification System
AtoN	Aid(s) to Navigation
CIL	Commissioners of Irish Lights
DfT	Department for Transport (UK)
GLA	General Lighthouse Authority
GLF	General Lighthouse Fund
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
IMO	International Maritime Organization
IRCG	Irish Coast Guard
MAIB	Marine Accident Investigation Branch
MoU	Memorandum of Understanding
MSA	Merchant Shipping Act
NLB	Northern Lighthouse Board
OREI	Offshore Renewable Energy Installation
RACON	RAdar BeaCON
RoI	Republic of Ireland
SOLAS	Safety of Life at Sea (IMO Convention)
SoS	Secretary of State
TH	Trinity House
TSS	Traffic Separation Scheme
UK	United Kingdom
WZ	UK Coastal Navigation Warning

### Image Credits

Front and back cover by Ian Cowe. Charts: © British Crown Copyright and/or database rights. Reproduced by permission of the Controller of Her Majesty's Stationery Office and the UK Hydrographic Office ([www.ukho.gov.uk](http://www.ukho.gov.uk)). AIS data reproduced by permission of the MCA.  
Page 84: Wreck of the Spinningdale © Maritime and Coastguard Agency.

## The General Lighthouse Authorities

---

The Merchant Shipping Acts have constituted three General Lighthouse Authorities for the UK and Ireland, these are:

- The Corporation of Trinity House, known as Trinity House  
- covering England, Wales, Channel Islands and Gibraltar
- The Commissioners of Northern Lighthouses, known as the Northern Lighthouse Board  
- covering Scotland and the Isle of Man
- The Commissioners of Irish Lights, known as Irish Lights  
- covering all of Ireland

The costs of the General Lighthouse Authorities (GLA) services are met from the General Lighthouse Fund (GLF), which derives its income mainly from light dues that are charged on commercial shipping calling at the ports of the United Kingdom and Ireland. In addition the Irish Government contributes to the GLF. Charges are in direct proportion to the costs of the services provided. This cost-recovery system is regulated by the Secretary of State for Transport who has a duty to ensure the effective management of the GLF to enable the GLA to provide adequate aids to navigation at the optimum cost. An advisory body, known as the Lights Advisory Committee, which is made up of shipping and ports' representatives, is consulted by the Department for Transport on certain financial matters relating to the GLF.

The GLAs have a shared mission

***“To deliver a reliable efficient and cost effective AtoN service for the benefit and safety of all mariners.”***



Trinity House



## Foreword

---

Maritime trade is essential to the economies of the United Kingdom and Ireland. There are some 158,000 vessel arrivals in UK and Irish ports each year, with goods totalling 340 million tonnes and departures with 193 million tonnes of exports. Twenty four million International passengers pass through UK and Irish ports each year whilst some 2.4 million goods vehicles are transported to mainland Europe.\*

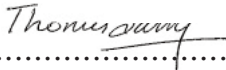
In addition, virtually all International sea traffic to and from Northern Europe passes through waters around the UK and Ireland before reaching this market.

It is therefore essential both for economic and safety reasons that the waters around the United Kingdom and Ireland are provided with measures that keep the sea routes open and safe, that meet the International commitments of the respective Governments and the recommendations of the appropriate International bodies.

To achieve this, the GLAs are tasked by Governments of the United Kingdom and Ireland to provide marine aids to navigation of the correct type and number consistent with the volume of traffic and degree of risk; to be able to maintain these aids to International standards, and be able to respond to the navigational dangers that from time to time are presented by wrecks or other newly discovered obstructions.

This Risk Response Criteria Document provides an up to date, balanced assessment of response requirements. For the first time modern traffic analysis tools have been used along with the principles of risk assessment to ensure proportionate response times to wrecks and new dangers.

Department of Transport, Tourism and Sport ..... 

Department for Transport ..... 

\* Combined 2010 UK & Ireland port statistics, source [www.cso.ie/en](http://www.cso.ie/en) and DfT



## Contents

	Page
FOREWORD	4
<b>1. INTRODUCTION</b>	<b>6</b>
1.1 Scope	6
1.2 Statutory Framework	7
1.3 International Recommendations and Guidelines	8
1.4 Risk Management	8
1.4.1 Definition of Impact Levels	9
1.4.2 Definition of Likelihood Levels	9
1.4.3 Quantifying Risk	10
<b>2. AID TO NAVIGATION CASUALTY</b>	<b>11</b>
2.1 Introduction	11
2.2 Availability of Aids to Navigation	11
2.3 Assigning IALA Category	12
2.4 Delivering Availability	12
2.5 Time to respond to an AtoN Casualty	12
<b>3. WRECK AND NEW DANGERS</b>	<b>14</b>
3.1 Wrecks	14
3.1.1 Requirements	14
3.2 New Dangers	15
3.2.1 Requirement	15
<b>4. INITIAL RISK ASSESSMENT</b>	<b>16</b>
<b>5. TIME OF RESPONSE TO WRECKS AND NEW DANGERS</b>	<b>17</b>
<b>ANNEX A</b>	<b>21</b>
<b>ANALYSIS ALL AREAS 1- 23</b>	<b>37</b>
<b>6. OUR COMMITMENT TO USERS</b>	<b>85</b>

The Risk Response Criteria is a supporting document of the  
GLA's Strategy 2025 & Beyond.



# 1. Introduction

---

## 1.1 Scope

The General Lighthouse Authorities (GLA) Risk Response Criteria is the GLA's policy document covering their response to Aids to Navigation (AtoN) Casualties, Wrecks and New Dangers. Differentiating between the requirements for AtoN and wrecks/new dangers, this risk based assessment has been prepared by the GLAs of the United Kingdom (UK) and Ireland for their guidance and to inform their users, partners and stakeholders.

## 1.2 Statutory Framework

The Governments of the UK and Ireland are signatories to the International Maritime Organization's Safety of Life at Sea (SOLAS) Convention, which states:

1. 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.
2. In order to obtain the greatest possible uniformity in aids to navigation, Contracting Governments undertake to take into account the international recommendations and guidelines when establishing such aids.
3. Contracting Governments undertake to arrange for information relating to aids to navigation to be made available to all concerned. Changes in the transmissions of position fixing systems which could adversely affect the performance of receivers fitted in ships shall be avoided as far as possible and only be effected after timely and adequate notice has been promulgated.

Responsibility and authority for this SOLAS commitment are given to the GLAs through the various Merchant Shipping Acts (MSAs).

The MSAs also lay requirements upon the 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 UK Secretary of State (SoS) powers (when the convention is ratified) 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 a MoU between the GLAs and SoS.

## 1.3 International Recommendations and Guidelines

The SOLAS Convention specifically refers Contracting Governments to the appropriate recommendations and guidelines of IALA and SN/Circ.107 - Maritime Buoyage System.

The GLAs use these recommendations and guidelines to ensure they meet international standards and deliver a homogeneous AtoN system around the UK and Ireland.

## 1.4 Risk Management

The GLAs use IALA risk management techniques when identifying the AtoN requirement (type location etc). 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.

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

1. Identify risks/hazards;
2. Assess risks;
3. Specify risk control options;
4. Make a decision;
5. Take action;
6. Monitor and review.

The GLAs ensure that the appropriate balance between the requirement for a quantitative assessment is combined with a qualitative approach using the principles of 6 steps to Risk Management.

The response to a Wreck, New Danger or AtoN Casualty is considered on the basis of the degree of risk posed. This can be assessed, modelled or calculated and may be described in terms of impact and likelihood.

### 1.4.1 Definition of Impact Levels

Grounding or collision as a consequence of AtoN Casualty, New Danger or Wreck may potentially result in one or more of the following:

	Safety	Environmental	Finance
Severe (3)	Multiple (>10) loss of life	Major pollution incident	Loss or damage of significant vessel Cost > £10M
Moderate (2)	Possible loss of life on a limited scale	Limited pollution incident	Major damage to large vessel/probable loss of small vessel
Minor (1)	Unlikely to result in loss of life	Little or no pollution	Minor damage to large vessel/possible loss of small vessel Cost <£500k

### 1.4.2 Definition of Likelihood Levels

Noting current and predicted traffic patterns, the probability of a grounding or collision as a consequence of AtoN Casualty, New Danger or Wreck is assessed as:

High (3)	This type of incident has occurred in the past and may be repeated, or it is assessed as likely
Medium (2)	Possible
Low (1)	A remotely possible occurrence

### 1.4.3 Quantifying Risk

Combining the impact and likelihood of an event generates a risk score.

IMPACT	Severe 3	3	6	9
	Moderate 2	2	4	6
	Minor 1	1	2	3
		Low 1	Medium 2	High 3
		LIKELIHOOD		

	Unacceptable Level of Risk
	Acceptable Level of Risk with Caution
	Acceptable Level of Risk

## 2. Aid to Navigation Casualty

### 2.1 Introduction

The SOLAS convention requires contracting governments to provide marine aids to navigation consistent with the volume of traffic and degree of risk.

Responsibility and authority are given to the GLAs through the Merchant Shipping Acts to undertake the superintendence and management of all lighthouses, buoys and beacons within their respective areas. The GLAs are (through the SOLAS convention) required to adhere to the international system and standards developed and managed by IALA.

### 2.2 Availability of Aids to Navigation

Recognising that no AtoN can be available 100% of the time IALA lays down performance targets for AtoN under the heading of Availability.

Availability is defined as:

**“the probability that an aid to navigation or system of aids to navigation as defined by the Competent Authority is performing its specified function at any randomly chosen time. This is expressed as a percentage of total time that an aid to navigation or a system of aids to navigation should be performing their specified function”**  
(IALA Navguide)

IALA recommends availability categories for AtoN as follows:

- Category 1: Aids considered to be of primary navigational significance. With availability of at least 99.8%.
- Category 2: Aids considered to be of navigational significance. With availability of at least 99.0%.
- Category 3: Aids considered to be of less navigational significance than Categories 1 or 2. With availability of at least 97.0%.

## 2.3 Assigning IALA Category

The responsible GLA assigns an availability category to each of its AtoN on the basis of risk. During the Risk Assessment process used to determine the need for an AtoN or at the time of the Five Yearly AtoN review the navigational significance is determined and category assigned or reviewed.

## 2.4 Delivering Availability

Availability of an AtoN can be ensured by one or more of the following:

- Robust engineering;
- Equipment redundancy;
- Monitoring;
- Response arrangements for AtoN casualties.

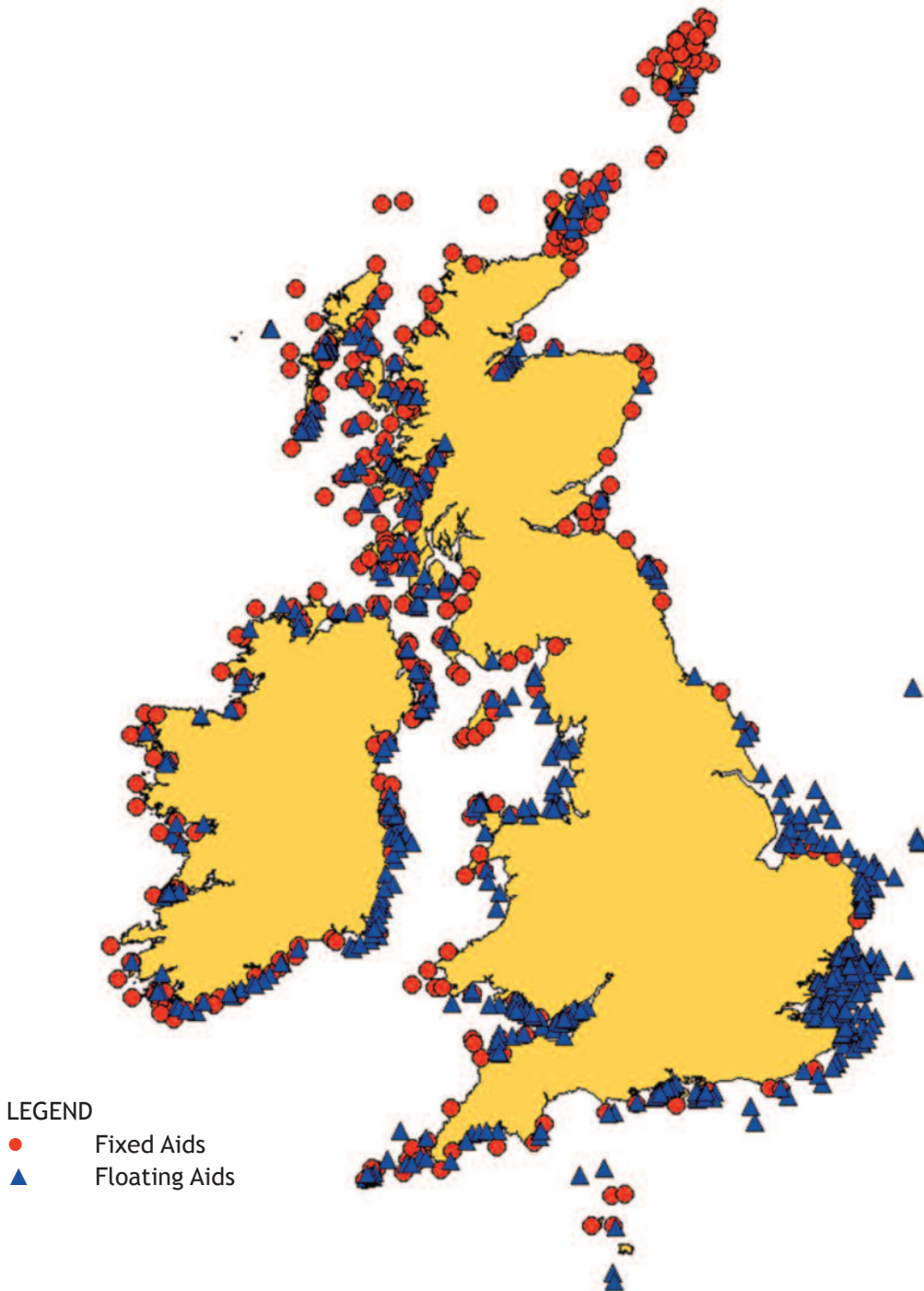
The responsible GLA determines the best balance to ensure availability is achieved, allocating resources to ensure availability targets are met.

## 2.5 Time to Respond to an AtoN Casualty

The time of response for AtoN Casualties is separate from and entirely unrelated to Wreck and New Dangers. Each GLA must ensure their AtoN meet the availability target prescribed. Taking into account the necessary means of access (road, air, local boat and GLA tender) and the distribution of AtoN of each category resources must be provided to meet these targets. The level of resource will be informed by the AtoN availability record of each AtoN and historic frequency of response. The mariner and marine bodies will be informed through Navigation warning/WZ of the casualty as soon as it is identified and subsequently once it is repaired.



## GLA Aids to Navigation



## 3.

## Wreck and New Dangers

---

### 3.1. Wrecks

Where any vessel becomes a wreck as defined by the Merchant Shipping Acts and there is no harbour or conservancy authority having power to raise, remove or destroy the vessel, the General Lighthouse Authority for the place in or near which the vessel is situated shall, if in the authorities opinion the vessel is, or is likely to become, an obstruction or danger to navigation:

- take possession of, and raise, remove or destroy the whole or any part of the vessel;
- mark the vessel until it is raised, removed or destroyed.

When a wreck as defined by the Wreck Removal Convention Act 2011 occurs and when directed by the SoS, or his representative, the General Lighthouse Authority for the place in or near which the wreck is situated shall as directed:

- light or buoy the ship or part thereof until it is raised, removed or destroyed;
- take possession of, and raise, remove or destroy the whole or any part of the ship.

#### 3.1.1. 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, and 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), other floating AtoN, racons and AIS as appropriate.

The GLAs will ensure that appropriate action is taken to inform the Mariner through Navigation Warnings - Notices to Mariners and other appropriate means via the relevant authorities.

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

## 3.2. NEW DANGERS

### 3.2.1 Requirement

When a GLA learns of a previously unknown hazard, or obstruction which may impinge upon the safety of navigation (new shoal or rock or other obstruction with an unknown clearance) they shall determine whether the hazard falls within the jurisdiction of a harbour or conservancy authority. If outside a harbour or conservancy area the GLA for the place in or near which the hazard or obstruction is situated shall undertake an initial risk assessment with a view to forming an early opinion 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 take such actions as the risk assessment identifies as necessary.

## 4.

## Initial Risk Assessment

In the case of wrecks and new dangers an initial risk assessment should be undertaken by a competent person within the GLA for the place in or near which the wreck or new danger is situated. This risk assessment is used to determine the level of response required including whether GLA vessels should be deployed.

This assessment should be quantitative and qualitative in nature considering a number of factors and using the GLA definitions of impact and likelihood.

Factors to be considered:

- Nature of incident (wreck/new shoal etc);
- Location;
- Jurisdiction;
- Whether a competent survey has been provided;
- Stakeholder views;
- Volume of traffic;
- Type of vessels involved;
- Size of vessel involved and the likely reduction in depths;
- Depth of water;
- Maximum draught of vessels that use the area;
- Speed of vessels that use the area;
- Proximity to ports/fairways/TSS;
- Amount of available information.

From this assessment the competent person will determine an operational response consisting of one or more of the below:

- None;
- Charting;
- Promulgation to the mariner and marine bodies by Navigational Warning, WZ;
- Virtual AIS;
- Vessel tasking from the tri GLA fleet or elsewhere to
  - Locate/confirm position;
  - Survey including ascertaining clearance depth;
  - Mark - physical and/or electronic;
  - Act as Guard vessel.

As more information becomes available the risk assessment will be reviewed and further action determined which may include:

- Permanent marking;
- Charting;
- Further Promulgation to the mariner and marine bodies, by Navigation warning;
- Taking possession;
- Removal or destruction;
- Further periodical survey.

## 5. Time of Response to Wrecks and New Dangers

The GLAs have finite resources for response to wrecks and new dangers and the waters around the British Isles have varying volumes of traffic and degree of risk. To ensure an appropriate distribution of resources, and speed of response Response Criteria\* are allocated:

- Up to 6 hours for areas of unacceptable risk with the highest quantified risk score of 9;
- Up to 12 hours for areas of unacceptable risk with lower quantified risk score of 6;
- Up to 24 hours for areas with acceptable level of risk with caution;
- Plus 24 hours for areas of acceptable level of risk.

This ensures:

- The ability to respond within the required timeframe;
- GLAs maintain resource distribution to respond.

To identify areas with highest risk and therefore the fastest response requirement, the GLAs undertook a mapping and risk assessment exercise using the GLA definitions for risk assessment.

High impact locations where a wreck or new hazard would cause an obstruction or danger to navigation were identified. Areas of shallow water (less than 30 metres) where the smaller and more frequent wrecks could cause an obstruction were overlaid with traffic density. Location of ports and harbours, together with existing and planned off shore development were assessed.

Likelihood of a wreck or new hazard causing a further collision or grounding was assessed using traffic volume.

Marine Accident Investigation Branch (MAIB) data for groundings and vessel loss distribution was analysed but proved inconclusive regarding significant areas of increased frequency.

Based on these risk assessments time of response was allocated.

*\*Time of response is measured from time of decision to send a vessel to arrival on scene and is based on moderate sea conditions where the vessel can attain service speed.*

## Wreck and New Danger Response Risk Assessment

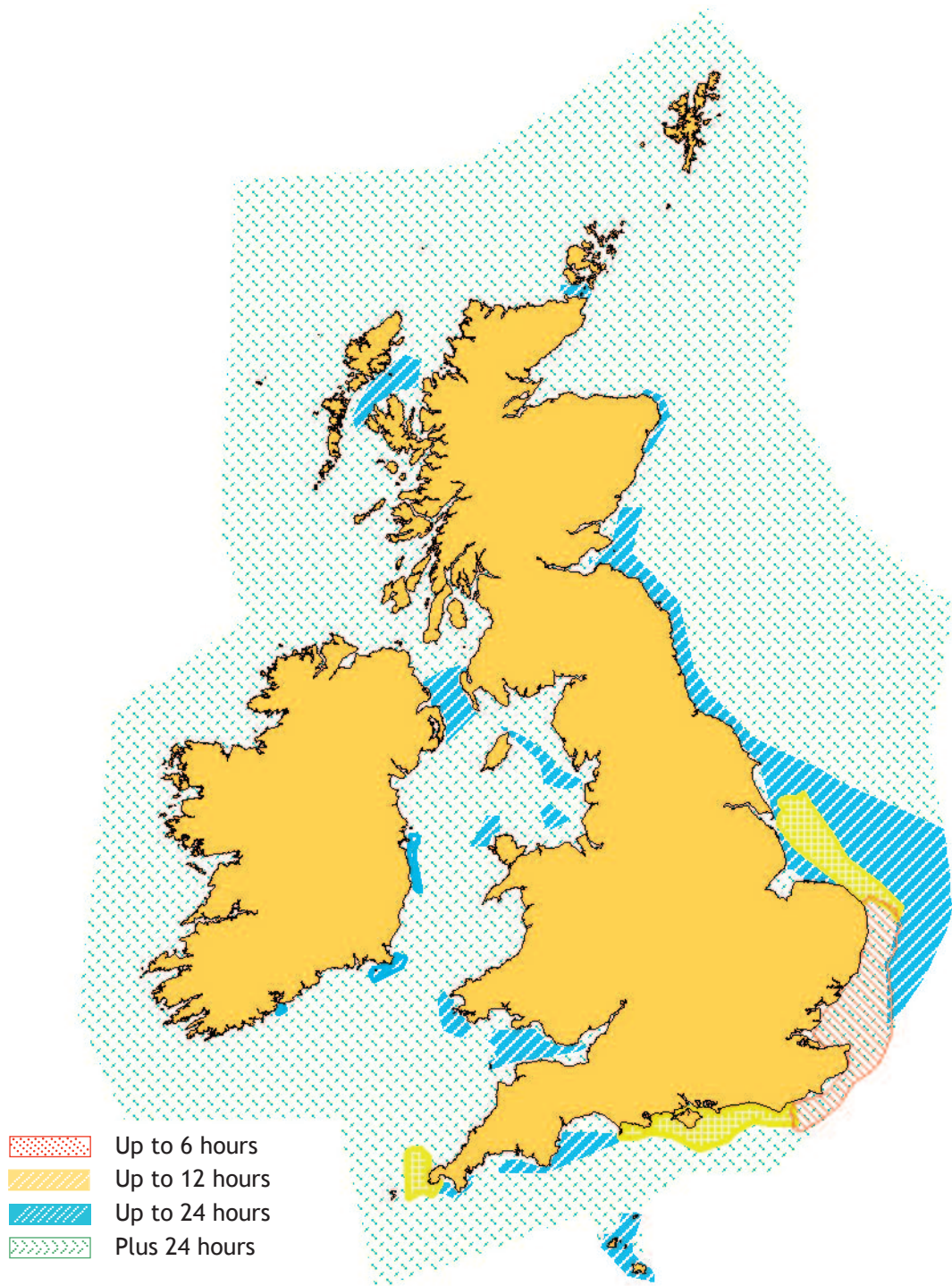
Area of Interest No.	Location Description	Traffic Volume	Complexity of area (Ports Fairways/TSS etc)	Level of congestion/conflict	Proportion of high consequence vessels or combination of vessel types	Daily Vessel tracks	A/B Split	Proportion of deep draught in relation to water depth	Impact of striking Wreck/new danger	Likelihood of striking wreck/new danger	Risk	Response	Remarks
					Type								
1	North Channel	High	Medium	Medium	Medium	224	79/21	Medium	3	1	3	24	Significant ferry traffic interacting with through traffic. Depth in crossing area mitigates risk.
2	Minch	Low/Medium	Medium	Medium	Medium	80	64/36	High	2	2	4	24	Complicated topography and shallows. Lifeline ferry services. Occasional routing transgressions.
3	Pentland Firth	Medium	Medium/Low	Low	Medium	182	73/27	Low	2	2	4	24	Traffic count includes some harbour ferries. Strong tidal flow, mainly deep water, but strategic route.
4	Peterhead	High	Medium	Medium	Medium	368	91/9	Low	2	2	4	24	Area includes 3 ports, significant oil & gas vessel movements. 30 metre contour close to shore. Key coastal waypoints.
5	Firth of Forth	Low/Medium	Medium	Low	High	81	88/12	Low	3	1	3	24	Key UK port with major route to continent to SE. 24 hour area takes into account significant renewable developments planned.
6	Humber	High	High	Medium	Medium	270	99/1	High	2	3	6	12	Complicated bathymetry and routes throughout. Significant renewable developments.
7	Cromer	Medium	Low	High	Medium	185	96/4	High	2	3	6	12	Congestion high due to bathymetry and increase in offshore renewables in shallow waters.
8	Yarmouth	High	High	High	High	913	92/8	High	3	3 becoming 2 in North	9 becoming 6 in North	6 becoming 12 in North	Complicated traffic density and patterns with shallow depths, shoals and renewables, planned renewable sites further increasing risk.
9	Dover Strait	High	High	High	High	461	89/11	High	3	3	9	6	14% of vessels > 9m draught. Significant proportion of passenger and tanker vessels.

## Wreck and New Danger Response Risk Assessment

Area of Interest No.	Location Description	Traffic Volume	Complexity of area (Ports/Fairways/TSS etc)	Level of congestion/conflict	Proportion of high consequence vessels or combination of vessel types	Daily Vessel tracks	A/B Split	Proportion of deep draught in relation to water depth	Impact of striking Wreck/new danger	Likelihood of striking wreck/new danger	Risk	Response	Remarks
10	Dover Approaches	High	High	Medium	High	336	90/10	High/Medium	3	3 becoming 2 in West	9 becoming 6 in West	6 becoming 12 in West	Gradually increasing depths and reduced conflicts in west of area.
11	Outer Solent	High	High	Medium	High	281	71/29	Medium	3	2	6	12	Traffic is less congested than area 9/10, but shallow depth increases vessel/wreck collision. High leisure component.
12	Western Solent	Medium	Medium	Medium	Medium	187	27/73	Medium	3	2	6	12	Area extends Westwards towards Portland Bill due to traffic density. High fishing and leisure component.
13	Start Point	Medium	Low	Medium	Medium	125	49/51	Low	2	2	4	24	Deep draught vessels in Torbay increases risk.
14	Lizard	Medium	Low	Low	Medium	123	70/30	Low	2	2	4	24	24 hour response area close inshore. Lower response outside. High volume of small craft.
15	Lands End	Medium	High	High	Medium	110	65/35	Low	3	2	6	12	Topography and TSS increase risk.
16	Milford Haven Approach	Medium	Medium	Medium	Medium	149	74/26	Medium	3	1	3	24	West of Small deep water decreases risk. High risk inshore. Laden tankers.
17	The Skerries	Low/Medium	Medium	Low	Medium	83	83/17	Low	3	1	3	24	Crossing traffic from Holyhead. East/West conflict in North.
18	Morcombe Bay	Medium	Medium	Medium	Medium	186	94/6	Medium	2	2	4	24	North & South of zone busy port approaches. High renewables component planned.
19	Dublin Bay	Medium	Medium	Medium	Medium	194	80/20	Medium	3	1	3	24	Burford Bank is port limit. 24 hour in Dublin Bay and inside banks from Codling.
20	Tuskar	Medium	Medium	Medium	Medium	150	73/27	Medium	3	1	3	24	South Shear increased risk. Deep water TSS. 24 Hours only west of Tuskar.
21	Cork Approaches	Low/Medium	Medium	Low	Medium	87	62/38	Low	2	2	4	24	Lower risk South of Cork buoy. Higher risk from buoy to harbour limit.
22	Shannon	Low	Low	Low	Low	44	84/16	Low	2	1	2	24+	Harbour limit is Loop Head. Low risk beyond.
23	Galway Bay	Low	Low	Low	Medium	45	58/42	Low	2	1	2	24+	Heavy seasonal passenger traffic.



## Response Areas





## ANNEX A

## Purpose

The purpose this Annex is to detail the method, data and results obtained when assessing Wreck and New Danger response times for the UK and Ireland. It makes use of the analysis of AIS data provided to the GLAs via the MCA and IRCG AIS network, Geographic Information Systems (GIS) for the purposes of charting, portrayal and data handling tools alongside the Risk Assessment process.

## Methodology

AIS data is provided real time from the MCA and Irish Coast Guard to the GLAs covering the whole of the UK and Ireland. The data is stored by the GLAs to provide the basis for analysis of traffic volumes over days, weeks, months or even years. The data covers all SOLAS vessels over 500 gross tonnes or other vessels which have mandatory carriage requirement for a type A transponder and all leisure, fishing or sub 500 gross tonnes vessels which voluntarily carry, in growing numbers, either type A or type B transponders. Consequently, it is an accurate measure of the volume and types of SOLAS traffic around the UK and Ireland and an increasingly good indicator of volumes of other vessels.

Previous experience in using AIS analysis tools has shown that whilst long periods of data are useful to gather all vessel types and operating drafts, there are not significant differences month to month in terms of volume of traffic. When determining risk a shorter period of 1 day's analysis (the busiest in any one month) provides a better indication of routes used and degree of risk at any one moment in time.

For the purposes of this exercise analysis was done by number of vessel tracks rather than unique vessels. This therefore means that multiple transits by the same vessel are counted e.g. Dover/Calais ferry. This is necessary to determine the risk of a vessel striking a new danger or wreck whereas unique vessels would be a better determination of vessel to vessel collision.

The tools used by the GLA do not calculate risk but are utilised by competent and professional individuals to make qualitative assessments. Information from the Intereg project ACCSEAS has been used for part of the area as corroboration.

One limitation was identified in that when each vessel status changes e.g. anchor to underway is counted as a new track. This was judged only to be an issue in port approach areas where such changes occur and that it had negligible impact on risk assessment results due to the qualitative approach taken.

## ANNEX A

1. Twenty eight consecutive days data (discounting breaks in data supply) for summer 2012 was obtained, portrayed and analysed (Fig 1 and 2 below).



Fig 1. All areas traffic 28 days Summer 2012

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	37761	8536	46297	14%	3%	17%
Reserved	207	0	207	0%	0%	0%
Wing in Ground	177	0	177	0%	0%	0%
Fishing	22387	10903	33290	8%	4%	12%
Recreation	1594	23945	25539	1%	9%	9%
Special Operation	11432	2459	13891	4%	1%	5%
High Speed Craft	6997	51	7048	3%	0%	3%
Special Craft	18231	4960	23191	7%	2%	9%
Passenger Ship	16763	1839	18602	6%	1%	7%
Cargo Ship	62031	519	62550	23%	0%	23%
Tanker	26571	242	26813	10%	0%	10%
Other	13626	728	14354	5%	0%	5%
Total	217777	54182	271959	80%	20%	100%

Fig 2. All areas traffic 28 days Summer 2012

2. Whilst this data is useful to give an indication of vessel tracks around the UK and Ireland and the areas of waters utilised, it is a poor indication of vessel volume. Therefore the data was further filtered.

From the 28 days of data utilised the busiest day (Fig 3) - that with the most tracks of vessels was selected.

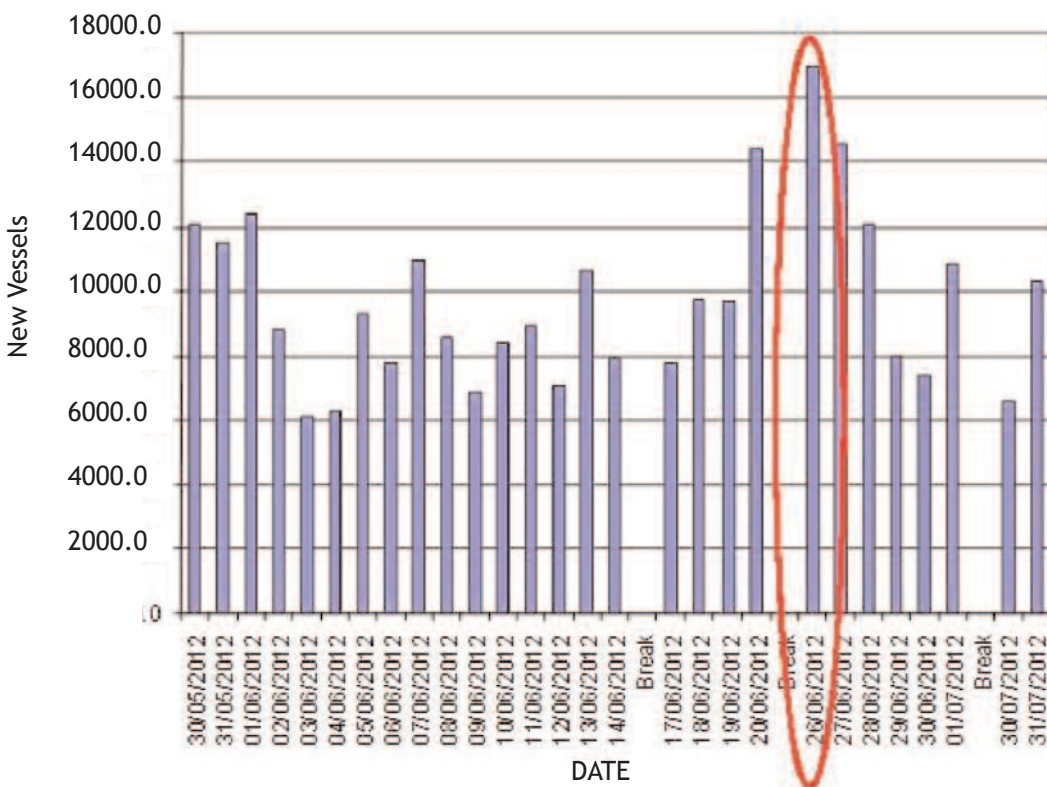


Fig 3. All Areas Traffic 28 Days Summer 2012

## ANNEX A

3. Data for 26th June 2012 was analysed and portrayed (Fig 4): This data set provides a good indication of traffic density, impacts of land on traffic patterns versus density, areas of complicated traffic patterns or distribution and conversely areas with straightforward traffic distribution.



Fig 4. One Day Traffic (26th June) Summer 2012

4. To this basic portrayal was added a depth contour within which there is a higher potential of striking a Wreck or New Danger (Fig 5 and 6). Given that from MAIB data it can be seen that the majority of sinkings around the UK and Ireland are fishing vessels, leisure craft and smaller SOLAS vessels, it was assessed that within the 30 metre contour this type of wreck could have an impact on other vessels in the area as would new dangers. In deeper water they would have little or no impact whilst larger wrecks were too infrequent to consider.



Fig 5. 30 Metre Contour





Fig 6. One Day of AIS Traffic with 30 Metre Contour

5. To give a numerical indication of volume of traffic the UK and Ireland was split into 3 areas using existing AtoN Review Areas. Broadly similar in size these areas once analysed provide for an initial consideration of the level of risk from traffic volume. Areas which required further investigation to clarify, traffic patterns, bathymetry, vessel types etc were identified.

### Area 1 to 8 Scottish Waters



Fig 7. Areas of Interest to Investigate Further

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	480	69	549	13%	2%	15%
Reserved	5	0	5	0%	0%	0%
Wing in Ground	5	0	5	0%	0%	0%
Fishing	425	175	600	12%	5%	17%
Recreation	22	137	159	1%	4%	4%
Special Operation	167	23	190	5%	1%	5%
High Speed Craft	16	0	16	0%	0%	0%
Special Craft	419	14	433	12%	0%	12%
Passenger Ship	235	27	262	6%	1%	7%
Cargo Ship	704	11	715	19%	0%	20%
Tanker	214	0	214	6%	0%	6%
Other	466	4	470	13%	0%	13%
Total	3158	460	3618	87%	13%	100%

Fig 8. Area 1 to 8, One Day Traffic Data (26th June)

## ANNEX A

### Area 9 to 11 East and South coast of England



Fig 9. Areas of interest to investigate further

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	457	135	592	8%	2%	11%
Reserved	2	0	2	0%	0%	0%
Wing in Ground	1	0	1	0%	0%	0%
Fishing	274	90	364	5%	2%	7%
Recreation	39	273	312	1%	5%	6%
Special Operation	288	50	338	5%	1%	6%
High Speed Craft	276	0	276	5%	0%	5%
Special Craft	318	65	383	6%	1%	7%
Passenger Ship	266	8	274	5%	0%	5%
Cargo Ship	1824	4	1828	33%	0%	33%
Tanker	915	8	923	17%	0%	17%
Other	219	17	236	4%	0%	4%
Total	4879	650	5529	88%	12%	100%

Fig 10. Area 9 to 11, One Day Traffic Data



Area 12 to 21 South West England, Irish Sea and coast of Ireland

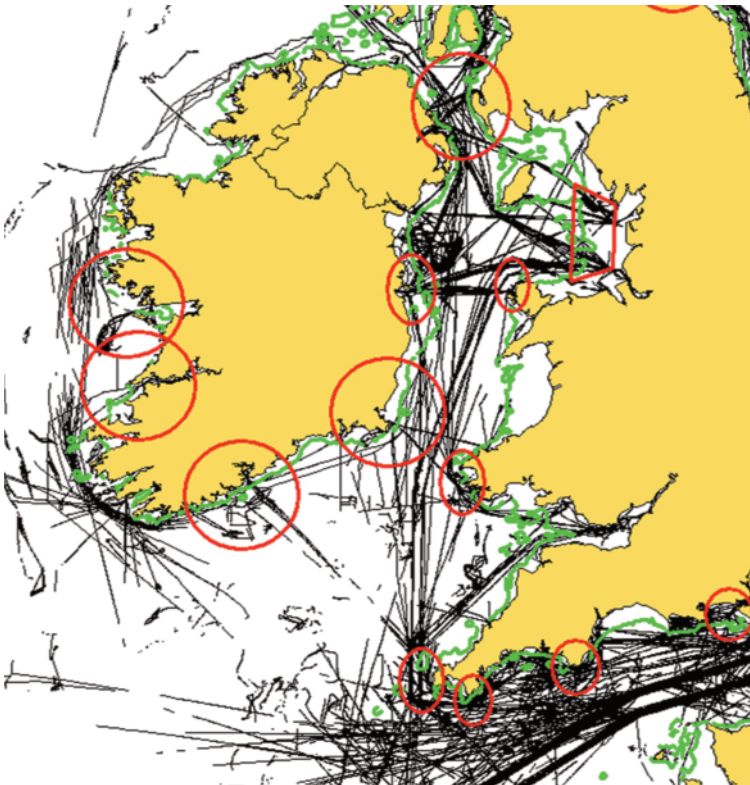


Fig 11. Areas of interest to investigate further

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	372	72	444	11%	2%	13%
Reserved	1	0	1	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	600	285	885	17%	8%	25%
Recreation	13	299	312	0%	9%	9%
Special Operation	133	58	191	4%	2%	5%
High Speed Craft	63	0	63	2%	0%	2%
Special Craft	171	48	219	5%	1%	6%
Passenger Ship	218	22	240	6%	1%	7%
Cargo Ship	703	7	710	20%	0%	20%
Tanker	271	0	271	8%	0%	8%
Other	135	12	147	4%	0%	4%
Total	2680	803	3483	77%	23%	100%

Fig 12. Area 11 to 21, One Day Traffic Data

## ANNEX A

- The Analysis of traffic data showed that the East and South Coast of England has the largest volumes of traffic with some 5500 vessel tracks versus some 3500 vessel tracks each in Scottish waters and the Southwest/Irish sea areas. The analysis also identified twenty three areas that required further investigation (Fig 13).



Fig 13. Areas of Interest that required further investigation

7. For each area of interest the process of determining the busiest day within the 28 day period for that area was repeated. Using the GIS Analysis Tool the number of vessel tracks passing through the area (bordered by the red ellipse Fig 14) were determined.

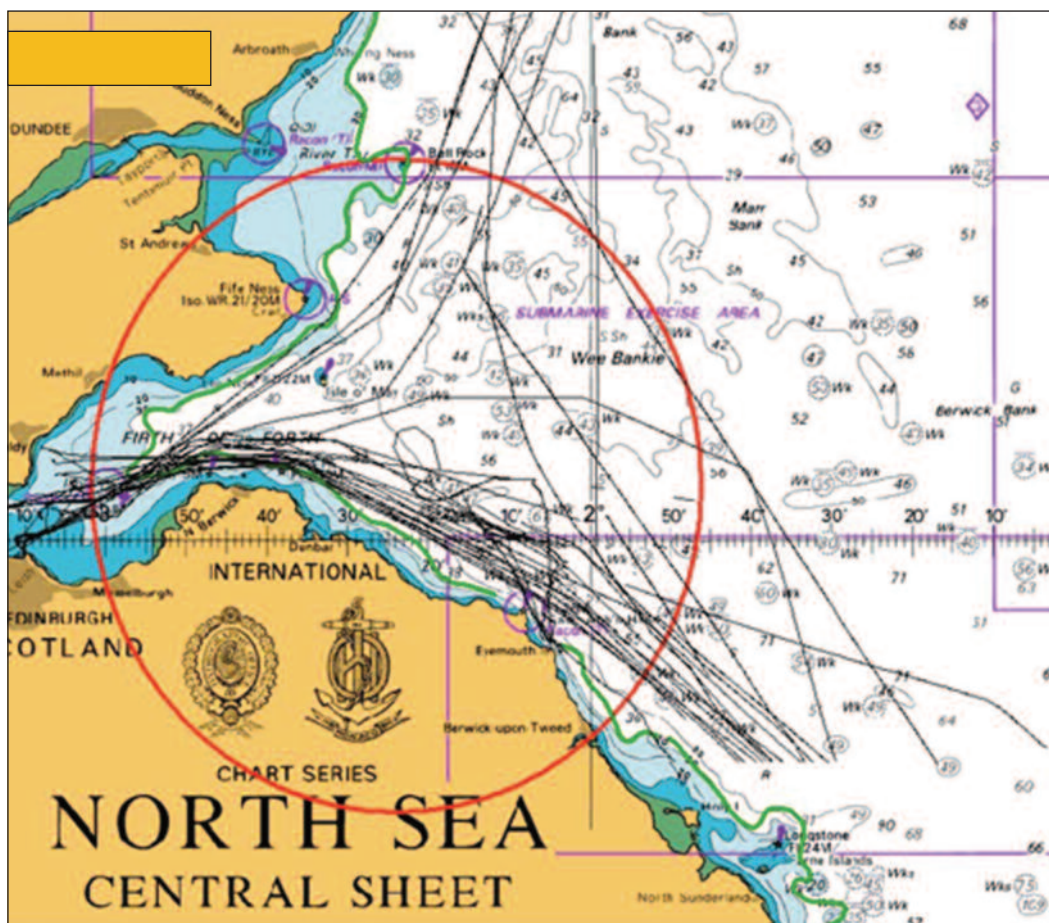


Fig 14. Example Area of Interest

## ANNEX A

8. The busiest day's traffic was tabulated (Fig 15) and a further report by draft (key indication of likelihood of striking a wreck) generated. To ensure deep draft vessels were not missed a further report by draft was generated for the 28 day period.

### Interest Area 5 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	2	1	3	2%	1%	4%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	1	7	8	1%	9%	10%
Recreation	0	2	2	0%	2%	2%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	3	0	3	4%	0%	4%
Passenger Ship	0	0	0	0%	0%	0%
Cargo Ship	52	0	52	64%	0%	64%
Tanker	13	0	13	16%	0%	16%
Other	0	0	0	0%	0%	0%
Total	71	10	81	88%	12%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	13	16%
< 4	3	4%
4 to 6	27	33%
6 to 9	36	44%
9 to 12	0	0%
> 12	2	2%
Total	81	100%

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	271	18%
< 4	98	7%
4 to 6	465	31%
6 to 9	544	36%
9 to 12	79	5%
> 12	39	3%
Total	1496	100%

Fig 15.



9. Any relevant developments for offshore renewable energy were also applied to the GIS to ascertain whether any constraints within the life of the assessment would have an impact.

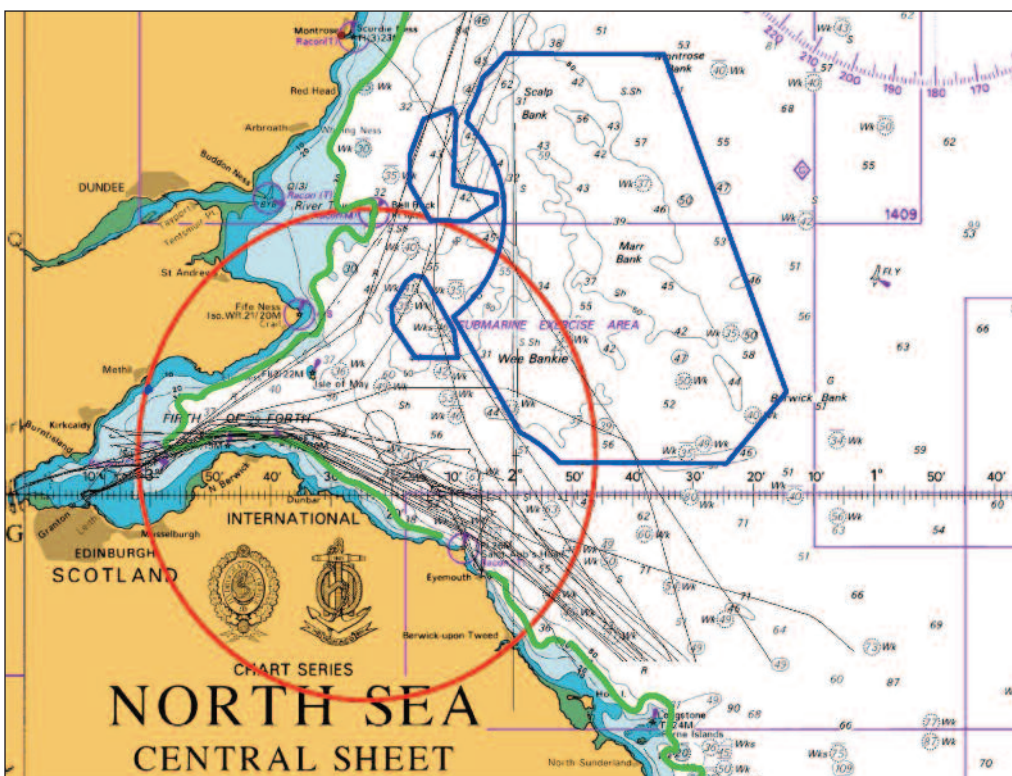


Fig 16. Example of OREI proposals overlaid

10. A risk assessment for each area of interest was undertaken utilising the AIS information, chart, local knowledge of the assessors and known future developments. Through the risk assessment a time of response was assigned to the area of interest and surrounding area. The resultant times of response were charted by the assessors using the GIS to provide a graphical representation (Fig 17 and 18). Efforts were made to ensure the response times were proportionate across the UK and Ireland to the volume of traffic and degree of risk.

## Response Areas

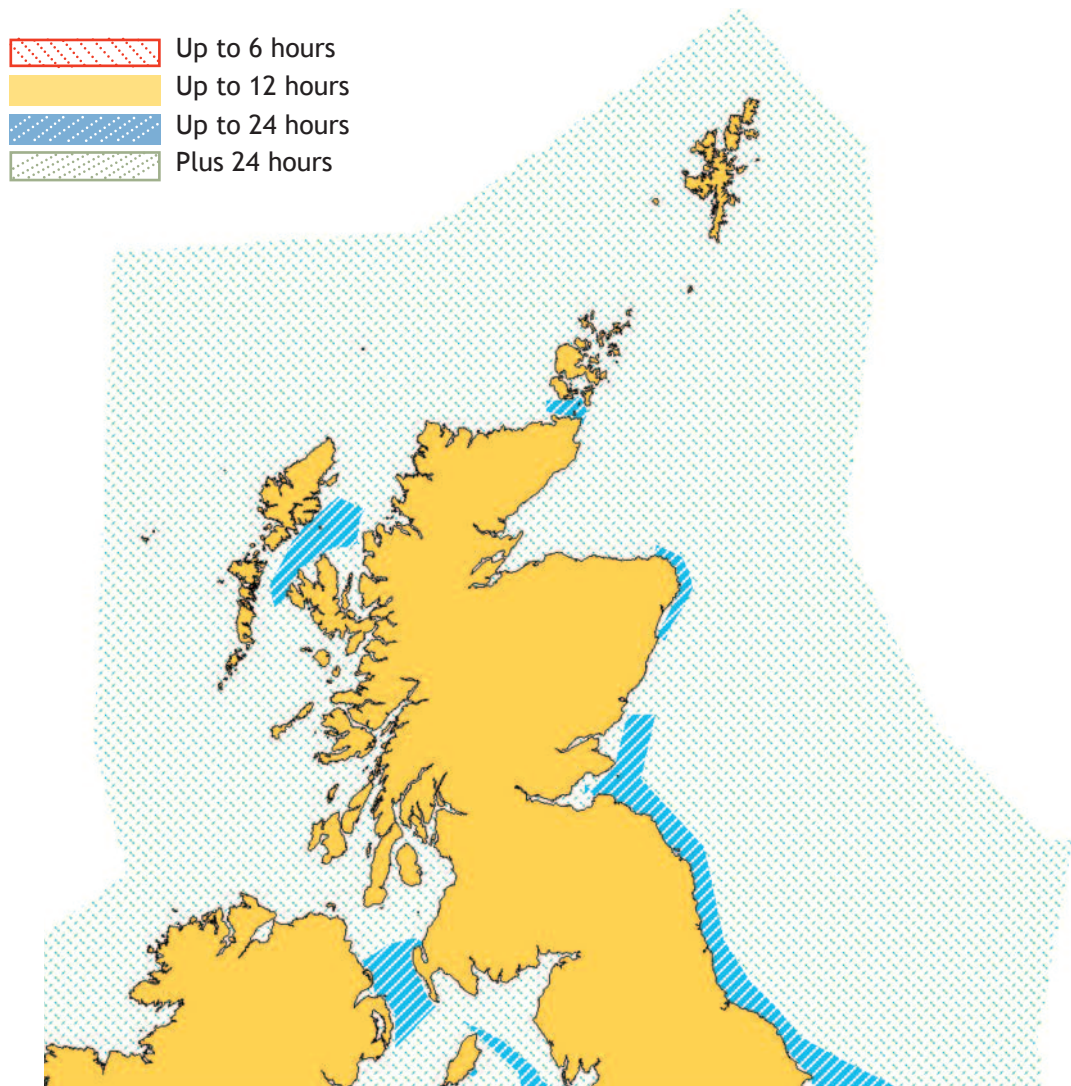


Fig 17.

## Response Areas

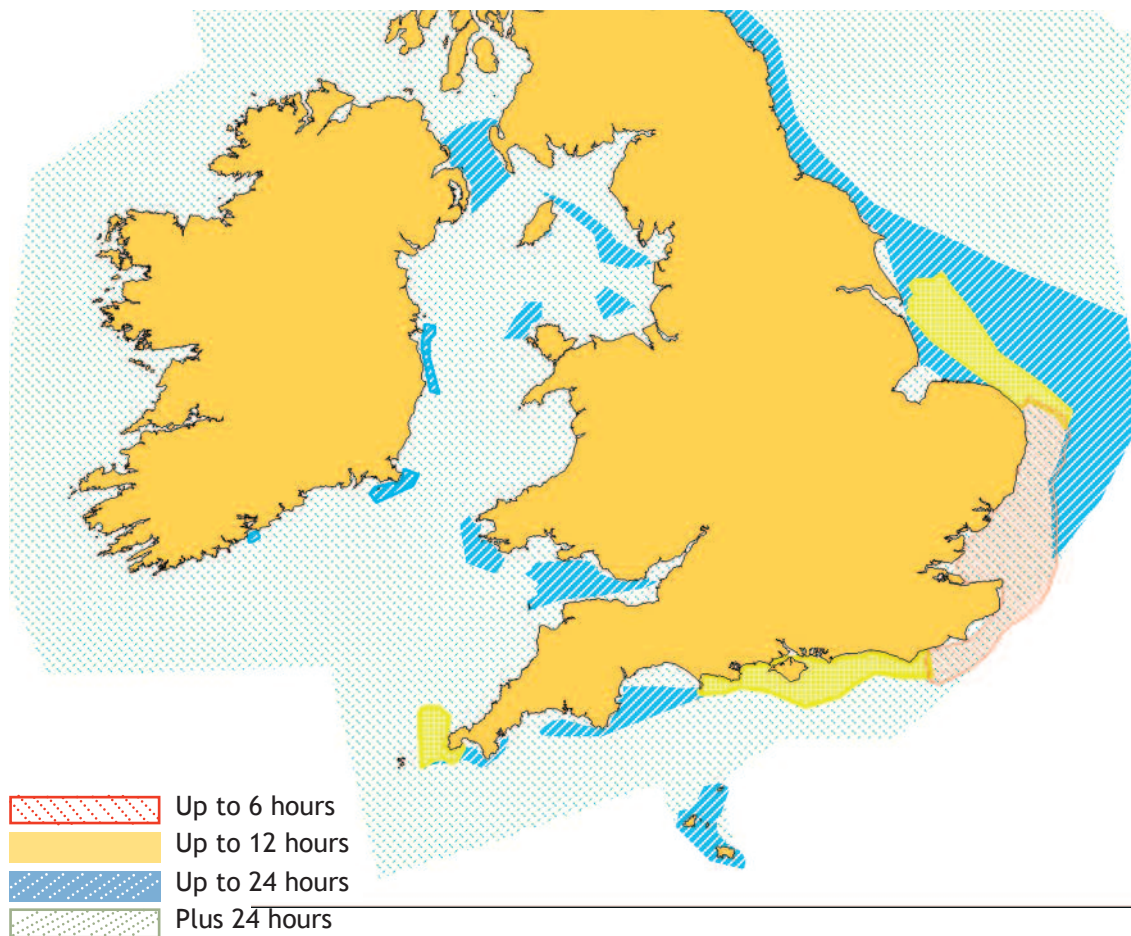


Fig 18.



## ANNEX A

### Corroboration

As corroboration, the assessors obtained risk analysis results from the IALA IWRAP tool prepared for the purposes of the ACCSEAS Interreg North Sea Region Project. This base line analysis was undertaken by the Danish Maritime Administration using AIS data supplied by project member states including the UK. The analysis is a graphical representation of the risk of collision and grounding with conventional heat diagram colours used red/purple being higher, amber moderate risk and yellow lower risk.



Fig 19.

IMAGE: ACCSEAS [www.accseas.eu](http://www.accseas.eu)

Whilst this analysis is for vessel to vessel collisions and the GLA Risk Response analysis is looking at secondary risk of vessel grounding on a wreck or new danger there is a relationship. Whilst the ACCSEAS Project does not cover the whole of the UK and Ireland the IWRAP analysis gives a high level of confidence that the GLA Risk Response Criteria are proportionate .



# Analysis All Areas

1 - 23

# ANNEX A

## Interest Area

1



NORTH CHANNEL

### Interest Area 1 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	1	4	5	0%	2%	2%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	17	4	21	8%	2%	9%
Recreation	2	30	32	1%	13%	14%
Special Operation	23	6	29	10%	3%	13%
High Speed Craft	9	0	9	4%	0%	4%
Special Craft	18	3	21	8%	1%	9%
Passenger Ship	59	0	59	26%	0%	26%
Cargo Ship	39	0	39	17%	0%	17%
Tanker	9	0	9	4%	0%	4%
Other	0	0	0	0%	0%	0%
<b>Total</b>	<b>177</b>	<b>47</b>	<b>224</b>	<b>79%</b>	<b>21%</b>	<b>100%</b>

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	60	27%
< 4	34	15%
4 to 6	58	26%
6 to 9	70	31%
9 to 12	2	1%
> 12	0	0%
<b>Total</b>	<b>224</b>	<b>100%</b>

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	1350	27%
< 4	602	12%
4 to 6	1215	24%
6 to 9	1704	34%
9 to 12	63	1%
> 12	33	1%
<b>Total</b>	<b>4967</b>	<b>100%</b>

## ANNEX A

### Interest Area

2



THE MINCH

### Interest Area 2 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	0	8	8	0%	10%	10%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	11	19	30	14%	24%	38%
Recreation	0	2	2	0%	3%	3%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	1	0	1	1%	0%	1%
Passenger Ship	16	0	16	20%	0%	20%
Cargo Ship	12	0	12	15%	0%	15%
Tanker	3	0	3	4%	0%	4%
Other	8	0	8	10%	0%	10%
Total	51	29	80	64%	36%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	32	40%
< 4	10	13%
4 to 6	24	30%
6 to 9	13	16%
9 to 12	1	1%
> 12	0	0%
Total	80	100%

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	629	42%
< 4	147	10%
4 to 6	399	27%
6 to 9	282	19%
9 to 12	18	1%
> 12	11	1%
Total	1486	100%



## ANNEX A

### Interest Area

3



PENTLAND FIRTH

Showing Proposed Renewable Energy Sites

### Interest Area 3 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	0	1	1	0%	1%	1%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	15	4	19	8%	2%	10%
Recreation	0	9	9	0%	5%	5%
Special Operation	11	6	17	6%	3%	9%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	22	17	39	12%	9%	21%
Passenger Ship	45	4	49	25%	2%	27%
Cargo Ship	20	3	23	11%	2%	13%
Tanker	7	0	7	4%	0%	4%
Other	12	6	18	7%	3%	10%
Total	132	50	182	73%	27%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	56	31%
< 4	51	28%
4 to 6	35	19%
6 to 9	24	13%
9 to 12	11	6%
> 12	5	3%
Total	182	100%

### One month by Draft

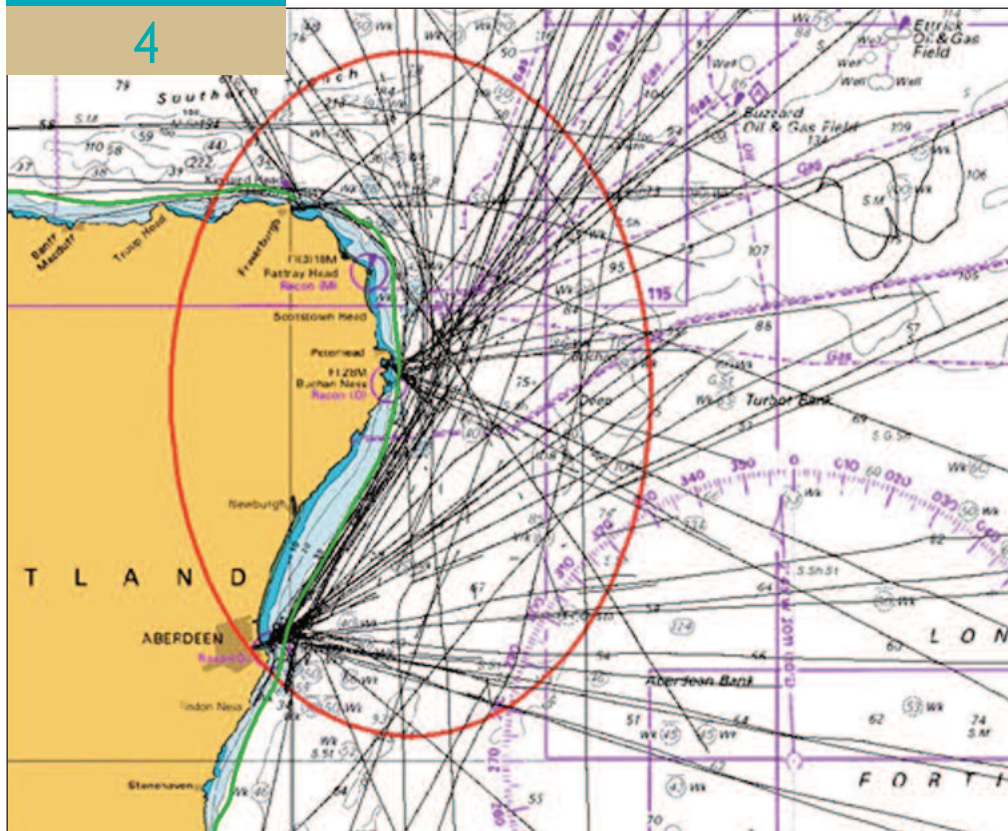
Draught (m)	No. of Vessels	%
Unspecified	1043	30%
< 4	883	25%
4 to 6	823	24%
6 to 9	504	14%
9 to 12	140	4%
> 12	98	3%
Total	3491	100%



# ANNEX A

## Interest Area

4



PETERHEAD

### Interest Area 4 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	6	5	11	2%	1%	3%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	33	26	59	9%	7%	16%
Recreation	0	1	1	0%	0%	0%
Special Operation	24	0	24	7%	0%	7%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	41	1	42	11%	0%	11%
Passenger Ship	9	0	9	2%	0%	2%
Cargo Ship	136	0	136	37%	0%	37%
Tanker	7	0	7	2%	0%	2%
Other	79	0	79	21%	0%	21%
Total	335	33	368	91%	9%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	38	10%
< 4	14	4%
4 to 6	207	56%
6 to 9	106	29%
9 to 12	2	1%
> 12	1	0%
Total	368	100%

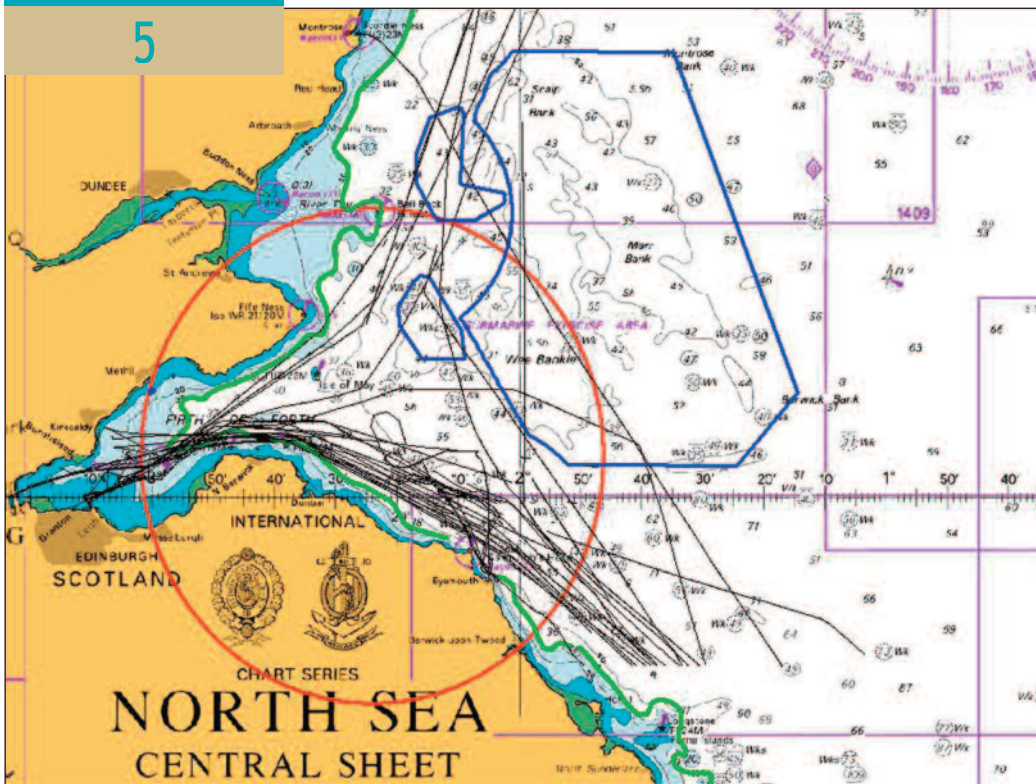
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	1288	18%
< 4	211	3%
4 to 6	3590	49%
6 to 9	2082	29%
9 to 12	47	1%
> 12	45	1%
Total	7263	100%

# ANNEX A

## Interest Area

5



FIRTH OF FORTH

Showing Proposed Renewable Energy Sites

### Interest Area 5 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	2	1	3	2%	1%	4%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	1	7	8	1%	9%	10%
Recreation	0	2	2	0%	2%	2%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	3	0	3	4%	0%	4%
Passenger Ship	0	0	0	0%	0%	0%
Cargo Ship	52	0	52	64%	0%	64%
Tanker	13	0	13	16%	0%	16%
Other	0	0	0	0%	0%	0%
Total	71	10	81	88%	12%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	13	16%
< 4	3	4%
4 to 6	27	33%
6 to 9	36	44%
9 to 12	0	0%
> 12	2	2%
Total	81	100%

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	271	18%
< 4	98	7%
4 to 6	465	31%
6 to 9	544	36%
9 to 12	79	5%
> 12	39	3%
Total	1496	100%

# ANNEX A

## Interest Area

6



HUMBER APPROACHES

Showing Proposed Renewable Energy Sites



### Interest Area 6 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	4	0	4	1%	0%	1%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	6	0	6	2%	0%	2%
Recreation	0	1	1	0%	0%	0%
Special Operation	7	1	8	3%	0%	3%
High Speed Craft	1	0	1	0%	0%	0%
Special Craft	24	0	24	9%	0%	9%
Passenger Ship	14	0	14	5%	0%	5%
Cargo Ship	160	0	160	59%	0%	59%
Tanker	45	0	45	17%	0%	17%
Other	7	0	7	3%	0%	3%
Total	268	2	270	99%	1%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	3	1%
< 4	56	21%
4 to 6	105	39%
6 to 9	82	30%
9 to 12	15	6%
> 12	9	3%
Total	270	100%

### One month by Draft

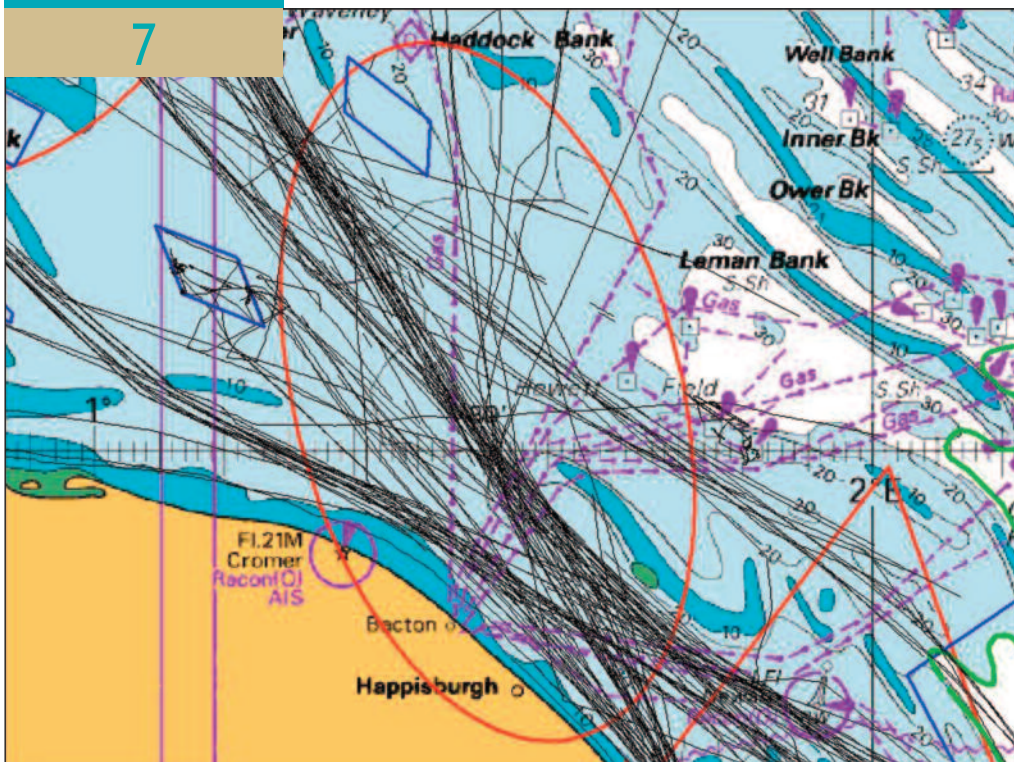
Draught (m)	No. of Vessels	%
Unspecified	171	3%
< 4	694	13%
4 to 6	2170	40%
6 to 9	2023	38%
9 to 12	177	3%
> 12	133	2%
Total	5368	100%



# ANNEX A

## Interest Area

7



CROMER

Showing Proposed Renewable Energy Sites

### Interest Area 7 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	1	0	1	1%	0%	1%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	41	0	41	22%	0%	22%
Recreation	0	7	7	0%	4%	4%
Special Operation	2	0	2	1%	0%	1%
High Speed Craft	4	0	4	2%	0%	2%
Special Craft	5	0	5	3%	0%	3%
Passenger Ship	10	1	11	5%	1%	6%
Cargo Ship	73	0	73	39%	0%	39%
Tanker	28	0	28	15%	0%	15%
Other	13	0	13	7%	0%	7%
<b>Total</b>	<b>177</b>	<b>8</b>	<b>185</b>	<b>96%</b>	<b>4%</b>	<b>100%</b>

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	8	4%
< 4	37	20%
4 to 6	92	50%
6 to 9	46	25%
9 to 12	2	1%
> 12	0	0%
<b>Total</b>	<b>185</b>	<b>100%</b>

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	122	4%
< 4	580	18%
4 to 6	1316	41%
6 to 9	1184	36%
9 to 12	45	1%
> 12	2	0%
<b>Total</b>	<b>3249</b>	<b>100%</b>

# ANNEX A

## Interest Area

8



YARMOUTH TO RAMSGATE

Showing Proposed Renewable Energy Sites

### Interest Area 8 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	84	9	93	9%	1%	10%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	1	0	1	0%	0%	0%
Fishing	22	7	29	2%	1%	3%
Recreation	0	25	25	0%	3%	3%
Special Operation	52	15	67	6%	2%	7%
High Speed Craft	129	0	129	14%	0%	14%
Special Craft	67	10	77	7%	1%	8%
Passenger Ship	36	0	36	4%	0%	4%
Cargo Ship	291	0	291	32%	0%	32%
Tanker	110	0	110	12%	0%	12%
Other	45	10	55	5%	1%	6%
Total	837	76	913	92%	8%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	123	13%
< 4	299	33%
4 to 6	220	24%
6 to 9	192	21%
9 to 12	44	5%
> 12	35	4%
Total	913	100%

### One month by Draft

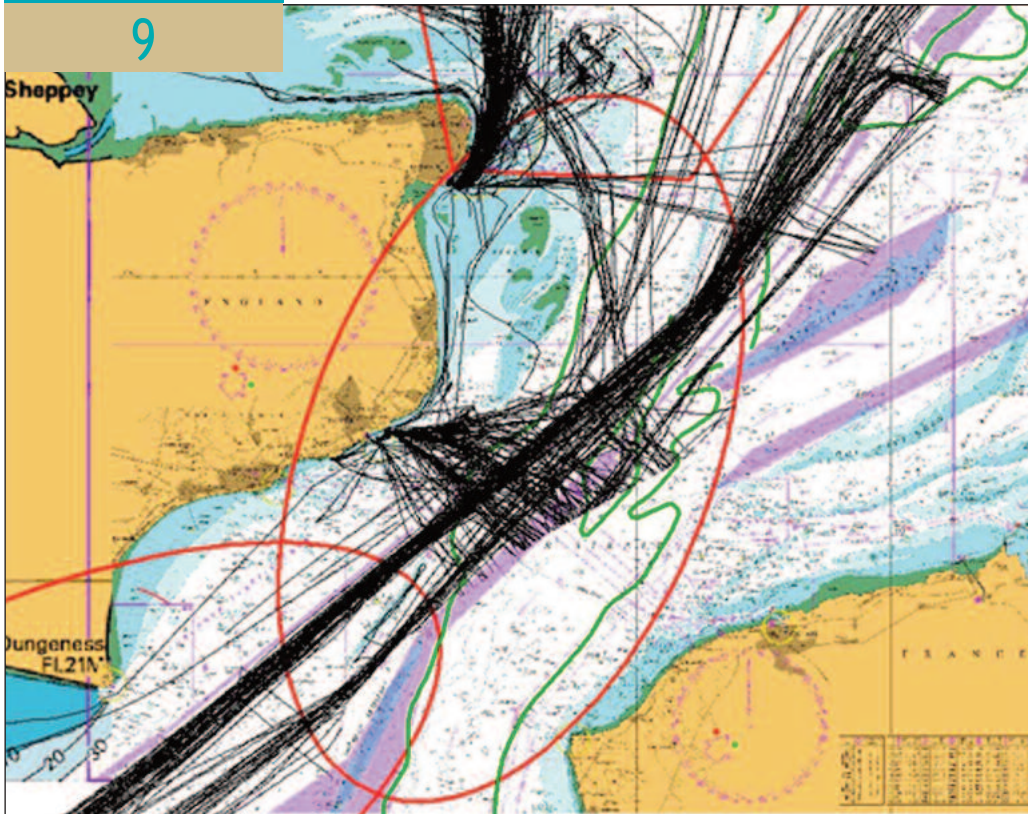
Draught (m)	No. of Vessels	%
Unspecified	2082	12%
< 4	5194	31%
4 to 6	4025	24%
6 to 9	3902	23%
9 to 12	931	6%
> 12	686	4%
Total	16820	100%



## ANNEX A

### Interest Area

9



DOVER STRAIT

### Interest Area 9 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	29	12	41	6%	3%	9%
Reserved	1	0	1	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	5	7	12	1%	2%	3%
Recreation	15	25	40	3%	5%	9%
Special Operation	37	2	39	8%	0%	8%
High Speed Craft	61	0	61	13%	0%	13%
Special Craft	16	4	20	3%	1%	4%
Passenger Ship	53	0	53	11%	0%	11%
Cargo Ship	125	0	125	27%	0%	27%
Tanker	59	0	59	13%	0%	13%
Other	7	3	10	2%	1%	2%
<b>Total</b>	<b>408</b>	<b>53</b>	<b>461</b>	<b>89%</b>	<b>11%</b>	<b>100%</b>

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	77	17%
< 4	134	29%
4 to 6	81	18%
6 to 9	103	22%
9 to 12	41	9%
> 12	25	5%
<b>Total</b>	<b>461</b>	<b>100%</b>

### One month by Draft

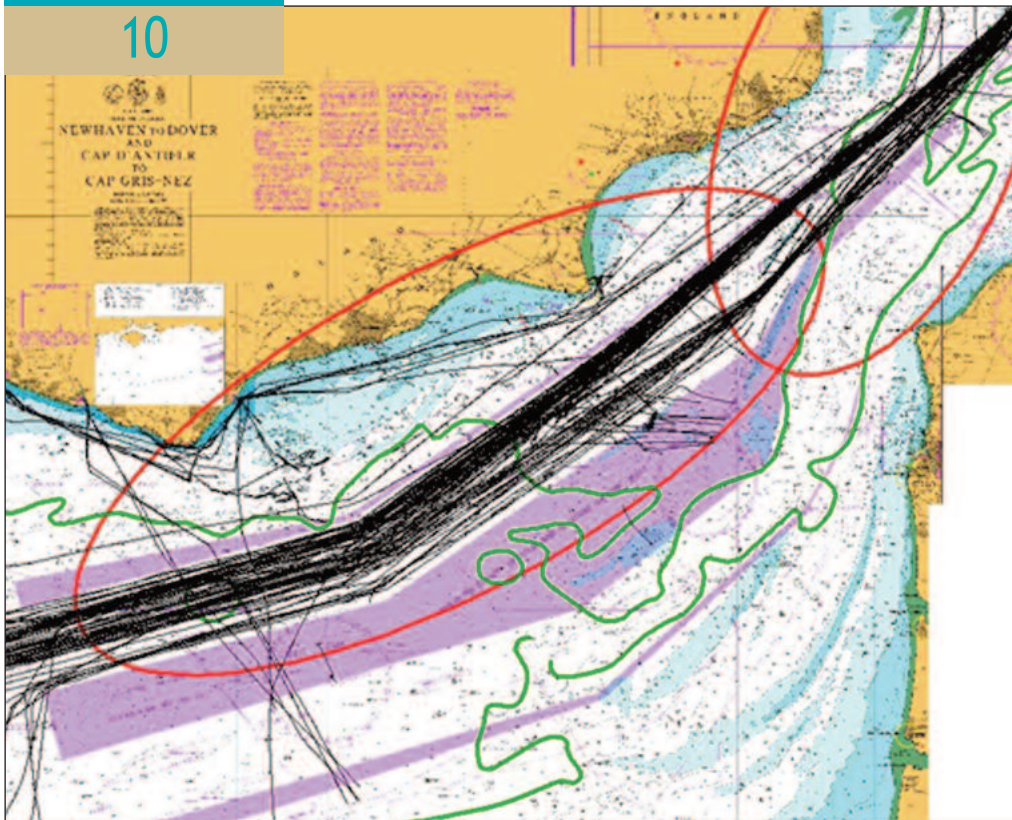
Draught (m)	No. of Vessels	%
Unspecified	1342	13%
< 4	2519	25%
4 to 6	1852	18%
6 to 9	2764	27%
9 to 12	965	10%
> 12	667	7%
<b>Total</b>	<b>10109</b>	<b>100%</b>



## ANNEX A

### Interest Area

10



DOVER APPROACHES

### Interest Area 10 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	3	7	10	1%	2%	3%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	42	9	51	13%	3%	15%
Recreation	10	16	26	3%	5%	8%
Special Operation	4	0	4	1%	0%	1%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	2	0	2	1%	0%	1%
Passenger Ship	1	0	1	0%	0%	0%
Cargo Ship	161	0	161	48%	0%	48%
Tanker	77	0	77	23%	0%	23%
Other	3	0	3	1%	0%	1%
Total	303	32	335	90%	10%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	35	10%
< 4	6	2%
4 to 6	104	31%
6 to 9	84	25%
9 to 12	69	21%
> 12	37	11%
Total	335	100%

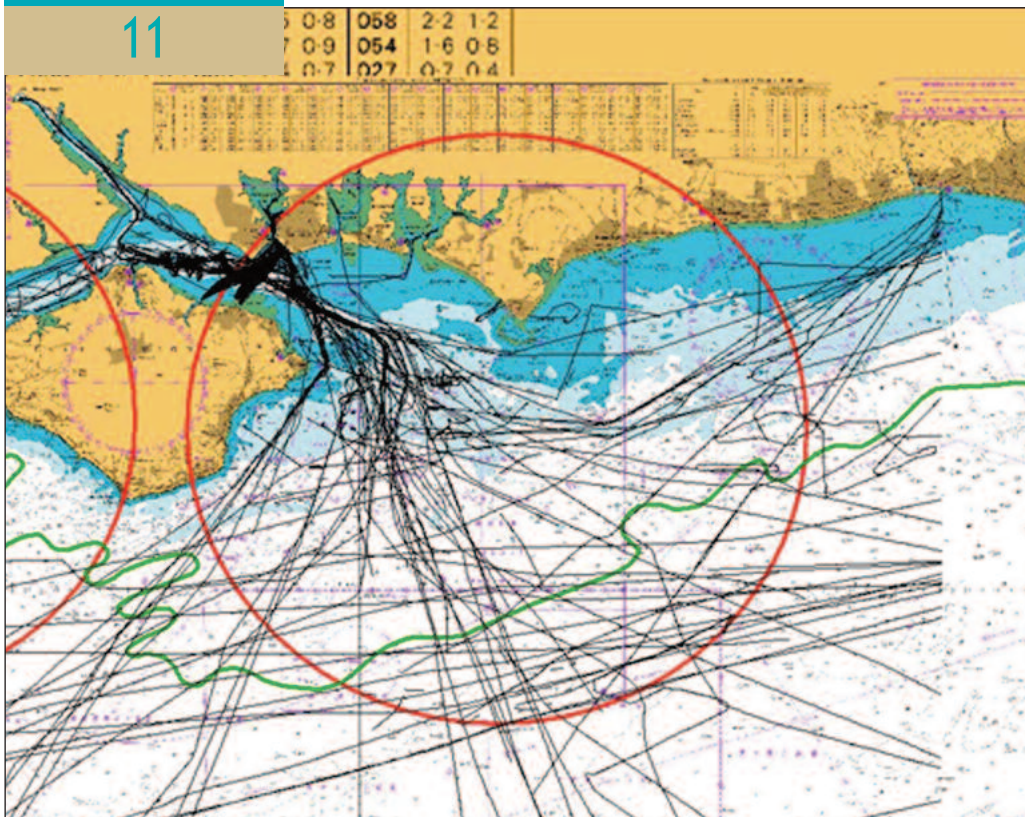
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	729	12%
< 4	266	4%
4 to 6	1866	30%
6 to 9	1888	30%
9 to 12	970	16%
> 12	519	8%
Total	6238	100%

## ANNEX A

### Interest Area

11



OUTER SOLENT

### Interest Area 11 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	4	16	20	1%	6%	7%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	3	9	12	1%	3%	4%
Recreation	1	46	47	0%	16%	17%
Special Operation	41	4	45	15%	1%	16%
High Speed Craft	23	0	23	8%	0%	8%
Special Craft	10	6	16	4%	2%	6%
Passenger Ship	39	0	39	14%	0%	14%
Cargo Ship	33	0	33	12%	0%	12%
Tanker	32	0	32	11%	0%	11%
Other	14	0	14	5%	0%	5%
Total	200	81	281	71%	29%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	102	36%
< 4	53	19%
4 to 6	52	19%
6 to 9	51	18%
9 to 12	14	5%
> 12	9	3%
Total	281	100%

### One month by Draft

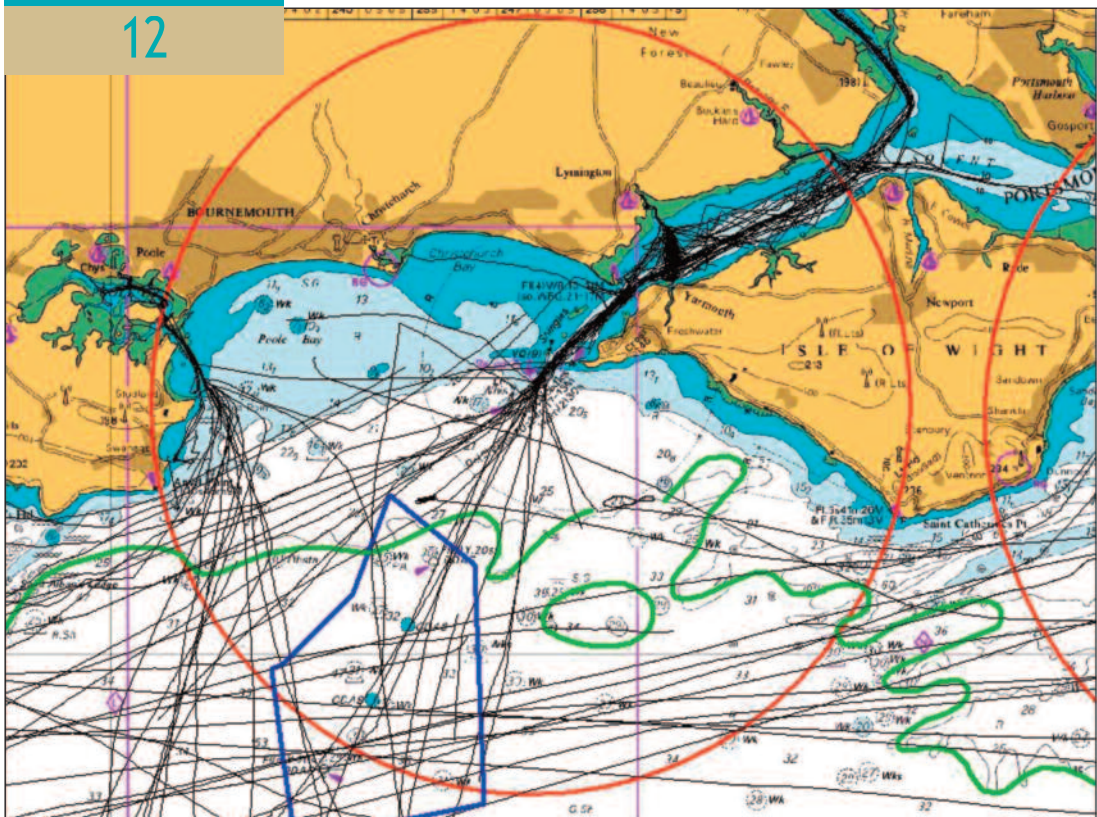
Draught (m)	No. of Vessels	%
Unspecified	2749	41%
< 4	1039	16%
4 to 6	991	15%
6 to 9	1291	19%
9 to 12	368	6%
> 12	236	4%
Total	6674	100%



# ANNEX A

## Interest Area

12



WESTERN APPROACHES TO SOLENT

Showing Proposed Renewable Energy Sites

### Interest Area 12 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	2	9	11	1%	5%	6%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	0	4	4	0%	2%	2%
Recreation	3	115	118	2%	61%	63%
Special Operation	5	6	11	3%	3%	6%
High Speed Craft	3	0	3	2%	0%	2%
Special Craft	1	2	3	1%	1%	2%
Passenger Ship	12	1	13	6%	1%	7%
Cargo Ship	15	0	15	8%	0%	8%
Tanker	3	0	3	2%	0%	2%
Other	6	0	6	3%	0%	3%
Total	50	137	187	27%	73%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	137	73%
< 4	15	8%
4 to 6	24	13%
6 to 9	9	5%
9 to 12	1	1%
> 12	1	1%
Total	187	100%

### One month by Draft

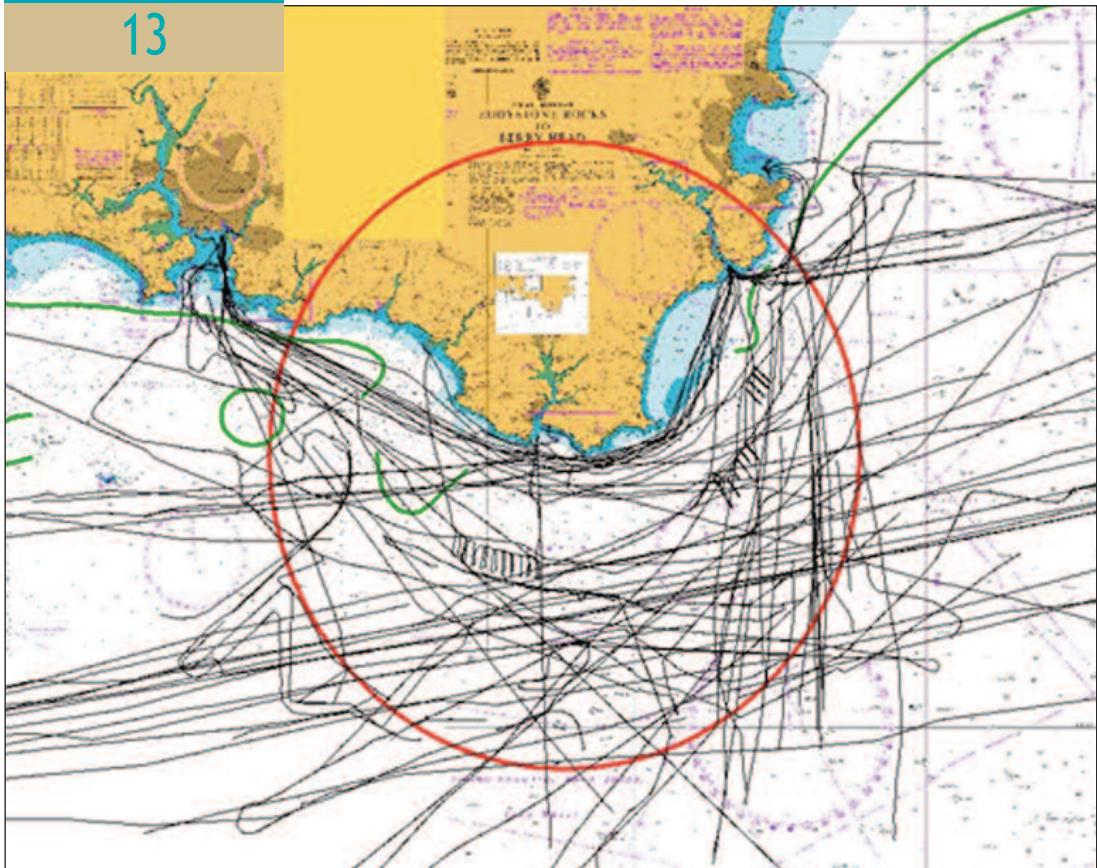
Draught (m)	No. of Vessels	%
Unspecified	3239	73%
< 4	469	11%
4 to 6	449	10%
6 to 9	244	5%
9 to 12	21	0%
> 12	16	0%
Total	4438	100%



## ANNEX A

### Interest Area

13



START POINT

### Interest Area 13 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	4	1	5	3%	1%	4%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	11	6	17	9%	5%	14%
Recreation	1	55	56	1%	44%	45%
Special Operation	16	0	16	13%	0%	13%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	1	0	1	1%	0%	1%
Passenger Ship	1	0	1	1%	0%	1%
Cargo Ship	19	0	19	15%	0%	15%
Tanker	6	0	6	5%	0%	5%
Other	2	2	4	2%	2%	3%
Total	61	64	125	49%	51%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	70	56%
< 4	6	5%
4 to 6	22	18%
6 to 9	16	13%
9 to 12	9	7%
> 12	2	2%
Total	125	100%

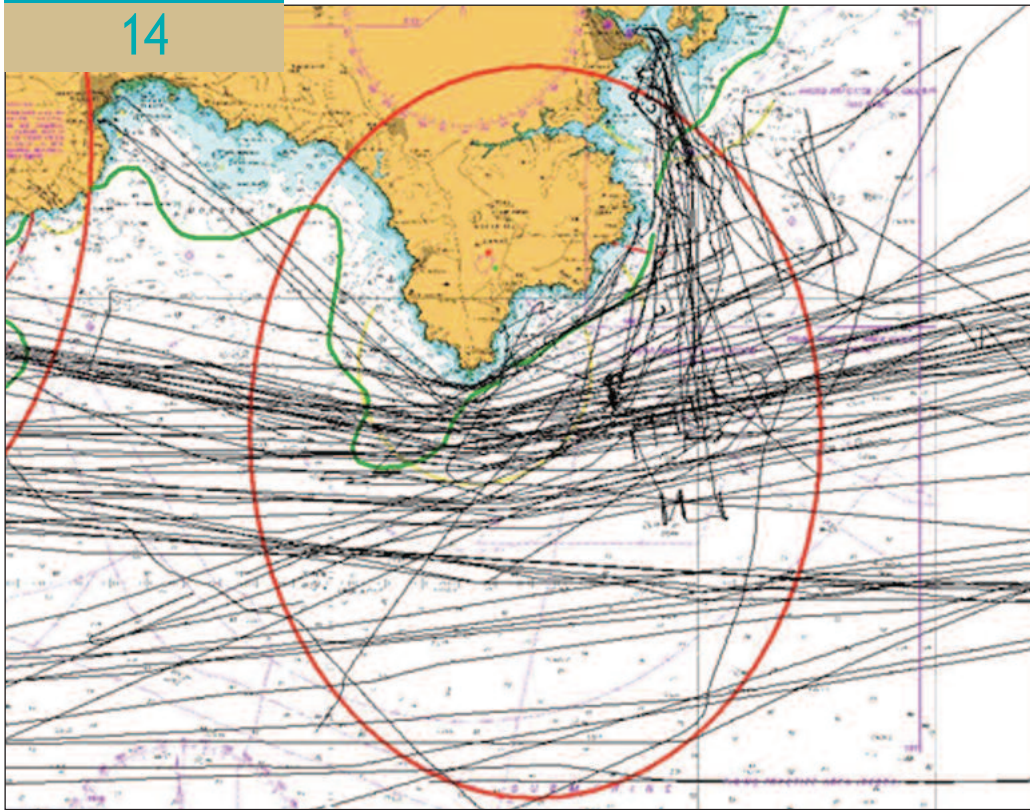
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	1034	47%
< 4	187	8%
4 to 6	411	19%
6 to 9	444	20%
9 to 12	79	4%
> 12	46	2%
Total	2201	100%

## ANNEX A

### Interest Area

14



LIZARD POINT

### Interest Area 14 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	0	0	0	0%	0%	0%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	4	7	11	3%	6%	9%
Recreation	0	29	29	0%	24%	24%
Special Operation	0	1	1	0%	1%	1%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	8	0	8	7%	0%	7%
Passenger Ship	3	0	3	2%	0%	2%
Cargo Ship	38	0	38	31%	0%	31%
Tanker	30	0	30	24%	0%	24%
Other	3	0	3	2%	0%	2%
Total	86	37	123	70%	30%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	44	36%
< 4	5	4%
4 to 6	17	14%
6 to 9	40	33%
9 to 12	12	10%
> 12	5	4%
Total	123	100%

### One month by Draft

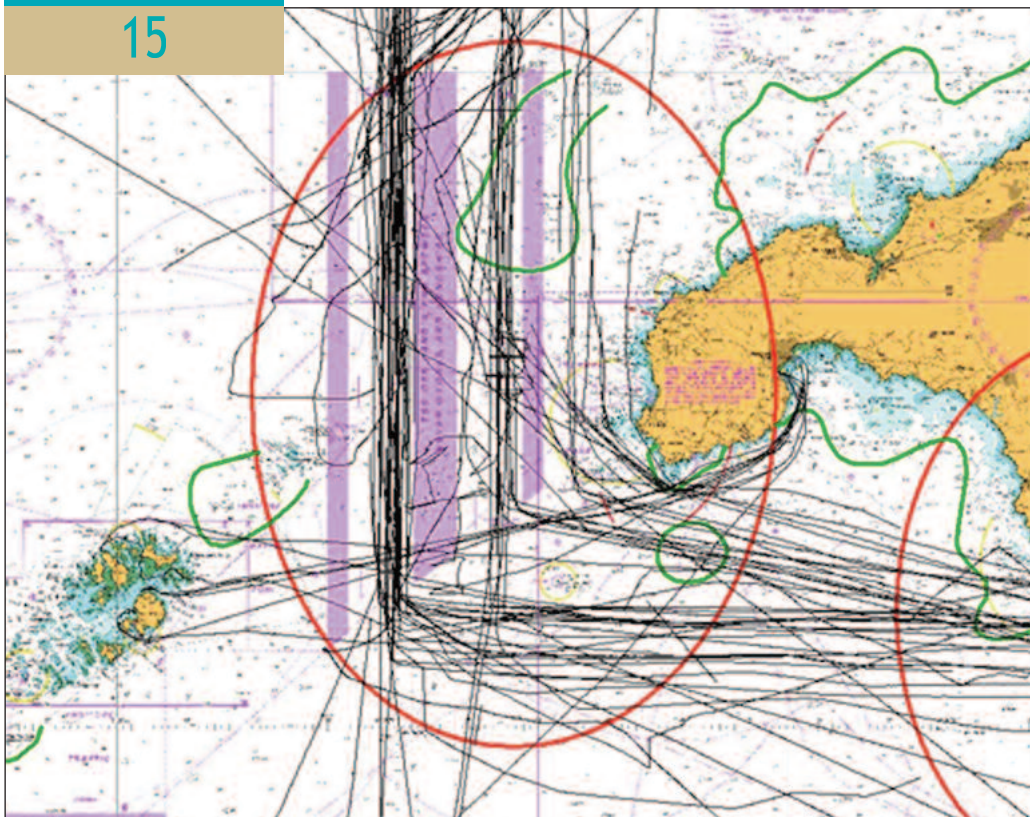
Draught (m)	No. of Vessels	%
Unspecified	733	30%
< 4	86	4%
4 to 6	437	18%
6 to 9	839	34%
9 to 12	225	9%
> 12	129	5%
Total	2449	100%



## ANNEX A

### Interest Area

15



LANDS END

### Interest Area 15 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	2	0	2	2%	0%	2%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	13	22	35	12%	20%	32%
Recreation	0	15	15	0%	14%	14%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	2	0	2	2%	0%	2%
Passenger Ship	5	0	5	5%	0%	5%
Cargo Ship	34	1	35	31%	1%	32%
Tanker	15	0	15	14%	0%	14%
Other	1	0	1	1%	0%	1%
Total	72	38	110	65%	35%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	43	39%
< 4	12	11%
4 to 6	20	18%
6 to 9	33	30%
9 to 12	2	2%
> 12	0	0%
Total	110	100%

### One month by Draft

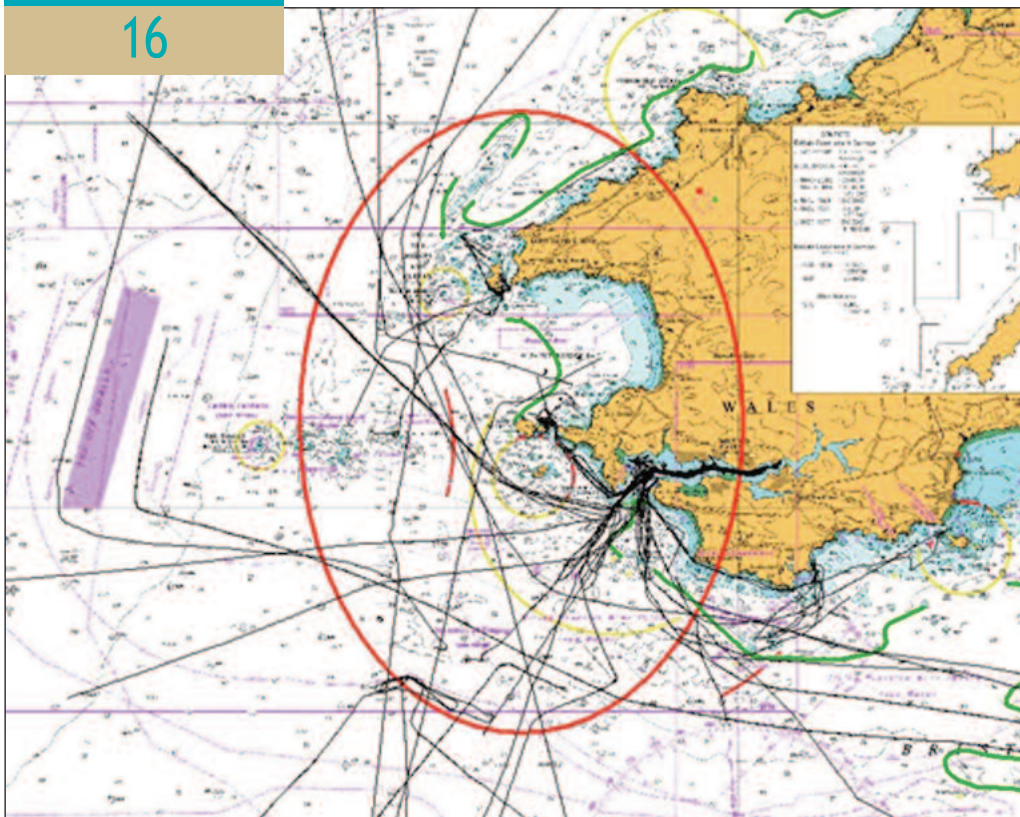
Draught (m)	No. of Vessels	%
Unspecified	729	34%
< 4	132	6%
4 to 6	471	22%
6 to 9	732	34%
9 to 12	77	4%
> 12	21	1%
Total	2162	100%



## ANNEX A

### Interest Area

16



MILFORD HAVEN APPROACH

### Interest Area 16 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	0	0	0	0%	0%	0%
Reserved	1	0	1	1%	0%	1%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	3	0	3	2%	0%	2%
Recreation	0	15	15	0%	10%	10%
Special Operation	7	7	14	5%	5%	9%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	35	11	46	23%	7%	31%
Passenger Ship	5	5	10	3%	3%	7%
Cargo Ship	4	0	4	3%	0%	3%
Tanker	56	0	56	38%	0%	38%
Other	0	0	0	0%	0%	0%
Total	111	38	149	74%	26%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	38	26%
< 4	19	13%
4 to 6	35	23%
6 to 9	48	32%
9 to 12	3	2%
> 12	6	4%
Total	149	100%

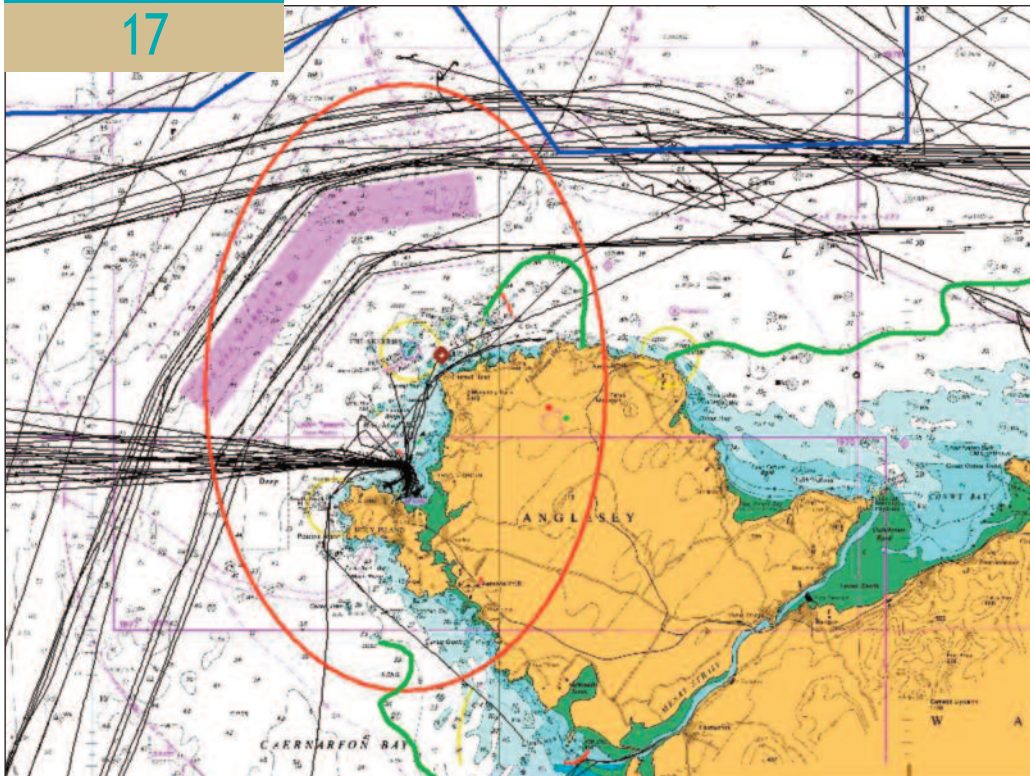
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	947	31%
< 4	433	14%
4 to 6	617	20%
6 to 9	818	27%
9 to 12	103	3%
> 12	136	4%
Total	3054	100%

## ANNEX A

### Interest Area

17



THE SKERRIES

Showing Proposed Renewable Energy Sites

### Interest Area 17 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	0	0	0	0%	0%	0%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	1	0	1	1%	0%	1%
Recreation	0	7	7	0%	8%	8%
Special Operation	0	3	3	0%	4%	4%
High Speed Craft	11	0	11	13%	0%	13%
Special Craft	3	4	7	4%	5%	8%
Passenger Ship	29	0	29	35%	0%	35%
Cargo Ship	18	0	18	22%	0%	22%
Tanker	6	0	6	7%	0%	7%
Other	1	0	1	1%	0%	1%
<b>Total</b>	<b>69</b>	<b>14</b>	<b>83</b>	<b>83%</b>	<b>17%</b>	<b>100%</b>

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	20	24%
< 4	10	12%
4 to 6	16	19%
6 to 9	34	41%
9 to 12	3	4%
> 12	0	0%
<b>Total</b>	<b>83</b>	<b>100%</b>

### One month by Draft

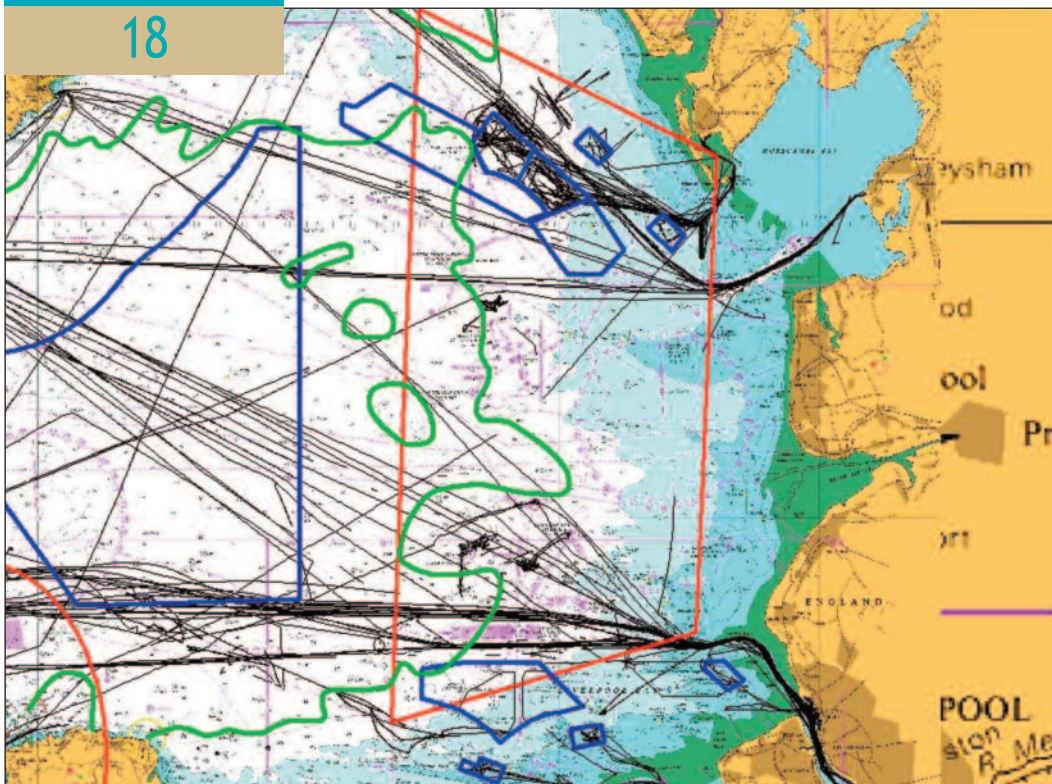
Draught (m)	No. of Vessels	%
Unspecified	305	16%
< 4	202	11%
4 to 6	340	18%
6 to 9	958	51%
9 to 12	57	3%
> 12	8	0%
<b>Total</b>	<b>1870</b>	<b>100%</b>



## ANNEX A

### Interest Area

18



MORECAMBE BAY

Showing Proposed Renewable Energy Sites

### Interest Area 18 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	12	3	15	6%	2%	8%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	1	3	4	1%	2%	2%
Recreation	0	0	0	0%	0%	0%
Special Operation	3	0	3	2%	0%	2%
High Speed Craft	9	0	9	5%	0%	5%
Special Craft	19	3	22	10%	2%	12%
Passenger Ship	21	0	21	11%	0%	11%
Cargo Ship	68	0	68	37%	0%	37%
Tanker	20	0	20	11%	0%	11%
Other	22	2	24	12%	1%	13%
Total	175	11	186	94%	6%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	33	18%
< 4	22	12%
4 to 6	78	42%
6 to 9	43	23%
9 to 12	10	5%
> 12	0	0%
Total	186	100%

### One month by Draft

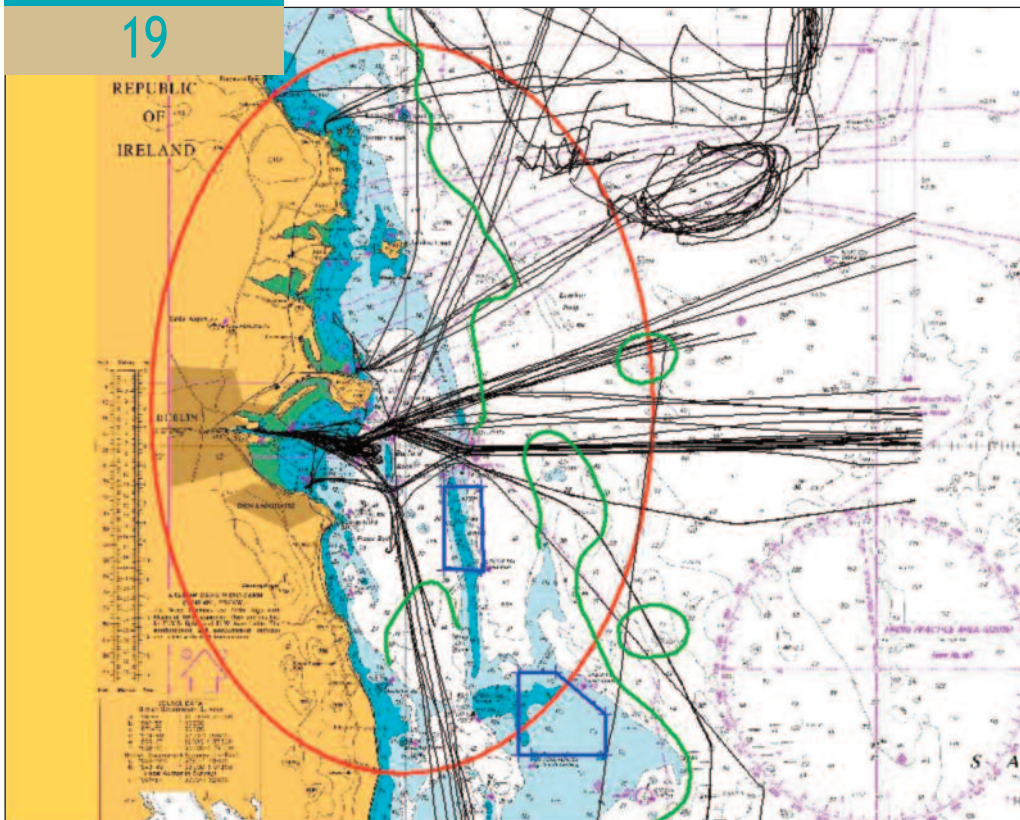
Draught (m)	No. of Vessels	%
Unspecified	393	12%
< 4	363	11%
4 to 6	1440	45%
6 to 9	825	26%
9 to 12	122	4%
> 12	45	1%
Total	3188	100%



# ANNEX A

## Interest Area

19



DUBLIN BAY

Showing Proposed Renewable Energy Sites

### Interest Area 19 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	6	10	16	3%	5%	8%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	32	0	32	16%	0%	16%
Recreation	8	16	24	4%	8%	12%
Special Operation	1	0	1	1%	0%	1%
High Speed Craft	10	0	10	5%	0%	5%
Special Craft	16	13	29	8%	7%	15%
Passenger Ship	26	0	26	13%	0%	13%
Cargo Ship	43	0	43	22%	0%	22%
Tanker	12	0	12	6%	0%	6%
Other	1	0	1	1%	0%	1%
Total	155	39	194	80%	20%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	44	23%
< 4	43	22%
4 to 6	47	24%
6 to 9	60	31%
9 to 12	0	0%
> 12	0	0%
Total	194	100%

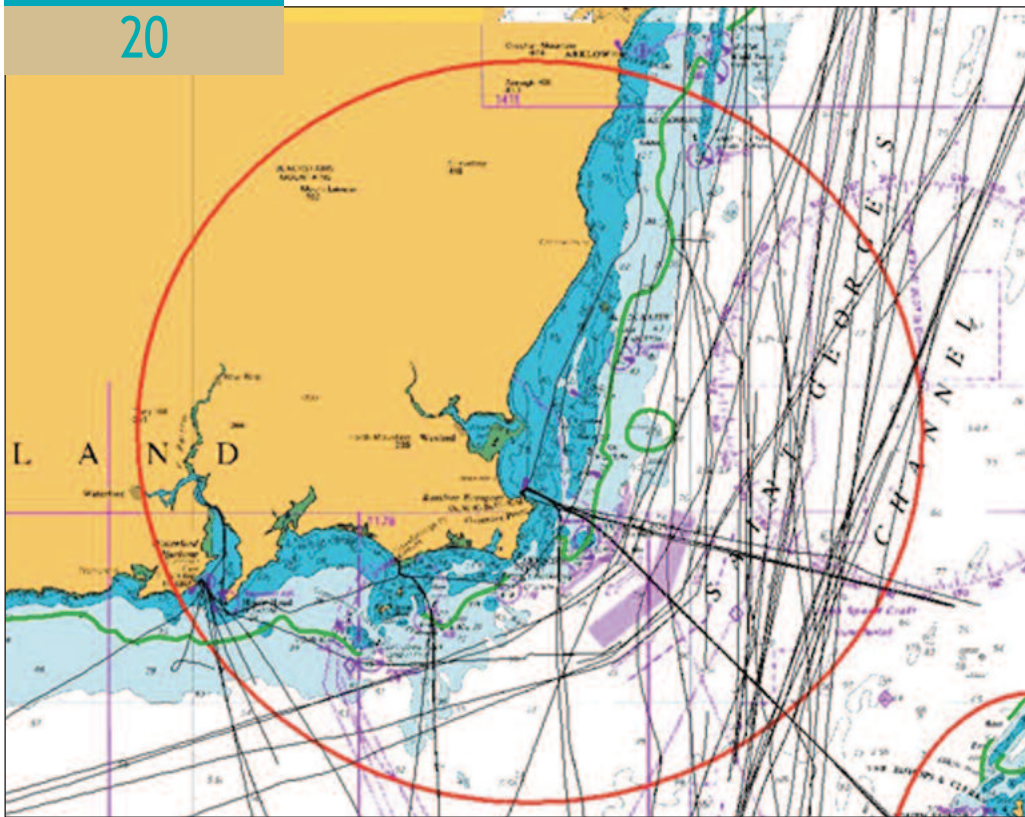
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	1059	25%
< 4	590	14%
4 to 6	1154	27%
6 to 9	1388	33%
9 to 12	43	1%
> 12	7	0%
Total	4241	100%

# ANNEX A

## Interest Area

20



TUSKAR

### Interest Area 20- One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	1	2	3	1%	1%	2%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	7	3	10	5%	2%	7%
Recreation	0	35	35	0%	23%	23%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	0	1	1	0%	1%	1%
Passenger Ship	30	0	30	20%	0%	20%
Cargo Ship	50	0	50	33%	0%	33%
Tanker	11	0	11	7%	0%	7%
Other	10	0	10	7%	0%	7%
Total	109	41	150	73%	27%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	44	29%
< 4	8	5%
4 to 6	40	27%
6 to 9	56	37%
9 to 12	2	1%
> 12	0	0%
Total	150	100%

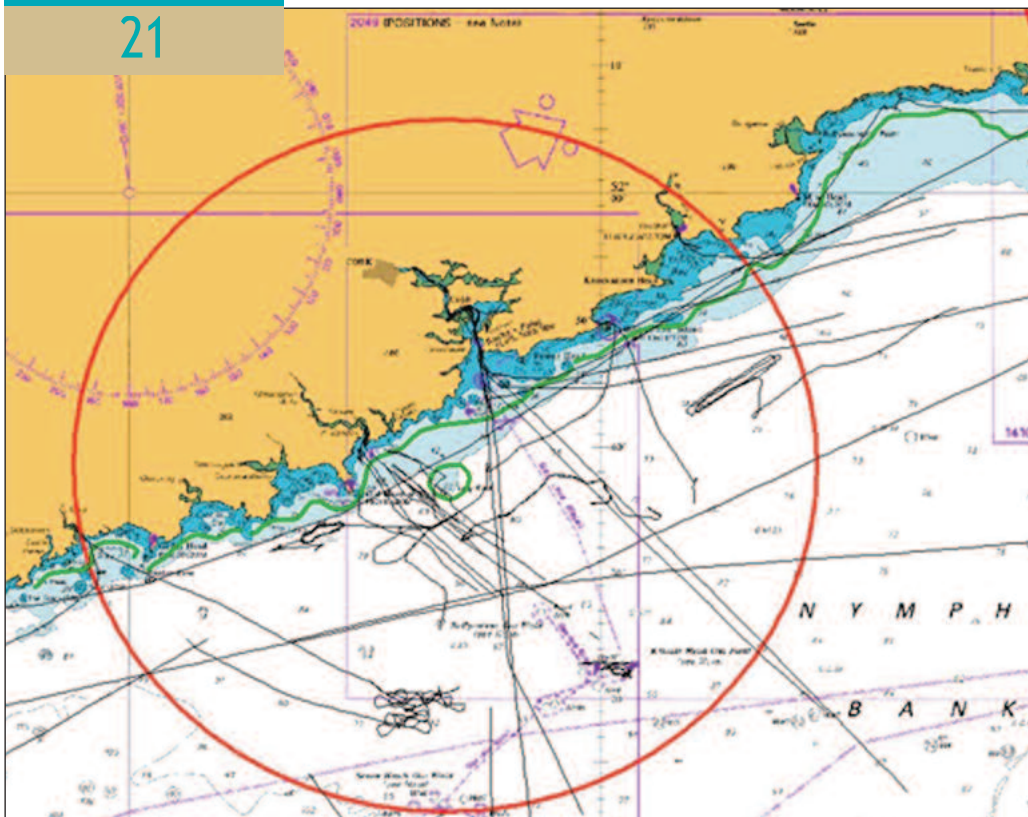
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	393	11%
< 4	325	9%
4 to 6	843	24%
6 to 9	1751	50%
9 to 12	139	4%
> 12	47	1%
Total	3498	100%

# ANNEX A

## Interest Area

21



CORK APPROACHES

### Interest Area 21 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	10	7	17	11%	8%	20%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	11	0	11	13%	0%	13%
Recreation	0	26	26	0%	30%	30%
Special Operation	1	0	1	1%	0%	1%
High Speed Craft	8	0	8	9%	0%	9%
Special Craft	2	0	2	2%	0%	2%
Passenger Ship	0	0	0	0%	0%	0%
Cargo Ship	14	0	14	16%	0%	16%
Tanker	4	0	4	5%	0%	5%
Other	4	0	4	5%	0%	5%
Total	54	33	87	62%	38%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	56	64%
< 4	7	8%
4 to 6	15	17%
6 to 9	9	10%
9 to 12	0	0%
> 12	0	0%
Total	87	100%

### One month by Draft

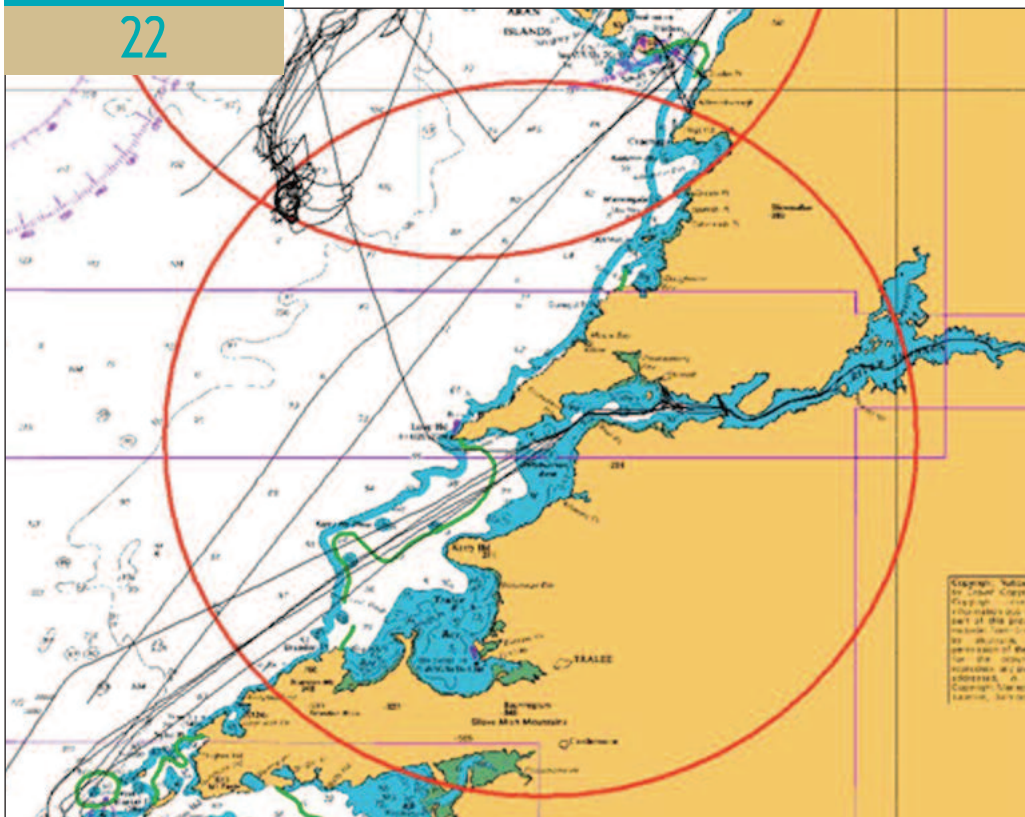
Draught (m)	No. of Vessels	%
Unspecified	714	41%
< 4	192	11%
4 to 6	525	30%
6 to 9	212	12%
9 to 12	59	3%
> 12	36	2%
Total	1738	100%



# ANNEX A

## Interest Area

22



SHANNON

### Interest Area 22 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	5	0	5	11%	0%	11%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	11	0	11	25%	0%	25%
Recreation	0	1	1	0%	2%	2%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	2	0	2	5%	0%	5%
Passenger Ship	0	6	6	0%	14%	14%
Cargo Ship	15	0	15	34%	0%	34%
Tanker	4	0	4	9%	0%	9%
Other	0	0	0	0%	0%	0%
Total	37	7	44	84%	16%	100%

### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	11	25%
< 4	5	11%
4 to 6	16	36%
6 to 9	9	20%
9 to 12	0	0%
> 12	3	7%
Total	44	100%

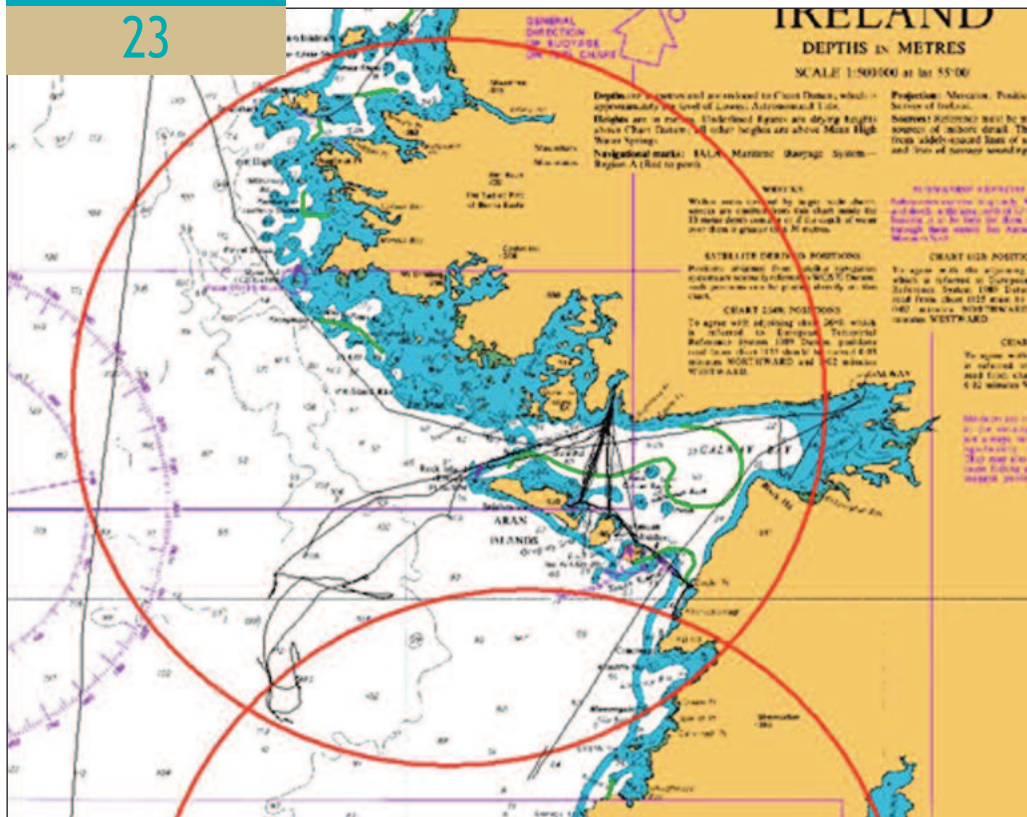
### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	266	31%
< 4	93	11%
4 to 6	295	34%
6 to 9	144	17%
9 to 12	19	2%
> 12	54	6%
Total	871	100%

# ANNEX A

## Interest Area

23



GALWAY BAY

### Interest Area 23 - One Day All Traffic Data

Type	No. of Vessels by Class			% of Total by Class		
	A	B	All	A	B	All
Unspecified	3	6	9	7%	13%	20%
Reserved	0	0	0	0%	0%	0%
Wing in Ground	0	0	0	0%	0%	0%
Fishing	9	0	9	20%	0%	20%
Recreation	0	12	12	0%	27%	27%
Special Operation	0	0	0	0%	0%	0%
High Speed Craft	0	0	0	0%	0%	0%
Special Craft	0	0	0	0%	0%	0%
Passenger Ship	7	0	7	16%	0%	16%
Cargo Ship	7	1	8	16%	2%	18%
Tanker	0	0	0	0%	0%	0%
Other	0	0	0	0%	0%	0%
Total	26	19	45	58%	42%	100%

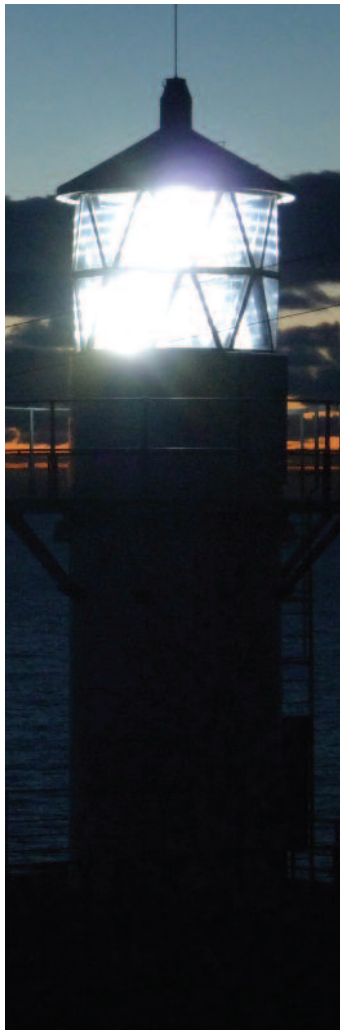
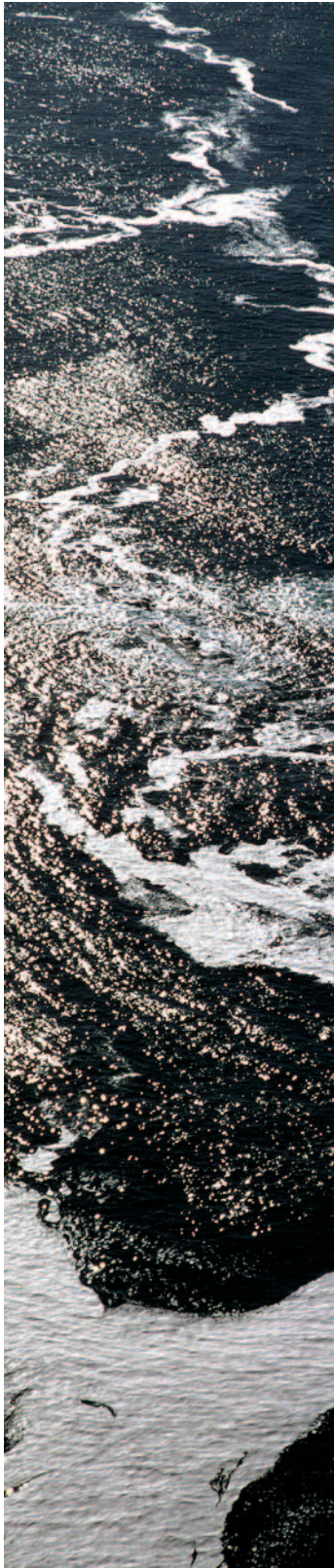
### One day by Draft

Draught (m)	No. of Vessels	%
Unspecified	20	44%
< 4	11	24%
4 to 6	14	31%
6 to 9	0	0%
9 to 12	0	0%
> 12	0	0%
Total	45	100%

### One month by Draft

Draught (m)	No. of Vessels	%
Unspecified	314	32%
< 4	227	23%
4 to 6	412	42%
6 to 9	18	2%
9 to 12	2	0%
> 12	0	0%
Total	973	100%





*“The five yearly Aids to Navigation Review details the AtoN we provide, whilst this document deals with response to unexpected events. Between them they reflect the level of service the GLAs expect to be able to deliver to all mariners appropriate to volume of traffic and degree of risk”*





## 6. Our Commitment to Users

Delivering a reliable efficient and cost effective AtoN service for the benefit and safety of all mariners is the GLAs' mission. Ensuring that this is consistent with the requirement of SOLAS to be commensurate with the volume of traffic and degree of risk is our aim.

The ability to assess risk in the maritime environment has changed dramatically with the introduction of AIS, the mandatory carriage requirements, alongside growing voluntary carriage on non SOLAS vessels means that in the early part of the 21st century for the first time an accurate assessment of the volume of traffic and determination of the level of risk is truly possible.

Those responsible for Navigation within the three GLAs have taken considerable time and effort to ensure that a full analysis of the AIS data for the UK and Ireland has been undertaken with a high degree of confidence in the results. This, matched with their operational experience around our coasts and a desire to ensure a Response Criteria that is a robust appraisal, has led to a significant revision from previous versions.

The impact of offshore renewable energy installations both existing and those that are well advanced in planning have been taken into account. The impact of these on the maritime environment must be part of the assessment and has resulted in some extensions to 24 hour response areas to accommodate traffic bunching or restrictions on available routes.

The five yearly Aids to Navigation Review details the AtoN we provide, whilst this document deals with response to unexpected events. Between them they reflect the level of service the GLAs expect to be able to deliver to all mariners appropriate to volume of traffic and degree of risk.

TH

*Van McLaughlin*

NLB

*[Signature]*

CIL

*Yvonne Shields*



Trinity House



# Risk Response

## CRITERIA



Produced by the  
General Lighthouse Authorities of the  
United Kingdom and Ireland

Marine Operations Department  
Northern Lighthouse Board  
84 George Street, Edinburgh EH2 3DA  
United Kingdom  
Tel: 0131 473 3100

Navigation Directorate  
Trinity House  
Tower Hill, London EC3N 4DH  
United Kingdom  
Tel: 020 7481 6900

Operations & Navigation Services Department  
Commissioners of Irish Lights  
Harbour Road, Dun Laoghaire, Co. Dublin  
Ireland  
Tel: 00 3531 271 5400