GLA Fleet Review – Phase 2

Volume 2

Work Package 8 – Overall Report and Implementation Plan

Author: Project Management Working Group
Date: 13/04/2018
Document No: 381263

Document History and Approvals

Document Location

The definitive copy of WP8 Report is held on IManage document management system

Revision History

Document Reference	Date	Summary of Changes
381263v1	16/03/18	First draft
381263v2	28/03/18	Approved by Project Board
381263v3	28/03/18	PDF Approved
381263v4	29/03/18	Combined document PDF
381263v5	29/03/18	Combined PDF including links
381263v6	13/04/18	Corrected Commercial Income Figures
382761v1	28/03/18	Redacted PDF - based on 381263 v5
382761v2	17/04/18	Redacted PDF - based on 381263 v6

Reference Documents

Document No.	Document Title Project Folder: \\HA-EDMS\ha_opsms\Projects\Fleet_Review\Fleet Review - Phase Two (489)
336037v12	Fleet Review Phase 2 – Project Initiation Document
337026v20	PROJECT Fleet Review Phase 2 – Project Risk and Issue Register
358114v5	Communications Strategy
358119v6	Additional Recommendations of Risk
373710v3	Fleet_Review_Phase 2 Revised Work Plan
379386v3	Tri-GLA Fleet Review Phase 2 – Management Letter 19-02-2018
382160v1	Ministers Letter
344506v5	'GLA Fleet Review - Phase 2 (489) - WP01 Centralised Monitoring Report 04.08.16'
344510v7	Project Memorandum of Understanding
348274v9	'GLA Fleet Review_WP2_Phase 1_Coordinated Planning'
350025v3	GLA Fleet Review_WP2_Phase_1 – Planning Tool Update Oct27
355458v5	'GLA Baseline annual plan summary'
355453v4	'GLA Baseline plans – 2017/18 Final'
355454v4	'GLA FR critical area baseline coverage'
357677v3	'GLA Baseline resource capacity document'
370954v3	Coordinated Fleet Management Planning Summary 2nd Quarter Report
380033v6	GLA Fleet Review Phase 2 – WP2 Co-Ordinated Fleet management Planning Summary
377388v2	GLA Fleet 18 Scenarios
376630v2	Six In-depth Scenarios
381583v3	Technical Specialist Introduction
373055v1	Fleet Review Phase 2 – WP3 – Braemar Final Report
350018v4	'GLA Fleet Review_WP4_Phase 2-Methodology'
344517v6	'GLA Fleet Review - Phase 2 (489) - WP04 Commercial Balance Report 16.08.16 Current Commitments'
377751v7	GLA Fleet Review Phase 2 – WP4_Report_180125
350037v5	Local Boats Document Cover Page
350035v3	'The Northern Lighthouse Board – Zone Boat Services Directory'

350038v2	CIL Local Boat Operations
342836v6	Trinity House - Local Boat Services Directory
380089v6	GLA Fleet Review Phase 2 – WP5_Report
359297v13	GLA Fleet Review Phase 2 - WP6_Houlder_Additional_Recommendations
376304v9	GLA Fleet Review Phase 2 – WP7_Fleet_Structure_Report
374102v12	WP8 Overall Fleet Review Project Report and Implementation Plan Volume 1
376089v1	Houlder Final Report
338,374	Project board submission to the Ministers
350099v1	Response from Department for Transport
338377	GLA Fleet Review Phase 2 Outline Project Plan
357746v1	GLA 17/18 Vessel baseline calendars

Approvals

Name	Date	Signature
M. Bullock On behalf of the NLB Managing Board	28/03/2018	[redacted]
Ian McNaught On behalf of the Trinity House Lighthouse Board	28/03/2018	[redacted]
Yvonne Shields On behalf of the Commissioners of Irish Lights	28/03/2018	[redacted]

Introduction

The overall Fleet Review Phase 2 – Work Package 8 report has been split into 2 volumes (Volume 1 and Volume 2).

Volume 1 (document number 374102) collates the results and conclusions and presents and implementation plan for future fleet construct. The intention of volume 1 is to allow the reader a full assessment of the process undertaken and the conclusions reached during the Fleet Review Phase 2 project. Volume 1 reports presents the data in an abridged format.

The full work package reports and their supporting data can be found within this Volume 2 report.

Contents

Project Documentation

Project Initiation Document – Original

Project Initiation Document – Revised

Project Risk and Issue Register

Review of the General Lighthouse Authorities' Fleet Requirements – Ministers Letter

Additional Recommendations on Risk

Communications Management Strategy

GIAA Audit Management Letter

Work Package 1 – Centralised Monitoring

WP1 – Phase 1 – Extend existing monitoring arrangements to make data visible to central planner 24/7 (Go-Live and Report)

Centralised Monitoring Report

Work Package 2 – Coordinated Planning

WP2 - Phase 0 – Project MOU

Memorandum of Understanding

WP2 - Phase 1 – Establish Tri-GLA framework, organisation, procedures and initial planning tool

Coordinated Planning Report

Developing a GLA Planning Tool

WP2 - Phase 2 – Establish Individual GLA operations requirements and develop coordinated fleet plan

Tri GLA Coordinated Baseline Annual Plan Summary

GLA Fleet Plan – Final

Critical Area Baseline Coverage

GLA Baseline Resource Capacity

WP2 - Phase 3 – Evaluate, refine centralise planning model and build coordinated plan

Second Quarter Report - Coordinated Fleet Management Planning Summary

Coordinated Planning Final Report

GLA Fleet Eighteen Scenarios

GLA Fleet Six In-depth Scenarios

Work Package 3 - Charter Test and Evaluation

WP3 – Phase 1 – Engage technical specialist and develop market test framework and consider independent report for WP3

Technical Specialist Report

Work Package 4 – Commercial Impact and Future Balance

WP4 – Phase 1 – Review Current Commitments

Commercial Balance Methodology

Review of Current Commercial Commitments

WP4 – Phase 2 – Identify the financial implications and potential benefits from the exploitation of reserve capacity within a coordinated operational plan

Commercial Impact and Future Balance Report

Work Package 5 – Supplementary Solutions Development

WP5 – Phase 1 – Expand, develop Tri-GLA 'Zone Boat' arrangements to support operations

Use of Local Contract Vessels in support of AtoN Maintenance

The Northern Lighthouse Board – Zone Boat Services Directory

Commissioners of Irish Lights Local Boat Operations

Trinity House Local Boat Services Directory

WP5 – Phase 2 & 3 – Alternative Resource Solutions and Alternative Vessel Funding and Delivery Mechanisms

Supplementary Solution Development Report

Work Package 6 – Additional Recommendation Review

WP6 - Phase 1 - Further Work

Houlder Additional Recommendations

Work Package 7 – Fleet Structure Report

WP7 – Phase 1 – Fleet Structure

Fleet Structure Report

Key Supporting Documentation

Houlder Report 2015

Project Documentation
Project Initiation Document - Original

GLA Fleet Review – Phase 2

Project Initiation Document Incorporating Full Project Plan (PID) No. 489

Author: Project Management Working Group
Date: 16/05/2016
Document No: 336037

Project Brief No. 489	Fleet Review – Phase Two SUMMARY	2016/18

Project Requirements

The project will deliver an Implementation plan for future Fleet Structure and management which draws information and conclusions from the following work package reports:

- Centralised monitoring
- Coordinated Planning
- Charter Test and Evaluation
- Commercial Impact and Future Balance
- Supplementary Solutions Assessment
- Additional Recommendations Review
- Fleet Structure Report

Project Timeline

Project Definition Phase	16th May 2016
Centralised Monitoring	July 2016
Coordinated Planning	April 2016 – March 2018
Coordinated Planning Ph 1 – sign off	31st Oct 2016
Charter Test and Evaluation	May 2016 – Nov 2017
Commercial Impact and Future Balance	May 2016 – March 2017
Supplementary Solutions Development	May 2016 – Dec 2017
Additional Recommendations	May 2016 Oct 2017
Fleet Structure Report	May 2018
Final Report and Implementation Plan	July 2018
Completion	Sept 2018

Project ID's	Project Title	Category	Date
489	Fleet Review – Phase 2	Project	

	2015/16	2016/17	2017/18	2018/19	Total ESTIMATE
Current Expenditure Profile		[redacted]	[redacted]		[redacted]
Project Risk Profile		[redacted]	[redacted]		[redacted]

Risk 20 Profile (Ref. Section 6.3) *Estimated risk to line business*	2015/16	2016/17	2017/18	2018/19	Total ESTIMATE
			[redacted]		[redacted]

Project Summary

Background

- Fleet review phase 1 delivered a report from consultants Houlder Ltd. The report contains a number of outcomes but does not give specific recommendations or methods of implementation.

Proposal

- Phase two will review the options and outcomes from phase 1, assess the feasibility of the options presented, consider other means of delivery and then make recommendations based on operational data that will enable a coordinated implementation plan

Benefits

- Reduce risk compared to current arrangements
- Provision of a Value for Money solution
- Stakeholder confidence
- A solution based on agreed data
- A realistic implementation plan

Document History and Approvals

Document Location

The definitive copy of the Project Initiation Document (including revisions) is held by the Project Manager. It is also published on the projects page of worksite.

Revision History

Document Reference	Date	Summary of Changes
336037v1	23/03/16	First draft
336037v2	25/04/2016	Project Management Working Group Review
336037v3	03/05/16	WG Review
336037v4	06/05/16	Updated comments R. McCabe
336037v5	08/05/16	Updated comments P. Day
336037v6	17/05/16	Update following comments from CEC
336037v7	26/05/16	Update following JSB meeting 24/05
336037v8	01/06/16	Update with minor amendments to milestone dates
336037v9	20/07/16	Update following comments from Reference Group meeting
336037v10	06/09/16	Added updated description risk 20, risk 20 added to summary page
336037v11	07/09/16	PDF Signed
336037v12	07/09/16	PDF Signed on Behalf N. Palmer

References Documents

Document No.	Document Title
336,037	Fleet Review PID
338,376	Houlder Final Report
338,374	Project board submission to the Ministers
	Response from Department for Transport
338,377	GLA Fleet Review Phase 2 Outline Project Plan

Approvals @ Prince2TM DP2

Role Responsibilities Details	Name	Date	Signature
ha_opsms 181,793	Ian McNaught (Project Board – Executive – Chair of CEC)	07/09/16	S. Keddie on Behalf of I. McNaught
ha_opsms 181,794	Brendan Coyne (Project Board – Senior Supplier Finance)	07/09/16	S. Keddie on Behalf of B. Coyne
ha_opsms 182,288	Roger Barker (Project Board – Senior Supplier – IGC 5 Chair)	12/08/16	R.H.Barker
ha_opsms 182,289	Nigel Palmer (Project Board – Senior User – Chair JSB)	07/09/16	S. Keddie on Behalf of N. Palmer
ha_opsms 182,002	PWC DfT Internal Audit (Project Assurance – PWC internal audit)		
ha_opsms 182,005	Steve Keddie (Project Manager)	07/09/16	S. Keddie

For Project Board responsibilities see: ha_opsms 208,783

Approvals Finance (DfT)

Name	Date	Signature
Ian Woodman (DfT)		

Management Summary Project

Sanctioned – Project .....[redacted]
Risk - Project.....[redacted]
Sanction Amount (First Year) .....[redacted] (16/17)
Risk Budget (First Year) .....[redacted] (16/17)
Sanction Amount (Second Year) .....[redacted] (17/18)
Risk Budget (Second Year) .....[redacted] (17/18)

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1 Background

The United Kingdom Department for Transport (DfT) led a review of the ships required to enable the General Lighthouse Authorities' (GLAs) to fulfil their statutory duty to maintain marine aids to navigation and respond to dangerous wreck and new danger. The aim was to identify the optimum number of ships, the capability of those ships, and the appropriate ownership and operational management of the ships required during the period 2016-25.

This Fleet Review was undertaken by a Project Board chaired by DfT with representatives from each GLA, the Lights Advisory Committee (representing light dues payers) and DTTAS. The Board procured a specialist maritime consultant (Houlder Ltd) to assist with the Review, which was initiated on the assumption that there were no constraints within the scope established for the work. It delivered to that remit, identifying in a schedule the political, geographic and organisational constraints that would need to be taken into account, and which mean that the outcomes require significant further analysis to verify feasibility.

In particular the report validated the GLA Risk Response Criteria and identified clear deficiencies in the current arrangements for risk response.

The Project Board submitted the Houlder report to ministers with a number of recommendations. The minister responded to the chair of the JSB stating that He should work with each GLA to develop and implement a full project plan for this next phase.

The Ministers response letter detailed the overall purpose of the review recognising importantly that the aim is to secure the most efficient and effective fleet construct, which maintains appropriate levels of navigation safety and, overall, reduces risk compared to the current arrangements.

2 Project Objective

The project will deliver an Implementation plan for future Fleet Structure which draws information and conclusions from the following work package reports:

- Centralised monitoring
- Coordinated Planning
- Charter Test and Evaluation
- Commercial Impact and Future Balance
- Supplementary Solutions Assessment
- Additional Recommendations Review
- Fleet Structure

2.1 Scope

The scope of the project is defined by the project objective being delivered through the work-packages in Para 2.1.1 and expanded in 2.1.2 limited by the exclusions in 3.3 and acknowledging constraints in para 3.4.

2.1.1 Project Structure

The project will be sub-divided into seven main work packages

WP1) Centralised Monitoring
WP2) Coordinated Planning
WP3) Charter, Test and Evaluation
WP4) Commercial Impact and Future Balance
WP5) Supplementary Solutions Assessment
WP6) Additional Recommendations Review
WP7) Fleet Structure Report including GLA risk reduction analysis
WP8) Overall report and implementation plan

2.1.2 Each work package (WP) will have a number of Outline Deliverables

- **WP1 (Centralised Monitoring)**
  - Extend existing monitoring arrangements to make data visible to central planner 24/7 (Go-Live and Report)

Data available 29/07/2016

- **WP2 (Coordinated Planning)**
  - Phase 0 – Project MOU incorporating:-
    - Coordinated Planning - Funding agreement
    - Coordinated Planning - Vessel availability
    - Coordinated Planning - Commercial activity integration
    - Coordinated Planning – Casualty, wrecks, new dangers

MOU Signed 31/01/2017

  - Phase 1 – Establish Tri-GLA framework, organisation, procedures, initial planning tool
    - Coordinated Planning - Tri-GLA framework proposal
    - Coordinated Planning - Organisational proposal
    - Coordinated Planning – Establish planning procedures
    - Coordinated Planning - Establish initial planning tool
    - Coordinated Planning – Input current plans to Coordinated Planning tool
    - Coordinated Planning – Go Live and Report

Plan Signed 31/10/2016

  - Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan
    - Coordinated Planning – 2017/18 NLB Operational requirement
    - Coordinated Planning – 2017/18 Irish Lights Operational requirement
    - Coordinated Planning – 2017/18 Trinity House Operational requirement
    - Coordinated Planning – Overlay 2017/18 Individual GLA requirements into coordinated fleet plan demonstrating risk reduction
    - Coordinated Planning – Sign-off coordinated fleet plan incorporating 2017/18 GLA operational requirements

Operational 01/04/2017

  - Phase 3 – Evaluate, Refine centralise planning model, build coordinated plan
    - Coordinated Planning – Measure success against planned operational requirements, casualty, wreck and new danger response, ability to meet risk response criteria, effect on commercial activities
    - Coordinated Planning – Review and refine central planning tool processes and procedures
    - Coordinated Planning – Report on implementation
  - Phase 4 – Final Post Project MOU (Operation of recommended fleet construct)
    - Coordinated Planning – Consider phase 3 report
    - Coordinated Planning – Post Project Funding agreement

- Coordinated Planning - Post Project vessel availability
- Coordinated Planning - Post Project commercial activity integration
- Coordinated Planning – Post Project casualty, wrecks, new dangers
- Coordinated Planning – Sign-Off MOU and implement

Refined Plan by 31/03/2018

- **WP3 (Charter test and evaluation)**
  - Phase 1 – Engage technical specialist and develop market test framework and consider independent report for WP3
    - Charter test and evaluation – Develop requirements for Independent Technical Specialist
    - Charter test and evaluation – Establish and report finance and budget arrangements for Phase 2 and future business
    - Charter test and evaluation – Contract Independent Technical Specialist
    - Charter test and evaluation – Develop approach to testing the Market
    - Charter test and evaluation – Develop the vessel statement of requirement
    - Charter test and evaluation – Develop test scenarios
    - Charter test and evaluation – Develop report detailing long term costings, market viability, availability
    - Charter test and evaluation – Agree and sign-off Evaluation report
    - Charter test and evaluation – Consider requirement to proceed to phase 2
    - Charter test and evaluation – Consider continued use of Technical Specialist for oversight of Phase 2

Framework in place and report delivered 01/11/2016

  - Phase 2 – Test Market with Contracted Broker
    - Charter test and evaluation – Develop requirements
    - Charter test and evaluation – Agree and sign-off requirements
    - Charter test and evaluation – Assign Contractor
    - Charter test and evaluation – Implement test scenarios and response to real world events in accordance with methodology determined in Phase 1
    - Charter test and evaluation – Evaluate performance against each test criteria and report
    - Charter test and evaluation – Compile overall performance and test report
    - Charter test and evaluation – Sign-off performance and test report

Report delivered and signed off 01/11/2017

- **WP4 (Commercial Impact and Future Balance)**
  - Phase 1– Review Current Commitments
    - Compile Report reviewing current commitments
    - Define methodology to deliver Phase 2
    - Sign-off Current commitments report

Report complete 31/10/2016

  - Phase 2 – Identify the financial implications and potential benefits from the exploitation of reserve capacity within a coordinated operational plan

- Commercial Impact and Future Balance – Assess potential reserve capacity together with exploitation and financial models
- Commercial Impact and Future Balance – Produce reserve capacity report
- Commercial Impact and Future Balance – Sign-off report that details fleet commercial work against operational profile to deliver optimum VFM

Signed off commercial VFM report 31/03/2017

- **WP5 (Supplementary Solutions Development)**
  - Phase 1 – Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations
    - Supplementary solutions – Report 'Zone Boat' arrangements
    - Supplementary solutions – Sign-Off 'Zone Boat' arrangements

Zone Boat arrangements reviewed 30/11/2016

  - Phase 2 – Alternative resource solutions
    - Supplementary solutions – Review the report on the Test and Evaluation from Charter
    - Supplementary solutions – Review the report on Coordinated Planning
    - Supplementary solutions – Perform Gap analysis of requirements and cost effectiveness against report conclusions
    - Supplementary solutions – Consider and Develop Alternative Resource Solutions / Options
    - Supplementary solutions – Review Alternative Resource Solutions
    - Supplementary solutions – Report on Alternative Resource Solutions
    - Supplementary solutions – Sign-off report for Alternative Resource Solutions

Report signed off for alternative resource solutions 01/12/2017

  - Phase 3 - Alternative Vessel Funding and Delivery Mechanisms
    - Analyse Phase 2 report - consider Alternative Resource Solutions
    - Supplementary solutions – Report on Alternative vessel Funding and Delivery Mechanisms
    - Supplementary solutions – Sign-Off Report for Alternative vessel funding and Delivery Mechanisms

Alternative vessel funding and delivery arrangements signed off 01/12/2017

- **WP6 (Additional Recommendation Review)**
  - Phase 1 – Further Work
    - Additional Recommendation Review – Evaluate recommendations identified within table 12 of the Houlder Report
    - Additional Recommendation Review – Develop implementation plan for recommendation's taken forward
    - Additional Recommendations Review - Sign-Off Report Implementation plan

Additional recommendations report delivered 01/10/2017

- **WP7 (Fleet Structure Report)**
  - Phase 1 – Fleet Structure
    - Review report from WP2, WP3, WP4, WP5
    - Evaluate weighting for risk reduction against cost
    - Develop fleet construct proposal
    - Evaluate Commercial balance and reserve capacity following fleet structure experience
    - Sign-off fleet construct proposal

Fleet Structure Report signed off 30/04/2018

- **WP8 (Overall report and implementation plan)**
  - Consolidate reports from WP1-7
  - Develop implementation plan
  - Develop overall report
  - Sign-off of overall report

Overall Report signed off 31/07/2018

Phase 2 Project Closure 01/09/2018

2.1.3 Work-Package Responsibility Matrix

Note: All draft reports will be approved by the Project Management Working Group prior to final report distribution to approval level

Work Package Number	Description	Responsible Team	Team Leader for WP	Supporting Team or Team member	Approval & Sign-Off
WP1	Centralised Monitoring				
	Go-Live	Monitoring task group	Bill Summers	MTG Team	PMWG
	Report	Monitoring task group	Bill Summers	MTG Team	Project Board Chair via PMWG
WP2	Coordinated Planning				
Phase 0	Project MOU				
	Funding Agreement	Funding Task Group	Brendan Coyne	FTG Tri GLA, DfT, DTTAS	Project Board
	Vessel Availability	Project Board	PB Chair	PB	PB Chair
	Commercial Activity Integration	Project Board	PB Chair	PB	PB Chair
	Casualty, Wrecks, New Dangers	Project Board	PB Chair	PB	PB Chair
	Sign-Off MOU and	Project	PB Chair	PB	CEC

	implement	Board			
Phase 1	Tri-GLA framework, organisation, procedures and initial planning tool				
	Tri-GLA framework Proposal	Planning task group	Tony Wright	CFM Team	PMWG
	Organisation proposal	Planning task group	Tony Wright	CFM Team	PMWG
	Establish planning procedures	Planning task group	Tony Wright	CFM Team	PMWG
	Establish initial planning tool	Planning task group	Tony Wright	CFM Team	PMWG
	Input current plans into Coordinated Planning tool	Planning task group	Tony Wright	CFM Team	PMWG
	Go-Live and report	Planning task group	Tony Wright	CFM Team	Project Board via PMWG
Phase 2	Establish Individual GLA operational requirements and develop to coordinated fleet plan				
	2017/18 NLB Operational requirement	Planning task group	Tony Wright	CFM Team	PMWG
	2017/18 Irish Lights Operational requirement	Planning task group	Tony Wright	CFM Team	PMWG
	2017/18 Trinity House Operational requirement	Planning task group	Tony Wright	CFM Team	PMWG
	Overlay 2017/18 Individual GLA requirements into coordinated fleet plan demonstrating risk reduction	Planning task group	Tony Wright	CFM Team	PMWG
	Sign-off coordinated fleet plan incorporating 2017/18 GLA operational requirements	Planning task group	Tony Wright	CFM Team	Project Board via PMWG
Phase 3	Evaluate, Refine centralise planning model, build coordinated plan				
	Measure success against planned operational requirements,	Planning task group	Tony Wright	CFM Team	PMWG

	casualty, wreck and new danger				
	Review and refine central planning tool processes and procedures	Planning task group	Tony Wright	CFM Team	PMWG
	Report on implementation	Planning task group	Tony Wright	CFM Team	PB Chair via PMWG
Phase 4	Post Project MOU (Operation of recommended fleet construct)				
	Consider phase 3 report	Project Board	PB Chair	PB	PB Chair
	Post Project Funding agreement	Funding Task Group	Brendan Coyne	FTG Tri GLA, DfT, DTTAS	Project Board
	Post Project vessel availability	Project Board	PB Chair	PB	PB Chair
	Post Project commercial activity integration	Project Board	PB Chair	PB	PB Chair
	Post Project casualty, wrecks, new dangers	Project Board	PB Chair	PB	PB Chair
	Sign-Off MOU and implement	Project Board	PB Chair	PB	CEC
WP3	Charter Test and Evaluation				
Phase 1	Engage technical specialist and develop market test framework and consider independent report for WP3				
	Develop requirements for Independent Technical Specialist	PMWG	Roger Barker	PMWG	Project Board Chair
	Establish and report finance and budget arrangements for Phase 2 and future business	PMWG	Brendan Coyne	PMWG	Project Board Chair
	Contract Independent Technical Specialist	PMWG	Brendan Coyne	PMWG	Project Board Chair
	Develop approach to testing the	PMWG	Roger Barker	PMWG + Technical	Project Board

	Market			Specialist	Chair
	Develop the vessel statement of requirement	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Develop test scenarios	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Develop report detailing long term costings, market viability, availability	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Agree and sign-off Evaluation report	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Consider requirement to proceed to phase 2	PMWG	Roger Barker	PMWG	Project Board Chair
	Consider continued use of Technical Specialist for oversight of Phase 2	PMWG	Roger Barker	PMWG	Project Board Chair
Phase 2	Test Market with Contracted Broker				
	Develop requirements	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Agree and sign-off requirements	PMWG	Roger Barker	PMWG + Technical Specialist	Project Board Chair
	Assign Contractor	PMWG	Brendan Coyne	PMWG	Project Board Chair
	Implement test scenarios and response to real world events in accordance with methodology determined in Phase 1	PMWG	Roger Barker	PMWG + CFM Team + Technical specialist and Broker	Project Board Chair
	Evaluate performance against each test criteria and report	PMWG	Roger Barker	PMWG + CFM Team + Technical specialist	Project Board Chair
	Compile overall performance and test report	PMWG	Roger Barker	PMWG + CFM Team + Technical specialist	Project Board Chair
	Sign-off performance and test report	PMWG	Roger Barker	PMWG	Project Board Chair
WP4	Commercial Impact and Future Balance				

Phase 1	Review Current Commitments				
	Compile Report reviewing current commitments	Commercial task group (CTG)	Mike Spain	CTG	PMWG
	Define methodology to deliver Phase 2	Commercial task group	Mike Spain	CTG	PMWG
	Sign-off Current commitments report	Commercial task group	Mike Spain	CTG	PB Chair via PMWG
Phase 2	Identify the financial benefits from the exploitation of reserve capacity within a coordinated operational plan				
	Assess potential reserve capacity and exploitation models	Planning task group	Tony Wright	CFM Team + CTG	PMWG
	Produce reserve capacity report	Planning task group	Tony Wright	CFM Team + CTG	PMWG
	Sign-off report that details fleet commercial work against operational profile to deliver optimum VFM	Planning task group	Tony Wright	CFM Team + CTG	PB Chair via PMWG
WP5	Supplementary solutions development				
Phase 1	Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations				
	Report 'Zone Boat' arrangements	Planning task group	Tony Wright	CFM Team	PMWG
	Sign-Off 'Zone Boat' arrangements	Planning task group	Tony Wright	CFM Team	PMWG
Phase 2	Alternative Resource Solutions				
	Review the report on the Test and Evaluation from Charter	PMWG	Roger Barker	PMWG + CFM	PMWG
	Review the report on Coordinated Planning	PMWG	Roger Barker	PMWG + CFM	PMWG
	Perform Gap analysis of	PMWG	Roger Barker	PMWG + CFM	PMWG

	requirements and cost effectiveness against report conclusions				
	Consider and Develop Alternative Resource Solutions / Options	PMWG	Roger Barker	PMWG + CFM	PMWG
	Review Alternative Resource Solutions	PMWG	Roger Barker	PMWG + CFM	PMWG
	Report on Alternative Resource solutions	PMWG	Roger Barker	PMWG + CFM	PMWG
	Sign-off report for Alternative Resource Solutions	PMWG	Roger Barker	PMWG	PB Chair via PMWG
Phase 3	Alternative Vessel Funding and Delivery Mechanisms				
	Report on Alternative vessel Funding and Delivery Mechanisms	PMWG	Roger Barker	PWMG + Funding Task Group + Tech Specialist + Broker	PMWG
	Sign-Off Report for Alternative vessel funding and Delivery Mechanisms	PMWG	Roger Barker	PWMG	PB Chair via PMWG
WP6	Additional Recommendations Review				
Phase 1	Further Work				
	Evaluate recommendations identified within table 12 of the Houlders Report	Planning task group	Tony Wright	CFM Team + CTG as required	PMWG
	Develop implementation plan for recommendation's taken forward	Planning task group	Tony Wright	CFM Team + CTG as required	PMWG
	Sign-Off Report Implementation plan WP7 (Fleet Structure Report)	Planning task group	Tony Wright	CFM Team + CTG as required	PMWG
WP7	Fleet Structure Report				
Phase 1	Fleet Structure				
	Review report from	PMWG	PMWG	PMWG +	PMWG

	WP2, WP3, WP4, WP5		Chair	CFM + CTG + Tech Specialist	
	Evaluate weighting for risk reduction against cost	PMWG	PMWG Chair	PMWG + CFM + CTG + Tech Specialist	PMWG
	Develop fleet construct proposal	PMWG	PMWG Chair	PMWG + CFM + CTG + Tech Specialist	PMWG
	Evaluate Commercial Balance and reserve capacity following fleet structure experience	PMWG	PMWG Chair	PMWG + CFM + CTG	PMWG
	Sign-off of fleet construct proposal	PMWG	PMWG Chair	PMWG	PB Chair via PMWG
WP8	Overall Report and Implementation plan				
	Consolidate reports from WP1-7	PMWG	PMWG Chair	PMWG + CFM + CTG + FTG + Tech Specialist	PB Chair
	Develop implementation plan	Project Board	Project Board Chair	Project Board	Project Board Chair
	Develop final report	Project Board	Project Board Chair	Project Board	Project Board Chair
	Sign-off of overall report				CEC Via GLA Boards

3 Project Communications Plan and Escalation Procedure

3.1 Project Communications

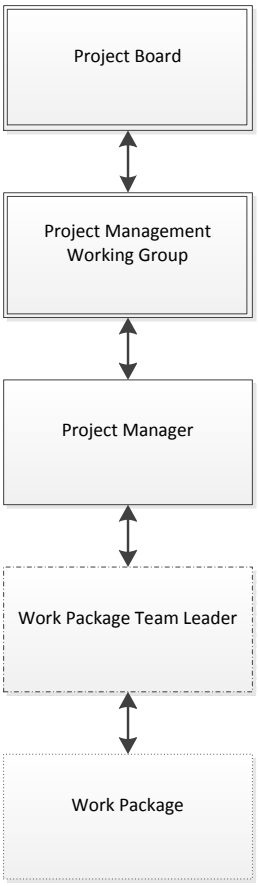
3.1.1 Project Summary Report

Content:	Short summary taken from monthly Work Package Highlight report
Timing:	Generated as required and prior to key meetings.
Responsible:	Chair Project Management Working Group
Distribution:	Project Board, JSB and Reference Group

3.1.2 Monthly Reports

Content:	Summary of status for last reporting period for each work package Task undertaken within last period Next reporting period activities Identified Issues and Risks Financial Tracking Schedule tracking
Timing:	Monthly to feed into PMWG meetings
Responsibility:	Task group leader to update each work package PM to coordinate and distribute
Approval:	Project management working group
Distribution:	Project Management Working Group Project Board Work package task leaders

3.2 Project Escalation Process



3.3 Exclusions

- Any change in fleet construct prior to agreed future solution and implementation
- Activities not relevant to Fleet Review
- Any changes to AtoN requirement

3.4 Constraints

This project may be constrained by:

- Potential negative effects on commercial income
- Current commercial commitment
- Current resource commitment
- Government Policies (Escalation procedure to appropriate department)
- Existing Funding arrangements (Escalation procedure to appropriate department)

4 Project Plan

4.1 Plan Description

This project plan outlines the content and conduct for phase 2 of the GLA Fleet Review and will deliver the composition and an implementation plan for the future fleet construct.

4.2 Plan Prerequisites

- DfT & DTTAS interim funding agreement for Irish Lights.
- Approval of any changes to endorsed Corporate Plans.
- DFT sanction for project funding
- Individual GLA Board approval for process

4.3 Dependencies and Co-ordination

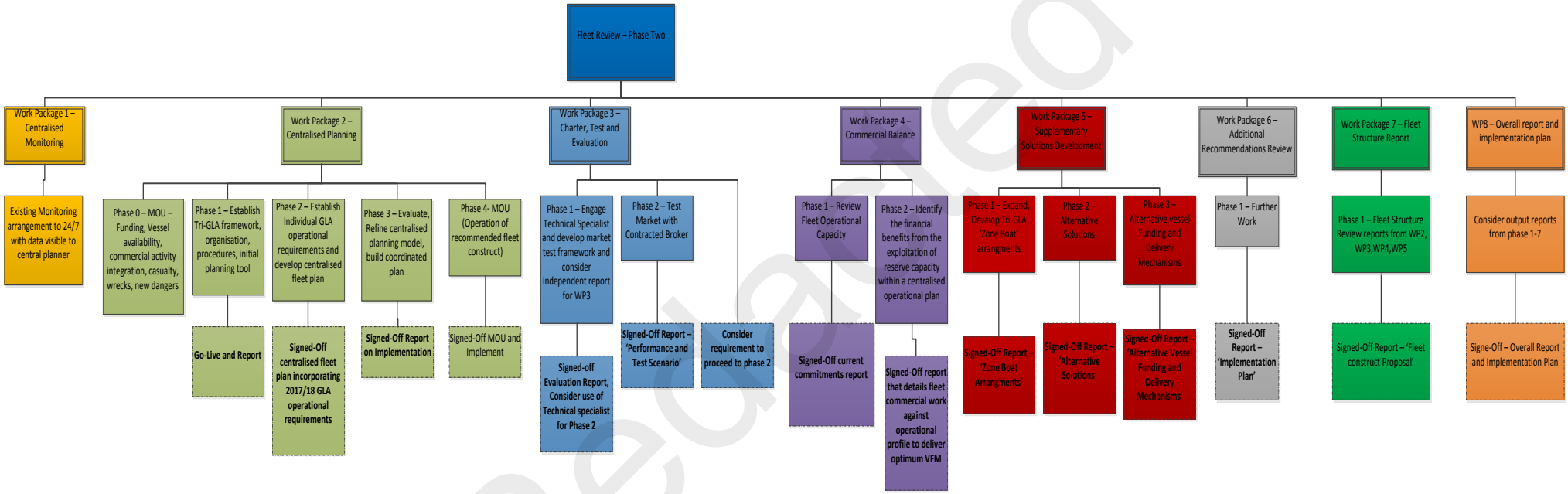
Additionally the Project may have an impact on or be affected by the following activities

- GLA Board meetings
- GLA work arrangement and cooperation

4.4 Planning Assumptions

- Internal resources are available to complete the assigned tasks. The situation regarding resource will be closely monitored and external resources are not excluded from providing additional resource
- Commercial work will be constrained from 1st April 2017

4.5 Product Breakdown Structure



4.6 Product Delivery Schedule

This table shows all milestones for the project in date order (soonest to latest). The major project deliverables are highlighted in yellow for clarity.

Work Package Number	Phase	Task Description	Completion Date
		Mandate approval gateway (Baseline 0 & 1)	18/03/16
		Project DP3 - Stage Approval (Baseline 0 & 7)	18/03/16
		Project PID Distribution	10/05/16
		Project PID Feedback Deadline	10/05/16
		Project PID Sign-Off	**16/05/16**
		Project Definition Phase	07/06/16
		Funding approval	**07/06/16**
		Project DP2 - PID approval gateway (Baseline 0 & 3)	07/06/16
		Commercial Impact and Future Balance - Phase 1 (Deadline for Report - Current Commitments)	**12/07/16**
		Charter, Test & Evaluation - Phase 1 (Contract Independent Technical Specialist)	**20/07/16**

Work Package Number	Phase	Task Description	Completion Date
WP1		**Extend Existing monitoring arrangements to 24/7 (Data visible to Central Planner)**	**29/07/16**
		Project DP3 - Stage Baseline (0 & 4)	29/07/16
		Charter, Test & Evaluation - Phase 1 (Deliver interim report for approach, scenarios, vessel requirements)	10/08/16
		Supplementary Solution Development - Phase 1 (Deadline for Feedback Report - 'Zone Boat Arrangements')	10/08/16
		Coordinated Planning - Phase 1 (Revised coordinated plan feedback deadline)	01/09/16
		Coordinated Planning - Phase 0 (MOU Feedback Deadline)	08/09/16
		Supplementary Solutions - Phase 3 (Deadline for feedback - Report - Alternative Funding and delivery mechanisms)	08/09/16
		Charter, Test & Evaluation (Deadline for feedback on report)	28/09/16
		Coordinated Planning - Phase 1 (Establish Tri-GLA framework, organisation, procedures, initial planning tool)	31/10/16
WP2	**1**	**Coordinated Planning - Phase 1 (Revised Report / Plan sign-Off / Go-Live)**	**31/10/16**
		Commercial Impact and Future Balance - Phase 1 (Review Current Commitments)	31/10/16
WP4	**1**	**Commercial Impact and Future Balance - Phase 1 (Sign-Off Report - Current Commitments)**	**31/10/16**

Work Package Number	Phase	Task Description	Completion Date
		Charter, Test & Evaluation - Phase 1 (Engage Technical Specialist and develop market test framework and consider independent report for WP3)	01/11/16
WP3	**1**	**Charter, Test & Evaluation - Phase 1 (Establish and report finance and budget arrangements for Phase 2 and future business - Sign-off)**	**01/11/16**
WP3	**1**	**Charter, Test & Evaluation (Sign-off Report - Technical specialist)**	**01/11/16**
WP3	**1**	**Consider requirement to proceed to phase 2**	**01/11/16**
		Charter, Test & Evaluation (Assign Broker / Contractor)	03/11/16
		Supplementary Solutions Development - Phase 1 (Expand, Develop Tri-GLA 'Zone Boat' Arrangements to support operations)	30/11/16
WP5	**1**	**Supplementary Solution Development - Phase 1 (Sign-Off Report - 'Zone Boat Arrangements')**	**30/11/16**
		Additional Recommendations - Phase 1 (Deadline for Feedback - Report - Implementation Plan)	09/12/16
		Coordinated Planning - Phase 0 (MOU)	31/01/17
WP2	**0**	**Coordinated Planning - Phase 0 (DFT, DTTAS, GLA Chief EXEC sign-off of MOU)**	**31/01/17**
		Coordinated Planning - Phase 2 (Deadline for feedback, overlaid coordinated plan incorporating 2017/18 GLA individual operational requirements)	13/02/17
		Commercial Impact and Future Balance - Phase 2 (Deadline for feedback on report that details fleet commercial work against operational profile to deliver Optimum VFM)	27/02/17

Work Package Number	Phase	Task Description	Completion Date
		Coordinated Planning - Phase 2 (Establish Individual GLA operational requirement and develop coordinated fleet plan)	31/03/17
WP2	**2**	**Coordinated Planning - Phase 2 (Sign-Off overlaid coordinated plan incorporating 2017/18 GLA individual operational requirements)**	**31/03/17**
		Fleet Review Phase 2 Project Work Package 4 (Commercial Impact and Future Balance)	31/03/17
		Commercial Impact and Future Balance - Phase 2 (Identify the financial benefits from exploitation of reserve capacity within a coordinated operational plan)	31/03/17
WP4	**2**	**Commercial Impact and Future Balance - Phase 2 (Sign-Off report that details fleet commercial work against operational profile to deliver Optimum VFM)**	**31/03/17**
		Charter, Test & Evaluation (6 Month Review Gate)	15/05/17
		Supplementary Solutions - Phase 2 (Report - Alternative Resource Solutions)	14/06/17
		Supplementary Solutions - Phase 2 (Deadline for feedback Report - Alternative Resource Solutions)	28/06/17
		Fleet Review Phase 2 Project Work Package 6 (Additional Recommendations Review)	02/10/17
		Additional Recommendations - Phase 1 (Further Work)	02/10/17
WP6	**1**	**Additional Recommendations - Phase 1 (Sign-Off Report - Implementation Plan)**	**02/10/17**
		Fleet Review Phase 2 Project Work Package 3 (Charter test and evaluation)	01/11/17

Work Package Number	Phase	Task Description	Completion Date
		Charter Test & Evaluation - Phase 2 (Test Market with Contracted Broker)	01/11/17
WP3	**2**	**Charter, Test & Evaluation (Sign-Off Report - Performance and test scenario)**	**01/11/17**
		Project DP3 - Stage Baseline (0 & 6)	01/11/17
		Centralise Planning - Phase 3 (Feedback Deadline Report - Implementation)	20/11/17
		Fleet Review Phase 2 Project Work Package 5 (Supplementary Solutions development)	01/12/17
		Supplementary Solutions - Phase 2 (Alternative Resource Solutions)	01/12/17
WP5	**2**	**Supplementary Solutions - Phase 2 (Sign-Off Report - Alternative Resource Solutions)**	**01/12/17**
		Supplementary Solutions - Phase 3 (Alternative Vessel Funding and delivery mechanisms)	01/12/17
WP5	**3**	**Supplementary Solutions - Phase 3 (Sign-Off Report - Alternative Funding and delivery mechanisms)**	**01/12/17**
		Fleet Structure - Phase 1 (Deadline for Feedback - Fleet construct proposal)	28/12/17
		Coordinated Planning - Phase 3 (Evaluate, refine centralise planning model , build coordinated plan	04/01/18

Work Package Number	Phase	Task Description	Completion Date
WP2	**3**	**Coordinated planning - Phase 3 (Report - Implementation sign-off)**	**04/01/18**
		Coordinated Planning - Phase 4 (Deadline for Feedback MOU - Operation of Recommended Fleet Construct)	23/03/18
		Fleet Review Phase 2 Project Work Package 2 (Coordinated Planning)	30/03/18
		Coordinated Planning - Phase 4 - MOU (Operation of recommended fleet construct)	30/03/18
WP2	**4**	**Coordinated Planning - Phase 4 (Sign-Off MOU - Operation of Recommended Fleet Construct)**	**30/03/18**
		Project DP3 - Stage Baseline (0 & 5)	30/03/18
		Fleet Review Phase 2 Project Work Package 7 (Fleet Structure Report)	30/04/18
		Fleet Structure - Phase 1 (Fleet Structure)	30/04/18
WP7	**1**	**Fleet Structure - Phase 1 (Sign-Off - Fleet construct proposal)**	**30/04/18**
		Overall Report - Phase 1 (Deadline for feedback - Overall Report)	23/07/18
WP8		**Overall Report - Phase 1 (Sign-Off - Overall Report)**	**31/07/18**
		Project DP4 - Stage Approval (Baseline 0 & 8)	31/07/18

Work Package Number	Phase	Task Description	Completion Date
		Fleet Review Phase 2 Project Work Package 8 (Overall report and implementation plan)	06/08/18
		Fleet Structure - Phase 1 (Overall Report and implementation plan)	06/08/18
		Fleet Review Phase Two PID 489	03/09/18
		Project DP5 - CE4 sign-off and closure (Baseline 0 & 9)	**03/09/18**

4.7 Acceptance Criteria Matrix

The section outlines the overall planned acceptance criteria for each work package, however it is recognised that work package results will impact future work packages and therefore an acceptance criteria review will be held at the start of each work package to determine a detailed acceptance criteria.
To enable timely delivery of the project, document review and comment are to be completed prior to the deadline given in the project Gantt chart. Failure to meet the deadlines will be taken as agreement of the deliverable.

Rules of engagement for each work package:

4.7.1 WP1 - Centralised Monitoring

Objective:	To provide 24 hour monitoring to the central planning team.
Conduct:	While awaiting the tri GLA monitoring project outcomes, ensure that 24/7 data provided by each GLA is available for use by the Central Planning Team.
Acceptance Criteria:	Three GLA Operations Directors to sign document that 24/7 monitoring arrangements are adequate for the purpose of Coordinated Planning.

4.7.2 WP2 - Coordinated Planning

Phase 0 – Project MoU

Objective:	To establish a framework agreement acceptable to each GLA Board which forms the basis for Coordinated Planning of tri-GLA vessels. MOU to include level of commitment of asset availability to conduct routine maintenance work, response to RRC, arrangements for the conduct of commercial activity and funding arrangements.
Conduct:	Draft to be generated by designated project staff incorporating tri-GLA views, endorsed by Chief Execs on behalf of GLA Boards. DfT and DTTAS confirmation of funding arrangements also required.
Acceptance Criteria:	MoU developed to the satisfaction of each GLA Board, (including funding arrangements endorsed by DfT/DTTAS) and signed by Chief Executives.

Phase 1 – Establish Tri-GLA framework, organisation, procedures, initial planning tool

Objective:	To establish an agreed organisational structure and framework of procedures for the coordination and execution of a Tri-GLA plan.
Conduct:	Establish a planning tool sufficient to incorporate all requirements and to provide the outputs required for the execution and adaption of the plan having injected current plans into the tool.
Acceptance Criteria:	16/17 operational plan incorporated live into agreed planning tool with associated organisational procedures established to the satisfaction of the PMWG.

Phase 2 – Establish Individual GLA operational requirements and Develop to coordinated fleet plan

Objective:	Execute current (16/17) plans and establish 2017/18 operational requirements entering into planning tool for period commencing 01 April 17.

Conduct: Execute 17/18 plan while establishing resource requirements utilising all assets for conduct of routine statutory work and meeting Risk Response Criteria (RRC). Identify reserve or under capacity of capability required to meet statutory requirements.

Acceptance Criteria: All statutory work and RRC achieved plus all operational requirements entered into the planning tool for period commencing 1st April 2017.

Phase 3 – Evaluate, refine Coordinated Planning model, build coordinated plan

Objective: Measure success against planned operational requirements, casualty, wreck and new danger response, ability to meet risk response criteria, effect on commercial activities

Conduct: Planning team record and evaluate implementation of 16/17 and 17/18 operational plans

Acceptance Criteria: A comprehensive record and report for the period 01 Apr 17 – 01 Apr 18 identifying performance in the following areas:

- T1&2/ T3&4 maintenance
- T1&2/ T3&4 casualty
- New danger/wreck location and marking

In addition, record where charter vessels were called upon to supplement existing fleet. (Charter work stream to record degree of success).

Phase 4 – MOU (Operation of recommended fleet construct)

Objective: To establish a framework agreement acceptable to each GLA Board which forms the basis for post project Coordinated Planning of tri-GLA vessels. To include level of commitment of asset availability to conduct routine maintenance work, response to RRC, arrangements for the conduct of commercial activity and funding arrangements.

Conduct: Draft to be generated by designated project staff incorporating tri-GLA views, endorsed by Chief Execs on behalf of GLA Boards and by DfT representative with respect to funding arrangements.

Acceptance Criteria: MoU developed to the satisfaction of each GLA Board, including funding arrangements, with the additional endorsement of DfT/DTTAS and signed by Chief Executives.

4.7.3 WP3 - Charter Test and Evaluation

Phase 1 – Engage Technical Specialist and develop market test framework and consider independent report for WP3

Objective: Seek additional professional expertise (at cost to be determined) to report on variables associated with short term charter approach. Assist in developing approach to testing the market and building the Statement of Requirement for a potential Broker, to feed Phase 2.

Conduct: Establish contractual basis for professional support and scope of work and bring Technical Specialist on to contract. Develop approach to market testing including determination of appropriate sample size, SoR for ship chartering and SoR for contracting a suitable Broker to facilitate in Phase 2. Deliver report for GLA risk appreciation. GLA Boards to review and assess against risk appetite to determine areas of feasibility.

Acceptance Criteria: Successful ITT process, Delivery of Approach to Market test report. SoR developed and delivered. Risk report submitted.
Report agreed and signed detailing finance and budget arrangements for Phase 2 and future business

Consider and decide whether to proceed to WP3 Phase 2 'Test Market with Contracted Broker'

Phase 2 – Test Market with Contracted Broker

Objective: Implement test scenarios and response to real world events in accordance with methodology determined in Phase 1.

Conduct: Establish Broker/Brokers on contract with scope of work including agreed approach to Short Term Charter market testing. Conduct one year of charter testing through all seasons of demand, capability requirement and availability. Establish number of live tests to conduct and the number of scenario based tests in accordance with developed method of testing.

Acceptance Criteria: Provide live updates on success, against set criteria of capability and scenario, and Houlder report estimates; deliver 3 monthly reports and a final 12 month report of market testing.

4.7.4 WP4 - Commercial Impact and Future Balance

Phase1 – Review current commitments

Objective: Compile report on existing commitments

Conduct: Commercial/business development managers compile report on existing GLA commitment to commercial work. And define methodology for phase 2

Acceptance Criteria: Signed off report

Phase 2– Identify the financial benefits from the exploitation of reserve capacity within a coordinated operational plan

Objective: Assess post project potential reserve capacity together with exploitation and financial models.

Conduct: Taking into account findings from other WP Commercial/business development managers compile report on future GLA potential commitment to commercial work and financial arrangement.

Acceptance Criteria: signed off report

4.7.5 WP5 - Supplementary Solutions

Phase 1 – Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations

Objective: Expand and develop Tri-GLA 'Zone Boat' arrangements to support operations as an element of a layered fleet model.

Conduct: Assess each GLA existing arrangements and compile a directory of local boats of known standard. Consider appropriate contractual basis for use within layered fleet.

Acceptance Criteria: Delivery of a directory of all GLA local (Zone) boats with standards understood and contractual basis for use agreed by Chief Execs.

Phase 2 – Alternative Resource Solutions

Objective: To remain open to emerging opportunities, alternative delivery models and funding solutions. As charter test and evaluation develops, prepare to cost and evaluate alternative resource solutions should RRC, cost effectiveness and overall workload not be achievable.

Conduct: Should excess or shortfall in capability/capacity exist then consider alternative or supplementary means of delivery GLA responsibilities.

Acceptance Criteria: Signed off report detailing a range of costed solutions which mitigate risk to acceptable level.

Phase 3 – Alternative Vessel Funding and Delivery Mechanisms

Objective: To investigate alternative funding and delivery mechanisms to deliver required capability to assure a VfM solution.

Conduct: Identify and examine delivery solutions and funding mechanisms not covered within the Houlder report or not examined sufficiently. Look for emerging opportunities as the project develops and provide costed solutions for comparison which include a balance and assessment of risk and cost.

Acceptance Criteria: Delivery of a costed and risk mitigated fleet model which includes identified alternative resource solutions if appropriate, agreed by Chief Execs'.

4.7.6 WP6 - Additional Recommendations Review

Phase 1 – Further work

Objective: To evaluate the additional recommendations made within the Houlder report and assess to feasibility, desirability and value for money. Establish plan for implementation of those taken forward.

Conduct: Review recommendations and assess on case by case basis; feasibility, benefit, VfM and timeline for implementation if appropriate.

Acceptance Criteria: Delivery of consolidated document indicating intentions for each recommendation, agreed by Chief Execs.

4.7.7 WP7 – Fleet Structure

Phase 1 – Fleet Structure

Objective: With reference to the reports generated within WP2, WP3, WP4, WP5 evaluate a weighting for risk reduction against cost and develop a fleet construct proposal

Conduct: Review reports from WP2, 3, 4 & 5 and develop model evaluating risk reduction against cost to develop final cost assessed layered fleet construct proposal which reduces risk compared to the current arrangements.

Acceptance Criteria: Signed off report by CEC.

4.7.8 WP8 – Overall Report and Implementation Plan

Objective: The assessment of all reports to determine a consolidated report detailing a desired solution and implementation plan that offers a VfM outcome which balances cost and risk to the satisfaction of each GLA Board, for DfT and where appropriate DTTAS approval for implementation through the corporate planning process.

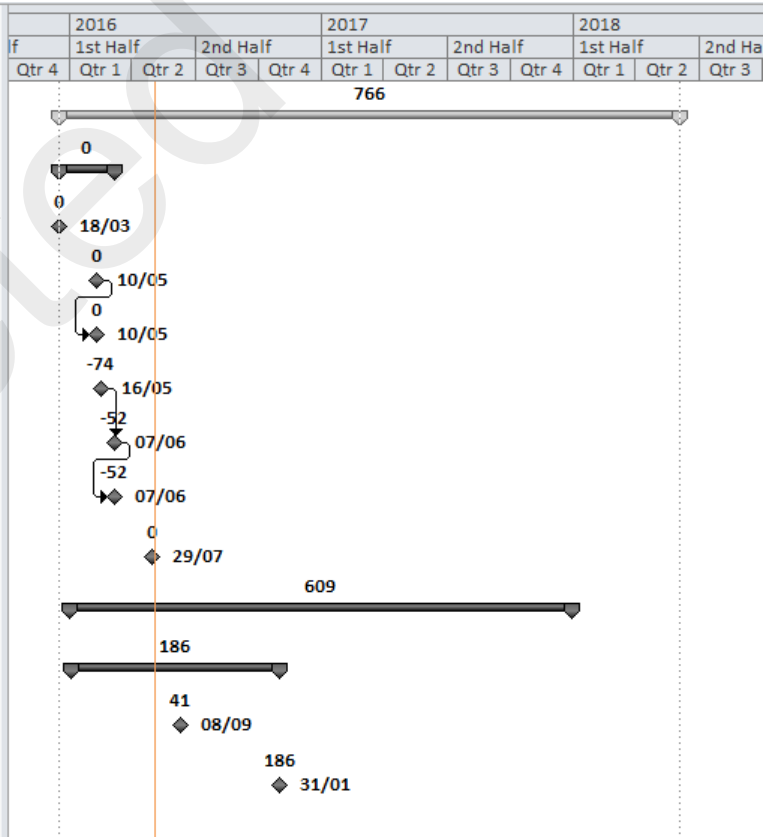
Conduct: Review reports from WP1 to 7 and provide overarching summary report and implementation plan suitable for GLA Board

Acceptance Criteria: Signed off report by CEC.

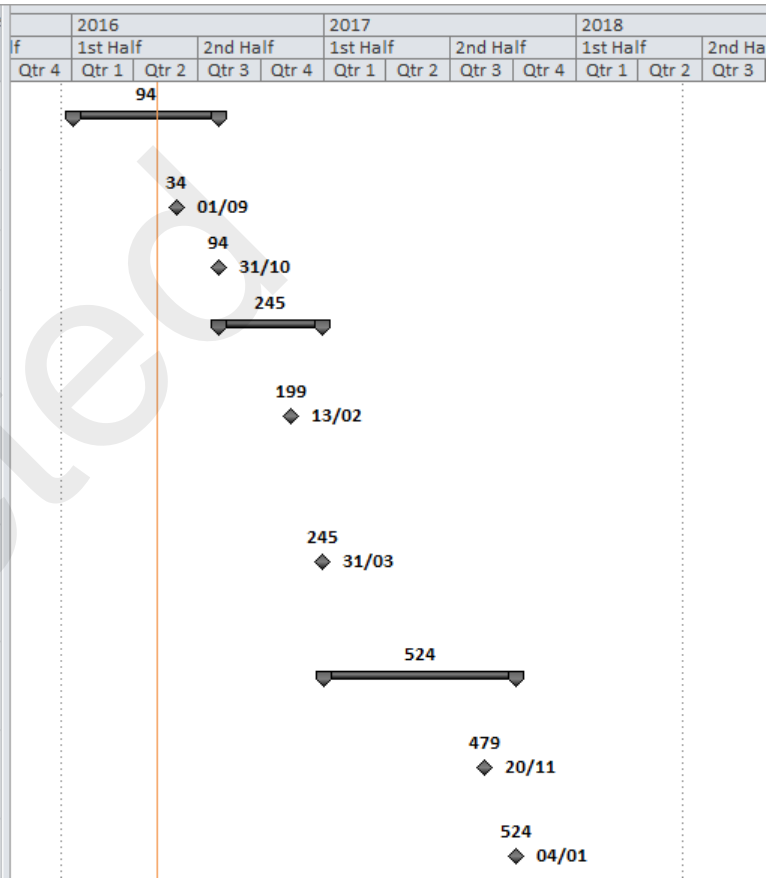
4.8 Programme of Works

4.8.1 Milestone Gantt

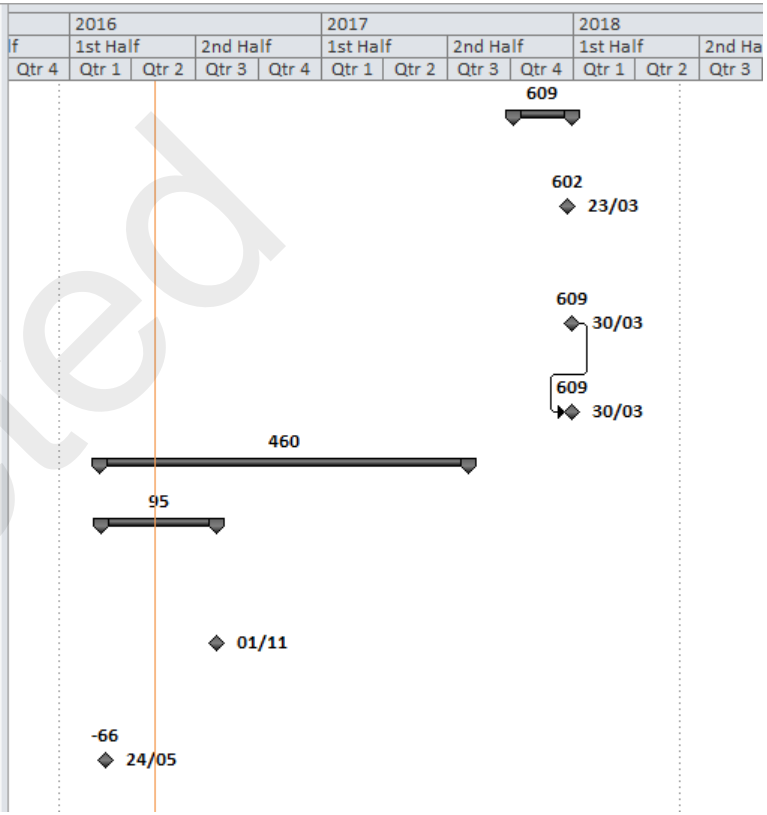
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
0	5%		**Fleet Review Phase Two PID 489**	**625 days?**	**Fri 18/03/16**	**Mon 03/09/18**	
2	97%		**Project Definition Phase**	**53 days**	**Fri 18/03/16**	**Tue 07/06/16**	
4	100%		Mandate approval gateway (Baseline 0 & 1	0 days	Fri 18/03/16	Fri 18/03/16	
10	100%		Project PID Distribution	0 days	Tue 10/05/16	Tue 10/05/16	9
11	100%		Project PID Feedback Deadline	0 days	Tue 10/05/16	Tue 10/05/16	10
13	90%		Project PID Sign-Off	0 days	Mon 16/05/16	Mon 16/05/16	12
14	0%		Funding approval	0 days	Tue 07/06/16	Tue 07/06/16	13
15	0%		Project DP2 - PID approval gateway (Baseline 0 & 3)	0 days	Tue 07/06/16	Tue 07/06/16	14
20	0%		Project DP3 - Stage Baseline (0 & 4)	0 days	Fri 29/07/16	Fri 29/07/16	19
21	1%	WP2	**Fleet Review Phase 2 Project Work Package 2 (Coordinated Planning)**	**506 days**	**Fri 01/04/16**	**Fri 30/03/18**	
23	0%		**Centralised Planning - Phase 0 (MOU)**	**209 days**	**Mon 04/04/16**	**Tue 31/01/17**	
31	0%		Centralised Planning - Phase 0 (MOU Feedback Deadline)	0 days	Thu 08/09/16	Thu 08/09/16	30
33	0%		Centralised Planning - Phase 0 (DFT, DTTAS, GLA Chief EXEC sign-off of MOU)	0 days	Tue 31/01/17	Tue 31/01/17	32



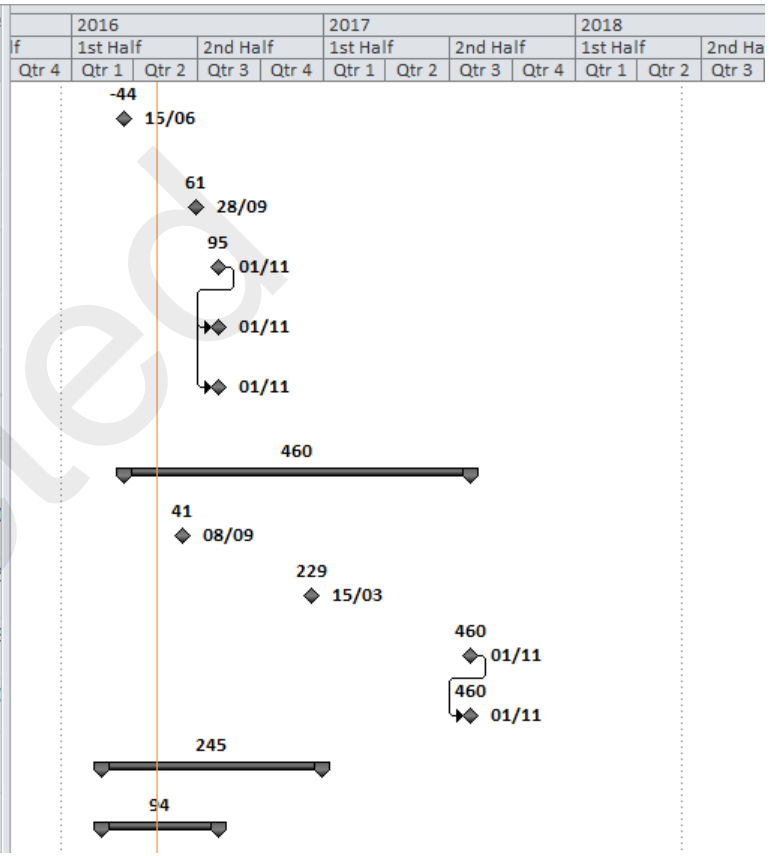
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
34	**5%**		**Centralised Planning - Phase 1 (Establish Tri-GLA framework, organisation, procedures, initial planning tool)**	**147 days**	**Mon 04/04/16**	**Mon 31/10/16**	
42	0%		Centralised Planning - Phase 1 (Revised centralised plan feedback deadline)	0 days	Thu 01/09/16	Thu 01/09/16	41
44	0%		Centralised planning - Phase 1 (Revised Report / Plan sign-Off / Go-Live)	0 days	Mon 31/10/16	Mon 31/10/16	43
45	**0%**		**Centralised Planning - Phase 2 (Establish Individual GLA operational requirement and develop centralised fleet plan)**	**104 days**	**Tue 01/11/16**	**Fri 31/03/17**	
52	0%		Centralised Planning - Phase 2 (Deadline for feedback, overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	0 days	Mon 13/02/17	Mon 13/02/17	51
54	0%		Centralised Planning - Phase 2 (Sign-Off overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	0 days	Fri 31/03/17	Fri 31/03/17	53
55	**0%**		**Centralised Planning - Phase 3 (Evaluate, refine centralise planning model , build coordinated plan**	**191 days**	**Mon 03/04/17**	**Thu 04/01/18**	
61	0%		Centralise Planning - Phase 3 (Feedback Deadline Report - Implementation)	0 days	Mon 20/11/17	Mon 20/11/17	60
63	0%		Centralise planning - Phase 3 (Report - Implementation sign-off)	0 days	Thu 04/01/18	Thu 04/01/18	62



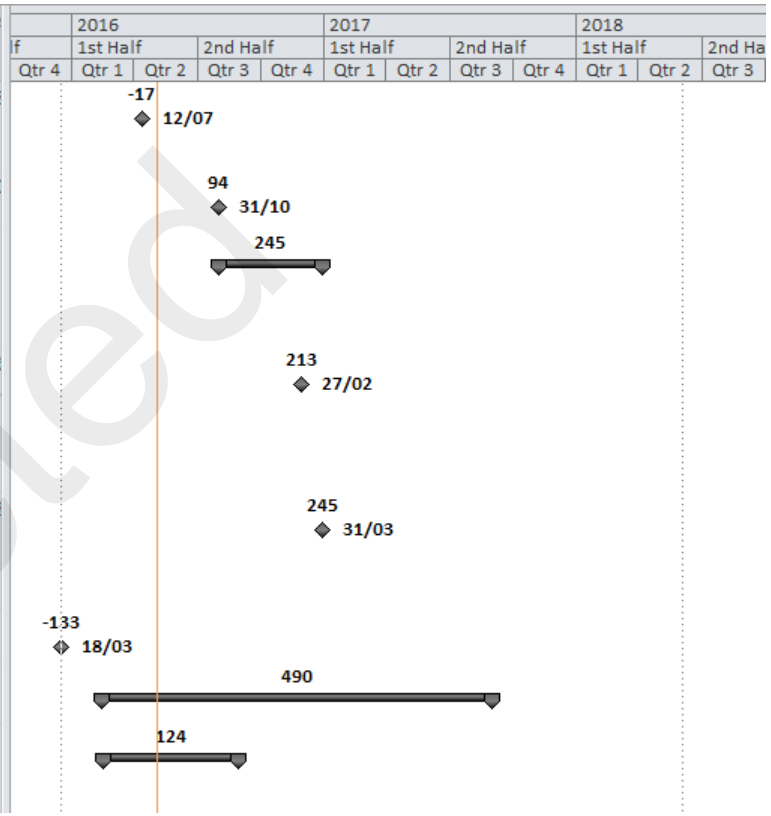
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
64	**0%**		**Centralised Planning - Phase 4 - MOU (Operation of recommended fleet construct)**	**61 days**	**Fri 05/01/18**	**Fri 30/03/18**	
73	0%		Centralised Planning - Phase 4 (Deadline for Feedback MOU - Operation of Recommended Fleet Construct)	0 days	Fri 23/03/18	Fri 23/03/18	72
75	0%		Centralised Planning - Phase 4 (Sign-Off MOU - Operation of Recommended Fleet Construct)	0 days	Fri 30/03/18	Fri 30/03/18	74
76	0%		Project DP3 - Stage Baseline (0 & 5)	0 days	Fri 30/03/18	Fri 30/03/18	75
77	**1%**	**WP3**	**Fleet Review Phase 2 Project Work Package 3 (Charter test and evaluation)**	**371 days**	**Mon 16/05/16**	**Wed 01/11/17**	
79	**2%**		**Charter, Test & Evaluation - Phase 1 (Engage Technical Specialist and develop market test framework and consider independent report for WP3)**	**118 days**	**Tue 17/05/16**	**Tue 01/11/16**	
83	0%		Charter, Test & Evaluation - Phase 1 (Establish and report finance and budget arrangements for Phase 2 and future business - Sign-off)	0 days	Tue 01/11/16	Tue 01/11/16	82
84	0%		Charter, Test & Evaluation - Phase 1 (Contract Independent Technical Specialist)	0 days	Tue 24/05/16	Tue 24/05/16	81



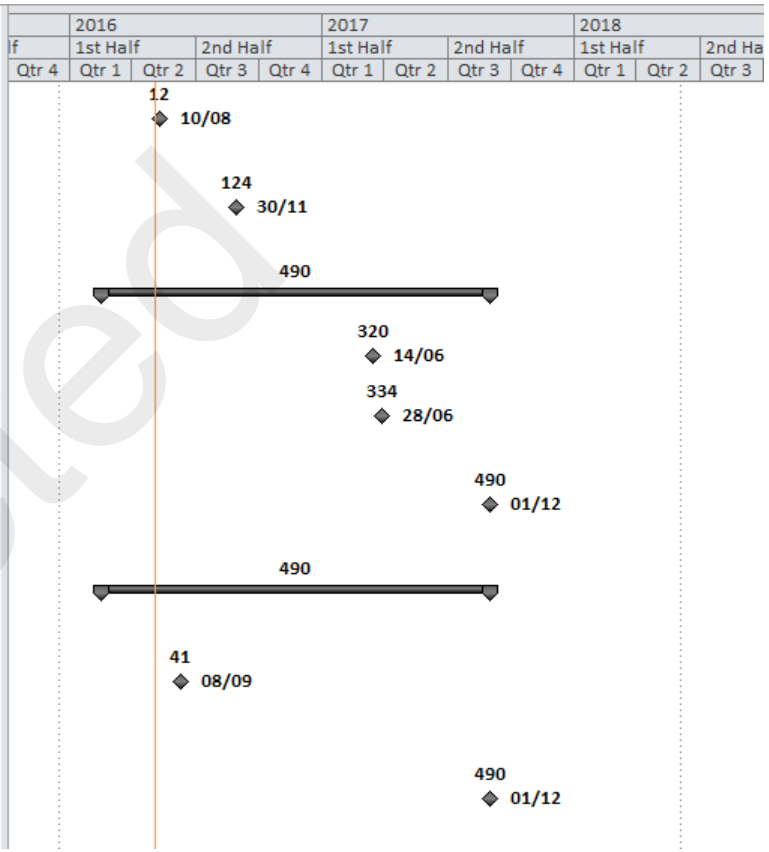
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
88	0%		Charter, Test & Evaluation - Phase 1 (Deliver interim report for approach, scenarios, vessel requirements)	0 days	Wed 15/06/16	Wed 15/06/16	87
91	0%		Charter, Test & Evaluation (Deadline for feedback on report)	0 days	Wed 28/09/16	Wed 28/09/16	90
93	0%		Charter, Test & Evaluation (Sign-off Report)	0 days	Tue 01/11/16	Tue 01/11/16	92
94	0%		Consider requirement to proceed to phase 2	0 days	Tue 01/11/16	Tue 01/11/16	93
95	0%		Charter, Test & Evaluation (Consider continued use of Technical Specialist for oversight of Phase 2)	0 days	Tue 01/11/16	Tue 01/11/16	93
96	**0%**		**Charter Test & Evaluation - Phase 2 (Test Market with Contracted Broker)**	**349 days**	**Thu 16/06/16**	**Wed 01/11/17**	
101	0%		Charter, Test & Evaluation (Asign Contractor)	0 days	Thu 08/09/16	Thu 08/09/16	100
106	0%		Charter, Test & Evaluation (6 Month Review Gate)	0 days	Wed 15/03/17	Wed 15/03/17	105
110	0%		Charter, Test & Evaluation (Sign-Off Report - Performance and test senario)	0 days	Wed 01/11/17	Wed 01/11/17	109
111	0%		Project DP3 - Stage Baseline (0 & 6)	0 days	Wed 01/11/17	Wed 01/11/17	110
112	**3%**	**WP4**	**Fleet Review Phase 2 Project Work Package 4 (Commercial Impact and Future Balance)**	**223 days**	**Mon 16/05/16**	**Fri 31/03/17**	
114	**7%**		**Commercial Balance - Phase 1 (Review Current Commitments)**	**118 days**	**Mon 16/05/16**	**Mon 31/10/16**	



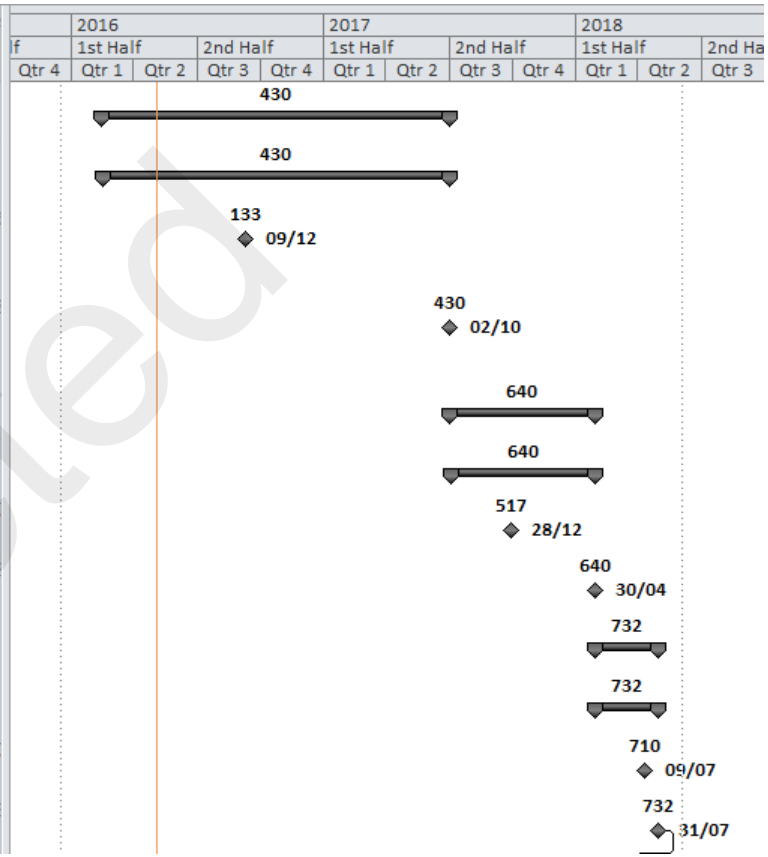
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
119	0%		Commercial Balance - Phase 1 (Deadline for Report - Current Commitments)	0 days	Tue 12/07/16	Tue 12/07/16	118
121	0%		Commercial Balance - Phase 1 (Sign-Off Report - Current Commitments)	0 days	Mon 31/10/16	Mon 31/10/16	120
122	**0%**		**Commercial Balance - Phase 2 (Identify the financial benefits from exploitation of reserve capacity within a centralised operational plan)**	**104 days**	**Tue 01/11/16**	**Fri 31/03/17**	
127	0%		Commercial Balance - Phase 2 (Deadline for feedback on report that details fleet commercial work against operational profile to deliver Optimum VFM)	0 days	Mon 27/02/17	Mon 27/02/17	126
129	0%		Commercial Balance - Phase 2 (Sign-Off report that details fleet commercial work against operational profile to deliver Optimum VFM)	0 days	Fri 31/03/17	Fri 31/03/17	128
130	0%		Project DP3 - Stage Approval (Baseline 0 & 7)	0 days	Fri 18/03/16	Fri 18/03/16	
131	**1%**	**WP5**	**Fleet Review Phase 2 Project Work Package 5 (Supplimentary Solutions development)**	**393 days**	**Mon 16/05/16**	**Fri 01/12/17**	
133	**3%**		**Supplimentary Solutions Development - Phase 1 (Expand, Develop Tri-GLA 'Zone Boat' Arrangments to support operations)**	**139 days**	**Tue 17/05/16**	**Wed 30/11/16**	



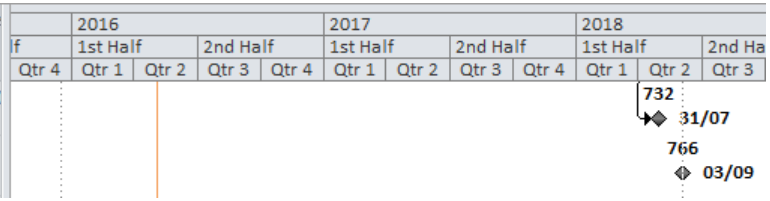
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
137	0%		Supplimentary Solution Development - Phase 1 (Deadline for Feedback Report - 'Zone Boat Arrangments')	0 days	Wed 10/08/16	Wed 10/08/16	136
139	0%		Supplimentary Solution Development - Phase 1 (Sign-Off Report - 'Zone Boat Arrangments')	0 days	Wed 30/11/16	Wed 30/11/16	138
140	**0%**		**Supplimentary Solutions - Phase 2 (Alternative Solutions)**	**392 days**	**Tue 17/05/16**	**Fri 01/12/17**	
147	0%		Supplimentary Solutions - Phase 2 (Report - Alternative Solutions)	0 days	Wed 14/06/17	Wed 14/06/17	146
149	0%		Supplimentary Solutions - Phase 2 (Deadline for feedback Report - Alternative Solutions)	0 days	Wed 28/06/17	Wed 28/06/17	148
151	0%		Supplimentary Solutions - Phase 2 (Sign-Off Report - Alternative Solutions)	0 days	Fri 01/12/17	Fri 01/12/17	150
152	**0%**		**Supplimentary Solutions - Phase 3 (Alternative Vessel Funding and delivery mechanisms)**	**392 days**	**Tue 17/05/16**	**Fri 01/12/17**	
156	0%		Supplimentary Solutions - Phase 3 (Deadline for feedback - Report - Alternative Funding and delivery mechanisms)	0 days	Thu 08/09/16	Thu 08/09/16	155
158	0%		Supplimentary Solutions - Phase 3 (Sign-Off Report - Alternative Funding and delivery mechanisms)	0 days	Fri 01/12/17	Fri 01/12/17	157



	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
159	0%	WP6	**Fleet Review Phase 2 Project Work Package 6 (Additional Recommendations Review)**	**349 days**	**Mon 16/05/16**	**Mon 02/10/17**	
161	0%		**Additional Recommendations - Phase 1 (Further Work)**	**348 days**	**Tue 17/05/16**	**Mon 02/10/17**	
167	0%		Additional Recommendations - Phase 1 (Deadline for Feedback - Report - Implementation Plan)	0 days	Fri 09/12/16	Fri 09/12/16	166
169	0%		Additional Recommendations - Phase 1 (Sign-Off Report - Implementation Plan)	0 days	Mon 02/10/17	Mon 02/10/17	168
170	0%	WP7	**Fleet Review Phase 2 Project Work Package 7 (Fleet Structure Report)**	**147 days**	**Mon 02/10/17**	**Mon 30/04/18**	
172	0%		**Fleet Structure - Phase 1 (Fleet Structure)**	**146 days**	**Tue 03/10/17**	**Mon 30/04/18**	
178	0%		Fleet Structure - Phase 1 (Deadline for Feedback - Fleet construct proposal)	0 days	Thu 28/12/17	Thu 28/12/17	177
180	0%		Fleet Structure - Phase 1 (Sign-Off - Fleet construct proposal)	0 days	Mon 30/04/18	Mon 30/04/18	179
181	0%	WP8	**Fleet Review Phase 2 Project Work Package 8 (Overall report and implementation plan)**	**66 days?**	**Mon 30/04/18**	**Tue 31/07/18**	
183	0%		**Fleet Structure - Phase 1 (Overall Report and implementation plan)**	**65 days**	**Tue 01/05/18**	**Tue 31/07/18**	
188	0%		Overall Report - Phase 1 (Deadline for feedback - Overall Report)	0 days	Mon 09/07/18	Mon 09/07/18	187
190	0%		Overall Report - Phase 1 (Sign-Off - Overall Report)	0 days	Tue 31/07/18	Tue 31/07/18	189

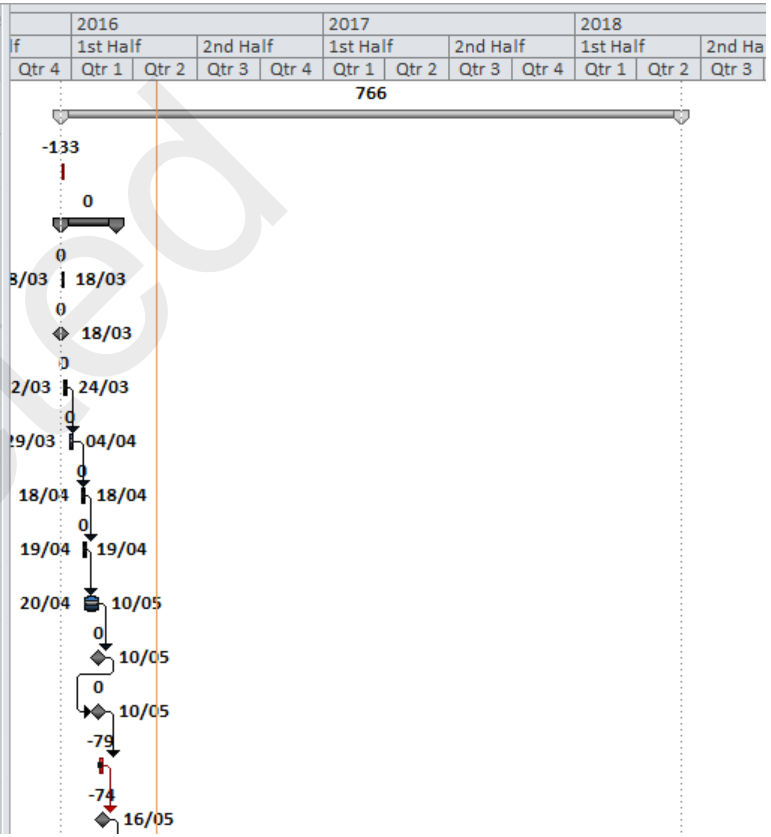


	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
191	0%		Project DP4 - Stage Approval (Baseline 0 & 8)	0 days	Tue 31/07/18	Tue 31/07/18	190
196	0%		Project DP5 - CE4 sign-off and closure (Baseline 0 & 9)	0 days	Mon 03/09/18	Mon 03/09/18	

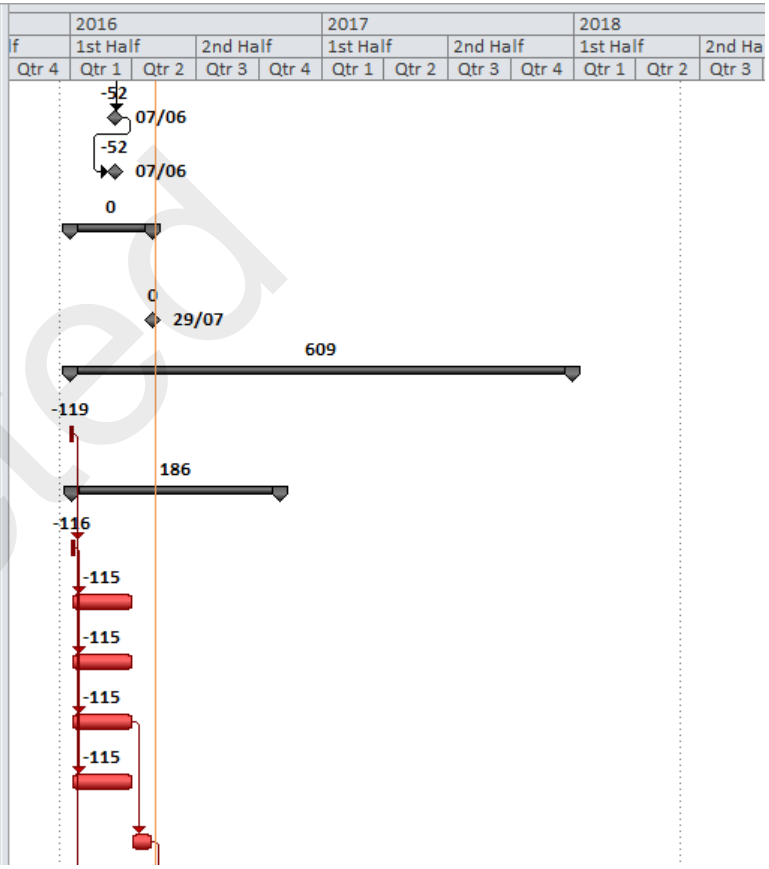


4.8.2 Detailed Project Gantt Chart

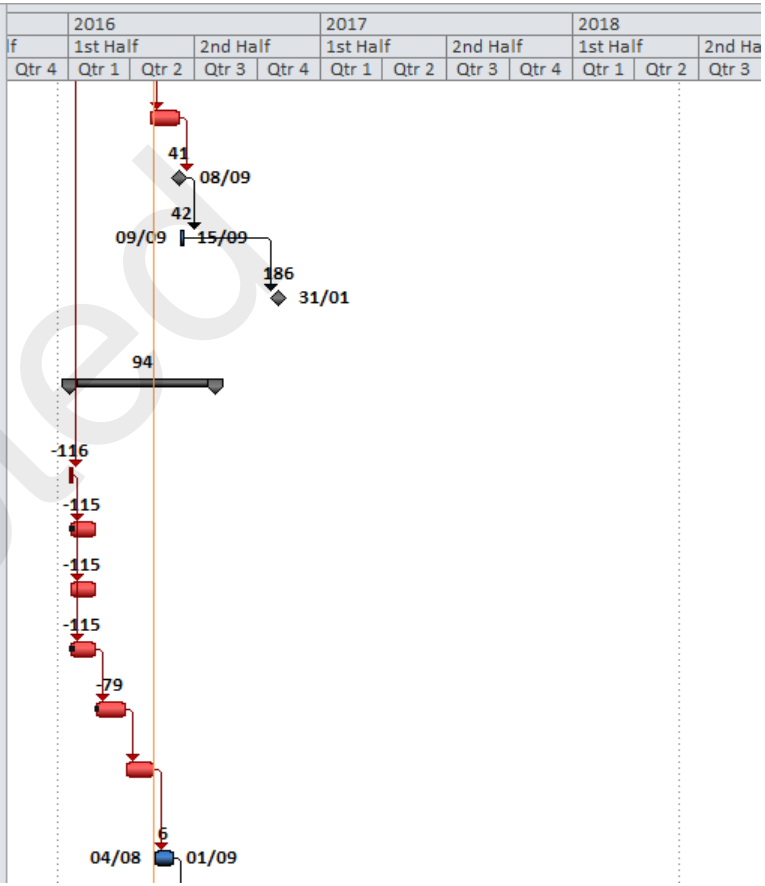
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
0	**5%**		**Fleet Review Phase Two PID 489**	**625 days?**	**Fri 18/03/16**	**Mon 03/09/18**	
1	0%		Project Management Time	1 day?	Fri 18/03/16	Fri 18/03/16	
2	**97%**		**Project Definition Phase**	**53 days**	**Fri 18/03/16**	**Tue 07/06/16**	
3	100%		Project Outline	1 day	Fri 18/03/16	Fri 18/03/16	
4	100%		Mandate approval gateway (Baseline 0 & 1	0 days	Fri 18/03/16	Fri 18/03/16	
5	100%		Compile Draft Project Plan	3 days	Tue 22/03/16	Thu 24/03/16	
6	100%		Compile Draft PID	5 days	Tue 29/03/16	Mon 04/04/16	5
7	100%		Project Start-up Meeting	1 day	Mon 18/04/16	Mon 18/04/16	6
8	100%		Requirements capture	1 day	Tue 19/04/16	Tue 19/04/16	7
9	100%		Project PID Production	14 days	Wed 20/04/16	Tue 10/05/16	8
10	100%		Project PID Distribution	0 days	Tue 10/05/16	Tue 10/05/16	9
11	100%		Project PID Feedback Deadline	0 days	Tue 10/05/16	Tue 10/05/16	10
12	75%		Project PID Update	4 days	Wed 11/05/16	Mon 16/05/16	11
13	90%		Project PID Sign-Off	0 days	Mon 16/05/16	Mon 16/05/16	12



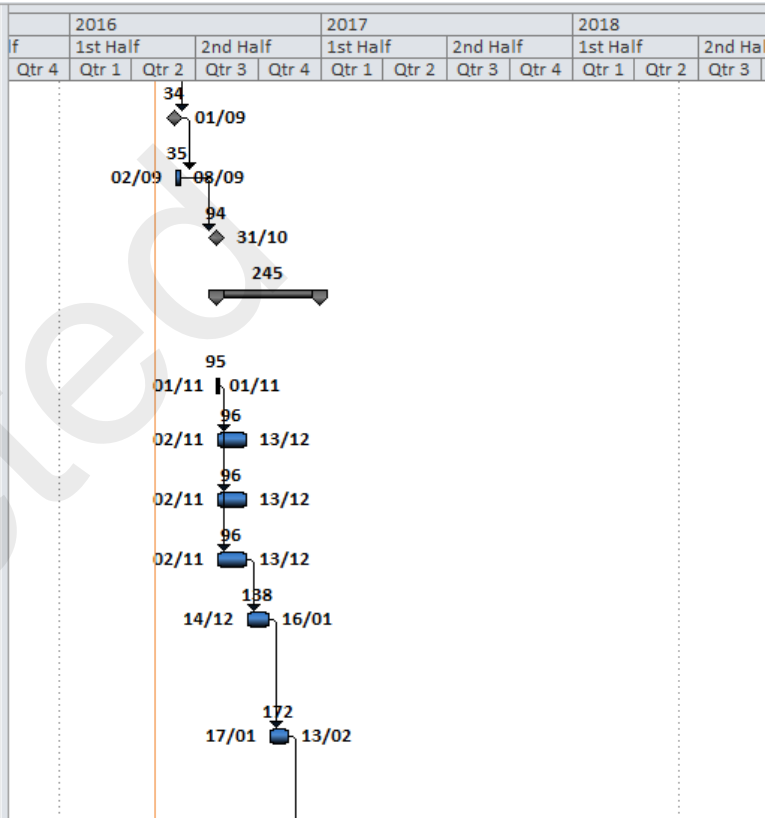
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
14	0%		Funding approval	0 days	Tue 07/06/16	Tue 07/06/16	13
15	0%		Project DP2 - PID approval gateway (Baseline 0 & 3)	0 days	Tue 07/06/16	Tue 07/06/16	14
16	**100%**	**WP1**	**Fleet Review Phase 2 Project Work Package 1 (Centralised Monitoring - Tri-GLA data available to Central Planner)**	**84 days**	**Fri 01/04/16**	**Fri 29/07/16**	
20	0%		Project DP3 - Stage Baseline (0 & 4)	0 days	Fri 29/07/16	Fri 29/07/16	19
21	**1%**	**WP2**	**Fleet Review Phase 2 Project Work Package 2 (Coordinated Planning)**	**506 days**	**Fri 01/04/16**	**Fri 30/03/18**	
22	0%		Fleet Review Phase 2 Work package 2 Project Start-Up meeting	1 day	Fri 01/04/16	Fri 01/04/16	
23	**0%**		**Centralised Planning - Phase 0 (MOU)**	**209 days**	**Mon 04/04/16**	**Tue 31/01/17**	
24	0%		Acceptance Critea Review	1 day	Mon 04/04/16	Mon 04/04/16	22
25	0%		Centralised Planning - Phase 0 (Funding)	60 days	Tue 05/04/16	Wed 29/06/16	24
26	0%		Centralise Planning - Phase 0 (Vessel availability)	60 days	Tue 05/04/16	Wed 29/06/16	24
27	0%		Centralise Planning - Phase 0 (Commercial Activity Integration)	60 days	Tue 05/04/16	Wed 29/06/16	24
28	0%		Centralised Planning - Phase 0 (Casualty, wrecks, new dangers)	60 days	Tue 05/04/16	Wed 29/06/16	24
29	0%		Centralise Planning - Phase 0 (MOU document)	20 days	Thu 30/06/16	Wed 27/07/16	27



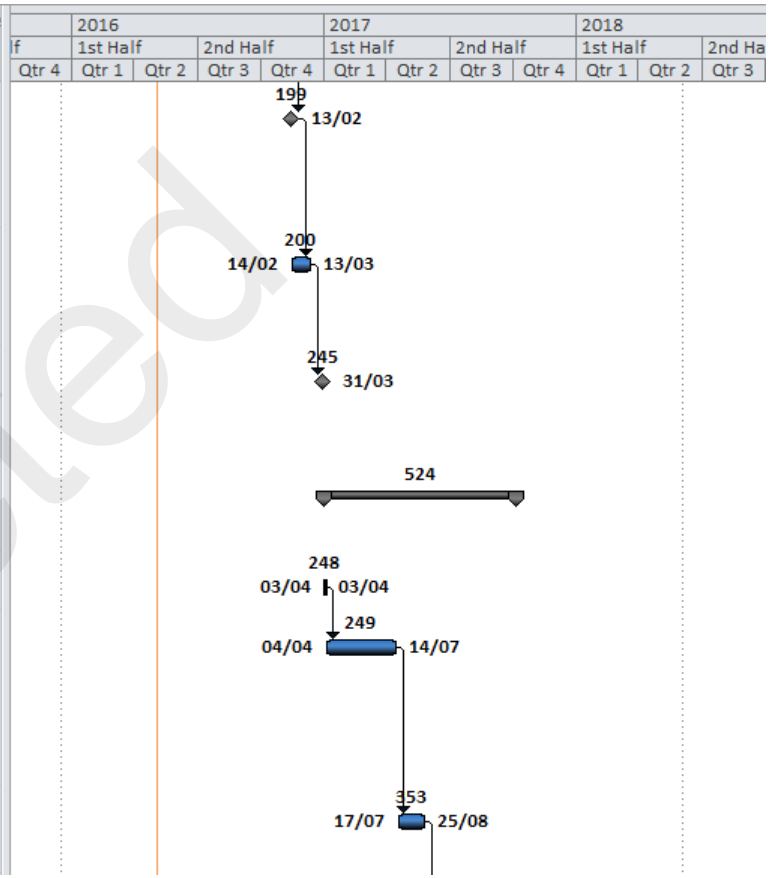
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
30	0%		Centralised Planning - Phase 0 (Distribute MOU)	30 days	Thu 28/07/16	Thu 08/09/16	29
31	0%		Centralised Planning - Phase 0 (MOU Feedback Deadline)	0 days	Thu 08/09/16	Thu 08/09/16	30
32	0%		Centralised Planning - Phase 0 (Update MOU from Feedback)	5 days	Fri 09/09/16	Thu 15/09/16	31
33	0%		Centralised Planning - Phase 0 (DFT, DTTAS, GLA Chief EXEC sign-off of MOU)	0 days	Tue 31/01/17	Tue 31/01/17	32
34	**5%**		**Centralised Planning - Phase 1 (Establish Tri-GLA framework, organisation, procedures, initial planning tool)**	**147 days**	**Mon 04/04/16**	**Mon 31/10/16**	
35	0%		Acceptance critea review	1 day	Mon 04/04/16	Mon 04/04/16	22
36	10%		Centralised planning - Phase 1 (Tri-GLA framework proposal)	25 days	Tue 05/04/16	Tue 10/05/16	35
37	0%		Centralised Planning - Phase 1 (Organisation proposal)	25 days	Tue 05/04/16	Tue 10/05/16	35
38	10%		Centralised Planning - Phase 1 (Establish planning procedures)	25 days	Tue 05/04/16	Tue 10/05/16	35
39	10%		Centralised Planning - Phase 1 (Establish Initial planning Tool)	30 days	Wed 11/05/16	Wed 22/06/16	38
40	0%		Centralised Planning - Phase 1 (Input current plans to Centralised planning tool)	30 days	Thu 23/06/16	Wed 03/08/16	39
41	0%		Centralised Planning - Phase 1 (Distribute Plan for Feedback)	20 days	Thu 04/08/16	Thu 01/09/16	40



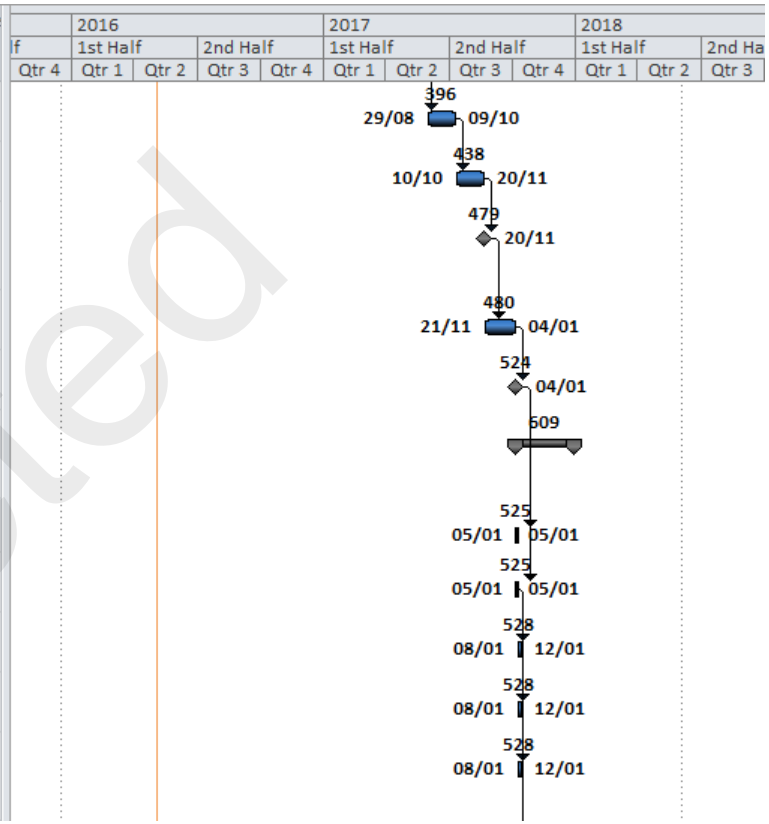
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
42	0%		Centralised Planning - Phase 1 (Revised centralised plan feedback deadline)	0 days	Thu 01/09/16	Thu 01/09/16	41
43	0%		Centralised Planning - Phase 1 (Revise Plan following feedback)	5 days	Fri 02/09/16	Thu 08/09/16	42
44	0%		Centralised planning - Phase 1 (Revised Report / Plan sign-Off / Go-Live)	0 days	Mon 31/10/16	Mon 31/10/16	43
45	**0%**		**Centralised Planning - Phase 2 (Establish Individual GLA operational requirement and develop centralised fleet plan)**	**104 days**	**Tue 01/11/16**	**Fri 31/03/17**	
46	0%		Acceptance Critea Review	1 day	Tue 01/11/16	Tue 01/11/16	
47	0%		Centralised Planning - Phase 2 (2017/18 NLB operational requirement)	30 days	Wed 02/11/16	Tue 13/12/16	46
48	0%		Centralised Planning - Phase 2 (2017/18 CIL operational requirement)	30 days	Wed 02/11/16	Tue 13/12/16	46
49	0%		Centralised Planning - Phase 2 (2017/18 Trinity House operational requirement)	30 days	Wed 02/11/16	Tue 13/12/16	46
50	0%		Centralised Planning - Phase 2 (Overlay 2017/18 individual operational requirements into centralised plan demonstrating risk reduction)	20 days	Wed 14/12/16	Mon 16/01/17	49
51	0%		Centralised Planning - Phase 2 (Distribute overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	20 days	Tue 17/01/17	Mon 13/02/17	50



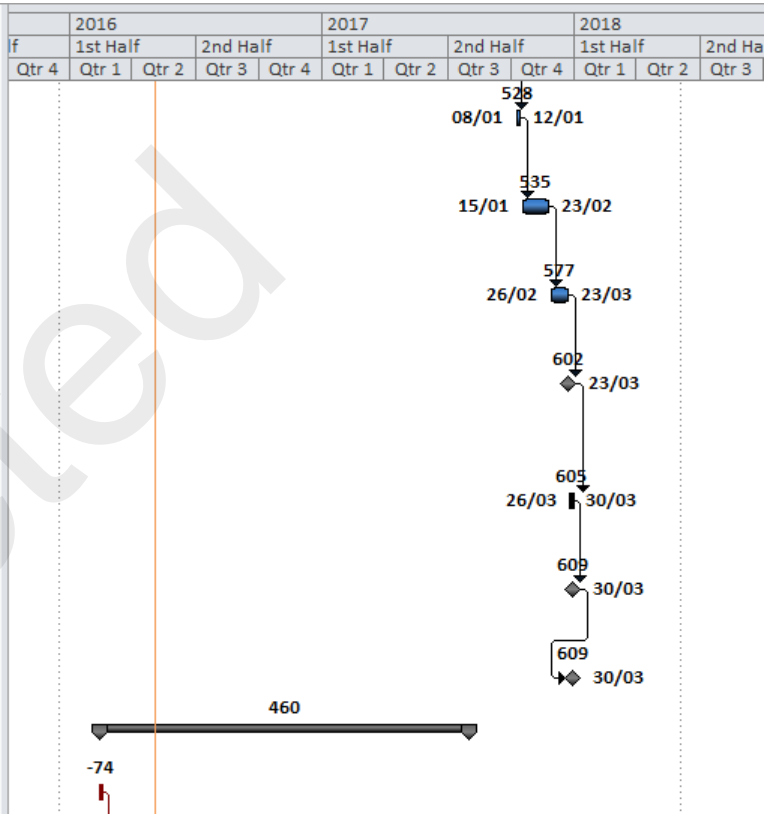
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
52	0%		Centralised Planning - Phase 2 (Deadline for feedback, overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	0 days	Mon 13/02/17	Mon 13/02/17	51
53	0%		Centralised Planning - Phase 2 (Update for feedback, overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	20 days	Tue 14/02/17	Mon 13/03/17	52
54	0%		Centralised Planning - Phase 2 (Sign-Off overlayed centralised plan incorporating 2017/18 GLA individual operational requirements)	0 days	Fri 31/03/17	Fri 31/03/17	53
55	**0%**		**Centralised Planning - Phase 3 (Evaluate, refine centralise planning model , build coordinated plan**	**191 days**	**Mon 03/04/17**	**Thu 04/01/18**	
56	0%		Centralised Planning - Phase 3 (Review Acceptance Criteria)	1 day	Mon 03/04/17	Mon 03/04/17	
57	0%		Centralised Planning - Phase 3 (Measure success against planned operational requirements, casualty, wreck, new danger response, ability to meet risk response criteria, effect on commercial activities)	70 days	Tue 04/04/17	Fri 14/07/17	56
58	0%		Centralise Planning - Phase 3 (Review and refine central planning tool processes and procedures)	30 days	Mon 17/07/17	Fri 25/08/17	57



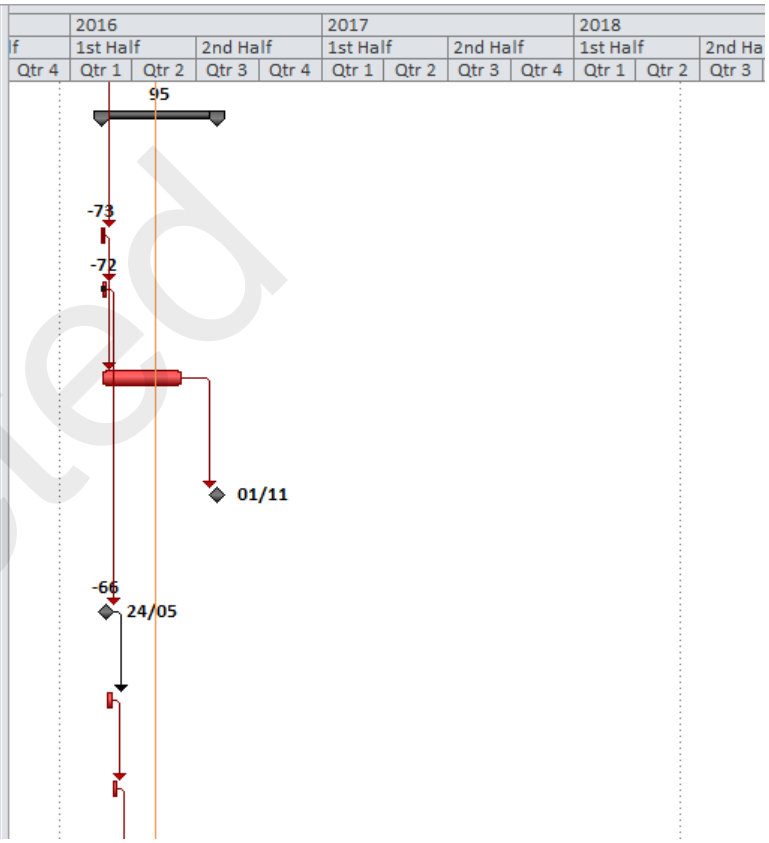
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
59	0%		Centralise Planning - Phase 3 (Report on implementation)	30 days	Tue 29/08/17	Mon 09/10/17	58
60	0%		Centralise Planning - Phase 3 (Distribute Report - Implementation)	30 days	Tue 10/10/17	Mon 20/11/17	59
61	0%		Centralise Planning - Phase 3 (Feedback Deadline Report - Implementation)	0 days	Mon 20/11/17	Mon 20/11/17	60
62	0%		Centralise Planning - Phase 3 (update for Feedback Report - Implementation)	30 days	Tue 21/11/17	Thu 04/01/18	61
63	0%		Centralise planning - Phase 3 (Report - Implementation sign-off)	0 days	Thu 04/01/18	Thu 04/01/18	62
64	**0%**		**Centralised Planning - Phase 4 - MOU (Operation of recommended fleet construct)**	**61 days**	**Fri 05/01/18**	**Fri 30/03/18**	
65	0%		Review Acceptance Criteria	1 day	Fri 05/01/18	Fri 05/01/18	63
66	0%		Centralised Planning - Phase 4 (Consider Phase 3 Report)	1 day	Fri 05/01/18	Fri 05/01/18	63
67	0%		Centralised Planning - Phase 4 (Post Project Funding Agreement)	5 days	Mon 08/01/18	Fri 12/01/18	66
68	0%		Centralised Planning - Phase 4 (Post Project Vessel Availability)	5 days	Mon 08/01/18	Fri 12/01/18	66
69	0%		Centralised Planning - Phase 4 (Post Project Commercial Activity Integration)	5 days	Mon 08/01/18	Fri 12/01/18	66



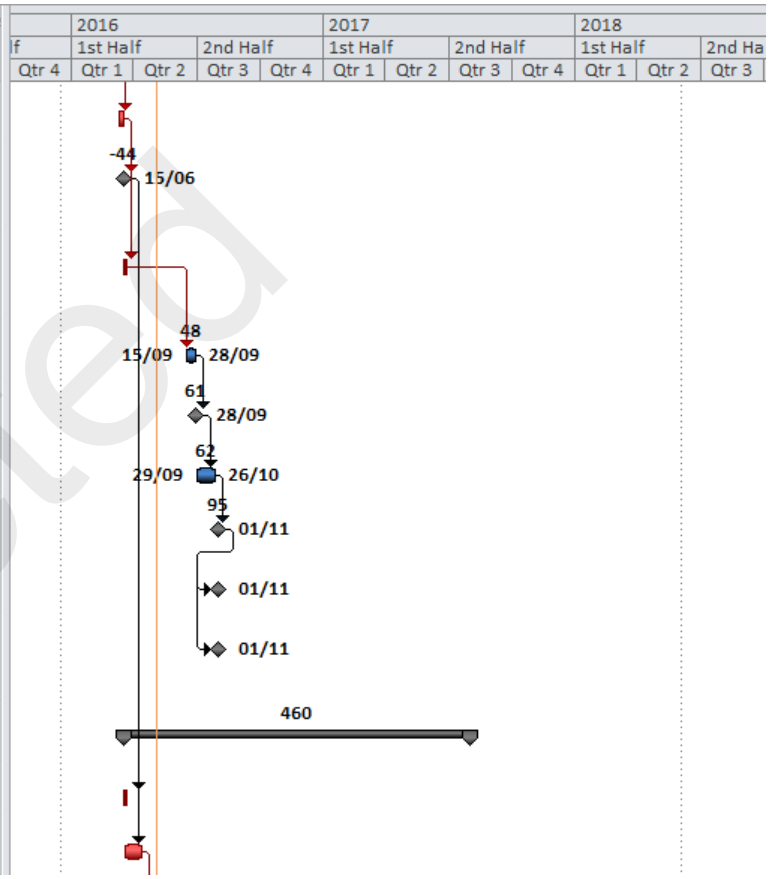
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
70	0%		Centralised Planning - Phase 4 (Post Project Casualty, Wrecks, New Dangers)	5 days	Mon 08/01/18	Fri 12/01/18	66
71	0%		Centralised Planning - Phase 4 (Compile MOU - Operation of Recommended Fleet Construct)	30 days	Mon 15/01/18	Fri 23/02/18	70
72	0%		Centralised Planning - Phase 4 (Distribute MOU - Operation of Recommended Fleet Construct)	20 days	Mon 26/02/18	Fri 23/03/18	71
73	0%		Centralised Planning - Phase 4 (Deadline for Feedback MOU - Operation of Recommended Fleet Construct)	0 days	Fri 23/03/18	Fri 23/03/18	72
74	0%		Centralised Planning - Phase 4 (Update for Feedback MOU - Operation of Recommended Fleet Construct)	5 days	Mon 26/03/18	Fri 30/03/18	73
75	0%		Centralised Planning - Phase 4 (Sign-Off MOU - Operation of Recommended Fleet Construct)	0 days	Fri 30/03/18	Fri 30/03/18	74
76	0%		Project DP3 - Stage Baseline (0 & 5)	0 days	Fri 30/03/18	Fri 30/03/18	75
77	**1%**	**WP3**	**Fleet Review Phase 2 Project Work Package 3 (Charter test and evaluation)**	**371 days**	**Mon 16/05/16**	**Wed 01/11/17**	
78	0%		Fleet Review Phase 2 Work package 3 Project Start-Up	1 day	Mon 16/05/16	Mon 16/05/16	



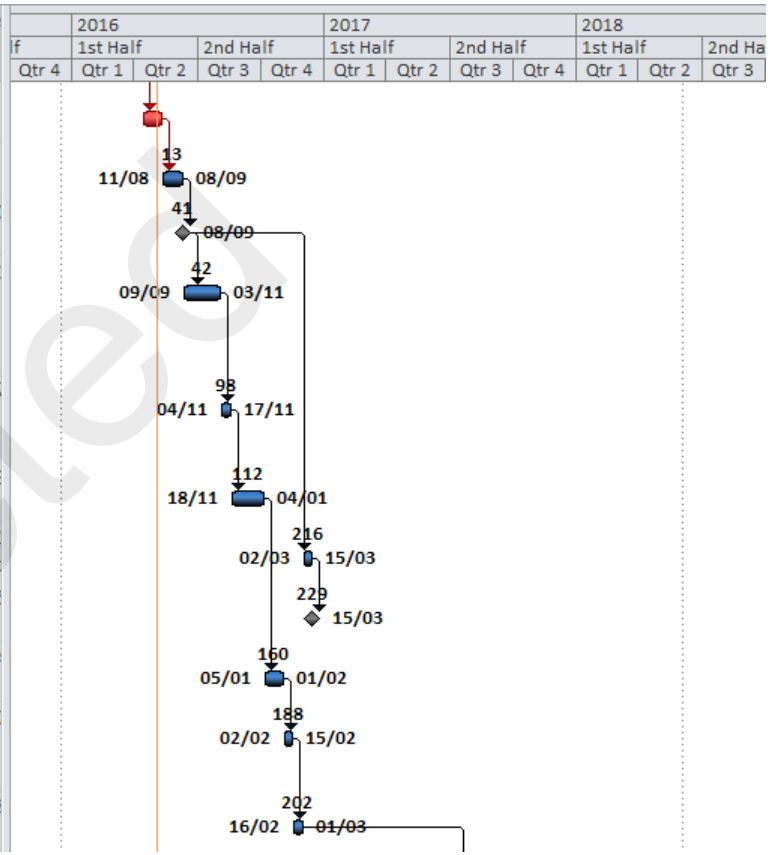
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
79	2%		**Charter, Test & Evaluation - Phase 1 (Engage Technical Specialist and develop market test framework and consider independent report for WP3)**	**118 days**	**Tue 17/05/16**	**Tue 01/11/16**	
80	0%		Review Acceptance Criteria	1 day	Tue 17/05/16	Tue 17/05/16	78
81	50%		Charter, Test & Evaluation - Phase 1 (Develop requirements for independent Technical Specialist)	5 days	Wed 18/05/16	Tue 24/05/16	80
82	0%		Charter, Test & Evaluation - Phase 1 (Establish and report finance and budget arrangements for Phase 2 and future business)	80 days	Wed 18/05/16	Thu 08/09/16	80
83	0%		Charter, Test & Evaluation - Phase 1 (Establish and report finance and budget arrangements for Phase 2 and future business - Sign-off)	0 days	Tue 01/11/16	Tue 01/11/16	82
84	0%		Charter, Test & Evaluation - Phase 1 (Contract Independent Technical Specialist)	0 days	Tue 24/05/16	Tue 24/05/16	81
85	0%		Charter, Test & Evaluation - Phase 1 (Develop Approach to testing the Market)	5 days	Wed 25/05/16	Wed 01/06/16	84
86	0%		Charter, Test & Evaluation - Phase 1 (Develop the vessel statement of requirement)	5 days	Thu 02/06/16	Wed 08/06/16	85



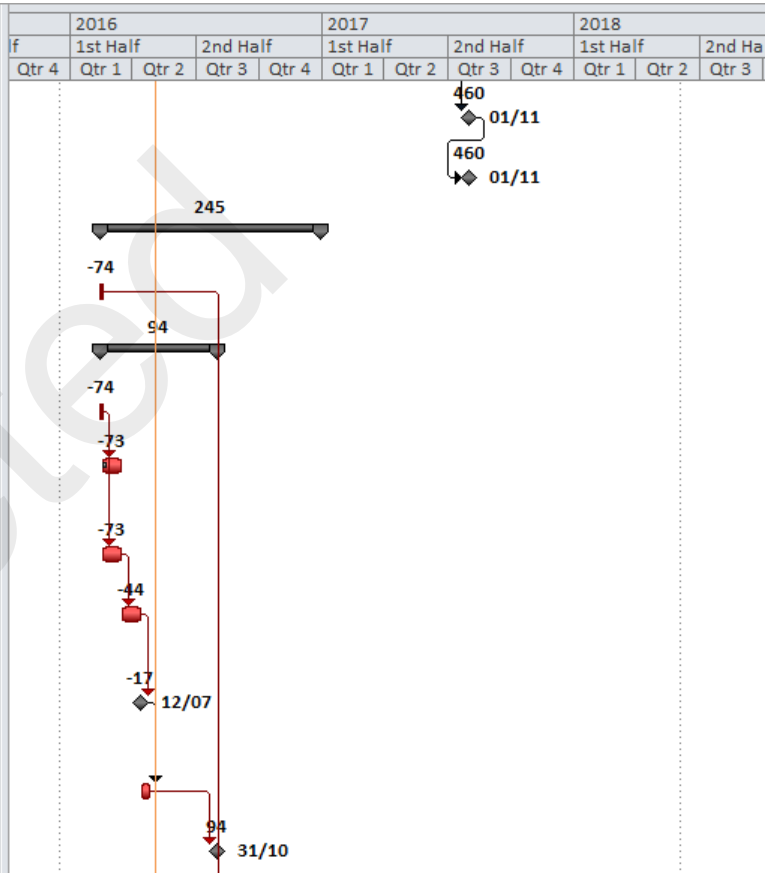
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
87	0%		Charter, Test & Evaluation - Phase 1 (Develop test scenarios)	5 days	Thu 09/06/16	Wed 15/06/16	86
88	0%		Charter, Test & Evaluation - Phase 1 (Deliver interim report for approach, scenarios, vessel requirements)	0 days	Wed 15/06/16	Wed 15/06/16	87
89	0%		Charter, Test & Evaluation - Phase 1 (Develop Report detailing long term costings, market viability, avilability)	2 days	Thu 16/06/16	Fri 17/06/16	87
90	0%		Charter, Test & Evaluation (Distribute Report for Feedback)	10 days	Thu 15/09/16	Wed 28/09/16	89
91	0%		Charter, Test & Evaluation (Deadline for feedback on report)	0 days	Wed 28/09/16	Wed 28/09/16	90
92	0%		Update Interim Report to Final Report	20 days	Thu 29/09/16	Wed 26/10/16	91
93	0%		Charter, Test & Evaluation (Sign-off Report)	0 days	Tue 01/11/16	Tue 01/11/16	92
94	0%		Consider requirement to proceed to phase 2	0 days	Tue 01/11/16	Tue 01/11/16	93
95	0%		Charter, Test & Evaluation (Consider continued use of Technical Specialist for oversight of Phase 2)	0 days	Tue 01/11/16	Tue 01/11/16	93
96	**0%**		**Charter Test & Evaluation - Phase 2 (Test Market with Contracted Broker)**	**349 days**	**Thu 16/06/16**	**Wed 01/11/17**	
97	0%		Review Acceptance Criteria	1 day	Thu 16/06/16	Thu 16/06/16	88
98	0%		Charter, Test Evaluation - Phase 2 (Develop Requirements)	20 days	Thu 16/06/16	Wed 13/07/16	88



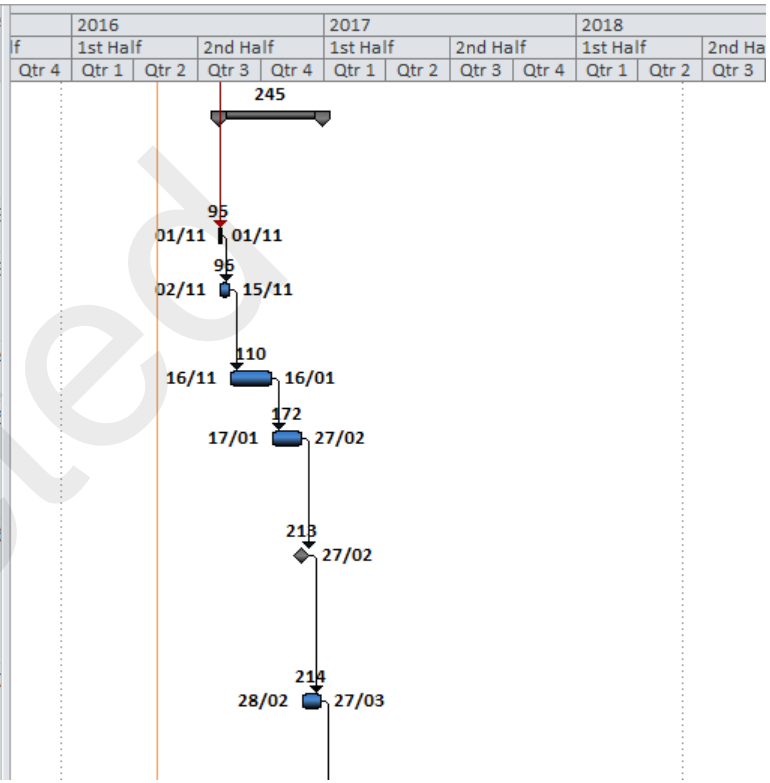
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
99	0%		Charter, Test Evaluation - Phase 2 (Agree and sign-off requirements)	20 days	Thu 14/07/16	Wed 10/08/16	98
100	0%		Procure Broker (Framework)	20 days	Thu 11/08/16	Thu 08/09/16	99
101	0%		Charter, Test & Evaluation (Asign Contractor)	0 days	Thu 08/09/16	Thu 08/09/16	100
102	0%		Charter, Test & Evaluation (Implement test scenarios and response to real world events in accordance with methodology determined in Phase 1)	40 days	Fri 09/09/16	Thu 03/11/16	101
103	0%		Charter, Test & Evaluation (Evaluate Performance against each test scenario and report)	10 days	Fri 04/11/16	Thu 17/11/16	102
104	0%		Charter, Test & Evaluation (Compile overall performance and test report)	30 days	Fri 18/11/16	Wed 04/01/17	103
105	0%		Charter, Test & Evaluation (Interim 6 Month Report)	10 days	Thu 02/03/17	Wed 15/03/17	101 mo
106	0%		Charter, Test & Evaluation (6 Month Review Gate)	0 days	Wed 15/03/17	Wed 15/03/17	105
107	0%		Charter, Test & Evaluation (Distribute Performance and test senario report)	20 days	Thu 05/01/17	Wed 01/02/17	104
108	0%		Charter, Test & Evaluation (Feedback deadline for Performance and test senario report)	10 days	Thu 02/02/17	Wed 15/02/17	107
109	0%		Charter, Test & Evaluation (Update for Performance and test senario report)	10 days	Thu 16/02/17	Wed 01/03/17	108



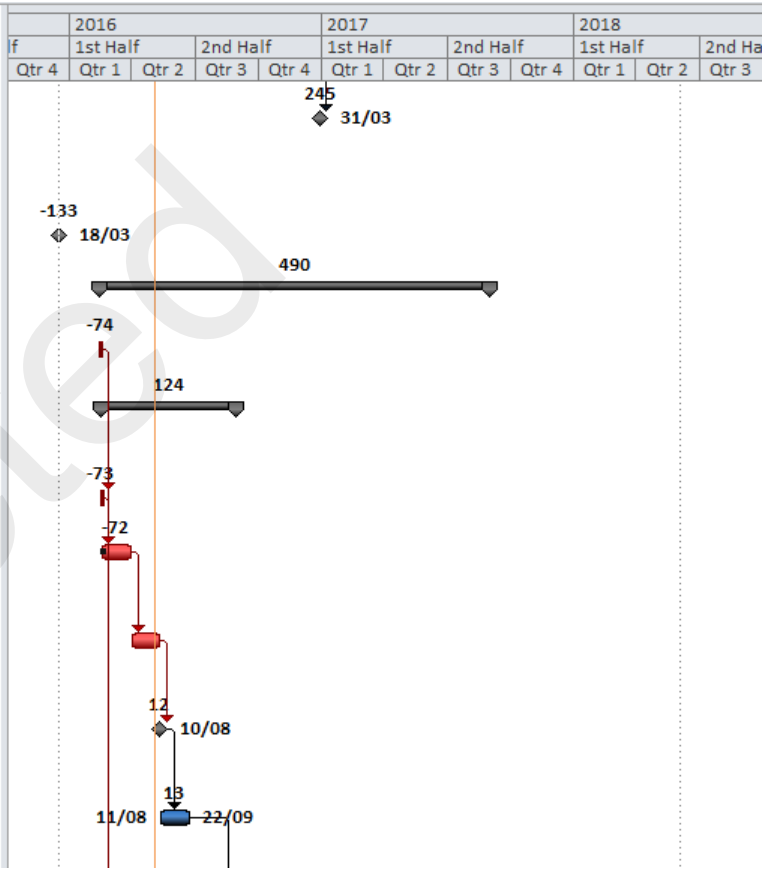
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
110	0%		Charter, Test & Evaluation (Sign-Off Report - Performance and test senario)	0 days	Wed 01/11/17	Wed 01/11/17	109
111	0%		Project DP3 - Stage Baseline (0 & 6)	0 days	Wed 01/11/17	Wed 01/11/17	110
112	**3%**	**WP4**	**Fleet Review Phase 2 Project Work Package 4 (Commercial Impact and Future Balance)**	**223 days**	**Mon 16/05/16**	**Fri 31/03/17**	
113	0%		Fleet Review Phase 2 Work package 4 Project Start-Up	1 day	Mon 16/05/16	Mon 16/05/16	
114	**7%**		**Commercial Balance - Phase 1 (Review Current Commitments)**	**118 days**	**Mon 16/05/16**	**Mon 31/10/16**	
115	0%		Review Acceptance Criteria	1 day	Mon 16/05/16	Mon 16/05/16	
116	25%		Commercial Balance - Phase 1 (Compile report reviewing current commitments)	20 days	Tue 17/05/16	Tue 14/06/16	115
117	0%		Commercial Balance - Phase 1 (Define methodology to deliver Phase 2)	20 days	Tue 17/05/16	Tue 14/06/16	115
118	0%		Commercial Balance - Phase 1 (Distribute Report Current Commitments)	20 days	Wed 15/06/16	Tue 12/07/16	117
119	0%		Commercial Balance - Phase 1 (Deadline for Report - Current Commitments)	0 days	Tue 12/07/16	Tue 12/07/16	118
120	0%		Commercial Balance - Phase 1 (Update Report - Current Commitments)	10 days	Wed 13/07/16	Tue 26/07/16	119
121	0%		Commercial Balance - Phase 1 (Sign-Off Report - Current Commitments)	0 days	Mon 31/10/16	Mon 31/10/16	120



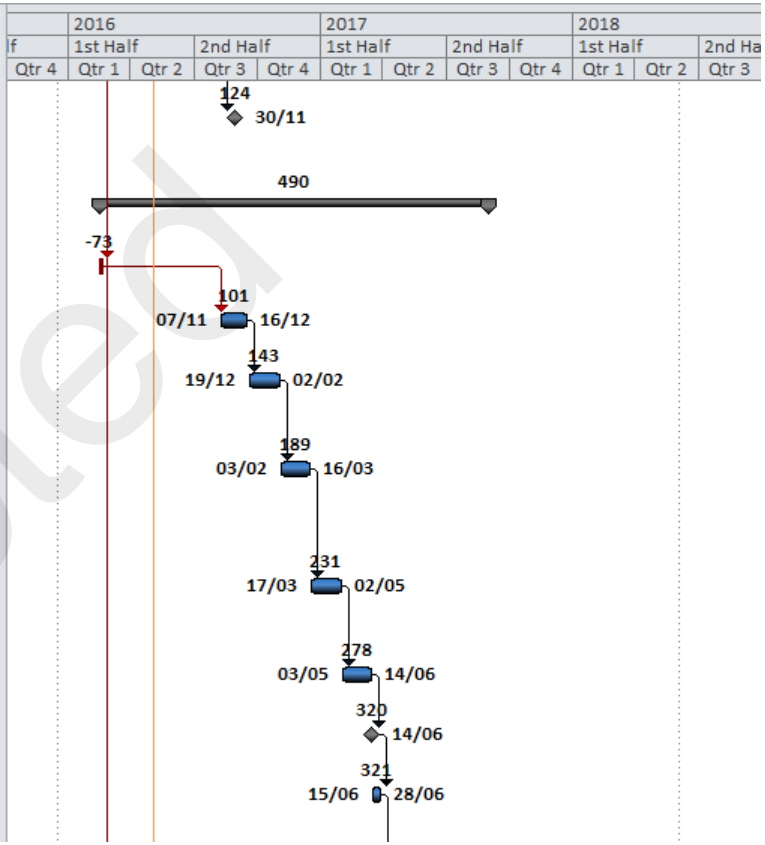
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
122	**0%**		**Commercial Balance - Phase 2 (Identify the financial benefits from exploitation of reserve capacity within a centralised operational plan)**	**104 days**	**Tue 01/11/16**	**Fri 31/03/17**	
123	0%		Review Acceptance Criteria	1 day	Tue 01/11/16	Tue 01/11/16	113
124	0%		Commercial Balance - Phase 2 (Assess potential reserve capacity and exploitation models)	10 days	Wed 02/11/16	Tue 15/11/16	123
125	0%		Commercial Balance - Phase 2 (Produce reserve capacity report)	40 days	Wed 16/11/16	Mon 16/01/17	124
126	0%		Commercial Balance - Phase 2 (Distribute report that details fleet commercial work against operational profile to deliver Optimum VFM)	30 days	Tue 17/01/17	Mon 27/02/17	125
127	0%		Commercial Balance - Phase 2 (Deadline for feedback on report that details fleet commercial work against operational profile to deliver Optimum VFM)	0 days	Mon 27/02/17	Mon 27/02/17	126
128	0%		Commercial Balance - Phase 2 (Update feedback into report that details fleet commercial work against operational profile to deliver Optimum VFM)	20 days	Tue 28/02/17	Mon 27/03/17	127



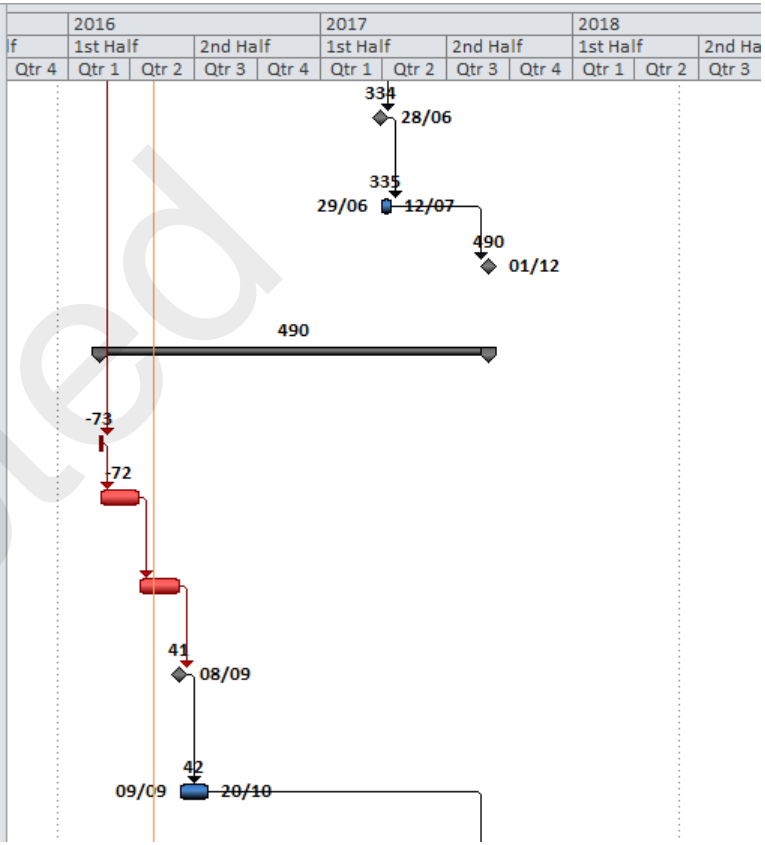
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
129	0%		Commercial Balance - Phase 2 (Sign-Off report that details fleet commercial work against operational profile to deliver Optimum VFM)	0 days	Fri 31/03/17	Fri 31/03/17	128
130	0%		Project DP3 - Stage Approval (Baseline 0 & 7)	0 days	Fri 18/03/16	Fri 18/03/16	
131	**1%**	**WP5**	**Fleet Review Phase 2 Project Work Package 5 (Supplimentary Solutions development)**	**393 days**	**Mon 16/05/16**	**Fri 01/12/17**	
132	0%		Fleet Review Phase 2 Work package 5 Project Start-Up	1 day	Mon 16/05/16	Mon 16/05/16	
133	**3%**		**Supplimentary Solutions Development - Phase 1 (Expand, Develop Tri-GLA 'Zone Boat' Arrangments to support operations)**	**139 days**	**Tue 17/05/16**	**Wed 30/11/16**	
134	0%		Review Acceptance Criteria	1 day	Tue 17/05/16	Tue 17/05/16	132
135	10%		Supplimentary Solution Development - Phase 1 (Develop Report - Tri-GLA 'Zone Boat' arrangments)	30 days	Wed 18/05/16	Wed 29/06/16	134
136	0%		Supplimentary Solution Development - Phase 1 (Distribute Report - 'Zone Boat Arrangments')	30 days	Thu 30/06/16	Wed 10/08/16	135
137	0%		Supplimentary Solution Development - Phase 1 (Deadline for Feedback Report - 'Zone Boat Arrangments')	0 days	Wed 10/08/16	Wed 10/08/16	136
138	0%		Supplimentary Solution Development - Phase 1 (Update Report - 'Zone Boat Arrangments')	30 days	Thu 11/08/16	Thu 22/09/16	137



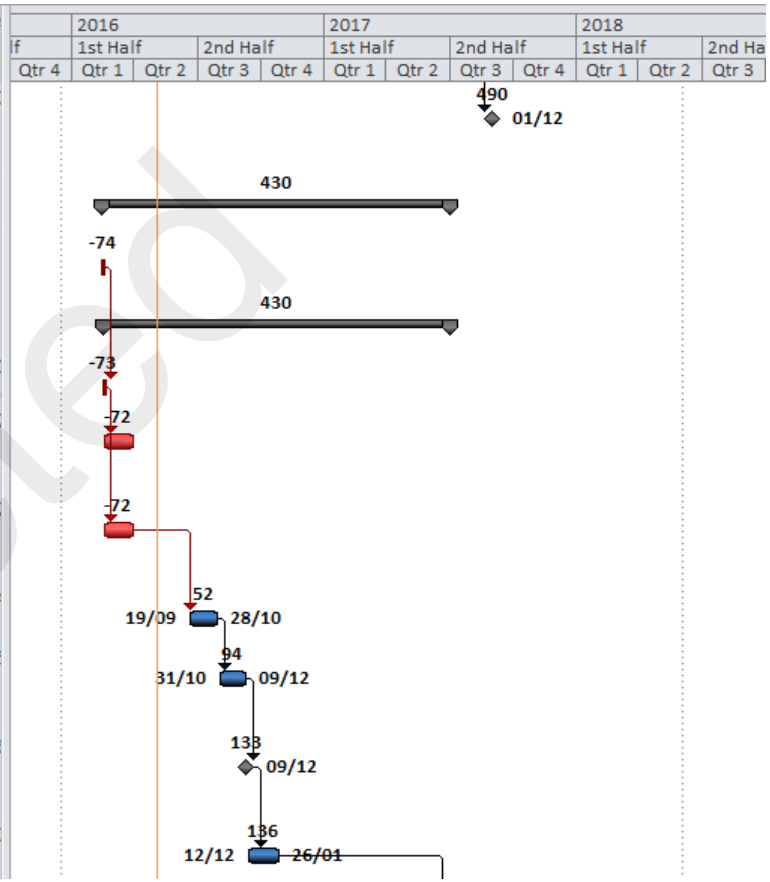
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
139	0%		Supplimentary Solution Development - Phase 1 (Sign-Off Report - 'Zone Boat Arrangments')	0 days	Wed 30/11/16	Wed 30/11/16	138
140	**0%**		**Supplimentary Solutions - Phase 2 (Alternative Solutions)**	**392 days**	**Tue 17/05/16**	**Fri 01/12/17**	
141	0%		Review Acceptance Criteria	1 day	Tue 17/05/16	Tue 17/05/16	132
142	0%		Supplimentary Solutions - Phase 2 (Review Test & Evaluation from	30 days	Mon 07/11/16	Fri 16/12/16	141
143	0%		Supplimentary Solutions - Phase 2 (Review Report on Centralised Planning(MOU))	30 days	Mon 19/12/16	Thu 02/02/17	142
144	0%		Supplimentary Solutions - Phase 2 (Perform Gap analysis of requirements and cost effectiveness against report conclusions)	30 days	Fri 03/02/17	Thu 16/03/17	143
145	0%		Supplimentary Solutions - Phase 2 (Consider and develop alternative solutions)	30 days	Fri 17/03/17	Tue 02/05/17	144
146	0%		Supplimentary Solutions - Phase 2 (Review Alternative Solutions)	30 days	Wed 03/05/17	Wed 14/06/17	145
147	0%		Supplimentary Solutions - Phase 2 (Report - Alternative Solutions)	0 days	Wed 14/06/17	Wed 14/06/17	146
148	0%		Supplimentary Solutions - Phase 2 (Distribute Report - Alternative Solutions)	10 days	Thu 15/06/17	Wed 28/06/17	147



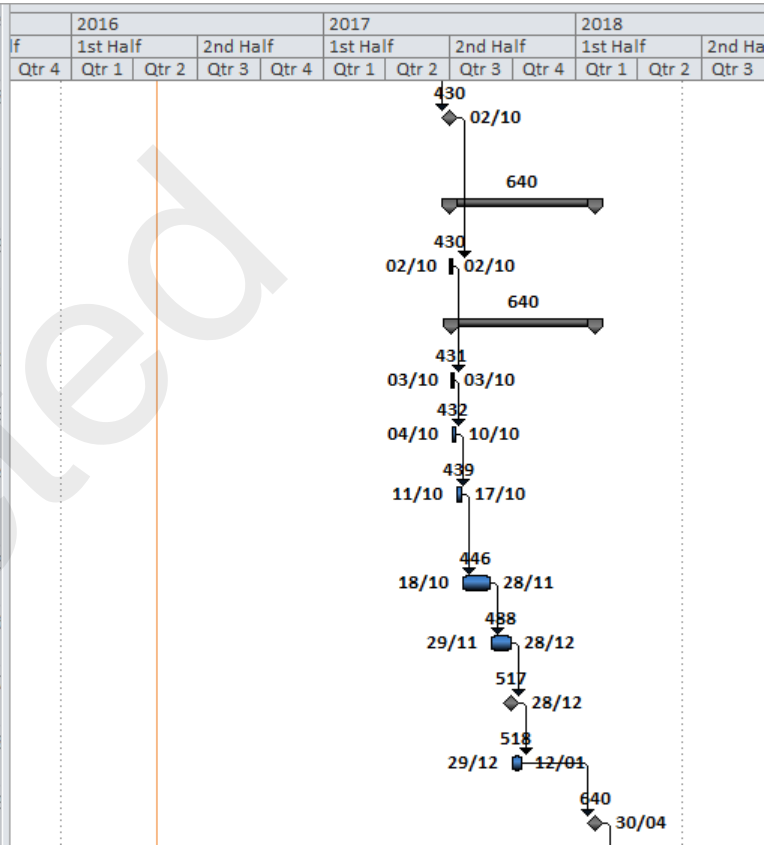
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
149	0%		Supplimentary Solutions - Phase 2 (Deadline for feedback Report - Alternative Solutions)	0 days	Wed 28/06/17	Wed 28/06/17	148
150	0%		Supplimentary Solutions - Phase 2 (Update Report - Alternative Solutions)	10 days	Thu 29/06/17	Wed 12/07/17	149
151	0%		Supplimentary Solutions - Phase 2 (Sign-Off Report - Alternative Solutions)	0 days	Fri 01/12/17	Fri 01/12/17	150
152	**0%**		**Supplimentary Solutions - Phase 3 (Alternative Vessel Funding and delivery mechanisms)**	**392 days**	**Tue 17/05/16**	**Fri 01/12/17**	
153	0%		Review Acceptance Criteria	1 day	Tue 17/05/16	Tue 17/05/16	132
154	0%		Supplimentary Solutions - Phase 3 (Report - Alternative Vessel Funding and Delivery Mechanisms)	40 days	Wed 18/05/16	Wed 13/07/16	153
155	0%		Supplimentary Solutions - Phase 3 (Distribute Report - Alternative Funding and delivery mechanisms)	40 days	Thu 14/07/16	Thu 08/09/16	154
156	0%		Supplimentary Solutions - Phase 3 (Deadline for feedback - Report - Alternative Funding and delivery mechanisms)	0 days	Thu 08/09/16	Thu 08/09/16	155
157	0%		Supplimentary Solutions - Phase 3 (Update Report - Alternative Funding and delivery mechanisms)	30 days	Fri 09/09/16	Thu 20/10/16	156



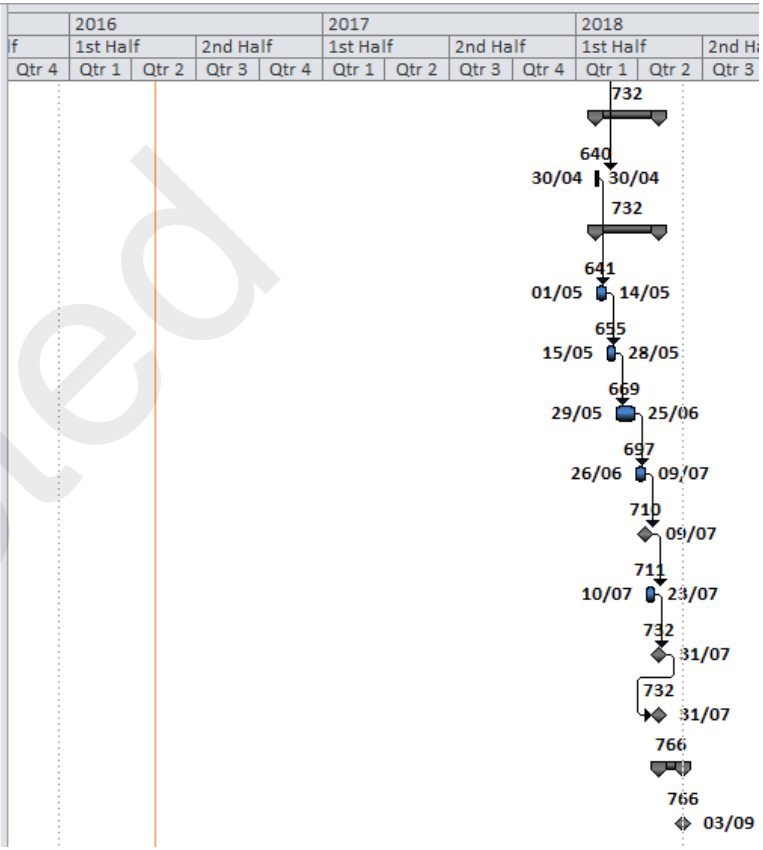
	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
158	0%		Supplimentary Solutions - Phase 3 (Sign-Off Report - Alternative Funding and delivery mechanisms)	0 days	Fri 01/12/17	Fri 01/12/17	157
159	**0%**	**WP6**	**Fleet Review Phase 2 Project Work Package 6 (Additional Recommendations Review)**	**349 days**	**Mon 16/05/16**	**Mon 02/10/17**	
160	0%		Fleet Review Phase 2 Work package 6 Project Start-Up	1 day	Mon 16/05/16	Mon 16/05/16	
161	**0%**		**Additional Recommendations - Phase 1 (Further Work)**	**348 days**	**Tue 17/05/16**	**Mon 02/10/17**	
162	0%		Review Acceptance Criteria	1 day	Tue 17/05/16	Tue 17/05/16	160
163	0%		Additional Recommendations - Phase 1 (Evaluate recommendations identified within table 12 of the Houlders Report)	30 days	Wed 18/05/16	Wed 29/06/16	162
164	0%		Additional Recommendations - Phase 1 (Develop implementation plan for recommendations taken forward)	30 days	Wed 18/05/16	Wed 29/06/16	162
165	0%		Additional Recommendations - Phase 1 (Report - Implementation plan)	30 days	Mon 19/09/16	Fri 28/10/16	164
166	0%		Additional Recommendations - Phase 1 (Distribute Report - Implementation Plan)	30 days	Mon 31/10/16	Fri 09/12/16	165
167	0%		Additional Recommendations - Phase 1 (Deadline for Feedback - Report - Implementation Plan)	0 days	Fri 09/12/16	Fri 09/12/16	166
168	0%		Additional Recommendations - Phase 1 (Update Report - Implementation Plan)	30 days	Mon 12/12/16	Thu 26/01/17	167



	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
169	0%		Additional Recommendations - Phase 1 (Sign-Off Report - Implementation Plan)	0 days	Mon 02/10/17	Mon 02/10/17	168
170	**0%**	**WP7**	**Fleet Review Phase 2 Project Work Package 7 (Fleet Structure Report)**	**147 days**	**Mon 02/10/17**	**Mon 30/04/18**	
171	0%		Fleet Review Phase 2 Work package 7 Project Start-Up	1 day	Mon 02/10/17	Mon 02/10/17	169
172	**0%**		**Fleet Structure - Phase 1 (Fleet Structure)**	**146 days**	**Tue 03/10/17**	**Mon 30/04/18**	
173	0%		Review Acceptance Criteria	1 day	Tue 03/10/17	Tue 03/10/17	171
174	0%		Fleet Structure - Phase 1 (Review reports from WP2, WP3, WP4, WP5)	5 days	Wed 04/10/17	Tue 10/10/17	173
175	0%		Fleet Structure - Phase 1 (Evaluate weighting for risk reduction against cost)	5 days	Wed 11/10/17	Tue 17/10/17	174
176	0%		Fleet Structure - Phase 1 (Develop fleet construct proposal)	30 days	Wed 18/10/17	Tue 28/11/17	175
177	0%		Fleet Structure - Phase 1 (Distribute Fleet construct proposal)	20 days	Wed 29/11/17	Thu 28/12/17	176
178	0%		Fleet Structure - Phase 1 (Deadline for Feedback - Fleet construct proposal)	0 days	Thu 28/12/17	Thu 28/12/17	177
179	0%		Fleet Structure - Phase 1 (Update from Feedback - Fleet construct proposal)	10 days	Fri 29/12/17	Fri 12/01/18	178
180	0%		Fleet Structure - Phase 1 (Sign-Off - Fleet construct proposal)	0 days	Mon 30/04/18	Mon 30/04/18	179



	% Cor	Work Package Number	Task Name	Duration	Start	Finish	Pre
181	**0%**	**WP8**	**Fleet Review Phase 2 Project Work Package 8 (Overall report and implementation plan)**	**66 days?**	**Mon 30/04/18**	**Tue 31/07/18**	
182	0%		Review acceptance criteria	1 day?	Mon 30/04/18	Mon 30/04/18	180
183	**0%**		**Fleet Structure - Phase 1 (Overall Report and implementation plan)**	**65 days**	**Tue 01/05/18**	**Tue 31/07/18**	
184	0%		Overall Report - Phase 1 (Consolidate reports from WP1-7)	10 days	Tue 01/05/18	Mon 14/05/18	182
185	0%		Overall Report - Phase 1 (Develop implementation plan)	10 days	Tue 15/05/18	Mon 28/05/18	184
186	0%		Overall Report - Phase 1 (Develop - Overall Report)	20 days	Tue 29/05/18	Mon 25/06/18	185
187	0%		Overall Report - Phase 1 (Distribute - Overall Report)	10 days	Tue 26/06/18	Mon 09/07/18	186
188	0%		Overall Report - Phase 1 (Deadline for feedback - Overall Report)	0 days	Mon 09/07/18	Mon 09/07/18	187
189	0%		Overall Report - Phase 1 (Update - Overall Report)	10 days	Tue 10/07/18	Mon 23/07/18	188
190	0%		Overall Report - Phase 1 (Sign-Off - Overall Report)	0 days	Tue 31/07/18	Tue 31/07/18	189
191	0%		Project DP4 - Stage Approval (Baseline 0 & 8)	0 days	Tue 31/07/18	Tue 31/07/18	190
192	**0%**		**Fleet Review Phase 2 Project Closure**	**25 days**	**Tue 31/07/18**	**Mon 03/09/18**	
196	0%		Project DP5 - CE4 sign-off and closure (Baseline 0 & 9)	0 days	Mon 03/09/18	Mon 03/09/18	



5 Project Approach

5.1 Governance Structure

This project is so far as possible designed to utilise existing GLA structure drawing on JSB, CEO committee, and Inter GLA operations Committee (IGC5) to make up the Project Board. It has been supplemented by the creation of a reference group to ensure successful and meaningful external liaison is continued as in the Dft led fleet review process. The project will be conducted using Prince 2 management processes.

The project Board will draw on the Coordinated Fleet Management group (CFM) and other internal resources to undertake project work packages. These will be overseen by the Phase 2 project management working group (PMWG) formed of the GLA Operation Directors, Project Manager and GLA finance representative. The Project Manager role is as project coordinator and has a non-executive role in the working group.

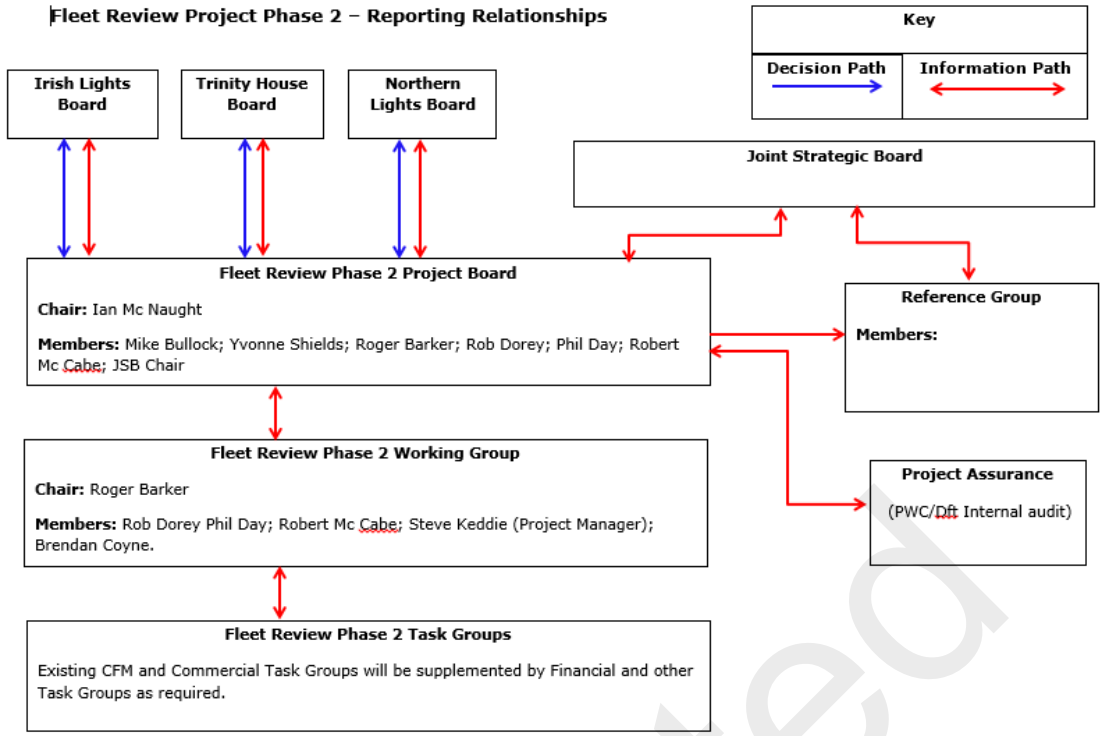
Assurance will be provided through the auspices of the PWC DfT Internal Audit team.

Independent external experts on brokerage and market analysis will be utilised under the working group supervision.

The role of the JSB is to coordinate joint GLA strategic oversight of the project and act as a vehicle for ongoing tri GLA cooperation.

The role of the Reference Group is to provide challenge and ideas for the Project Board and with their independent expertise provide information useful for the effective completion of the project.

The GLA Boards are responsible for the approval of the project plan, monitoring of progress and final sign off of project conclusions and recommendations.



5.1.1 Project Board

Chair: CEC Chair - Ian McNaught 2016
Members: Chair of JSB – Nigel Palmer; Mike Bullock; Yvonne Shields; Roger Barker; Rob Dorey; Phil Day; Robert McCabe

Terms of Reference:

- Meetings to be coordinated with the GLA Boards as well as routine JSB meetings and at other key milestones;
- Approve budgetary arrangements for project
- Confirm all pre-commencement requirements are established
- Provide guidance and direction to Working Group
- Receive and note monthly progress reports from the Project Management Working Group (PMWG). Approve any changes in scope OR BUDGET proposed by PMWG
- Receive work package and phase reports and action in accordance with the work package responsibility matrix at section 2.1.3 of the PID
- Provide reports to individual GLA Boards as required and feedback Board input to Working Group
- Provide reports to JSB as required and feedback JSB input to PMWG
- Provide reports to Reference Group as required
- Recommend final outcome and implementation plan to individual GLA Boards for approval
- Manage communications plan with internal and external stakeholders together with media as considered appropriate.

- Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.
- The Project Board may amend or withdraw these terms of reference, in agreement with the JSB

5.1.2 Project Management Working Group

Chair: Roger Barker
Members: Rob Dorey; Phil Day; Robert McCabe; Steve Keddie; Tony Wright; Brendan Coyne.

Terms of Reference:

- Preparation of detailed project plan for approval by Project Board
- Provide monthly progress and key milestone reports to Project Board
- Establish work package task groups as per PID providing direction and guidance.
- Propose any changes of scope for approval by Project Board
- Propose any changes of budget to Project Board
- Receive task group phase reports and action in accordance with the responsibility matrix at section 2.1.3 of the PID.
- Progress work packages assigned to the PMWG and report in line with the responsibility matrix at section 2.1.3 of the PID.
- Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.
- The Project Board may amend or withdraw these terms of reference, in agreement with the PMWG.

5.1.3 Reference Group

5.1.3.1 Background

Phase 1 of the 2015 Fleet Review was completed with a report which proposed a number of potential outcomes but noted that they were based on untested assumptions which required thorough testing and evaluation. An outline project plan along with a proposal for the conduct of the next phase of the review was submitted to Ministers on 8th March 2016
The Minister for Shipping requested inter alia that:

a) The Chair of the JSB, working with each GLA is to develop and then implement a full project plan for the next phase, which amongst other considerations, should involve external partners closely throughout, in particular, the Lights Advisory Committee and the UK and Irish governments to ensure an effective sharing of ideas, challenge and information about progress.

b) And that a full project plan should be put to a project Reference Group for their consideration and recommendations and that the Group should comprise stakeholders and independent expertise, and will provide a valuable challenge function for the JSB Chair and each GLA

5.1.3.2 Reference Group Role

A reference Group is to be established as part of the governance structure for Phase 2 of the General Lighthouse Authorities' Fleet Review.

a) The role of the Reference Group is to support and challenge the Project Board in its work to identify the optimum size, specification and management of the GLA fleet for the period 2016-2025, drawing on its experience, expertise and strategic view of the wider maritime and political environment.

b) The Reference Group will provide advice to the Project Board; the Board exercises overall control over the project and it is their responsibility to appoint and manage any contractors, and to agree a final report and implementation plan.

5.1.3.3 Functions

The Reference Group will:

a) Input into definition of the project and key requirements;

b) Quality review principal project documents and outputs;

c) Provide guidance to the Project Board as it deems appropriate;

d) Review and contribute to the risk register for the project; and,

e) Provide review and acknowledgement of key decision points.

5.1.3.4 Recommended Membership:

a) The Reference Group's membership is (subject to confirmation - any future changes will be managed through changed control):
   - TBA DfT
   - TBA DTTAS
   - TBA Transport Scotland
   - JSB Chair and 1 other member from each GLA not in Chair
   - TBA LAC x 2

- [redacted] Secretary of State's Representative
- Representative from UK Major Ports Group
- Senior Independent Industry professional
- Representative of Institute of Chartered Shipbrokers

b) The Chair of the Reference Group and a secretary will be appointed;

c) The Chair will decide if another member of the Reference Group should chair a meeting on the occasion of their own absence or if the meeting should be rearranged on a date where the Chair is available;

d) Each stakeholder may change its representatives at any time on written request to the Reference Group Chair;

e) The Reference Group may invite any other person to attend a particular meeting if that person can assist in its deliberations;

f) The Reference Group Secretariat will support meetings of the Group, planning of the agenda, circulation of papers, preparation and circulation of minutes and monitoring of the project milestones.

5.1.3.5 Accountability

The Reference Group should comprise stakeholders and independent expertise and will provide a valuable challenge function for the Chair of the JSB and each GLA.

5.1.3.6 Meetings

a) Meetings of the Reference Group will be scheduled: one at the outset of the project, others at key milestones or decision points and a final meeting after the Project Board's final report has been received;

b) Minutes of each meeting will be produced to provide an accurate record of the recommendations that are made by the Reference Group. These will be circulated to the Group and to the Project Board as soon as reasonably possible.

5.1.3.7 Communications

a) The Reference Group's deliberations and recommendations will be reported to the Project Board through the minutes of its meetings;

b) The Reference Group will not engage in external communications about the project, that being the responsibility of the Project Board, in agreement with the communications teams of is constituent members.

5.1.3.8 Terms of Reference

a) Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.

b) The Reference Group may amend or withdraw these terms of reference, in agreement with the Project Board.

5.2 Special Tools required During Project

- Planning tool
- Tool for mapping vessel distribution – [redacted]

6 Project Finance (Budget)

DFT are asked to approve finance for this project through the GLF

An estimate of the Project costs are listed below:-

6.1 Budget Breakdown

Material description	Cost Breakdown	Comment
Technical Specialist	[redacted]	
Broker Fees	[redacted]	
Charter Fees	[redacted]	Initial estimate to be confirmed of completion of WP3 Phase 1 (delivery of technical specialist report)
Licenses	[redacted]	
Total	[redacted]	

6.2 Spend Profile

Description	2016/17	2017/18	2018/19	Total
Technical Specialist	[redacted]			[redacted]
Broker Fees	[redacted]			[redacted]
Charter Fees	[redacted]	[redacted]		[redacted]
Licenses		[redacted]		[redacted]
Total	[redacted]	[redacted]		[redacted]

6.3 Risk Profile

Reference Risk 20 – This risk highlights the potential loss of commercial income of [redacted] arising from the constraints on vessel location and activity that are likely to result from the greater coordination of planning and operations to more fully meet the Risk Response Criteria.

The Houlder Report identified three core features which they considered to be key to the development of the future GLA fleet: Centralised Fleet Planning; a Layered Fleet Model; and Increased Commercial Support. This Phase 2 Project is testing these solutions.

With regard to Centralised Fleet Planning the Houlder Report recommend that this be established at the earliest opportunity to prove the ability of the fleet to deliver the statutory obligations of the GLA. (Following discussions at Department level the term "Centralised Fleet Planning" has been replaced by "Coordinated Planning") Houlder concluded that under the present arrangements there is an 'extant and substantial risk' to the GLA ability to meet their required response criteria in several of the higher risk areas.

Coordinated planning aims to improve Risk Response Coverage in order to have vessels better positioned to meet casualty/new danger response requirements. Utilising the existing fleet construct, and based around a limited sample period, Houlder estimated an improved co-ordinated planning approach could reduce missed responses by 86%.

Work Package 2 (Coordinated Planning) is intended to deliver on the Houlder Centralised Planning recommendation and will be operational from 1st April 2017. At that time the GLA will implement, test and evaluate an organisation and process for Coordinated Planning of their fleet, endeavouring to meet the agreed Risk Response Criteria to the maximum extent possible and to deliver routine operations in a more efficient manner. With a greater focus on optimising fleet scheduling, with the emphasis on Risk Response for wrecks, new dangers and casualties, there will be significantly fewer opportunities for commercial income to be generated by the ships.

The maximum annual exposure to net loss of income to the GLF during the trial period could be in the region of [redacted]. This breaks down across the GLA as TH [redacted], NLB [redacted] and Irish Lights [redacted]. These figures are based on the corporate plan forecasts for each GLA and therefore reflect the worst case in terms of draw down from the GLF. The potential loss will be mitigated through exploitation of opportunistic charters within the planned zones of operation, but such work has always been less predictable.

It is envisaged that once tested, evaluated and refined, the improvements in coordinated planning and risk management will continue indefinitely. The potential loss of charter income is balanced by the improvement in risk response and is in keeping with the Minister's requirement for an overall reduction of risk compared to the current arrangements. The extent to which reserve capacity may be available in the future will be dependent on the outcome of the overall Phase 2 project conclusions.

Risk	2016/17	2017/18	Total
Risk Profile (Charter Testing)	[redacted]	[redacted]	[redacted]
Risk Profile (Commercial Income) - Risk No. 20	[redacted]	[redacted]	[redacted]
Total	[redacted]	[redacted]	[redacted]

6.4 Project Risk Register

Risk Register source document 337026

Risk ID	Title	Date Raised	Originator	Risk Probability	Time Impact	Cost Impact	Performance Impact	Risk Factor	Risk Exposure	Financial Year
1	Agreement cannot be made on key issues	07/04/2016	S. Keddie	4	5	1	3	36		
2	Key supplier ceases trading / fails to meet contract	07/04/2016	S. Keddie	3	4	4	3	33		
3	Exchange rate variations cause variences above planned costs	07/04/2016	S. Keddie	3	0	3	2	15		
4	Unforeseen legal issues result in additional cost	07/04/2016	S. Keddie	4	4	3	3	40		
5	Failure to agree project MoU	09/05/2016	P. Day	2	4	2	3	18		
6	Vessels not made available 365 24/7 to Centralised operational plan	09/05/2016	P. Day	2	4	3	3	20		
7	Failure of Dft/DTTAS to agree Irish Lights funding for project	09/05/2016	P. Day	3	4	2	3	27		
8	Failure of communications plan and subsequent loss of external support	09/05/2016	P. Day	2	4	2	3	18		
9	Dft Internal audit give unsatisfactory finding for project assurance	09/05/2016	P. Day	2	4	2	3	18		
10	one or more GLA Board(s) fails to support project or work package findings	09/05/2016	P. Day	2	4	2	3	18		
11	One or more work packages over run.	09/05/2016	P. Day	3	4	3	2	27		
12	Failure to procure suitable technical specialist, broker and vessel	09/05/2016	P.Day	3	4	3	3	30		
13	Failure to agree project funding	09/05/2016	R. Dorey	3	4	1	3	24		
14	Failure to assign sufficient manpower to project	09/05/2016	R. Dorey	2	4	2	4	20		
15	Failure to agree post project MoU	09/05/2016	R. Dorey	3	3	2	3	24		
16	Unclear outcome from broker testing	10/05/2016	R. McCabe	2	4	4	3	22		
17	Significant difference between Project Board / Reference Group on key issue	10/05/2016	R. McCabe	2	4	1	3	16		
18	Prolonged process impacts on staff morale	10/05/2016	R. McCabe	2	1	1	3	10		
19	Pressure on Project Board to favour or reject particular options	10/05/2016	R. McCabe	2	1	4	4	18		
20	Increased cost to the GLF due to loss of commercial income	20/07/2016	R. Dorey	5	1	5	1	35		

Key	
Risk Probability	The probability of the risk occurring. >90%=5, >70%=4, >50%=3, , >30%=2, >10%=1, Nil=0
Time Impact	The impact on schedule. >8wk=5, 4-5wk=4, 2-4wk=3, <2wk=2, <1wk=1, No impact=0.
Cost Impact	The impact on cost. [redacted]
Performance Impact	The impact on performance. Loss of system functionality=5, Major shortfalls in key areas=4, Some shortfalls in 1 or 2 areas=3, A few shortfalls in secondary areas=2, Degradation of a secondary parameter=1, No impact=0.
Risk Factor ((Time Impact + Cost Impact + Performance Impact)*Risk Probability)	High: Red =(>14), Medium: Amber =(Between 7&14), Low: Green = (<7)

7 Project Quality Plan

7.1 Purpose

To define the quality techniques and standards to be applied and the various responsibilities to achieve the required quality levels during the project.

7.2 Customer Quality Expectations

- Report Quality will be assessed during GLA Board and reference group reviews

7.3 Acceptance Criteria

- See Section 4.7

7.4 Quality Responsibilities

- PMWG have Project responsibility to ensure quality criteria are met
- Project Manager co-ordinates quality throughout the project life-cycle
- Project Assurance representative reviews and audits project quality throughout the project

7.5 Reference to any Standards that need to be met

- MSA 1995, Work boat code, Categorisation of waters, SOLAS, MLC etc.
- Risk Response Criteria

7.6 Quality Control and Audit Processes to be applied to the Project Management

- ISO9001
- ISO14000

7.7 Quality Control and Audit Process Requirements for Specialist Work

- Project Audit – PWC DfT Internal Audit

7.8 Change Management Procedures

Form 182,644 shall be completed and issued to Project Board for approval. This document includes the impact on cost, time and quality. The Project Manager shall update the project plan to reflect changes where required.

Any Tools to Ensure Quality

- Irish Lights shared area will be used for distribution of Project information [redacted]

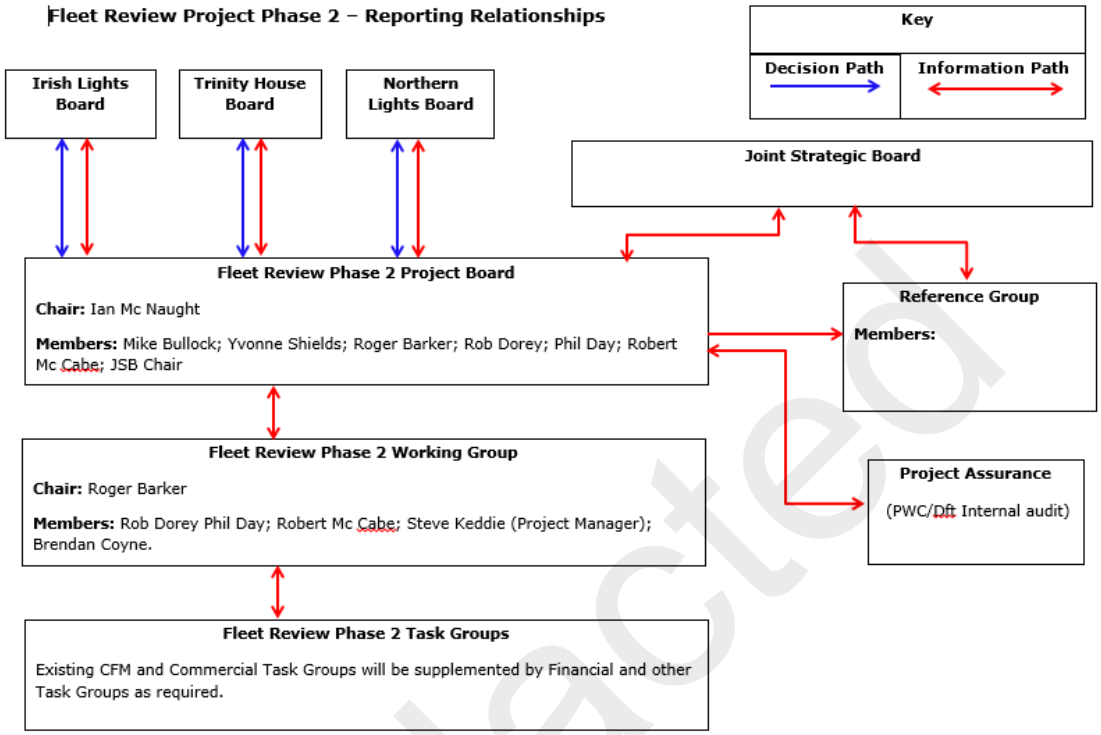
- Project version control and configuration management will be accomplished using the project folder set up within Trinity House IManage document management system
- Microsoft Project Server will be used to plan and monitor updates from the project tasks

7.9 Legislation

The Project will take into account both UK and Irish Legislation

Appendix A – Project Management and Communication Plan

Structure



Note: Communications to Internal staff and External stakeholders, where appropriate will be considered by the Project Board on a regular basis

Project Documentation
Project Initiation Document - Revised

GLA Fleet Review – Phase 2

Revised Fleet Review Work Plan following Acceptance of Braemar Report conclusions

Author: Project Management Working Group
Date: 22/11/2017
Document No: 373710

Project Brief No. 489	Fleet Review – Phase Two SUMMARY	2016/18

Project Requirements

The project will deliver an Implementation plan for future Fleet Structure and management which draws information and conclusions from the following work package reports:

- Centralised monitoring
- Coordinated Planning
- Charter Test and Evaluation
- Commercial Impact and Future Balance
- Supplementary Solutions Assessment
- Additional Recommendations Review
- Fleet Structure Report

Project Timeline

Project Definition Phase	16th May 2016
Centralised Monitoring	July 2016
Coordinated Planning	April 2016 – March 2018
Coordinated Planning Ph 1 – sign off	31st Oct 2016
Charter Test and Evaluation	May 2016 – Dec 2017
Commercial Impact and Future Balance	May 2016 – Feb 2018
Supplementary Solutions Development	May 2016 – Feb 2018
Additional Recommendations	May 2016 Dec 2017
Fleet Structure Report	Feb 2018
Final Report and Implementation Plan	March 2018
Completion	March 2018

Project ID's	Project Title	Category	Date
489	Fleet Review – Phase 2	Project	

	2015/16	2016/17	2017/18	2018/19	Total ESTIMATE
Current Expenditure Profile			[redacted]		[redacted]
Project Risk Profile					

Project Summary

Background

- Fleet review phase 1 delivered a report from consultants Houlder Ltd. The report contains a number of outcomes but does not give specific recommendations or methods of implementation.

Proposal

- Phase two will review the options and outcomes from phase 1, assess the feasibility of the options presented, consider other means of delivery and then make recommendations based on operational data that will enable a coordinated implementation plan

Benefits

- Reduce risk compared to current arrangements
- Provision of a Value for Money solution
- Stakeholder confidence
- A solution based on agreed data
- A realistic implementation plan

Document History and Approvals

Document Location

The definitive copy of the Project Initiation Document (including revisions) is held by the Project Manager. It is also published on the projects page of worksite.

Revision History

Document Reference	Date	Summary of Changes
336037v1	23/03/16	First draft
336037v2	25/04/2016	Project Management Working Group Review
336037v3	03/05/16	WG Review
336037v4	06/05/16	Updated comments R. McCabe
336037v5	08/05/16	Updated comments P. Day
336037v6	17/05/16	Update following comments from CEC
336037v7	26/05/16	Update following JSB meeting 24/05
336037v8	01/06/16	Update with minor amendments to milestone dates
336037v9	20/07/16	Update following comments from Reference Group meeting
336037v10	06/09/16	Added updated description risk 20, risk 20 added to summary page
336037v11	08/09/16	PDF version
336037v12	08/09/16	PDF version Signed
373710v1	22/11/17	Revised following acceptance of the Braemar report
373710v2	07/12/2017	Updated following discussions / comments M. Bullock and R. Dorey
373710v3	18/01/2018	PDF version

References Documents

Document No.	Document Title
336,037	Fleet Review PID
338,376	Houlder Final Report
338,374	Project board submission to the Ministers
	Response from Department for Transport
338,377	GLA Fleet Review Phase 2 Outline Project Plan
373,055	Fleet Review Phase 2 – WP3 – Braemar Final Report 3 including appendices

Approvals

Approved out of Committee by email on 12/12/2017 PB Chair

Management Summary Project

Sanctioned – Project .....[redacted]
Risk - Project.....[redacted]
Sanction Amount (First Year) .....[redacted] (17/18)

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1 Introduction

The United Kingdom Department for Transport (DfT) led a review of the ships required to enable the General Lighthouse Authorities' (GLAs) to fulfil their statutory duty to maintain marine aids to navigation and respond to dangerous wreck and new danger. The aim was to identify the optimum number of ships, the capability of those ships, and the appropriate ownership and operational management of the ships required during the period 2016-25.

This Fleet Review was undertaken by a Project Board chaired by DfT with representatives from each GLA, the Lights Advisory Committee (representing light dues payers) and DTTAS. The Board procured a specialist maritime consultant (Houlder Ltd) to assist with the Review, which was initiated on the assumption that there were no constraints within the scope established for the work. It delivered to that remit, identifying in a schedule the political, geographic and organisational constraints that would need to be taken into account, and which mean that the outcomes require significant further analysis to verify feasibility.

In particular the report validated the GLA Risk Response Criteria and identified clear deficiencies in the current arrangements for risk response.

The Project Board submitted the Houlder report to ministers with a number of recommendations. The minister responded to the chair of the JSB stating that He should work with each GLA to develop and implement a full project plan for this next phase.

The Ministers response letter detailed the overall purpose of the review recognising importantly that the aim is to secure the most efficient and effective fleet construct, which maintains appropriate levels of navigation safety and, overall, reduces risk compared to the current arrangements.

The PID details thorough testing of the Houlder assumption that among other things include that spot market charter vessels could supplement a reduced GLA core fleet. Braemar Offshore, with well-respected and acknowledged expertise in the charter market, were contracted to independently consider specific assumptions made by Houlder with respect to their proposed outcomes. The final report and its conclusions has now been assessed and accepted by the Fleet Review Phase 2 Project Board. The report was presented to the Reference Group and feedback has been received from the LAC via the DfT. This feedback will be considered as the follow on work is conducted, however it should be noted that the Braemar report is not the answer to the Fleet Review in itself, but will feed into other workstreams to inform conclusions.

The key conclusion from the Braemar report that 'the charter market cannot be relied on to be able to supply a suitable vessel to deliver the various areas of GLA obligation and responsibility on a spot charter basis on a year round basis' does however negate the potential requirement for further market testing of the spot charter market, which in turn has allowed the Project Board to reassess project timelines. The revised plan includes engagement sessions with stakeholders to ensure that all views are taken into account including meeting with the LAC early in the process to explore their feedback submitted to the DfT on the Braemar Report.

Updated work plan

The Table below summarises the tasks required and the desired meeting dates to support the plan and key date changes within the overall timing plan to complete the project.

22 Nov to 10 Jan 2018	WP2 Modelling
4-5 Jan	WP2 modelling Workshop
WC 8 Jan	LAC engagement
12 Jan	PB Agree Scenario conclusions – Hull No.
12 Jan to 7 Feb	Prepare WP 7 report
25th / 26th Jan	CEC consideration of WP7 progress
1 Feb	Ref Group Engagement [WP7]
7 Feb	PMWG 18 -Review and agree WP 7 report
7 Feb to 1 Mar	develop WP 8
WC 12 Feb	FRPB Finalise WP 7
19 Feb	Ref Group engagement [WP8]
WC 5 Mar	PB, PMWG 19, review and agree WP 8 report (Final Project Report)
2 Mar to 26 Mar	GLA Board briefings and endorsement
29 Mar	Submit Final Report and Brief Government Departments [DfT, DTTAS, Transport Scotland]
29 April	DfT to endorse the Final Report

Table 1: Revised task and communication plan

2 Project Objective

The project will deliver an Implementation plan for future Fleet Structure which draws information and conclusions from the following work package reports:

- Centralised monitoring
- Coordinated Planning
- Charter Test and Evaluation
- Commercial Impact and Future Balance
- Supplementary Solutions Assessment
- Additional Recommendations Review
- Fleet Structure

2.1 Scope

The scope of the project is defined by the project objective being delivered through the work-packages in Para 2.1.1 and expanded in 2.1.2 limited by the exclusions in 3.3 and acknowledging constraints in para 3.4.

2.1.1 Project Structure

The project will be sub-divided into seven main work packages

WP1) Centralised Monitoring
WP2) Coordinated Planning
WP3) Charter, Test and Evaluation
WP4) Commercial Impact and Future Balance
WP5) Supplementary Solutions Assessment
WP6) Additional Recommendations Review
WP7) Fleet Structure Report including GLA risk reduction analysis
WP8) Overall report and implementation plan

2.1.2 Each work package (WP) will have a number of Outline Deliverables

This updated work plan details complete tasks highlighted in green, incomplete tasks highlighted in red, revised due by dates and resources allocated to deliver

- **WP1 (Centralised Monitoring)**
  - Extend existing monitoring arrangements to make data visible to central planner 24/7 (Go-Live and Report)

Data available 29/07/2016 - Complete

- **WP2 (Coordinated Planning)**
  - Phase 0 – Project MOU incorporating:-
    - Coordinated Planning - Funding agreement
    - Coordinated Planning - Vessel availability
    - Coordinated Planning - Commercial activity integration
    - Coordinated Planning – Casualty, wrecks, new dangers

MOU Signed 31/01/2017 - Complete

  - Phase 1 – Establish Tri-GLA framework, organisation, procedures, initial planning tool
    - Coordinated Planning - Tri-GLA framework proposal
    - Coordinated Planning - Organisational proposal
    - Coordinated Planning – Establish planning procedures
    - Coordinated Planning - Establish initial planning tool
    - Coordinated Planning – Input current plans to Coordinated Planning tool
    - Coordinated Planning – Go Live and Report

Plan Signed 31/10/2016 - Complete

  - Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan
    - Coordinated Planning – 2017/18 NLB Operational requirement
    - Coordinated Planning – 2017/18 Irish Lights Operational requirement
    - Coordinated Planning – 2017/18 Trinity House Operational requirement
    - Coordinated Planning – Overlay 2017/18 Individual GLA requirements into coordinated fleet plan demonstrating risk reduction
    - Coordinated Planning – Sign-off coordinated fleet plan incorporating 2017/18 GLA operational requirements

Operational 01/04/2017 - Complete

  - Phase 3 – Evaluate, Refine centralise planning model, build coordinated plan
    - Coordinated Planning – Measure success against planned operational requirements, casualty, wreck and new danger response, ability to meet risk response criteria, effect on commercial activities
    - Coordinated Planning – Review and refine central planning tool processes and procedures
    - Coordinated Planning – Report on implementation

Data analysed 12/01/2018 [OUTSTANDING] – Lead (Bill Summers)

- Phase 4 – Final Post Project MOU (Operation of recommended fleet construct)
  - Coordinated Planning – Consider phase 3 report
  - Coordinated Planning – Post Project Funding agreement
  - Coordinated Planning - Post Project vessel availability
  - Coordinated Planning - Post Project commercial activity integration
  - Coordinated Planning – Post Project casualty, wrecks, new dangers
  - Coordinated Planning – Sign-Off MOU and implement

Refined Plan by 07/02/2018 [OUTSTANDING] – Lead (CFM – supported by Finance and Legal)

- **WP3 (Charter test and evaluation)**
  - Phase 1 – Engage technical specialist and develop market test framework and consider independent report for WP3
    - Charter test and evaluation – Develop requirements for Independent Technical Specialist
    - Charter test and evaluation – Establish and report finance and budget arrangements for Phase 2 and future business
    - Charter test and evaluation – Contract Independent Technical Specialist
    - Charter test and evaluation – Develop approach to testing the Market
    - Charter test and evaluation – Develop the vessel statement of requirement
    - Charter test and evaluation – Develop test scenarios
    - Charter test and evaluation – Develop report detailing long term costings, market viability, availability
    - Charter test and evaluation – Agree and sign-off Evaluation report
    - Charter test and evaluation – Consider requirement to proceed to phase 2
    - Charter test and evaluation – Consider continued use of Technical Specialist for oversight of Phase 2

Framework in place and report delivered 01/11/2016 - Complete

- **WP4 (Commercial Impact and Future Balance)**
  - Phase 1– Review Current Commitments
    - Compile Report reviewing current commitments
    - Define methodology to deliver Phase 2
    - Sign-off Current commitments report

Report complete 31/10/2016 [Complete]

  - Phase 2 – Identify the financial implications and potential benefits from the exploitation of reserve capacity within a coordinated operational plan
    - Commercial Impact and Future Balance – Assess potential reserve capacity together with exploitation and financial models
    - Commercial Impact and Future Balance – Produce reserve capacity report
    - Commercial Impact and Future Balance – Sign-off report that details fleet commercial work against operational profile to deliver optimum VFM

Signed off commercial VFM report 22/01/2018[OUTSTANDING] – Lead - (Mike Spain with CFM support)

- **WP5 (Supplementary Solutions Development)**
  - Phase 1 – Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations

- Supplementary solutions – Report 'Zone Boat' arrangements
- Supplementary solutions – Sign-Off 'Zone Boat' arrangements

Zone Boat arrangements reviewed 30/11/2016 - Complete

- Phase 2 – Alternative resource solutions
  - Supplementary solutions – Review the report on the Test and Evaluation from Charter
  - Supplementary solutions – Review the report on Coordinated Planning
  - Supplementary solutions – Perform Gap analysis of requirements and cost effectiveness against report conclusions
  - Supplementary solutions – Consider and Develop Alternative Resource Solutions / Options
  - Supplementary solutions – Review Alternative Resource Solutions
  - Supplementary solutions – Report on Alternative Resource Solutions
  - Supplementary solutions – Sign-off report for Alternative Resource Solutions

Report signed off for alternative resource solutions 07/02/2018[OUTSTANDING] – Lead (Phil Day – CFM support)

- Phase 3 - Alternative Vessel Funding and Delivery Mechanisms
  - Analyse Phase 2 report - consider Alternative Resource Solutions
  - Supplementary solutions – Report on Alternative vessel Funding and Delivery Mechanisms
  - Supplementary solutions – Sign-Off Report for Alternative vessel funding and Delivery Mechanisms

Alternative vessel funding and delivery arrangements signed off 07/02/2017[OUTSTANDING] – Lead (Phil Day – CFM support)

- **WP6 (Additional Recommendation Review)**
  - Phase 1 – Further Work
    - Additional Recommendation Review – Evaluate recommendations identified within table 12 of the Houlder Report
    - Additional Recommendation Review – Develop implementation plan for recommendation's taken forward
    - Additional Recommendations Review - Sign-Off Report Implementation plan

Additional recommendations report delivered 05/01/2018[OUTSTANDING] Lead – (Ewen Mackerchar, support Mike Spain)

- **WP7 (Fleet Structure Report)**
  - Phase 1 – Fleet Structure
    - Review report from WP2, WP3, WP4, WP5
    - Evaluate weighting for risk reduction against cost
    - Develop fleet construct proposal
    - Evaluate Commercial balance and reserve capacity following fleet structure experience
    - Sign-off fleet construct proposal

Fleet Structure Report signed off 12/02/2018[OUTSTANDING] Lead – (Phil Day, PMWG support)

- **WP8 (Overall report and implementation plan)**
  - Consolidate reports from WP1-7
  - Develop implementation plan

- Develop overall report
- Sign-off of overall report

Overall Report signed off 01/03/2018[OUTSTANDING] Lead – (PM + PMWG support)

Phase 2 Project Closure 05/04/2018[OUTSTANDING] Lead – (PM + PMWG)

2.1.3 Work-Package Responsibility Matrix

Note: All draft reports will be approved by the Project Management Working Group prior to final report distribution to approval level

Work Package Number	Description	Responsible Team	Team Leader for WP	Supporting Team or Team member	Approval & Sign-Off
WP1	Centralised Monitoring				
	Go-Live	Monitoring task group	Bill Summers	MTG Team	PMWG
	Report	Monitoring task group	Bill Summers	MTG Team	Project Board Chair via PMWG
WP2	Coordinated Planning				
Phase 0	Project MOU				
	Funding Agreement	Funding Task Group	Brendan Coyne	FTG Tri GLA, DfT, DTTAS	Project Board
	Vessel Availability	Project Board	PB Chair	PB	PB Chair
	Commercial Activity Integration	Project Board	PB Chair	PB	PB Chair
	Casualty, Wrecks, New Dangers	Project Board	PB Chair	PB	PB Chair
	Sign-Off MOU and implement	Project Board	PB Chair	PB	CEC
Phase 1	Tri-GLA framework, organisation, procedures and initial planning tool				
	Tri-GLA framework Proposal	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Organisation proposal	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Establish planning procedures	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Establish initial planning tool	Planning task group	Ewen Mackerchar	CFM Team	PMWG

	Input current plans into Coordinated Planning tool	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Go-Live and report	Planning task group	Ewen Mackerchar	CFM Team	Project Board via PMWG
Phase 2	Establish Individual GLA operational requirements and develop to coordinated fleet plan				
	2017/18 NLB Operational requirement	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	2017/18 Irish Lights Operational requirement	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	2017/18 Trinity House Operational requirement	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Overlay 2017/18 Individual GLA requirements into coordinated fleet plan demonstrating risk reduction	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Sign-off coordinated fleet plan incorporating 2017/18 GLA operational requirements	Planning task group	Ewen Mackerchar	CFM Team	Project Board via PMWG
Phase 3	Evaluate, Refine centralise planning model, build coordinated plan				
	Measure success against planned operational requirements, casualty, wreck and new danger	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Review and refine central planning tool processes and procedures	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Report on implementation	Planning task group	Ewen Mackerchar	CFM Team	PB Chair via PMWG
Phase 4	Post Project MOU (Operation of recommended fleet construct)				
	Consider phase 3	Project	PB Chair	PB	PB Chair

	report	Board			
	Post Project Funding agreement	Funding Task Group	Brendan Coyne	FTG Tri GLA, DfT, DTTAS	Project Board
	Post Project vessel availability	Project Board	PB Chair	PB	PB Chair
	Post Project commercial activity integration	Project Board	PB Chair	PB	PB Chair
	Post Project casualty, wrecks, new dangers	Project Board	PB Chair	PB	PB Chair
	Sign-Off MOU and implement	Project Board	PB Chair	PB	CEC
WP3	Charter Test and Evaluation				
Phase 1	Engage technical specialist and develop market test framework and consider independent report for WP3				
	Develop requirements for Independent Technical Specialist	PMWG	Phil Day	PMWG	Project Board Chair
	Establish and report finance and budget arrangements for Phase 2 and future business	PMWG	Brendan Coyne	PMWG	Project Board Chair
	Contract Independent Technical Specialist	PMWG	Brendan Coyne	PMWG	Project Board Chair
	Develop the vessel statement of requirement	PMWG	Phil Day	PMWG + Technical Specialist	Project Board Chair
	Develop test scenarios	PMWG	Phil Day	PMWG + Technical Specialist	Project Board Chair
	Develop report detailing long term costings, market viability, availability	PMWG	Phil Day	PMWG + Technical Specialist	Project Board Chair
	Agree and sign-off Evaluation report	PMWG	Phil Day	PMWG + Technical Specialist	Project Board Chair
	Consider requirement to proceed to phase	PMWG	Phil Day	PMWG	Project Board Chair

	2				
	Consider continued use of Technical Specialist for oversight of Phase 2	PMWG	Phil Day	PMWG	Project Board Chair
WP4	Commercial Impact and Future Balance				
Phase 1	Review Current Commitments				
	Compile Report reviewing current commitments	Commercial task group (CTG)	Mike Spain	CTG	PMWG
	Define methodology to deliver Phase 2	Commercial task group	Mike Spain	CTG	PMWG
	Sign-off Current commitments report	Commercial task group	Mike Spain	CTG	PB Chair via PMWG
Phase 2	Identify the financial benefits from the exploitation of reserve capacity within a coordinated operational plan				
	Assess potential reserve capacity and exploitation models	Planning task group	Ewen Mackerchar	CFM Team + CTG	PMWG
	Produce reserve capacity report	Planning task group	Ewen Mackerchar	CFM Team + CTG	PMWG
	Sign-off report that details fleet commercial work against operational profile to deliver optimum VFM	Planning task group	Ewen Mackerchar	CFM Team + CTG	PB Chair via PMWG
WP5	Supplementary solutions development				
Phase 1	Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations				
	Report 'Zone Boat' arrangements	Planning task group	Ewen Mackerchar	CFM Team	PMWG
	Sign-Off 'Zone Boat' arrangements	Planning task group	Ewen Mackerchar	CFM Team	PMWG
Phase 2	Alternative Resource Solutions				

	Review the report on the Test and Evaluation from Charter	PMWG	Phil Day	PMWG + CFM	PMWG
	Review the report on Coordinated Planning	PMWG	Phil Day	PMWG + CFM	PMWG
	Perform Gap analysis of requirements and cost effectiveness against report conclusions	PMWG	Phil Day	PMWG + CFM	PMWG
	Consider and Develop Alternative Resource Solutions / Options	PMWG	Phil Day	PMWG + CFM	PMWG
	Review Alternative Resource Solutions	PMWG	Phil Day	PMWG + CFM	PMWG
	Report on Alternative Resource solutions	PMWG	Phil Day	PMWG + CFM	PMWG
	Sign-off report for Alternative Resource Solutions	PMWG	Phil Day	PMWG	PB Chair via PMWG
Phase 3	Alternative Vessel Funding and Delivery Mechanisms				
	Report on Alternative vessel Funding and Delivery Mechanisms	PMWG	Phil Day	PWMG + Funding Task Group + Tech Specialist + Broker	PMWG
	Sign-Off Report for Alternative vessel funding and Delivery Mechanisms	PMWG	Phil Day	PWMG	PB Chair via PMWG
WP6	Additional Recommendations Review				
Phase 1	Further Work				
	Evaluate recommendations identified within table 12 of the Houlders Report	Planning task group	Ewen Mackerchar	CFM Team + CTG as required	PMWG
	Develop implementation plan for recommendation's taken forward	Planning task group	Ewen Mackerchar	CFM Team + CTG as required	PMWG

	Sign-Off Report Implementation plan WP7 (Fleet Structure Report)	Planning task group	Ewen Mackerchar	CFM Team + CTG as required	PMWG
WP7	Fleet Structure Report				
Phase 1	Fleet Structure				
	Review report from WP2, WP3, WP4, WP5	PMWG	PMWG Chair	PMWG + CFM + CTG + Tech Specialist	PMWG
	Evaluate weighting for risk reduction against cost	PMWG	PMWG Chair	PMWG + CFM + CTG + Tech Specialist	PMWG
	Develop fleet construct proposal	PMWG	PMWG Chair	PMWG + CFM + CTG + Tech Specialist	PMWG
	Evaluate Commercial Balance and reserve capacity following fleet structure experience	PMWG	PMWG Chair	PMWG + CFM + CTG	PMWG
	Sign-off of fleet construct proposal	PMWG	PMWG Chair	PMWG	PB Chair via PMWG
WP8	Overall Report and Implementation plan				
	Consolidate reports from WP1-7	PMWG	PMWG Chair	PMWG + CFM + CTG + FTG + Tech Specialist	PB Chair
	Develop implementation plan	Project Board	Project Board Chair	Project Board	Project Board Chair
	Develop final report	Project Board	Project Board Chair	Project Board	Project Board Chair
	Sign-off of overall report				CEC Via GLA Boards

3 Project Communications Plan and Escalation Procedure

3.1 Project Communications

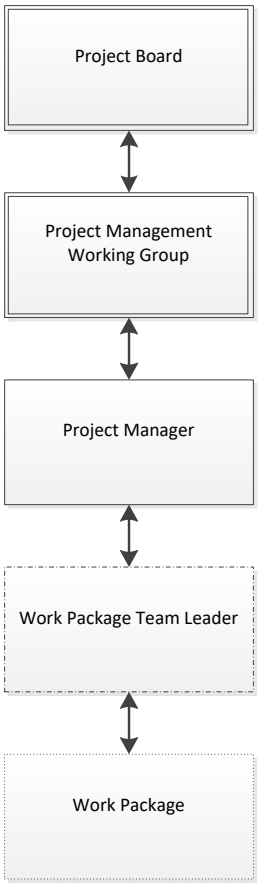
3.1.1 Project Summary Report

Content:	Short summary taken from monthly Work Package Highlight report
Timing:	Generated as required and prior to key meetings.
Responsible:	Chair Project Management Working Group
Distribution:	Project Board, JSB and Reference Group

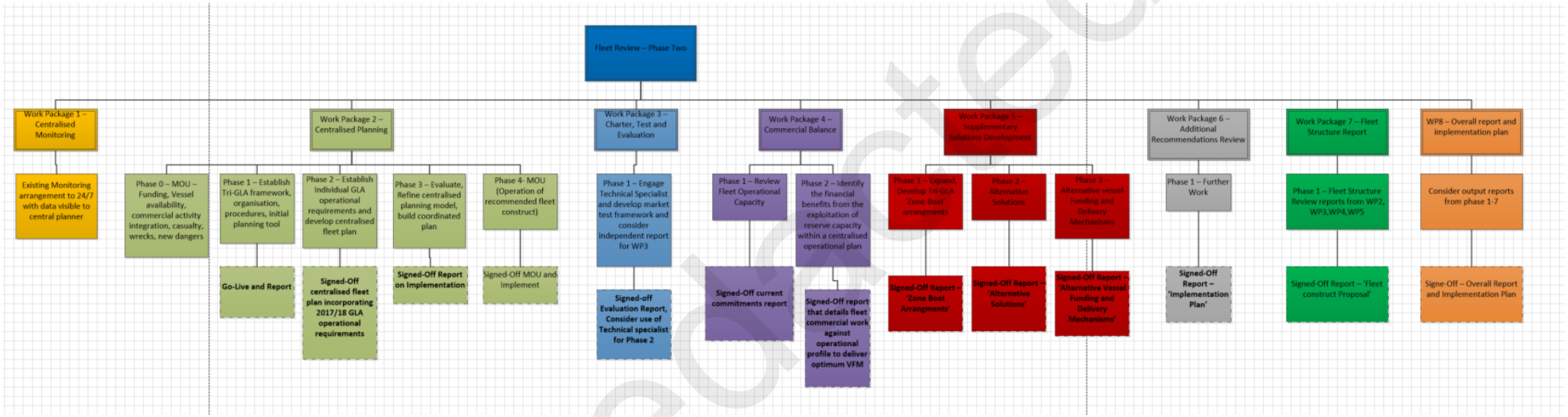
3.1.2 Monthly Reports

Content:	Summary of status for last reporting period for each work package Task undertaken within last period Next reporting period activities Identified Issues and Risks Financial Tracking Schedule tracking
Timing:	Monthly to feed into PMWG meetings
Responsibility:	Task group leader to update each work package PM to coordinate and distribute
Approval:	Project management working group
Distribution:	Project Management Working Group Project Board Work package task leaders

3.2 Project Escalation Process



3.3 Product Breakdown Structure



3.4 Product Delivery Schedule

This table shows all milestones for the project in date order (soonest to latest). The major outstanding project deliverables are highlighted in yellow, removed milestones are lined-out and completed milestones are highlighted in green. **Work Package Number**	**Phase**	**Task Description**	**Completion Date**
		Mandate approval gateway (Baseline 0 & 1)	18/03/16
		Project DP3 - Stage Approval (Baseline 0 & 7)	18/03/16
		Project PID Distribution	10/05/16
		Project PID Feedback Deadline	10/05/16
		Project PID Sign-Off	**16/05/16**

		Project Definition Phase	07/06/16
		Funding approval	07/06/16
		Project DP2 - PID approval gateway (Baseline 0 & 3)	07/06/16
		Commercial Impact and Future Balance - Phase 1 (Deadline for Report - Current Commitments)	12/07/16
		Charter, Test & Evaluation - Phase 1 (Contract Independent Technical Specialist)	20/07/16
Work Package Number	**Phase**	**Task Description**	**Completion Date**
WP1		**Extend Existing monitoring arrangements to 24/7 (Data visible to Central Planner)**	**Complete**
		Project DP3 - Stage Baseline (0 & 4)	29/07/16
		Charter, Test & Evaluation - Phase 1 (Deliver interim report for approach, scenarios, vessel requirements)	10/08/16
		Supplementary Solution Development - Phase 1 (Deadline for Feedback Report - 'Zone Boat Arrangements')	10/08/16
		Coordinated Planning - Phase 1 (Revised coordinated plan feedback deadline)	01/09/16
		Coordinated Planning - Phase 0 (MOU Feedback Deadline)	08/09/16
		Supplementary Solutions - Phase 3 (Deadline for feedback - Report - Alternative Funding and delivery mechanisms)	08/09/16

		Charter, Test & Evaluation (Deadline for feedback on report)	28/09/16
		Coordinated Planning - Phase 1 (Establish Tri-GLA framework, organisation, procedures, initial planning tool)	31/10/16
WP2	**1**	**Coordinated Planning - Phase 1 (Revised Report / Plan sign-Off / Go-Live)**	**Complete**
		Commercial Impact and Future Balance - Phase 1 (Review Current Commitments)	31/10/16
WP4	**1**	**Commercial Impact and Future Balance - Phase 1 (Sign-Off Report - Current Commitments)**	**Complete**
Work Package Number	**Phase**	**Task Description**	**Completion Date**
		Charter, Test & Evaluation - Phase 1 (Engage Technical Specialist and develop market test framework and consider independent report for WP3)	01/11/16
WP3	**1**	**Charter, Test & Evaluation - Phase 1 (Establish and report finance and budget arrangements for Phase 2 and future business - Sign-off)**	**Complete**
WP3	**1**	**Charter, Test & Evaluation (Sign-off Report - Technical specialist)**	**Complete**
WP3	**1**	**Consider requirement to proceed to phase 2**	**Complete**
		Charter, Test & Evaluation (Assign Broker / Contractor)	03/11/16
		Supplementary Solutions Development - Phase 1 (Expand, Develop Tri-GLA 'Zone Boat' Arrangements to support operations)	30/11/16
WP5	**1**	**Supplementary Solution Development - Phase 1 (Sign-Off Report - 'Zone Boat Arrangements')**	**Complete**

		Additional Recommendations - Phase 1 (Deadline for Feedback - Report - Implementation Plan)	09/12/16
		Coordinated Planning - Phase 0 (MOU)	31/01/17
WP2	**0**	**Coordinated Planning - Phase 0 (DFT, DTTAS, GLA Chief EXEC sign-off of Project MOU)**	**Complete**
		Coordinated Planning - Phase 2 (Deadline for feedback, overlaid coordinated plan incorporating 2017/18 GLA individual operational requirements)	13/02/17
		Commercial Impact and Future Balance - Phase 2 (Deadline for feedback on report that details fleet commercial work against operational profile to deliver Optimum VFM)	27/02/17
Work Package Number	**Phase**	**Task Description**	**Completion Date**
		Coordinated Planning - Phase 2 (Establish Individual GLA operational requirement and develop coordinated fleet plan)	31/03/17
WP2	**2**	**Coordinated Planning - Phase 2 (Sign-Off overlaid coordinated plan incorporating 2017/18 GLA individual operational requirements)**	**Complete**
		Fleet Review Phase 2 Project Work Package 4 (Commercial Impact and Future Balance)	31/03/17
		Commercial Impact and Future Balance - Phase 2 (Identify the financial benefits from exploitation of reserve capacity within a coordinated operational plan)	31/03/17
WP4	**2**	**Commercial Impact and Future Balance - Phase 2 (Sign-Off report that details fleet commercial work against operational profile to deliver Optimum VFM)**	**22/01/18**
		Charter, Test & Evaluation (6 Month Review Gate)	15/05/17
		Supplementary Solutions - Phase 2 (Report - Alternative Resource Solutions)	14/06/17

		Supplementary Solutions - Phase 2 (Deadline for feedback Report - Alternative Resource Solutions)	28/06/17
		Fleet Review Phase 2 Project Work Package 6 (Additional Recommendations Review)	02/10/17
		Additional Recommendations - Phase 1 (Further Work)	02/10/17
WP6	**1**	**Additional Recommendations - Phase 1 (Sign-Off Report - Implementation Plan)**	**05/01/18**
		Fleet Review Phase 2 Project Work Package 3 (Charter test and evaluation)	01/11/17
Work Package Number	**Phase**	**Task Description**	**Completion Date**
		Charter Test & Evaluation - Phase 2 (Test Market with Contracted Broker)	01/11/17
~~**WP3**~~	~~**2**~~	~~**Charter, Test & Evaluation (Sign-Off Report - Performance and test scenario)**~~	~~**Remove**~~
		Project DP3 - Stage Baseline (0 & 6)	01/11/17
		Centralise Planning - Phase 3 (Feedback Deadline Report - Implementation)	20/11/17
		Fleet Review Phase 2 Project Work Package 5 (Supplementary Solutions development)	01/12/17
		Supplementary Solutions - Phase 2 (Alternative Resource Solutions)	01/12/17

WP5	**2**	**Supplementary Solutions - Phase 2 (Sign-Off Report - Alternative Resource Solutions)**	**07/02/18**
		Supplementary Solutions - Phase 3 (Alternative Vessel Funding and delivery mechanisms)	01/12/17
WP5	**3**	**Supplementary Solutions - Phase 3 (Sign-Off Report - Alternative Funding and delivery mechanisms)**	**07/02/18**
		Fleet Structure - Phase 1 (Deadline for Feedback - Fleet construct proposal)	28/12/17
		Coordinated Planning - Phase 3 (Evaluate, refine centralise planning model , build coordinated plan	04/01/18
Work Package Number	**Phase**	**Task Description**	**Completion Date**
WP2	**3**	**Coordinated planning - Phase 3 (Report - Implementation sign-off)**	**12/01/18**
		Coordinated Planning - Phase 4 (Deadline for Feedback MOU - Operation of Recommended Fleet Construct)	23/03/18
		Fleet Review Phase 2 Project Work Package 2 (Coordinated Planning)	30/03/18
		Coordinated Planning - Phase 4 - MOU (Operation of recommended fleet construct)	30/03/18
WP2	**4**	**Coordinated Planning - Phase 4 (Sign-Off MOU - Operation of Recommended Fleet Construct)**	**07/02/18**
		Project DP3 - Stage Baseline (0 & 5)	30/03/18
		Fleet Review Phase 2 Project Work Package 7 (Fleet Structure Report)	30/04/18

		Fleet Structure - Phase 1 (Fleet Structure)	30/04/18
WP7	**1**	**Fleet Structure - Phase 1 (Sign-Off - Fleet construct proposal)**	**12/02/18**
		Overall Report - Phase 1 (Deadline for feedback - Overall Report)	23/07/18
WP8		**Overall Report - Phase 1 (Sign-Off - Overall Report)**	**01/03/18**
		Project DP4 - Stage Approval (Baseline 0 & 8)	31/07/18
Work Package Number	**Phase**	**Task Description**	**Completion Date**
		Fleet Review Phase 2 Project Work Package 8 (Overall report and implementation plan)	06/08/18
		Fleet Structure - Phase 1 (Overall Report and implementation plan)	06/08/18
		Fleet Review Phase Two PID 489	03/09/18
		Project DP5 - CE4 sign-off and closure (Baseline 0 & 9)	**05/04/18**

3.5 Acceptance Criteria Matrix

The section outlines the overall planned acceptance criteria for each work package, however it is recognised that work package results will impact future work packages and therefore an acceptance criteria review will be held at the start of each work package to determine a detailed acceptance criteria.
To enable timely delivery of the project, document review and comment are to be completed prior to the deadline given in the project Gantt chart. Failure to meet the deadlines will be taken as agreement of the deliverable.

Rules of engagement for each work package:

3.5.1 WP1 - Centralised Monitoring

Objective:	To provide 24 hour monitoring to the central planning team.
Conduct:	While awaiting the tri GLA monitoring project outcomes, ensure that 24/7 data provided by each GLA is available for use by the Central Planning Team.
Acceptance Criteria:	Three GLA Operations Directors to sign document that 24/7 monitoring arrangements are adequate for the purpose of Coordinated Planning.

3.5.2 WP2 - Coordinated Planning

Phase 0 – Project MoU

Objective:	To establish a framework agreement acceptable to each GLA Board which forms the basis for Coordinated Planning of tri-GLA vessels. MOU to include level of commitment of asset availability to conduct routine maintenance work, response to RRC, arrangements for the conduct of commercial activity and funding arrangements.
Conduct:	Draft to be generated by designated project staff incorporating tri-GLA views, endorsed by Chief Execs on behalf of GLA Boards. DfT and DTTAS confirmation of funding arrangements also required.
Acceptance Criteria:	MoU developed to the satisfaction of each GLA Board, (including funding arrangements endorsed by DfT/DTTAS) and signed by Chief Executives.

Phase 1 – Establish Tri-GLA framework, organisation, procedures, initial planning tool

Objective:	To establish an agreed organisational structure and framework of procedures for the coordination and execution of a Tri-GLA plan.
Conduct:	Establish a planning tool sufficient to incorporate all requirements and to provide the outputs required for the execution and adaption of the plan having injected current plans into the tool.
Acceptance Criteria:	16/17 operational plan incorporated live into agreed planning tool with associated organisational procedures established to the satisfaction of the PMWG.

Phase 2 – Establish Individual GLA operational requirements and Develop to coordinated fleet plan

Objective: Execute current (16/17) plans and establish 2017/18 operational requirements entering into planning tool for period commencing 01 April 17.

Conduct: Execute 17/18 plan while establishing resource requirements utilising all assets for conduct of routine statutory work and meeting Risk Response Criteria (RRC). Identify reserve or under capacity of capability required to meet statutory requirements.

Acceptance Criteria: All statutory work and RRC achieved plus all operational requirements entered into the planning tool for period commencing 1st April 2017.

Phase 3 – Evaluate, refine Coordinated Planning model, build coordinated plan

Objective: Measure success against planned operational requirements, casualty, wreck and new danger response, ability to meet risk response criteria, effect on commercial activities

Conduct: Planning team record and evaluate implementation of 16/17 and 17/18 operational plans

Acceptance Criteria: A comprehensive record and report for the period 01 Apr 17 – 01 Apr 18 identifying performance in the following areas:

- T1&2/ T3&4 maintenance
- T1&2/ T3&4 casualty
- New danger/wreck location and marking

In addition, record where charter vessels were called upon to supplement existing fleet. (Charter work stream to record degree of success).

Phase 4 – MOU (Operation of recommended fleet construct)

Objective: To establish a framework agreement acceptable to each GLA Board which forms the basis for post project Coordinated Planning of tri-GLA vessels. To include level of commitment of asset availability to conduct routine maintenance work, response to RRC, arrangements for the conduct of commercial activity and funding arrangements.

Conduct: Draft to be generated by designated project staff incorporating tri-GLA views, endorsed by Chief Execs on behalf of GLA Boards and by DfT representative with respect to funding arrangements.

Acceptance Criteria: MoU developed to the satisfaction of each GLA Board, including funding arrangements, with the additional endorsement of DfT/DTTAS and signed by Chief Executives.

3.5.3 WP3 - Charter Test and Evaluation

Phase 1 – Engage Technical Specialist and develop market test framework and consider independent report for WP3

Objective: Seek additional professional expertise (at cost to be determined) to report on variables associated with short term charter approach. Assist in developing approach to testing the market and building the Statement of Requirement for a potential Broker, to feed Phase 2.

Conduct: Establish contractual basis for professional support and scope of work and bring Technical Specialist on to contract. Develop

approach to market testing including determination of appropriate sample size, SoR for ship chartering and SoR for contracting a suitable Broker to facilitate in Phase 2. Deliver report for GLA risk appreciation. GLA Boards to review and assess against risk appetite to determine areas of feasibility.

Acceptance Criteria: Successful ITT process, Delivery of Approach to Market test report. SoR developed and delivered. Risk report submitted.
Report agreed and signed detailing finance and budget arrangements for Phase 2 and future business
Consider and decide whether to proceed to WP3 Phase 2 'Test Market with Contracted Broker'

3.5.4 WP4 - Commercial Impact and Future Balance

Phase1 – Review current commitments

Objective: Compile report on existing commitments

Conduct: Commercial/business development managers compile report on existing GLA commitment to commercial work. And define methodology for phase 2

Acceptance Criteria: Signed off report

Phase 2– Identify the financial benefits from the exploitation of reserve capacity within a coordinated operational plan

Objective: Assess post project potential reserve capacity together with exploitation and financial models.

Conduct: Taking into account findings from other WP Commercial/business development managers compile report on future GLA potential commitment to commercial work and financial arrangement.

Acceptance Criteria: signed off report

3.5.5 WP5 - Supplementary Solutions

Phase 1 – Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations

Objective: Expand and develop Tri-GLA 'Zone Boat' arrangements to support operations as an element of a layered fleet model.

Conduct: Assess each GLA existing arrangements and compile a directory of local boats of known standard. Consider appropriate contractual basis for use within layered fleet.

Acceptance Criteria: Delivery of a directory of all GLA local (Zone) boats with standards understood and contractual basis for use agreed by Chief Execs.

Phase 2 – Alternative Resource Solutions

Objective: To remain open to emerging opportunities, alternative delivery models and funding solutions. As charter test and evaluation develops, prepare to cost and evaluate alternative resource solutions should RRC, cost effectiveness and overall workload not be achievable.

Conduct: Should excess or shortfall in capability/capacity exist then consider alternative or supplementary means of delivery GLA responsibilities.

Acceptance Criteria: Signed off report detailing a range of costed solutions which mitigate risk to acceptable level.

Phase 3 – Alternative Vessel Funding and Delivery Mechanisms

Objective: To investigate alternative funding and delivery mechanisms to deliver required capability to assure a VfM solution.

Conduct: Identify and examine delivery solutions and funding mechanisms not covered within the Houlder report or not examined sufficiently. Look for emerging opportunities as the project develops and provide costed solutions for comparison which include a balance and assessment of risk and cost.

Acceptance Criteria: Delivery of a costed and risk mitigated fleet model which includes identified alternative resource solutions if appropriate, agreed by Chief Execs'.

3.5.6 WP6 - Additional Recommendations Review

Phase 1 – Further work

Objective: To evaluate the additional recommendations made within the Houlder report and assess to feasibility, desirability and value for money. Establish plan for implementation of those taken forward.

Conduct: Review recommendations and assess on case by case basis; feasibility, benefit, VfM and timeline for implementation if appropriate.

Acceptance Criteria: Delivery of consolidated document indicating intentions for each recommendation, agreed by Chief Execs.

3.5.7 WP7 – Fleet Structure

Phase 1 – Fleet Structure

Objective: With reference to the reports generated within WP2, WP3, WP4, WP5 evaluate a weighting for risk reduction against cost and develop a fleet construct proposal

Conduct: Review reports from WP2, 3, 4 & 5 and develop model evaluating risk reduction against cost to develop final cost assessed layered fleet construct proposal which reduces risk compared to the current arrangements.

Acceptance Criteria: Signed off report by CEC.

3.5.8 WP8 – Overall Report and Implementation Plan

Objective: The assessment of all reports to determine a consolidated report detailing a desired solution and implementation plan that offers a VfM outcome which balances cost and risk to the satisfaction of each GLA Board, for DfT and where appropriate DTTAS approval for implementation through the corporate planning process.

Conduct: Review reports from WP1 to 7 and provide overarching summary report and implementation plan suitable for GLA Board

Acceptance Criteria: Signed off report by CEC.

4 Project Approach

4.1 Governance Structure

This project is so far as possible designed to utilise existing GLA structure drawing on JSB, CEO committee, and Inter GLA operations Committee (IGC5) to make up the Project Board. It has been supplemented by the creation of a reference group to ensure successful and meaningful external liaison is continued as in the Dft led fleet review process. The project will be conducted using Prince 2 management processes.

The project Board will draw on the Coordinated Fleet Management group (CFM) and other internal resources to undertake project work packages. These will be overseen by the Phase 2 project management working group (PMWG) formed of the GLA Operation Directors, Project Manager and GLA finance representative. The Project Manager role is as project coordinator and has a non-executive role in the working group.

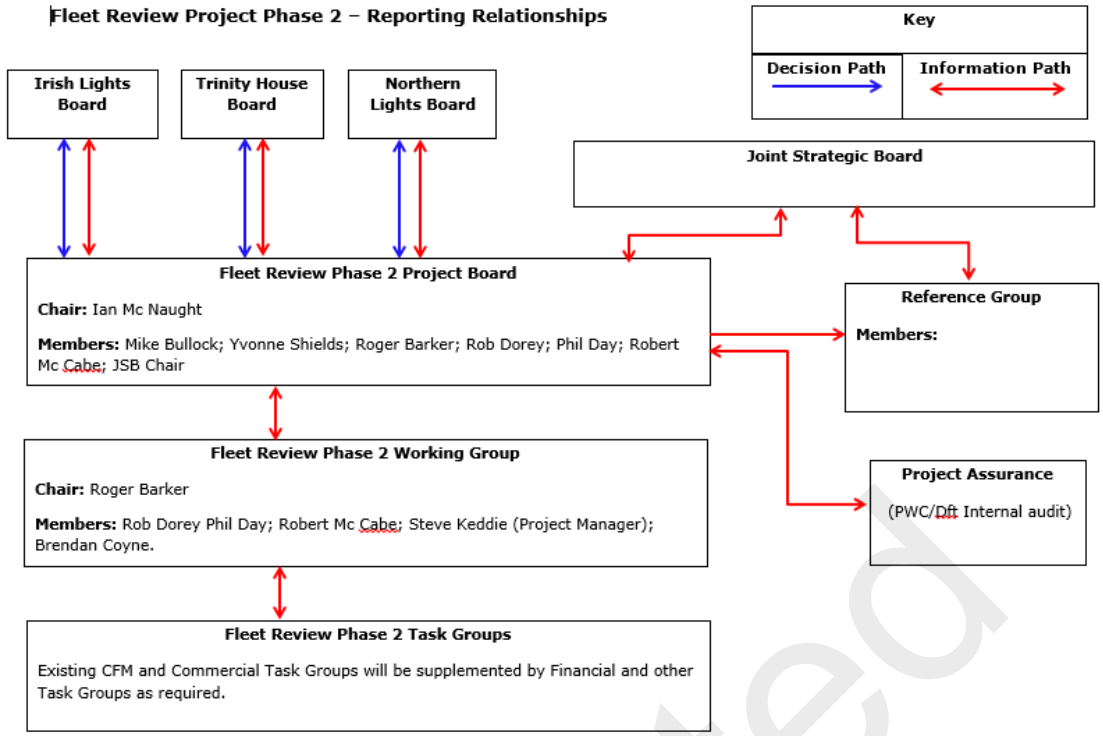
Assurance will be provided through the auspices of the PWC DfT Internal Audit team.

Independent external experts on brokerage and market analysis will be utilised under the working group supervision.

The role of the JSB is to coordinate joint GLA strategic oversight of the project and act as a vehicle for ongoing tri GLA cooperation.

The role of the Reference Group is to provide challenge and ideas for the Project Board and with their independent expertise provide information useful for the effective completion of the project.

The GLA Boards are responsible for the approval of the project plan, monitoring of progress and final sign off of project conclusions and recommendations.



4.1.1 Project Board

Chair: CEC Chair - Ian McNaught 2016
Members: Chair of JSB – Nigel Palmer; Mike Bullock; Yvonne Shields; Roger Barker; Rob Dorey; Phil Day; Robert McCabe

Terms of Reference:

- Meetings to be coordinated with the GLA Boards as well as routine JSB meetings and at other key milestones;
- Approve budgetary arrangements for project
- Confirm all pre-commencement requirements are established
- Provide guidance and direction to Working Group
- Receive and note monthly progress reports from the Project Management Working Group (PMWG). Approve any changes in scope OR BUDGET proposed by PMWG
- Receive work package and phase reports and action in accordance with the work package responsibility matrix at section 2.1.3 of the PID
- Provide reports to individual GLA Boards as required and feedback Board input to Working Group
- Provide reports to JSB as required and feedback JSB input to PMWG
- Provide reports to Reference Group as required
- Recommend final outcome and implementation plan to individual GLA Boards for approval
- Manage communications plan with internal and external stakeholders together with media as considered appropriate.

- Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.
- The Project Board may amend or withdraw these terms of reference, in agreement with the JSB

4.1.2 Project Management Working Group

Chair: Roger Barker
Members: Rob Dorey; Phil Day; Robert McCabe; Steve Keddie; Ewen Mackerchar; Brendan Coyne.

Terms of Reference:

- Preparation of detailed project plan for approval by Project Board
- Provide monthly progress and key milestone reports to Project Board
- Establish work package task groups as per PID providing direction and guidance.
- Propose any changes of scope for approval by Project Board
- Propose any changes of budget to Project Board
- Receive task group phase reports and action in accordance with the responsibility matrix at section 2.1.3 of the PID.
- Progress work packages assigned to the PMWG and report in line with the responsibility matrix at section 2.1.3 of the PID.
- Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.
- The Project Board may amend or withdraw these terms of reference, in agreement with the PMWG.

4.1.3 Reference Group

4.1.3.1 Background

Phase 1 of the 2015 Fleet Review was completed with a report which proposed a number of potential outcomes but noted that they were based on untested assumptions which required thorough testing and evaluation. An outline project plan along with a proposal for the conduct of the next phase of the review was submitted to Ministers on 8th March 2016
The Minister for Shipping requested inter alia that:

a) The Chair of the JSB, working with each GLA is to develop and then implement a full project plan for the next phase, which amongst other considerations, should involve external partners closely throughout, in particular, the Lights Advisory Committee and the UK and Irish governments to ensure an effective sharing of ideas, challenge and information about progress.

b) And that a full project plan should be put to a project Reference Group for their consideration and recommendations and that the Group should comprise stakeholders and independent expertise, and will provide a valuable challenge function for the JSB Chair and each GLA

4.1.3.2 Reference Group Role

A reference Group is to be established as part of the governance structure for Phase 2 of the General Lighthouse Authorities' Fleet Review.

a) The role of the Reference Group is to support and challenge the Project Board in its work to identify the optimum size, specification and management of the GLA fleet for the period 2016-2025, drawing on its experience, expertise and strategic view of the wider maritime and political environment.

b) The Reference Group will provide advice to the Project Board; the Board exercises overall control over the project and it is their responsibility to appoint and manage any contractors, and to agree a final report and implementation plan.

4.1.3.3 Functions

The Reference Group will:

a) Input into definition of the project and key requirements;

b) Quality review principal project documents and outputs;

c) Provide guidance to the Project Board as it deems appropriate;

d) Review and contribute to the risk register for the project; and,

e) Provide review and acknowledgement of key decision points.

4.1.3.4 Recommended Membership:

a) The Reference Group's membership is:
- TBA DfT
- TBA DTTAS
- TBA Transport Scotland
- JSB Chair and 1 other member from each GLA not in Chair
- TBA LAC x 2
- [redacted] Secretary of State's Representative

- Representative from UK Major Ports Group
- Senior Independent Industry professional
- Representative of Institute of Chartered Shipbrokers

b) The Chair of the Reference Group and a secretary will be appointed;

c) The Chair will decide if another member of the Reference Group should chair a meeting on the occasion of their own absence or if the meeting should be rearranged on a date where the Chair is available;

d) Each stakeholder may change its representatives at any time on written request to the Reference Group Chair;

e) The Reference Group may invite any other person to attend a particular meeting if that person can assist in its deliberations;

f) The Reference Group Secretariat will support meetings of the Group, planning of the agenda, circulation of papers, preparation and circulation of minutes and monitoring of the project milestones.

4.1.3.5 Accountability

The Reference Group should comprise stakeholders and independent expertise and will provide a valuable challenge function for the Chair of the JSB and each GLA.

4.1.3.6 Meetings

a) Meetings of the Reference Group will be scheduled: one at the outset of the project, others at key milestones or decision points and a final meeting after the Project Board's final report has been received;

b) Minutes of each meeting will be produced to provide an accurate record of the recommendations that are made by the Reference Group. These will be circulated to the Group and to the Project Board as soon as reasonably possible.

4.1.3.7 Communications

a) The Reference Group's deliberations and recommendations will be reported to the Project Board through the minutes of its meetings;

b) The Reference Group will not engage in external communications about the project, that being the responsibility of the Project Board, in agreement with the communications teams of is constituent members.

4.1.3.8 Terms of Reference

a) Nothing in these terms of reference should be deemed to amend, remove or detract from any existing statutory powers, duties or responsibilities of any stakeholder.

b) The Reference Group may amend or withdraw these terms of reference, in agreement with the Project Board.

5 Project Finance (Budget)

A summary of the project budget costs and actual spend cost is detailed below:-

5.1 Budget Breakdown

Material description	Cost Breakdown	Comment
Technical Specialist	[redacted]	
Total	[redacted]	

5.2 Spend Profile

Description	2016/17	2017/18	2018/19	Total
Technical Specialist		[redacted]		[redacted]
Total		[redacted]		[redacted]

5.3 Project Risk Register

Risk Register source document 337026

Risk	Title	Date Raised	Originat	Risk Probabilit	Time Impact	Cost Impac	Performanc e Impact	Risk Facto	Risk Expos ure	Financial Year	Mitigation	Residual Risk Probabili	Residual Time Impact	Residual Cost Impact	Residual Performanc e Impact	Residual Risk Factor	Comment
1	Agreement cannot be made on key issues that hinder project conclusions	07/04/2016	S. Keddie	4	5	1	3	36			Each work package has an endorsed acceptance criteria agreed through the PID. Continued close working of GLAs, recognising where specific constraints exist, along with clear reporting relationships, terms of reference for each group along with defined escalation process, support of CEC's, JSB and challenge from Reference Group combine to reduce likelihood.	4	5	1	3	36	Continue dialogue and follow project process for resolution. 11/04/17 - Require clarity from DfT on fleet arrangements (Letter awaited) 15/05/17 - Letter received project progressing on basis of advise given
~~2~~	~~Key supplier ceases trading / fails to meet contract~~	~~07/04/2016~~	~~S. Keddie~~	~~1~~	~~4~~	~~4~~	~~3~~	~~11~~	~~Closed~~	~~22/11/2017~~		~~1~~	~~4~~	~~4~~	~~3~~	~~11~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~3~~	~~Exchange rate variations cause variences above planned costs~~	~~07/04/2016~~	~~S. Keddie~~	~~3~~	~~0~~	~~3~~	~~2~~	~~15~~	~~Closed~~	~~23/11/2017~~		~~3~~	~~0~~	~~3~~	~~2~~	~~15~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
4	Unforeseen legal issues result in additional cost	07/04/2016	S. Keddie	**3**	4	3	3	30			PMWG and PB engage with legal team throughout project and review of pertinent documentation will reduce likelihood of delivering solution with unresolved legal issues.	**2**	4	3	3	20	This risk reflected uncertainty in procurement chartering but others may emerge. **22/11/17 PMWG16 Risk probability reduction due to conclusion of Braemar report and the decision not to test the charter market**
~~5~~	~~Failure to agree project MoU~~	~~09/05/2016~~	~~P. Day~~	~~1~~	~~5~~	~~2~~	~~4~~	~~11~~	~~Closed~~	~~22/11/2017~~	~~PMWG Highlight the risk to CEC's Interim measure is to operate under existing / original Ship share MOU~~	~~1~~	~~4~~	~~2~~	~~3~~	9	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~6~~	~~Vessels not made available 365 24/7 to Coordinated operational plan~~	~~09/05/2016~~	~~P. Day~~	~~3~~	~~4~~	~~3~~	~~3~~	~~30~~	~~Closed~~	~~23/11/2017~~	~~Granuaile only to meet sanction requirement to minimise impact~~	~~1~~	~~4~~	~~3~~	~~3~~	~~10~~	~~Risk expired - Vessels available throughout te~~
~~7~~	~~Failure of Dft/DTTAS to agree Irish Lights funding for project~~	~~09/05/2016~~	~~P. Day~~	~~2~~	~~4~~	~~2~~	~~3~~	~~18~~	~~Closed~~	~~24/11/2017~~		~~2~~	~~4~~	~~2~~	~~3~~	~~18~~	~~Risk closed - funding not provided~~
8	Failure of communications plan and subsequent loss of external support	09/05/2016	P. Day	**3**	4	2	3	27			**Communication plan**	2	4	2	3	18	**Internal communication plan and External stakeholder engagement within revised timing plan**
9	**GIAA** Internal audit give unsatisfactory finding for project assurance	09/05/2016	P. Day	2	4	2	3	18				2	4	2	3	18	
10	one or more GLA Board(s) fails to support project or work package findings	09/05/2016	P. Day	2	4	2	3	18				2	4	2	3	18	Remains under review
11	One or more work packages over run causes overall project to overrun	09/05/2016	P. Day	2	4	3	2	18			Timelines understood through the PID. Progress monitored through PMWG, PB and Reference Group. Robust leadership and direction provided by Chief Execs.	2	3	3	2	16	Although timing has slipped on Work package 3 Phase 1 to engage a technical specialist there is confidence that this will not affect the overall project timelines
~~12~~	~~Failure to procure suitable technical specialist, broker and vessel~~	~~09/05/2016~~	~~P.Day~~	~~3~~	~~4~~	~~3~~	~~3~~	~~30~~	~~Closed~~	~~22/11/2017~~		~~1~~	~~4~~	~~3~~	~~3~~	~~10~~	~~Risk Closed following Braemar completion~~
~~13~~	~~Failure to agree project funding~~	~~09/05/2016~~	~~R. Dorey~~	~~1~~	~~4~~	~~1~~	~~3~~	8	~~Closed~~	~~23/11/2017~~		~~1~~	~~4~~	~~1~~	~~3~~	8	~~Funding agreed~~
14	Failure to assign sufficient manpower to project	09/05/2016	R. Dorey	2	4	2	4	20			**Internal work loading to be closely monitored**	2	4	2	4	20	
15	Failure to agree post project MoU	09/05/2016	R. Dorey	4	4	2	3	36			PMWG Highlight the risk to CEC's	3	4	2	3	27	Future Risk
~~16~~	~~Unclear outcome from Charter Evaluation and testing (WP4)~~	~~10/05/2016~~	~~R. McCabe~~	~~2~~	~~4~~	~~4~~	~~3~~	~~22~~	~~Closed~~	~~22/11/2017~~	~~Closely monitor the work of Braemar~~	~~2~~	~~4~~	~~4~~	~~3~~	~~22~~	~~Risk Closed following Braemar completion~~
17	Significant difference between Project Board / Reference Group on key issu	10/05/2016	R. McCabe	2	4	1	3	16				2	4	1	3	16	
18	Uncertainty and of potential impact on personnel , coupled with prolonged process impacts on staff morale could result in disenfrancised workforce	10/05/2016	R. McCabe	4	4	4	3	44			Internal GLA staff communications plan in place but to be refined and aligned with key project events. External stakeholders identified within project comms plan but engagement timeline to be developed.	3	4	4	3	33	**Communication to be provided in line with comms strategy**
19	Pressure on Project Board to favour or reject particular options	10/05/2016	R. McCabe	2	1	4	4	18				2	1	4	4	18	
20	Increased cost to the GLF due to loss of commercial income	20/07/2016	R. Dorey	3	1	4	1	18			[redacted] risk allocated at originally - DfT did not sanction reduced commercial income for IL. Risk to GLF is reduced. Opportunities will be taken to conduct commercial work where appropriate. Some previously committed work will be undertaken.	2	1	4	1	12	[redacted] accepted within Corporate plan

Key	
Risk Probability	The probability of the risk occurring. >90%=5, >70%=4, >50%=3, , >30%=2, >10%=1, Nil=0
Time Impact	The impact on schedule. >8wk=5, 4-5wk=4, 2-4wk=3, <2wk=2, <1wk=1, No impact=0.
Cost Impact	The impact on cost. [redacted]
Performance Impact	The impact on performance. Loss of system functionality=5, Major shortfalls in key areas=4, Some shortfalls in 1 or 2 areas=3, A few shortfalls in secondary areas=2, Degradation of a secondary parameter=1, No impact=0.
Risk Factor ((Time Impact + Cost Impact + Performance Impact)*Risk Probability)	High: Red =(>14), Medium: Amber =(Between 7&14), Low: Green = (<7)

Project Documentation
Project Risk and Issue Register

Risk ID	Title	Date Raised	Originator	Risk Probability	Time Impact	Cost Impact	Performance Impact	Risk Factor	Risk Exposure	Financial Year	Mitigation	Residual Risk Probability	Residual Time Impact	Residual Cost Impact	Residual Performance Impact	Residual Risk Factor	Comment
1	Agreement cannot be made on key issues that hinder project conclusions	07/04/2016	S. Keddie	4	5	1	3	36			Each work package has an endorsed acceptance criteria agreed through the PID. Continued close working of GLAs, recognising where specific constraints exist, along with clear reporting relationships, terms of reference for each group along with defined escalation process, support of CEC's, JSB and challenge from Reference Group combine to reduce likelihood.	4	5	1	3	36	Continue dialogue and follow project process for resolution. 11/04/17 - Require clarity from DfT on fleet arrangements (Letter awaited) 15/05/17 - Letter received project progressing on basis of advise given
~~2~~	~~Key supplier ceases trading / fails to meet contract~~	~~07/04/2016~~	~~S. Keddie~~	~~1~~	~~4~~	~~4~~	~~3~~	~~11~~	~~Closed~~	~~22/11/2017~~		~~1~~	~~4~~	~~4~~	~~3~~	~~11~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~3~~	~~Exchange rate variations cause variences above planned costs~~	~~07/04/2016~~	~~S. Keddie~~	~~3~~	~~0~~	~~3~~	~~2~~	~~15~~	~~Closed~~	~~23/11/2017~~		~~3~~	~~0~~	~~3~~	~~2~~	~~15~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~4~~	~~Unforeseen legal issues result in additional cost~~	~~07/04/2016~~	~~S. Keddie~~	~~3~~	~~4~~	~~3~~	~~3~~	~~30~~			~~PMWG and PB engage with legal team throughout project and review of pertinent documentation will reduce likelihood of delivering solution with unresolved legal issues.~~	~~1~~	~~4~~	~~3~~	~~3~~	~~10~~	~~This risk reflected uncertainty in procurement chartering but others may emerge. 22/11/17 PMWG16 Risk probability reduction due to conclusion of Braemar report and the decision not to test the charter market 07/02/18 As project nears completion risk is reduced 28/03/18 - Closed for Project but risk continues through DfT approval process~~
~~5~~	~~Failure to agree project MoU~~	~~09/05/2016~~	~~P. Day~~	~~1~~	~~5~~	~~2~~	~~4~~	~~11~~	~~Closed~~	~~22/11/2017~~	~~PMWG Highlight the risk to CEC's Interim measure is to operate under existing / original Ship share MOU~~	~~1~~	~~4~~	~~2~~	~~3~~	~~9~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~6~~	~~Vessels not made available 365 24/7 to Coordinated operational plan~~	~~09/05/2016~~	~~P. Day~~	~~3~~	~~4~~	~~3~~	~~3~~	~~30~~	~~Closed~~	~~23/11/2017~~	~~Granuaile only to meet sanction requirement to minimise impact~~	~~1~~	~~4~~	~~3~~	~~3~~	~~10~~	~~Risk expired - Vessels available throughout test period~~
~~7~~	~~Failure of Dft/DTTAS to agree Irish Lights funding for project~~	~~09/05/2016~~	~~P. Day~~	~~2~~	~~4~~	~~2~~	~~3~~	~~18~~	~~Closed~~	~~24/11/2017~~		~~2~~	~~4~~	~~2~~	~~3~~	~~18~~	~~Risk closed - funding not provided~~

Risk ID	Title	Date Raised	Originator	Risk Probability	Time Impact	Cost Impact	Performance Impact	Risk Factor	Risk Exposure	Financial Year	Mitigation	Residual Risk Probability	Residual Time Impact	Residual Cost Impact	Residual Performance Impact	Residual Risk Factor	Comment
8	Failure of communications plan and subsequent loss of external support	09/05/2016	P. Day	**3**	4	2	3	27			**Communication plan**	2	4	2	3	18	Internal communication plan and External stakeholder engagement within revised timing plan
9	**GIAA** Internal audit give unsatisfactory finding for project assurance	09/05/2016	P. Day	2	4	2	3	18				2	4	2	3	18	
~~10~~	~~one or more GLA Board(s) fails to support project or work package findings~~	~~09/05/2016~~	~~P. Day~~	~~2~~	~~4~~	~~2~~	~~3~~	~~18~~				~~2~~	~~4~~	~~2~~	~~3~~	~~18~~	~~Remains under review~~ **~~28/03/18 - Closed~~**
~~11~~	~~One or more work packages over run causes overall project to overrun~~	~~09/05/2016~~	~~P. Day~~	~~2~~	~~4~~	~~3~~	~~2~~	~~18~~			~~Timelines understood through the PID. Progress monitored through PMWG, PB and Reference Group. Robust leadership and direction provided by Chief Execs.~~	~~3~~	~~3~~	~~3~~	~~2~~	~~24~~	~~Although timing has slipped on Work package 3 Phase 1 to engage a technical specialist there is confidence that this will not affect the overall project timelines 7/02/2018 Increased due to revised tight deadlines following Braemar report conclusion~~ **~~28/03/18 - Closed~~**
~~12~~	~~Failure to procure suitable technical specialist, broker and vessel~~	~~09/05/2016~~	~~P.Day~~	~~3~~	~~4~~	~~3~~	~~3~~	~~30~~	~~Closed~~	~~22/11/2017~~		~~1~~	~~4~~	~~3~~	~~3~~	~~10~~	~~Risk Closed following Braemar completion and decision not to test charter market~~
~~13~~	~~Failure to agree project funding~~	~~09/05/2016~~	~~R. Dorey~~	~~1~~	~~4~~	~~1~~	~~3~~	~~8~~	~~Closed~~	~~23/11/2017~~		~~1~~	~~4~~	~~1~~	~~3~~	~~8~~	~~Funding agreed~~
~~14~~	~~Failure to assign sufficient manpower to project~~	~~09/05/2016~~	~~R. Dorey~~	~~2~~	~~4~~	~~2~~	~~4~~	~~20~~			~~**Internal work loading to be closely monitored**~~	~~2~~	~~4~~	~~2~~	~~4~~	~~20~~	~~Work load monitoring~~ **~~28/03/18 - Closed~~**
~~15~~	~~Failure to agree post project MoU~~	~~09/05/2016~~	~~R. Dorey~~	~~4~~	~~4~~	~~2~~	~~3~~	~~36~~			~~PMWG Highlight the risk to CEC's~~	~~3~~	~~4~~	~~2~~	~~3~~	~~27~~	~~Future Risk~~ 07/02/18 Risk removed from project to be deveoped following project conclusion
~~16~~	~~Unclear outcome from Charter Evaluation and testing (WP4)~~	~~10/05/2016~~	~~R. McCabe~~	~~2~~	~~4~~	~~4~~	~~3~~	~~22~~	~~Closed~~	~~22/11/2017~~	~~Closely monitor the work of Braemar~~	~~2~~	~~4~~	~~4~~	~~3~~	~~22~~	~~Risk Closed following Braemar completion and decision not to test charter market~~

Risk ID	Title	Date Raised	Originator	Risk Probability	Time Impact	Cost Impact	Performance Impact	Risk Factor	Risk Exposure	Financial Year	Mitigation	Residual Risk Probability	Residual Time Impact	Residual Cost Impact	Residual Performance Impact	Residual Risk Factor	Comment
~~17~~	~~Significant difference between Project Board / Reference Group on key issue~~	~~10/05/2016~~	~~R. McCabe~~	~~2~~	~~4~~	~~1~~	~~3~~	~~16~~			~~Revised PID provides for incrteased engagement with reference group~~	~~3~~	~~4~~	~~1~~	~~3~~	~~24~~	~~07/02/18 Minor issue raised therfore greater risk for more issues~~ **~~28/03/18 - Closed~~**
18	Uncertainty of potential impact on personnel , coupled with prolonged process impacts on staff morale could result in disenfrancised workforce	10/05/2016	R. McCabe	4	4	4	3	44			Internal GLA staff communications plan in place but to be refined and aligned with key project events. External stakeholders identified within project comms plan but engagement timeline to be developed.	3	4	4	3	33	Communication to be provided in line with comms strategy
~~19~~	~~Pressure on Project Board to favour or reject particular options~~	~~10/05/2016~~	~~R. McCabe~~	~~2~~	~~1~~	~~4~~	~~4~~	~~18~~				~~2~~	~~1~~	~~4~~	~~4~~	~~18~~	~~**28/03/18 - Closed**~~
~~20~~	~~Increased cost to the GLF due to loss of commercial income~~	~~20/07/2016~~	~~R. Dorey~~	~~3~~	~~1~~	~~4~~	~~1~~	~~18~~			~~[redacted] risk allocated at originally - DfT did not sanction reduced commercial income for IL. Risk to GLF is reduced. Opportunities will be taken to conduct commercial work where appropriate. Some previously committed work will be undertaken.~~	~~1~~	~~1~~	~~4~~	~~1~~	~~6~~	~~[redacted] accepted within Corporate plan 07/02/2018 Full financial risk not realised better than expected financial performance~~ **~~28/03/18 - Closed~~**

Key	
Risk Probability	The probability of the risk occurring. >90%=5, >70%=4, >50%=3, , >30%=2, >10%=1, Nil=0
Time Impact	The impact on schedule. >8wk=5, 4-5wk=4, 2-4wk=3, <2wk=2, <1wk=1, No impact=0.
Cost Impact	The impact on cost. [redacted]
Performance Impact	The impact on performance. Loss of system functionality=5, Major shortfalls in key areas=4, Some shortfalls in 1 or 2 areas=3, A few shortfalls in secondary areas=2, Degradation of a secondary parameter=1, No impact=0.
Risk Factor ((Time Impact + Cost Impact + Performance Impact)*Risk Probability)	High: Red =(>14), Medium: Amber =(Between 7&14), Low: Green = (<7)

Key Due to Impact on Commercial Impact	
Risk Probability	The probability of the risk occurring. >90%=5, >70%=4, >50%=3, , >30%=2, >10%=1, Nil=0
Time Impact	The impact on schedule. >8wk=5, 4-5wk=4, 2-4wk=3, <2wk=2, <1wk=1, No impact=0.
Cost Impact	The impact on cost. [redacted]
Performance Impact	The impact on performance. Loss of system functionality=5, Major shortfalls in key areas=4, Some shortfalls in 1 or 2 areas=3, A few shortfalls in secondary areas=2, Degradation of a secondary parameter=1, No impact=0.
Risk Factor ((Time Impact + Cost Impact + Performance Impact)*Risk Probability)	High: Red =(>14), Medium: Amber =(Between 7&14), Low: Green = (<7)

Project Documentation
Review of the General Lighthouse Authorities' Fleet Requirements
Ministers Letter

Department for Transport

From the Minister of State
Robert Goodwill MP

Great Minster House
33 Horseferry Road
London
SW1P 4DR

Tel: 0300 330 3000
E-Mail: robert.goodwill@dft.gsi.gov.uk

Web site: www.gov.uk/dft

Graham Crerar
Chairman, Joint Strategic Board
c/o Northern Lighthouse Board
84, George Street
Edinburgh
EH2 3DA

15 MAR 2016

Dear Graham,

Review of the General Lighthouse Authorities' Fleet Requirements

I am writing to thank you for your proposal for the next phase of work in response to the review of the General Lighthouse Authorities' (GLA) fleet requirements and the recommendations made by Houlder in their final report.

Houlder has made some significant findings in relation to the management of risk and their suggestions for how to respond to those findings include measures about which I recognise the GLAs have some reservations.

It is essential to carry the confidence of each GLA Board, light dues payers and parliaments in the UK and Ireland that a safe, efficient and cost-effective aids to navigation service is being maintained. In my view, the best way to address those reservations is to test Houlder's assumptions rigorously, and I welcome your proposal and high-level project plan which takes that approach.

I would like you, working with each GLA, to develop and then implement a full project plan for this next phase, which should:

- In relation to centralised fleet planning, draw up a proposal for implementation that is fully compliant with existing UK and Irish legislation and present these arrangements by 31 October 2016;
- Be ambitious in the aim of securing the most efficient and effective fleet construct, which maintains appropriate levels of navigation safety and, overall, reduces risk compared to the current arrangements;
- Maintain the existing momentum, working at pace to develop and implement responses to the recommendations, in particular with a view to securing quick

wins by 31 October 2016, while remaining alive to emerging opportunities, delivery models and funding mechanisms;

- Involve external partners closely throughout, in particular the Lights Advisory Committee and the UK and Irish governments to ensure an effective sharing of ideas, challenge and information about progress; and,
- Evaluate the financial impacts on each individual GLA at each stage of implementation, seeking approvals from the UK and Irish governments as necessary before proceeding to implementation.

To maintain momentum, this full project plan should be ready to put to a project Reference Group for their consideration and recommendations by 16 May. The Group should comprise stakeholders and independent expertise, and will provide a valuable challenge function for you and each GLA.

I appreciate that this project, both during evaluation and then in implementation, will have financial impacts and these will differ between each GLA. This is why it will be essential to continue working closely with the UK and Irish governments. In particular, I recognise there will be an effect on the funding arrangements for Irish Lights agreed between DfT and DTTAS. The two departments will seek prior agreement on how the impact will be handled, including working with the GLAs on determining an appropriate mechanism for recharging the cost of using each other's ships or otherwise constraining the commercial use of reserve capacity.

On that latter point more generally, I want to confirm that, in accordance with the statutory restrictions on the use of the General Lighthouse Fund, the fleet should be of the size and composition required to enable the GLAs to meet their statutory duties and liabilities, and that while any reserve capacity should be utilised to earn commercial income, this is not the principal purpose for the fleet.

I want to take this opportunity to thank you, other members of the Joint Strategic Board, and the staff and boards of the three GLAs for your hard work on the review and the continuing engagement in response to its findings. The open and constructive approach to working with Houlder, and the active participation of all representatives on the review's Project Board and Reference Group, have been fundamental to an effective process.

I am copying this letter to Ian McNaught, Mike Bullock and Yvonne Shields.

Yours sincerely

[redacted]

ROBERT GOODWILL

Project Documentation
Additional Recommendations on Risk

GLA Fleet Review – Phase 2

Additional Recommendations on Risk

Author: Phil Day

Date: 06/06/2017

Document No: 358119

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
358119 v.1	28/03/2017	First draft
358119 v.2	27/04/2017	Updated following PMWG 10
358119 v.3	06/06/2017	Updated following PMWG 12 + Standard formatting
358119 v.4	06/06/2017	Converted to PDF
358119 v.5	21.06.17	Amended to reflect PB comment
358119 v.6	22/06/2017	Converted to PDF

Reference Documents

Document No.	Document Title

Approvals

PMWG Meeting No.12 05/06/2017 approved.

Introduction

As well as the key recommendations on fleet size and operation, Houlder in the 2015 Fleet review report made nine additional recommendations. Three recommendations were made around the management of risk.

		rotating lead	
1/5	Risk	Implement means of determining risk routinely carried operationally and share with respective Departments	5.3.5
1/6	Risk	CEOs should provide guidance to their operations teams as to the degree of risk (failure to meet the RRC) that is acceptable	5.3.5
1/7	Risk	CEOs should provide guidance to their operations teams on the process to be followed if acceptable risk looks to be compromised	5.3.5
		Assess viability of providing sonar suite (for accurate wreck geo-	

Extract from additional recommendations page xi of executive summary

This paper sets out proposed approach to each risk to advise the Chief Executives and once endorsed will form the guidance that is recommended.

Assessing the degree of risk

Houlder stated:-

In assessing the risk, it is important to understand the event or sequence of events which are considered a risk. Whilst it can be argued that the failure to respond to an incident within the times laid down in the RRC is not, in itself, a risk as the consequence is unclear, the RRC response times have been developed based on the requirement to ensure navigational safety with a view to the potential for an incident or accident at sea. For this reason a failure to respond within the agreed timescales is considered as the metric against which risk is measured.

The shortfall in the overall ability to schedule vessel operations in relation to the impact of operational risk as a result of unplanned circumstances even on a relative basis has a number of consequences.

- *Dynamic risk has to be borne by the affected operations team with no scale or metrics against which to judge acceptability either to the GLA CEO, who bears the ultimate liability risk, or the Department upon whom a late response to an incident which resulted in a knock on incident would doubtless reflect poorly.*
- *Any change to fleet disposition will affect the risk profile but without any pre-agreed scale, the decision to accept the risk lacks transparency and is vested in the operations team. Plainly in the worst case this leads to an increase in a GLA's overall degree of risk which not only is predominantly opaque to higher authorities (CEOs and Ministers), but might actually be at a level that would be considered unacceptable to said authorities*

Houlder identified that failure to respond within the agreed RRC time scales is the metric against which risk is measured.

This approach though results in a "after the fact analysis" which provides a degree of uncertainty, in the results of the trial, in the coverage of the fleet, and in the consequences of failing to respond to a serious incident which not only reflects poorly as stated by Houlder but exposes the GLAs to risk and the mariner to potential serious safety concerns.
Therefore as well assessing "after the fact" the GLAs will assess the risk against the potential failure to meet the RRC.

Risk Response Criteria

The Risk Response Criteria was written independent of GLA resources or method of response to determine the degree of risk associated with wreck and new danger around the British Isles and Ireland.

The Risk Response criteria uses established risk assessment methodology to identify areas of risk:-

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

Using this methodology appropriate response times were allocated:-

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:

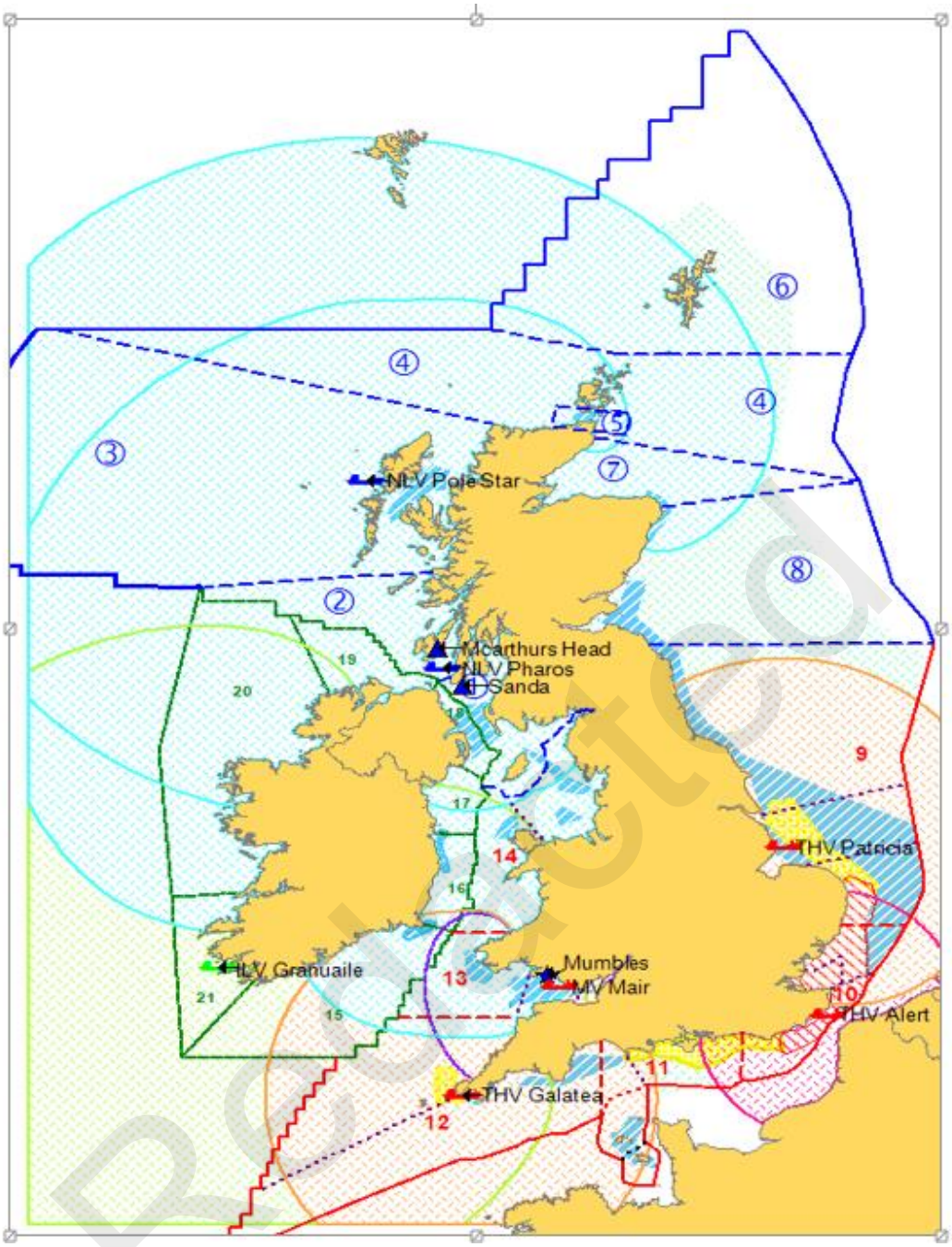
- The ability to respond within the required timeframe;
- GLAs maintain resource distribution to respond.

**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.*

The Risk Response criteria has been subject to audit as to methodology and process by Government Internal Audit Agency and the level of response reviewed as part of the Fleet Review by Houlder. Both aspects have been found to be correct and appropriate.

Measuring GLA fleet response capability

The GLAs ability to respond is assessed using Mapinfo Geographical Information System developed for Trinity House by Anatec. This software calculates the area of coverage for each owned or chartered vessel, taking into account navigation hazards and routing for 6, 12, 24 or some other defined period. The information is presented as a navigation chart layer over which the GLA response areas can also be displayed. The software can measure areas not being covered by GLA vessels.



Example bubble analysis

This software can be run, daily weekly, monthly, as events occur or at some other frequency. From the assessment of the charted information over a number of iterations a percentage metric can be recorded against ability to respond.

AtoN outage

The response to AtoN outage (casualties) is determined by the IALA category of the AtoN in accordance with individual GLA's casualty response priorities.

Resolving the Recommendations

Given that the level of risk has been assessed in the risk response criteria and a means of determining GLA vessel coverage is in use a combination of these two can be used to resolve the recommendations made by Houlder on risk.

1. Level of Risk acceptance

The GLAs approach to risk appetite is aligned with UK Treasury guidance in terms of adopting the five point **'averse'**, **'minimalist'**, '**cautious**', **'open'** and **'hungry'** descriptors. HM Treasury (2006)

Classification	Description
Averse	Avoidance of risk and uncertainty is a key Organisational objective.
Minimalist	Preference for ultra-safe business delivery options that have a low degree of inherent risk and only have a potential for limited reward.
Cautious	Preference for safe delivery options that have a low degree of residual risk and may only have limited potential for reward.
Open	Willing to consider all potential delivery options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (and value for money etc.).
Hungry	Eager to be innovative and to choose options offering potentially higher business rewards, despite greater inherent risk.

(HM Treasury 2006)

(

The GLAs Government accepted risk appetite remains 'averse' in terms of AtoN provision and for hazard risks such as health & safety, the environment and regulatory compliance. In the case of risks associated with operational and policy delivery, a more 'cautious' or 'open' approach is adopted. Also, in respect of the pursuance of commercial opportunities, the GLAs' risk appetite has broadly continued to reflect a 'cautious' approach within a robust framework of loss control. In terms of financial / value for money aspects, the GLAs' risk appetite is assessed as being between 'minimalist' and 'cautious'. This reflects that the GLAs are prepared, where appropriate, to consider value for money and a willingness to consider broader benefits in terms of their overall delivery profile.

Taking this into account and given that the 6 and 12 hour response areas are determined to be areas of unacceptable risk failure to meet the coverage is unacceptable. The risk appetite for not providing coverage is therefore averse.

The 24 hour response areas are determined to be acceptable with caution. The risk appetite for not providing coverage can therefore be described as Cautious

2. Routine Risk carried

Taking into account the level of risk acceptance identified above the 6, 12 and 24 areas have differing minimum acceptable coverage requirements. These are defined as

Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24hrs	1@ 15%	2 hrs

*All other areas to be 100% covered both in area and time to respond

3. **Process to be followed**

Work package 2 (coordinated planning) has set out a process of assessing the level of coverage for both planned and unplanned activities. This uses the tools described in this paper on a regular basis to quantify the coverage and from this the routine risk carried using the content of this paper can be assessed. The process is outlined below.

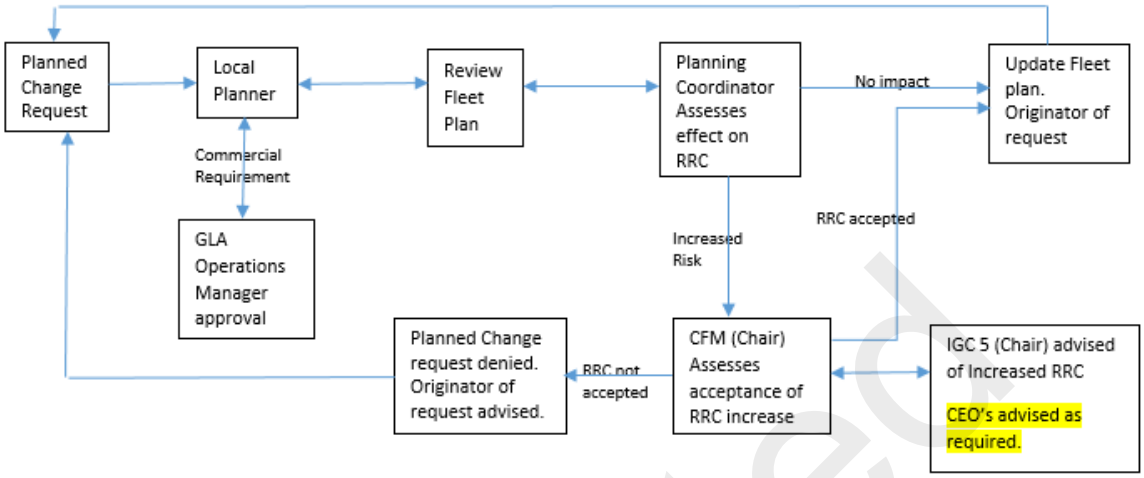


Figure 1 Planned changes

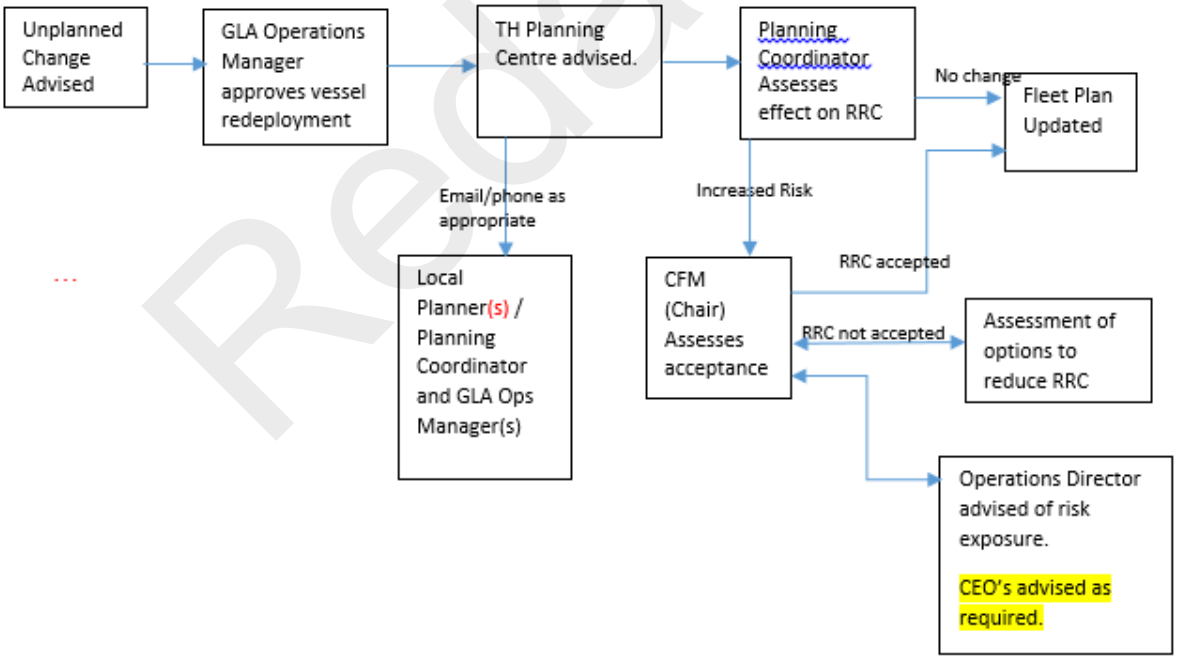


Figure 2 Unplanned changes

Directors and Managers will take into account the acceptable level of risk set out in this paper.

Action

CEOs are requested to formally endorse this paper which will be used to inform the coordinated planning activities.

Project Documentation
Communications Management Strategy

GLA Fleet Review – Phase 2

Communications Management Strategy

Author: Phil Day

Date: 21/06/2017

Document No: 358114

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
358114 v.1	28/03/2017	First Draft
358114 v.2	06/06/2017	Standard formatting
358114 v.3	06/06/2017	Converted to PDF
358114 v.4	21.06.17	Amended to include PB comments
358114 v.5	22/06/2017	Converted to PDF

Reference Documents

Document No.	Document Title
336037 v.12	Fleet Review Phase 2 – Project Initiation Document

Approvals

PMWG Meeting No.12 05/06/2017 approved.

PB Meeting No.06 20th June 2017 approved subject to suggested amendments

1. Plan overview

The purpose of this document is to set out the proposed methods for engaging various stakeholders in relation to the implementation, findings and recommendations of the Tri GLA Fleet review phase 2

The objectives of this plan are to identify the different interested stakeholder groups, and set out the different methods which will be used to communicate with them. For some, this will just be in the form of basis, periodic progress updates and for others this will be more complex, and require greater, two-way engagement.

This document will set out the proposed methods for communicating details of the internally, as well as describing the methods used to communicate with external stakeholders. The document will be maintained by the Project Manager.

2. Derivation

The Communications Strategy has been partially derived from the following:-
Project Plan, Discussions with Project Board, reference group and DfT/DTTAS

3. Communications Procedure

The communication procedures to be used are outlined in sections 7 to 9 of this document. These sections identify the key stakeholder groups for the project and the how they will be communicated with throughout the project.

4. Tools and Techniques

Information regarding the project will be shared with key stakeholders via formal and informal briefings, email and press statements. Further details are recorded within the tables of this document.

5. Records

Documentation initiated by the project team will be stored on the project sharepoint and Trinity House Worksite. Dft and DTTAS documentation will be stored by the respective departments.

6. Reports

Report	Responsibility	Timing	Recipients
Houlder Report	DfT	As required	GLAs /Reference Group/LAC/Public domain
Highlight Report (By Email	Project Manager	Monthly	Project Board
Reference group report	Project manager	As Required	Reference Group Project Board

Work package report	WP Lead	As per Project plan	PMWG Project Board
Braemar Report	Project Board	As Required	GLAs/Reference group/LAC/public domain
Final Report	Project Board	As per Project plan	JSB/Reference group/public/unions

7. Timing of communications activities

Informal oral briefings will be undertaken throughout this project to brief GLA staff, unions and other stakeholders. Formal briefings will be provided on completion of the Braemar report and the project final report. Press release and publication of Houlder report will be at DfT discretion and at the end of the project. Press release and the publication of the final report will be at the end of the project after Dft acceptance.

8. Roles and Responsibilities

Role	Responsibilities
DfT/DTTAS	To provide updates and guidance to Ministers. To endorse the outcomes of the project subject to reference group advice. To inform industry and other external bodies of the Project outcomes and fund through GLF implementation of project and final endorsed recommendations
Reference Group	To provide advice to departments and the project board in its endeavours. To support the departments in communication with industry and other external bodies being ready to explain project and outcomes to the constituent bodies represented.
JSB	To provide a tri GLA collaborative strategic lead, reach a tri GLA consensus on project outcomes, provide recommendation to departments and reference group on project milestones and outcomes and agree common GLA message.
GLA Boards	To provide individual GLA lead, approve GLA position on project milestones and outcomes. Be satisfied that Staff and stakeholders are updated with regard to project progress, implications and outcomes.
Project Board	Monitor and guide project progress. Determine project outcomes and agree highlight, work package and final reports. Agree project reports for reference group and departments.
Project Working Group	Co-ordinates the project plan, the communications strategy, RAG status reporting and project closure report. Ensures that all of the relevant information is readily available as required and that communications take place in line with this communications strategy.
Chief Execs	Ensure individual GLA Staff and stakeholders are updated with regard to project progress, implications and outcomes.
Project Manager	Coordinate the progress of project with Work package leads. Ensure project remains within process guide and advise the Project Board on project process. Prepare and update highlight reports PID, Risk Register and other associated records.

9. Stakeholder Analysis

Interested Parties	Current relationship	Desired relationship	Interfaces	Key messages
GLA staff	Mainly one way communications from briefings by Executive or management. Questions always responded to and answered	Two way channel of communications enabling staff across the GLAs to discuss with the project team implications and consequences of project.	Face to face (informal one to one and formal groups email, staff newsletters.	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions on staff
Unions	Mainly one way communication with briefings from GLAs Questions answered	Two way channel of communications enabling Unions to discuss with GLAs implications and consequences of project.	Face to face, email	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions on staff
Interested parties eg ports and harbours , professional bodies	Mainly one way communication with briefings from GLAs questions answered	Mainly one way communication with briefings from GLAs questions answered	Face to face, email, newsletters.	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions on level of service
Chamber of Shipping - LAC	Two way channel of communications enabling Chamber reps to discuss with GLAs implications and consequences of project.	Two way channel of communications enabling Chamber reps to discuss with GLAs implications and consequences of project.	Face to face, email, newsletters.	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements and ongoing capability
Light Dues Payers	Mainly one way communication with briefings from LAC questions answered little understanding	Mainly one way communication with briefings from LAC questions answered good understanding tacit support	Face to face	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements
Dft	Two way channel of communications enabling Dft officials to discuss with GLAs implications and consequences of project.	Two way channel of communications enabling Dft offcials to discuss with GLAs implications and consequences of project.	Face to face, email, newsletters.	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements and ongoing capability

DTTAS	Two way channel of communications enabling DTTAS Officials to discuss with GLAs implications and consequences of project.	Two way channel of communications enabling DTTAS officials to discuss with GLAs implications and consequences of project.	Face to face, email, newsletters.	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements and ongoing capability
Ministers	Mainly one way communication with briefings from GLAs / Reference Group members/ Dept. with questions answered	Mainly one way communication with briefings from GLAs / Reference Group members/ Dept. with questions answered	Face to face, briefing documents, advice from departments	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements
Parliament	Mainly one way communication with briefings from GLAs/ Reference Group members/ Dept. with questions answered	Mainly one way communication with briefings from GLAs/ Reference Group members/ Dept. with questions answered	Face to face, briefing documents, advice from departments	Impact on GLAs during project i.e. business as usual, changes to work i.e. coordinated planning, potential impacts of project conclusions to funding requirements

10. Information needs for each interested party

Information	Responsibility	Information Recipient	Frequency	Means of Communication	Format of Communications
Project plan	Project Board	DfT/DTTAS/Ref group	once	written	Project PID
Project progress reports	Project Board	GLA Boards DfT/DTTAS/Ref group	Monthly/ prior to each ref group meeting	Written	Highlight report
Project conclusions	Project Board	GLA Boards DfT/DTTAS/Ref group	Key milestones and project completion	written	Report
Impact on staff	Chief Execs	Staff/unions	Project completion	Face to face briefings and newsletter/briefing	briefing

Information	Information Provider	Information Recipient	Frequency	Means of Communication	Format of Communications
Funding agreement	DfT	Project Board	once	Written	Sanction letters to GLAs
Approval of PID	DfT	Project Board	once	Written	Signature on PID
Acceptance of Project conclusions	DfT/DTTAS	Project Board/GLA Boards/JSB	once	written	Letter from Minister

11. Project Team Communications

These activities are set out in the project PID.

Project Documentation
GIAA Audit Management Letter

To: Roger Barker, Director of Navigational Requirements, Trinity House

Rob Dorey, Director of Operations, Trinity House

Phil Day, Director of Marine Operations, Northern Lighthouse Board

Robert McCabe, Director of Operations and Navigation, Irish Lights

Steve Keddie – Project Manager

From: James Baldwin Government Internal Audit Agency

Cc: Members of the Audit and Risk Assurance Committee, Trinity House
Members of the Audit and Risk Committee, Northern Lighthouse Board
Members of the Audit and Risk Committee, Commissioners of Irish Lights

David Locke, GCIA DfT

National Audit Office

Date: February 19 2018

INTERNAL AUDIT MANAGEMENT LETTER
Tri-GLA Fleet Review Phase 2

OFFICIAL

1. BACKGROUND AND AUDIT OBJECTIVE

1.1 The Tri-GLA Fleet Review considers the vessels required to enable the General Lighthouse Authorities (GLAs) to fulfil their statutory duty to maintain marine aids to navigation and respond to dangerous wrecks and new dangers. The aim of the Review is to identify the optimum number of vessels, the capability of those vessels, and the appropriate ownership and operational management of the vessels required by the GLAs during the period 2016-25.

1.2 The audit's overall context was the Fleet Review Revised Work Plan issued on 22 November 2017. This issued the revised timeline for the Review in light of conclusions from the Braemar report. The aim of the Plan is to deliver a future GLA Fleet Structure that provides appropriate levels of navigation safety and reduces the risk of the current arrangements. The Plan needs to reflect the work on defined criteria including centralised monitoring, co-ordinated planning and commercial impact.

1.3 The Review's work included use of specialist consultants: Houlder and then Braemar Offshore, the latter showing that there was no viable spot market option within a possible Fleet construct. The Review's Work Plan defines necessary aspects of the process to develop the Implementation Plan covering:

- Seven Work Packages with engagement, timeline and roles and responsibility details
- Project communications and escalation processes
- Governance Project structures, membership and Terms of Reference of governance bodies
- A Risk Register.

1.4 Our Audit's objective was to provide independent and objective assurance on the following key areas underpinning the development of the Fleet Review process:

- Stakeholder engagement
- Risk Review
- Escalation Processes
- Meeting / Reporting Mechanisms

In doing this we sought to evaluate how far the Review process was focussed on providing appropriate evidence and engagement to underpin its findings and the effectiveness of its governance process to assure those criteria were met.

1.5 Government Internal Audit Agency (GIAA) has previously provided assurance support to the Fleet Review project. This included embedded assurance through participation in project boards. A management letter summarising our work on Phase 1 was issued in January 2017; actions from this were followed up in the course of our Audit.

1.6 This is high level audit resulting in a Management Letter. It is Advisory assignment focussed on project and programme management controls and does not provide assurance on more detailed areas such as the modelling, the options appraisal for resourcing or the adequacy of technical solutions/ components.

1.7 Our terms of Reference are attached as Annex A. We conducted our audit through interviews with Project Management and members of the Reference Group: a list of interviewees is attached as Annex B. We also reviewed relevant documentation including progress reports, meeting minutes and the Risk Register.

2. EXECUTIVE SUMMARY

2.1 The processes we reviewed developed conclusions that were clearly drawn from a well-structured, data-rich and evidence-based methodology, reflecting a good level of wider engagement. We consider that this provides a sound platform to develop the Implementation Plan Process.

2.2 Our key findings were as follows:

Engagement

The Reference Group provided an effective forum for challenge and advice from a range of stakeholders. Members were provided with in-depth updates on the progress of the Review and had opportunities to challenge the method and conclusions of the work performed.

A Communications Strategy was developed and implemented to ensure information needs of stakeholders internal and external to the Fleet Review process were identified and met. Suggestions and questions from stakeholders were addressed by project management to provide confidence in the outcome of the Review.

Risk Review

The risk register was a key document subject to regular review by project management. Updates and mitigating actions were documented in line with developments and identified changes in exposure, a key example being the Communications Strategy to mitigate the top risk of uncertainty and impact on GLA personnel.

Escalation Processes

The governance structure was complex but the membership overlaps from Project Management Working Group through to GLA boards facilitated escalation of approval and communication. Acceptance criteria were defined for each work package phase and testing indicated compliance for work packages completed to date.

Meeting / Reporting Mechanisms

Reporting provided a timely and informative basis for governance bodies to operate effectively. Meetings had a co-operative atmosphere and actions agreed were implemented. While complex, the well-structured meeting process and related governance structure, combined with the length of the Review, were generally considered necessary to have obtained the resulting level of engagement and evidential support.

3. KEY FINDINGS

3.1 Stakeholder engagement

Expected Controls per PID

Stakeholder engagement occurred primarily through a Reference Group composed of industry and government stakeholders. The functions of the Reference Group encompassed:

- Providing challenge and advice to the Project Board
- Receiving a monthly highlight report on the Review progress
- Meeting at key milestones throughout the review

A Communication Strategy was developed during Phase 2 of the Fleet Review to set out a method for engaging with stakeholders internal and external to the Fleet Review.

Tests of Controls

A Reference Group meeting was observed on 26/01/18 to assess the level of engagement with stakeholders and the challenge provided by stakeholders. Minutes of past Reference Group meetings were inspected to test that:

- Meetings coincided with key project milestones
- Stakeholder representation was in line with the recommended membership in the PID
- A project summary update was provided each meeting
- Stakeholders provided challenge and advice on agenda items
- Actions agreed from meetings were followed-up.

The Communications Strategy documented was inspected to test the assessment of stakeholder needs and the documents implementing the planned methods of engagement were also inspected for relevant and timely communication.

Interviews were conducted with members of Project Management and the Reference Group to discuss stakeholder engagement throughout the Review.

Results of Testing

A comparison to key milestones indicated that the timing of Reference Group meetings was geared towards the end of work packages. While this allowed their feedback to be incorporated into the reporting, this led to long discussions on their scope. Interviewees noted that earlier engagement on specific work packages, as exemplified in the methodology of Work Package 2, could have provided earlier clarity on scope and allowed a quicker agreement of conclusions.

The minutes from past Reference Group meetings demonstrated that stakeholder attendance was in line with the recommended membership and therefore included representatives from UK and Irish governments, the Lights Advisory Committee, the Joint Strategic Board and the UK Major Ports Group. Composition was perceived as generally balanced by interviewees and the Reference Group took the opportunity to expand membership of the Group to include an Independent Member.

The minutes for each meeting included the discussion of the latest Highlight Report following a summary provided by the PMWG Chair as a fixed agenda item. The inspection of minutes evidenced that challenge and advice was provided by Reference Group members and that actions agreed at the meeting were followed up accordingly with other governance bodies.

The Reference Group meeting observed provided evidence of robust challenge and advice by stakeholders following a transparent presentation by the PMWG on methodology used in the review.

The Communications Strategy was structured to include a thorough consideration of stakeholder needs, relevant information required for each, planned frequency and content of communications, and communication responsibilities of Fleet Review governance bodies. The monthly reports were included in the Meeting / Reporting Mechanisms testing and a draft communication for GLA staff and Unions is in progress.

Interviewees emphasised that engagement with stakeholders was vital to demonstrate the methodology used and ensure the conclusion would be supported. Actions were taken throughout the review to improve engagement, including the development of a communication strategy, additional briefings and extra meetings. We would also add that our fieldwork showed a high degree of co-operation across the GLAs in assembling robust data to underpin the Review and the stakeholder engagement process. This reflects the effective working of the Combined Fleet Management process and is an important factor in both giving confidence to stakeholders as to the robustness and subjectivity of the data used to draw Review conclusions.

3.2 **Risk Review**

Expected Controls per PID

A risk register was maintained for the project and was to be discussed regularly at meetings of the Project Board, the PMWG and the Reference Group.

The Risk Response Criteria were validated in Phase 1 of the Fleet Review as part of the work performed by Houlder. No further work has therefore been performed in this area.

Tests of Controls

The minutes of the governance bodies were inspected for inclusion of a risk register discussion at each meeting.

The risk register was inspected for evidence of appropriate mitigation and risk ownership.

Interviews were conducted with members of Project Management and the Reference Group to discuss the process of risk management throughout the review.

Results of Testing

The minutes of each meeting inspected included a discussion at least of the top 5 risks of the risk register as included in the monthly highlight reports provided to the Reference Group. The full risk register was also discussed at the meetings, resulting in revision of risk scoring based on current events and deployment of mitigating actions.

A key example of risk mitigation noted was the Communications Strategy which arose as a recommendation from the Reference Group. This was then drafted by the PMWG and reviewed by the Project Board and the Reference Group for further feedback. This was a mitigation of the risk of uncertainty and impact on personnel and is reflected in the updated risk register.

Interviewees confirmed that the risk register was discussed consistently at meetings and subject to regular review in light of developments and mitigating actions taken. They agree that this was a helpful document in managing the project. The highest risk was in relation to engagement with external stakeholders and resulted in several mitigating actions being implemented.

3.3 **Escalation Processes**

Expected Controls per PID

The PID defines acceptance criteria for each phase of each work package. In many cases this identifies a governance body that must approve the work package to confirm closure.

Tests of Controls

Out of 13 completed work packages a sample of 4 were selected. For the sample the evidence of work package acceptance was inspected to ensure compliance with PID escalation protocols.

Interviews were conducted with members of Project Management and the Reference Group to discuss the implementation of escalation processes throughout the review.

Results of Testing

Each of the work package phases in the sample had fulfilled the acceptance criteria outlined in the PID.

Interviewees agreed that escalation worked well. Membership overlaps between the PMWG, the Project Board and the GLA boards were identified as a useful mechanism to allow conclusions to be escalated through approval levels with sufficient endorsement. It was noted that the complexity of the governance was driven by the need to correspond with timings of their governance meetings and limited time windows for decision-making.

An issue of clarity over 'ultimate decision-making' arose in the event of a disagreement. We note that this has been addressed using acceptance criteria throughout the work package phases and the efforts were also made to get explicit agreement documented throughout the conclusion process to lower the risk of retrospective unpicking of decisions.

3.4 **Meeting / Reporting Mechanisms**

Expected Controls per PID

The PID defines the governance structure for the Fleet Review. A diagram shows reporting relationships and the terms of reference for each body and defines frequency of meeting, functions and responsibilities. The key governance bodies are the Project Board, the Project Management Working Group (PMWG) and the Reference Group.

A monthly report is compiled by the Project Manager from the Task group leaders of each work package including identified issues and risks. This is issued to the PMWG, the Project Board, and the Work Package task leaders. The contents should include:

- Summary of status for last reporting period for each work package
- Task undertaken within last period
- Next reporting period activities
- Identified Issues and Risks
- Financial Tracking
- Schedule tracking

A Project Summary Report is a highlights report taken from the monthly report and issued to the Reference Group.

Tests of Controls

Meetings minutes for each of the Reference Group, Project Board and PMWG were inspected for evidence of appropriate onward communication and follow-up of agreed actions.

For a sample of months, the Monthly Reports and Project Summary Reports issued were inspect for compliance with communications plan in respect of timing and content of the reports. Evidence of discussion at meetings was also inspected to ensure reports were reviewed on a timely basis.

Interviews were conducted with members of Project Management and the Reference Group to discuss the implementation of meeting and reporting processes throughout the review.

Results of Testing

Meeting minutes demonstrated consistent and timely follow-up of agreed actions and onward communication between governance bodies.

The contents of the monthly reports sampled complied with the specification in the PID. These were produced for each month sampled and circulated to the Project Board.

Our review of the minutes of the Reference Group included a review of the Project Summary Report as a standing agenda item for each meeting. This was supplemented by a summary given by the PMWG chair at each meeting.

The Reference Group does not meet monthly and therefore for two out of four months sampled the Reference Group received a highlights report relating to two months prior, e.g. a meeting in November discussing the highlights report from September. However, it was noted from interviews that this was mitigated by the in-person update from the PMWG chair who ensured a more up-to-date report was provided.

Interviewees agreed that meetings and reporting generally worked well. Interviewees commented on the co-operative spirit of the process and that the project management was high-quality throughout.

It was noted in interviews that the length of the process was generally considered to be necessary to demonstrate the consideration of stakeholders, despite seeming cumbersome given the apparent simplicity of the conclusions formed. The quality of data attained was unprecedented in the fleet review process and has formed a solid and transparent evidence base for the conclusions of the review.

3.5 **Previous Audit Recommendations**

Expected Controls per PID

On completion of Phase 1 a management letter was issued for a review of the Project Initiation Document (PID). As part of this review we assessed the response of the Project Board to the good practice principles identified in the management letter from the previous audit review.

The good practice principles identified for better reflection in the PID were that is should be:

- Risk-based: highlight the main benefits of the project, the high impact risks to the benefits and ensure good controls are in place for these risks e.g. rigorous testing of results
- Transparent: find ways of representing complexity more concisely, e.g. synthesis the project plans, making it clear when key decisions need to be made by the project board and define the logic for risk profiling such as charter testing.
- Proportionate: use it communicate the information that is important at the right time to the right people, some can be held in separate documents alongside the PID e.g. a detailed project plan
- Forward-looking: ensure it establishes a baseline set of metrics for future comparison e.g. measures of success.

Tests of Controls

The updated PID was inspected for evidence of embedding the good practice principles identified in the management letter.

Results of Testing

Risk-based: The risk register has been expanded to include columns for mitigation, residual risk by risk categories, and further comments on the risk status. This has been subject to additional testing, detailed above in section 3.2 Risk Review.

Transparent: the PID now includes an Updated Work Plan. This summarises the tasks required and the desired meeting dates to support the plan and key date changes within the overall timing plan to complete the project.

Proportionate: the PID has been reduced from 70 pages to 39 by removing the Outline Project Plan and the Project Quality Plan to a separate document.

Forward-looking: the testing of Fleet configurations against the risk response criteria in WP2 formed an agreed baseline measure of success for future comparison of fleet performance.

ANNEX A

INTERNAL AUDIT ENGAGEMENT :
FINAL TERMS OF REFERENCE Tri-GLA Fleet Review Phase 2

To:	Phil Day, Director of Marine Operations, Northern Lighthouse Board	From:	James Baldwin, Head of Audit
Cc:	Steve Keddie, Project Manager Hugh Roe, Corporate Services Director. Irish Lights Mari Rae, Financial Director, Northern Lighthouse Board Rebecca Roberts, Audit and Performance Manager, Trinity House		
Date:	2 January 2018		

Background

The Fleet Review is a key risk for the GLAs. The review will provide assurance to the Accounting Officer on the framework of governance, risk management and control relating to the Fleet Review process and will contribute to the level of assurance that will be provided to the Tri GLAs' Accounting Officers.

Phase 1 of the Fleet Review was undertaken in 2015/16. The Project Board undertook a consultation with specialist experts Houlder Ltd, culminating in a report which identified outcomes for future fleet structure. Phase 2 is now underway to deliver an implementation plan for the future Fleet construct.

This review provides an interim report on the performance of the Project Initiation Document for the Tri-GLA Fleet Review following the completion of Work Phase 7 of Phase 2. On completion of Phase 1 a management letter was issued for a review of the Project Initiation Document (PID). A future audit is anticipated following completion of the Project.

Audit Objective and Scope

The objective of this audit is to provide independent and objective assurance on the key areas underpinning the development of the Fleet Review process.

Audit work will be undertaken in the following areas:

- Stakeholder engagement
- Risk Review
- Escalation Processes
- Meeting / Reporting Mechanisms

Audit Approach

The review will be carried out as follows with interviews with Project Board members and the Project Manager. Relevant documents will be reviewed and testing performed as appropriate

Emerging findings will be discussed with management during the course of the audit. At the end of the fieldwork an exit meeting will be held to bring the main findings of the audit to management's attention and to agree a plan for implementing the agreed actions.

Budget and Resources

We anticipate that 8 GIAA days will be required to complete this audit.

We will provide an audit team comprising the following people:

Team Member	Title	Role
James Baldwin	Audit Manager	Audit Manager
Lauren Jackman	Auditor	Audit Lead

Timetable

We plan to work to the following timetable:

Audit Deliverables	Title
Terms of Reference Agreed Commence Fieldwork Draft Report Return of Report with Management Comments Final Report Report or summary report issued at Audit and Risk Assurance Committee	January 2017 07 February 2018 19 February 2018 21 February 2018 25 February 2018 TBA

GIAA/Customer Agreement

GIAA commits to:

- Complete all audits to published professional standards, which requires us to consider as appropriate the adequacy and effectiveness of governance, risk management and control, including propriety, regularity, and value for money.
- Consult with management throughout the review.
- Obtain feedback on our performance by issuing a Customer Feedback Form (CFF).
- Follow-up of agreed audit actions and reporting on progress to the Audit [and Risk Assurance] Committee.
- Handle data in accordance with relevant policies on data security and retention.

The audit customer commits to:

- Provide information and make staff available to enable the audit to be accomplished within the stated timescale.
- Provide feedback on GIAA's performance by completing the CFF and returning it to the Head of Internal Audit.
- Provide a management response to the draft audit report within 10 working days of its issue.
- Provide periodic updates on the implementation of agreed actions after the audit completes.

ANNEX B

LIST OF INTERVIEWEES

David Ring	Non-Executive Director, Trinity House	30 Jan 2018
Phil Day	Director of Marine Operations, Northern Lighthouse Board	5 Feb 2018
Ewen Mackerchar	Marine Operations Manager Northern Lighthouse Board	5 Feb 2018
Mike Bullock	Chief Executive Officer, Northern Lighthouse Board	5 Feb 2018
Robert McCabe	Director of Operations and Navigational Services, Commissioners of Irish Lights	6 Feb 2018
Roger Barker	Director of Navigational Requirements, Trinity House	6 Feb 2018
Steve Keddie	Engineering Project Delivery, Trinity House	8 Feb 2018
Rob Dorey	Director of Operations, Trinity House	9 Feb 2018
Chris Angell	Head of Maritime Safety Policy, Department for Transport	13 Feb 2018

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

Work Package 1 – Centralised Monitoring

Phase 1 – Extend existing monitoring arrangements to make data visible to central planner 24/7 (Go-Live and Report)

Centralised Monitoring Report

GLA Fleet Review – Phase 2

Work Package 1: Centralised Monitoring

Author: Bill Summers
Date: 05/08/2016
Document No: 344506

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
344256v.1	29/06/2016	Draft (Superseded)
344506v.1	29/06/2016	Draft
344506v.2	04/08/2016	Standard format
344506v.3	05/08/2016	WP2 Planning references: 'Centralised' replaced with 'Coordinated'.
344506v.4	20/10/2016	Signed document – S. Keddie on behalf of PB following 6/10/2016 meeting
344506v.5	20/10/2016	Converted to PDF

Reference Documents

Document No.	Document Title
336037	GLA Fleet Review – Phase 2 PID 489

Approvals

Name	Date	Signature
Roger Barker Director of Navigation (TH)	06/10/2016 (PB meeting)	S. Keddie on Behalf of R. Barker
Rob Dorey Director of Operations (TH)	06/10/2016 (PB meeting)	S. Keddie on Behalf of R. Dorey
Robert McCabe Director of Operations (Irish Lights)	06/10/2016 (PB meeting)	S. Keddie on Behalf of R. McCabe
Phil Day Director of Operations (NLB)	06/10/2016 (PB meeting)	S. Keddie on Behalf of P. Day
Project Board Chair	06/10/2016 (PB meeting)	S. Keddie on Behalf of I. McNaught

Work Package 1 – Coordinated Monitoring

Objective

To provide 24 hour monitoring to the Central Planning team.

Scope

While awaiting the Tri-GLA monitoring project outcomes from the IGC5 Task Group, ensure that 24/7 monitoring data provided by each GLA is available for use by the Central Planning Team.

Deliverable

To extend existing monitoring arrangements to make data visible to the Central Planning Team 24/7

Delivery Schedule

Commencing 1st April 2016, review and report on how existing monitoring arrangements will be extended to make all GLA monitoring data visible to the Central Planner Team 24/7- Go Live date 29/07/16. [An extract from the Project Gantt chart can be found at the end of the report to show how WP1 aligns with the Project Flow]

Work-Package Responsibility Matrix

Note: All draft reports will be approved by the Project Management Working Group prior to final report distribution to approval level

Work Package Number	Description	Responsible Team	Team Leader for WP	Supporting Team or Team member	Approval & Sign-Off
WP1	Coordinated Monitoring				
	Go-Live	Monitoring task group	Bill Summers	Steve Burrows, Irish Lights Subu Manipaddi, NLB	PMWG
	Report	Monitoring task group	Bill Summers		Project Board Chair via PMWG

Acceptance Criteria

Three GLA Operations Directors to sign document that all 24/7 monitoring arrangements are adequate for the purpose of Coordinated planning.

Background

Since 2011, Service Level Agreements have been in place between Trinity House and Irish Lights, and between Trinity House and the Northern Lighthouse Board for the Out-of-Hours Centralised Monitoring of Aids to Navigation (AtoN). By extending

the existing monitoring arrangements to 24 hours, this would be a key input towards the development of GLA Coordinated Planning.

Current Monitoring Systems Overview

The current monitoring systems currently in operation are:

Irish Lights

- RCMS (Remote Control Monitoring System); Realflex SCADA software inc. AIS monitoring
- Navielectro – AIS monitoring (back-up system)

Northern Lighthouse Board

- Flexview; Realflex Scada System inc AIS Monitoring
- Sabik WebSCADA System

Trinity House

- Prism CMCS (Central Monitoring & Control) System inc AIS Monitoring

GLA

- DGPS System
- ICON Horizon – AIS Monitoring (back-up system)

All of these systems are currently available in the Lighthouse Monitoring Centre; providing all the required monitoring AtoN data across the GLA with regards to the Safety of the Mariner and the Availability and performance of:

- Lights
- Racons
- AtoN positions
- Hazard Warning Signals
- AIS AtoN

By extending the current monitoring arrangement through 24 hours would enable this information to be available to the Planning Centre Team and facilitate a co-ordinated GLA response to meet the requirements of the Risk Response Criteria.

Communications

Internal and external communications (e-mail, fax etc) protocols have been in place since 2011. Telephone diverts are in place to identify callers from around the GLA areas hence no changes will be required when the extension of current monitoring arrangements through to 24 hours is implemented.

Planning (Lighthouse Monitoring) Centre

The Monitoring Workstation (shown below) has been designed to manage all the AtoN monitoring inputs across the GLA. The Central Planning Team's work stations are in the same office, hence arrangements are already in place for the extension of current monitoring arrangements through to 24 hours.

Monitoring Systems' Resilience

Since the introduction of the Out-of-Hours Centralised Monitoring of Aids to Navigation (AtoN) in 2011, and the establishment of the Planning (Lighthouse Monitoring) Centre in 2014, a project has been delivered and tested which has delivered Disaster Recovery (DR) provision for all GLA monitoring systems. This was completed in January 2016 and is now established ensuring that all GLA monitoring requirements will be maintained when the extension of current monitoring arrangements through to 24 hours is introduced.

Monitoring System Development

As indicated in the Scope above, running in parallel with the Fleet Review Project (Phase 2), and following a review of future GLA Monitoring Strategy in 2015, an IGC5 Task Group are investigating future Monitoring requirements and systems.

The outputs from this project have yet to be determined, however, the project streams are mutually exclusive to each other and hence there are no elements of the IGC5 project that would preclude the extension of current monitoring arrangements through to 24 hours.

Furthermore, the flexibility of the current GLA monitoring arrangements are such that, should there be any interim requirement to monitor additional data on any monitoring system e.g. Flexview or WebSCADA, this can easily be added into an additional display screen as required by the System Administrator together with supplementary Training or Monitoring Instructions as deemed appropriate, and again would not preclude the extension of current monitoring arrangements to 24 hours.

Training

All staff involved in monitoring functions have received training in the use of all the current monitoring systems. This training is supported by Operating Instructions for both Trinity House / Irish Lights systems and Trinity House/ Northern Lighthouse

Board Systems. This documentation is regularly reviewed and managed through Document Control and will remain relevant when the 'out-of-hours' monitoring extends through to 24 hours. Hence no additional training for staff will be required to extend current arrangements through to 24 hours.

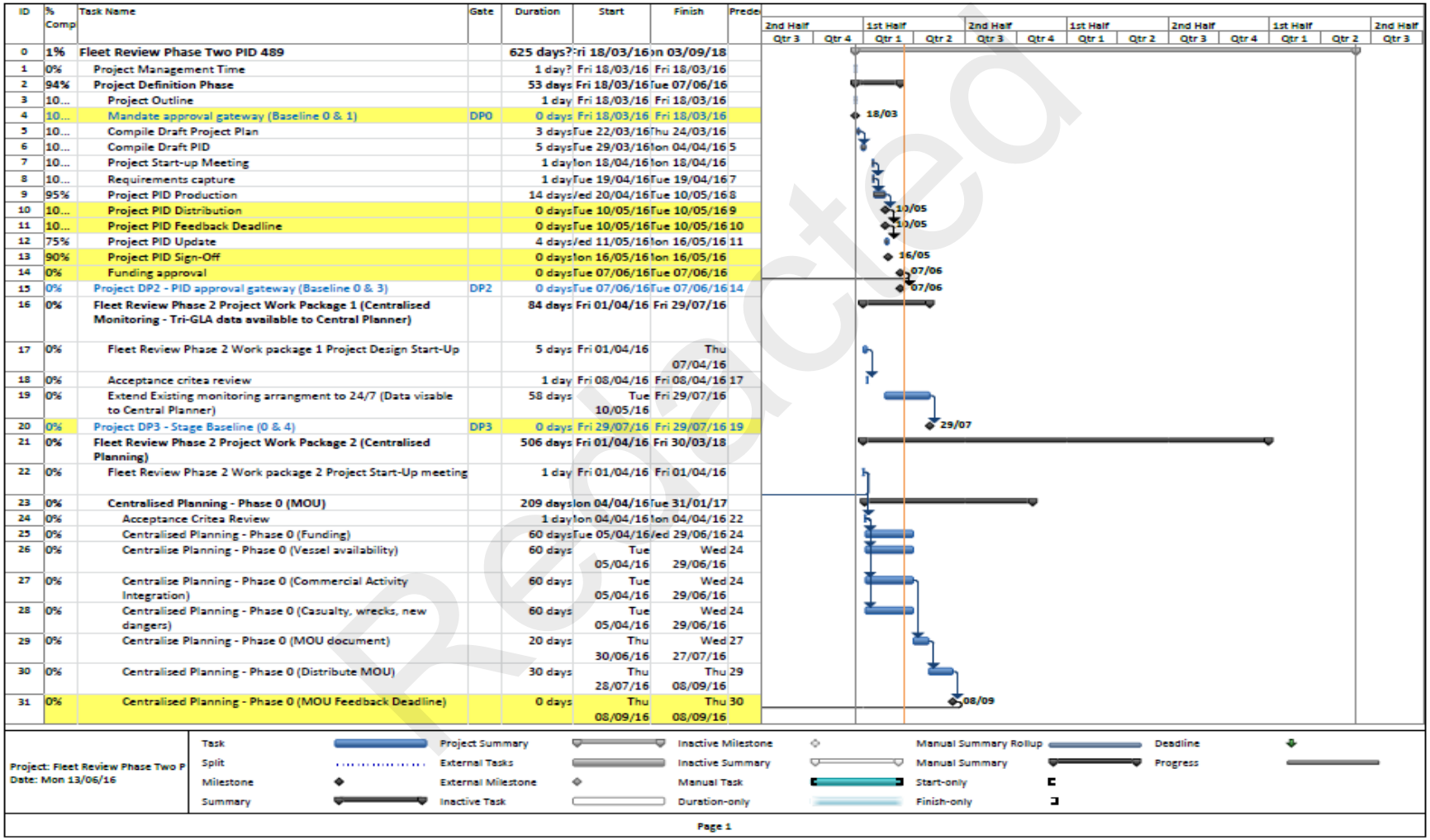
Resources

The current Monitoring Team comprises a Team of 6 staff operating in a rota of 24 hours all year round. Future resourcing requirements will be kept under review and will dovetail together with resourcing requirements within WP2 Coordinated Planning. Immediately, no additional resources will be required to extend the current monitoring arrangements through to 24 hours.

Conclusion

Following a review of all current GLA monitoring systems and procedures, at the time this report is dated, 24/7 monitoring arrangements are considered adequate for the purpose of Coordinated Planning; arrangements are in place to enable the Planning Centre Team to be able monitoring all GLA AtoN through 24 hours commencing 29th July 2016.

Extract from Full Project Gantt Chart



ID	% Comp	Task Name	Gate	Duration	Start	Finish	Predec
0	1%	**Fleet Review Phase Two PID 489**		625 days?	Fri 18/03/16	Mon 03/09/18	
1	0%	Project Management Time		1 day?	Fri 18/03/16	Fri 18/03/16	
2	94%	**Project Definition Phase**		53 days	Fri 18/03/16	Tue 07/06/16	
3	10...	Project Outline		1 day	Fri 18/03/16	Fri 18/03/16	
4	10...	Mandate approval gateway (Baseline 0 & 1)	DP0	0 days	Fri 18/03/16	Fri 18/03/16	
5	10...	Compile Draft Project Plan		3 days	Tue 22/03/16	Thu 24/03/16	
6	10...	Compile Draft PID		5 days	Tue 29/03/16	Mon 04/04/16	5
7	10...	Project Start-up Meeting		1 day	Mon 18/04/16	Mon 18/04/16	
8	10...	Requirements capture		1 day	Tue 19/04/16	Tue 19/04/16	7
9	95%	Project PID Production		14 days	Wed 20/04/16	Tue 10/05/16	8
10	10...	Project PID Distribution		0 days	Tue 10/05/16	Tue 10/05/16	9
11	10...	Project PID Feedback Deadline		0 days	Tue 10/05/16	Tue 10/05/16	10
12	75%	Project PID Update		4 days	Wed 11/05/16	Mon 16/05/16	11
13	90%	Project PID Sign-Off		0 days	Mon 16/05/16	Mon 16/05/16	
14	0%	Funding approval		0 days	Tue 07/06/16	Tue 07/06/16	
15	0%	Project DP2 - PID approval gateway (Baseline 0 & 3)	DP2	0 days	Tue 07/06/16	Tue 07/06/16	14
16	0%	**Fleet Review Phase 2 Project Work Package 1 (Centralised Monitoring - Tri-GLA data available to Central Planner)**		84 days	Fri 01/04/16	Fri 29/07/16	
17	0%	Fleet Review Phase 2 Work package 1 Project Design Start-Up		5 days	Fri 01/04/16	Thu 07/04/16	
18	0%	Acceptance critea review		1 day	Fri 08/04/16	Fri 08/04/16	17
19	0%	Extend Existing monitoring arrangment to 24/7 (Data visable to Central Planner)		58 days	Tue 10/05/16	Fri 29/07/16	
20	0%	Project DP3 - Stage Baseline (0 & 4)	DP3	0 days	Fri 29/07/16	Fri 29/07/16	19
21	0%	**Fleet Review Phase 2 Project Work Package 2 (Centralised Planning)**		506 days	Fri 01/04/16	Fri 30/03/18	
22	0%	Fleet Review Phase 2 Work package 2 Project Start-Up meeting		1 day	Fri 01/04/16	Fri 01/04/16	
23	0%	**Centralised Planning - Phase 0 (MOU)**		209 days	Mon 04/04/16	Tue 31/01/17	
24	0%	Acceptance Critea Review		1 day	Mon 04/04/16	Mon 04/04/16	22
25	0%	Centralised Planning - Phase 0 (Funding)		60 days	Tue 05/04/16	Wed 29/06/16	24
26	0%	Centralise Planning - Phase 0 (Vessel availability)		60 days	Tue 05/04/16	Wed 29/06/16	24
27	0%	Centralise Planning - Phase 0 (Commercial Activity Integration)		60 days	Tue 05/04/16	Wed 29/06/16	24
28	0%	Centralised Planning - Phase 0 (Casualty, wrecks, new dangers)		60 days	Tue 05/04/16	Wed 29/06/16	24
29	0%	Centralise Planning - Phase 0 (MOU document)		20 days	Thu 30/06/16	Wed 27/07/16	27
30	0%	Centralised Planning - Phase 0 (Distribute MOU)		30 days	Thu 28/07/16	Thu 08/09/16	29
31	0%	Centralised Planning - Phase 0 (MOU Feedback Deadline)		0 days	Thu 08/09/16	Thu 08/09/16	30

Project: Fleet Review Phase Two P
Date: Mon 13/06/16

Task
Split
Milestone
Summary
Project Summary
External Tasks
External Milestone
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Deadline
Progress

Page 1

Documentation

- Irish Lights shared area will be used for distribution of Project information [redacted]
- Project version control and configuration management will be accomplished using the project folder set up within Trinity House IManage document management system
- Microsoft Project Server will be used to plan and monitor updates from the project tasks

Work Package 2 – Coordinated Planning

Phase 0 – Project MOU

Memorandum of Understanding

GLA Fleet Review – Phase 2

Work Package 2: Memorandum of Understanding (MOU)

Author: PMWG
Date: 06/06/2017
Document 344510

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
344510v1	03/08/2016	Draft
344510v2	05/08/2016	Standard format
344510v3	06/09/2016	Updated following discussions at PMWG meeting 03
344510v4	15/05/2017	Tracked changes comments during PMWG11
344510v5	25/05/2017	Accepted PMWG11 comments and updated to reflect IGC2 conference call of 23/05/2017
344510v6	02/06/2017	Updated at Fleet Project Group Meeting
344510v7	08/06/2017	Approved by GLA CE's - added author and document number

Reference Documents

Document No.	Document Title

Approvals

Name	Date	Signature
SIGNED for and on behalf of THE CORPORATION OF TRINITY HOUSE OF DEPTFORD STROND		
Deputy Master	8/6/2017	[redacted]
SIGNED for and on behalf of THE COMMISSIONERS OF NORTHERN LIGHTHOUSES		
Chief Executive	8/6/17	[redacted]
SIGNED for and on behalf of THE COMMISSIONERS OF IRISH LIGHTS		
Chief Executive	8/6/17	[redacted]

NOTED for and on behalf of

DfT

DTTAS

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1 Parties

Memorandum of Understanding ("MOU") made this 8TH day of JUNE 2017 between the following Parties:

(1) THE CORPORATION OF TRINITY HOUSE, LONDON of Trinity House, Tower Hill, London EC3N 4DH ("TH")

(2) THE COMMISSIONERS OF NORTHERN LIGHTHOUSES of 84 George Street, Edinburgh EH2 3DA ("NLB");

(3) THE COMMISSIONERS OF IRISH LIGHTS of Harbour Road, Dun Laoghaire Co. Dublin ("Irish Lights")

Known collectively as "the General Lighthouse Authorities" ("the GLAs")

Considering that:

(A) Each of the GLAs requires access to sufficient ship capacity for the proper discharge of its statutory duties.

(B) The GLAs have a multi vessel fleet, see Schedule 1, which can, by agreement, be deployed to provide cover across all GLA areas.

(C) The GLAs may charter or contract vessels to provide further capacity when required.

(D) Coordinated deployment of the fleet should aim to improve risk response and reduce underlying risk across the GLAs.

(E) Adequate arrangements are required among the GLAs to cover:-

- Routine planned operations including maintenance and capital requirements
- Response to unplanned events including casualties and meeting Risk Response requirements
- Practical operation of the GLA ship fleet;
- Financial arrangements;
- Co-operation in commercial contract work.

(F) Inter-GLA ship sharing is not precluded by statute or otherwise provided that control of ships is not delegated or otherwise transferred. This MoU has the agreement of each of the GLA Boards and the support of the UK Department for Transport (DfT) and the Irish Department of Tourism, Transport and Sport (DTTAS).

(G) If a GLA has reserve capacity in its assets held in connection with the discharge of that duty, it is empowered with the consent of the Secretary of State or in the case of Ireland the Minister, to enter into agreements for the purpose of exploiting that capacity.

(H) From the date of commencement of this MOU, the MOU shall supersede the Memorandum of Understanding for Inter-GLA Ship Support signed between the GLAs dated 17 November 2010.

(I) It is envisaged that a further MoU will be required on the conclusion of the Fleet Review process to set out permanent future arrangements.

It is agreed that:

2 Principles

2.1 The objective underpinning this MoU is that, at any time, each of the three GLAs will have access to the services of sufficient ship capacity to meet their routine planned operations and risk and casualty response requirements.

2.2 Required ship capacity may be delivered by GLA operated vessels or by chartered/contracted tonnage.

2.3 This MoU will be reviewed by the GLAs on conclusion of the Fleet Review process. If the Fleet Review process has not concluded by 1st December 2018, this MoU will be reviewed at that time.

2.4 Nothing in this MOU shall detract from the agreed position that each GLA requires sufficient control of adequate resources to meet its statutory responsibilities to the satisfaction of its Board.

3 Term

3.1 This MoU will run from the date of signing until it has been superseded by another MoU unless varied by agreement of the parties or terminated in writing by one or more GLAs.

3.2 Unless otherwise required by circumstances of a legal or judicial nature, at least 6 months' notice will be given by any GLA wishing to terminate this MOU.

3.3 In the event of termination if a ship of one GLA is deployed in the area of another every effort will be made to complete the work allocated before recalling the vessel to the area of that GLA.

3.4 This MOU recognises and acknowledges the Supplemental Agreement between the GLAs and [redacted] Leasing Company dated 11 November 2004 in respect of THV GALATEA and NLV PHAROS ("the Supplemental Agreement") and in particular the restrictions on use set out in Clause 3 and the GLAs shall abide by the provisions thereof. This MOU recognises that the use of THV ALERT is similarly subject to such provisions. MV MAIR is contracted to work primarily in and around the Bristol Channel, but not confined thereto as it is required to undertake voyages and work in all waters contiguous to England, Wales and the Channel Islands.

3.5 It is further recognised and acknowledged by the GLAs that a need for the possible cessation in the arrangement for Inter-GLA Ship Support is remote except in circumstances where overriding legal or contractual requirements, such as irrecoverable changes that are brought into force of a legislative or judicial nature or changes necessary due to a shift in government (United Kingdom or Ireland) policy that result in the MOU being unsustainable; or by virtue of the respective charter party or lease agreements for the GLAs' ships, taking precedence. In such an eventuality, together with any other financial or operational developments that require a reassessment of the arrangement, the GLAs shall use their best endeavours to agree a suitable alternative approach where at all practicable. In any such event prior to termination under the provisions of this MOU the GLAs shall take such steps to inform the DfT and DTTAS (or such other government departments or agencies that succeed their respective executive

portfolios for marine transport and shipping) in writing of the permanent discontinuance of the MOU.

4 Authority and Agency

4.1 Each GLA will appoint one of its principal officers to oversee the operation of this MoU and will communicate contact details to the others. Day to day operations under this MoU will be overseen by the Coordinated Fleet Management Group. A GLA may change its responsible officer but shall communicate the change to the others. The responsible officers are as follows:

- Irish Lights - Director of Operations and Navigation Services
- NLB – Director of Marine Operations
- TH – Director of Operations.

5 Fleet Review Project Costs

5.1 Fleet Review Phase 2 Funding. The estimated cost of funding the Fleet Review Phase 2 Project are set out in the Project Initiation Document (PID). The initial estimate is for [redacted]. The PID notes that this estimate could increase or reduce depending on the extent and type of test charters required and that a more accurate estimate will be available on completion of Phase 1 of Work Package (WP3). Project costs will be met fully from the GLF.

6 Coordinated Planning

6.1 The Fleet Review Phase 2 Project provides for delivery of Coordinated Planning under WP2. An interim Coordinated Planning tool has been developed using Outlook diaries and Excel Spreadsheets and a coordinated plan has been operational from 1st April 2017 incorporating existing and yet to be secured commercial commitments. It will remain under evaluation.

6.2 Successive annual plans will be developed, incorporating lessons of process and application, ultimately incorporating the range of assets as determined by the outcome of the Fleet Review process and acceptable to the individual GLA Boards.

6.3 The Coordinated Planning function will be centred on TH Harwich. The additional staff requirements, if any, will be determined during the WP2 process.

6.4 The GLAs will consult on their work plans and align the capacity of the GLA fleet in the most efficient and effective manner to meet the Risk Response Criteria, casualty response, known programmed operational, maintenance and contingency requirements, and existing and yet to be secured commercial contract obligations with due regard to meeting each GLA's statutory obligations.

6.5 Each GLA will notify the co-ordinated planning function at the earliest opportunity of any commercial opportunity requiring the use of GLA operated vessels.

6.6 This MOU recognises and acknowledges that the timing of commercial income opportunities is uncertain and not secured and therefore could result in unplanned changes to the Coordinated Plan.

6.7 The Coordinated Planning arrangements will not involve or require any delegation of control of either vessels or AtoN to the planning team or other GLA. The authority to direct individual ships will remain with the GLA which operates the vessel.

6.8 All GLA tasks requiring vessel support and all GLA operated vessels will be included in the coordinated plan. The draft plan will require the approval of the Inter GLA Committee (Requirements & Delivery) (IGC5) and individual Operations Directors.

6.9 The practical coordination of inter GLA ship operations will be based on the following principles and priorities, essential for the delivery and execution of a co-ordinated plan:-

- Recognizing statutory obligations of each GLA, Ship capacity held by one GLA may, by agreement with the GLA that has direct legal and financial responsibility for the vessel, be redeployed to service another GLA's requirements.
- The coordinated plan will be developed on the basis of:
  - in the first instance, utilising each GLA vessel to cover risk response requirements in their own GLA area of operations.
  - tasking GLA vessels to conduct routine maintenance and project support operations within their own GLA area.
- sharing capability to respond to casualties, wrecks and new dangers, where the appropriate response to an incident in one area cannot be met by the incident GLA's own assets within an appropriate timeline set by the incident owners established risk response criteria.
- For coordinated planned operations a programme of work will be agreed in advance and within that programme the coordinated planning team may operate directly with the GLA and vessels involved.
- Deviations from the coordinated programme will be agreed between the coordinated planning team and other affected GLA.
- For unplanned response situations the coordinated planning team will develop a draft response and where additional vessel support is required they will seek approval from the other affected GLA.
- When considering the response to a new wreck or danger, the required immediacy of such response shall be at the discretion of the GLA in whose area of responsibility the new wreck or danger has occurred, regardless of which GLA has direct legal and financial responsibility for the vessel being deployed.
- When considering the response to a casualty of an AtoN, the required immediacy of such response shall be in accordance with the established AtoN casualty response priorities of the GLA responsible for the provision of such AtoN.

6.10 It is accepted that there may be rare occasions, which dictate a deviation from these arrangements to meet urgent national requirements of the respective priorities of each GLA's Government.

6.11 The Coordinated Fleet Management Group (CFMG) is a Task Group of IGC5 and operates to agreed terms of reference. The Coordinated Fleet Management Group (CFMG) will oversee the operational implementation of this MoU.

6.12 The operating areas of the GLA vessels will be those contained in the respective policies of hull and machinery insurance, namely:-

(a) the United Kingdom, Ireland, the Channel Islands, the Isle of Man and the Continent of Europe between River Elbe and Brest inclusive or such other areas as may be agreed from time to time; and/or

(b) the operational areas of the GLAs;

whichever is the wider.

7 Financial Arrangements

7.1 Further to the letter received from the Deputy Director, Maritime Safety & Environment, DfT dated 18 April 2017 regarding the GLA Fleet Review the co-ordinated fleet plan requires mutual cover to continue to be recorded and charged using the existing ship sharing Memorandum of Understanding dated 17 November 2010.

The MoU provides

i. The GLA with legal and financial responsibility for the asset will budget for the costs of the total use of its vessel in the normal way and seek sanction to the estimated costs in its favour.

ii. Subject to clause (vi) below there will be no invoicing between the GLAs and no cash will pass between the parties for ship sharing.

iii. An agreed daily rate ('the ADR') will be used to cost the usage of sharing a given vessel based on the number of working days on each occasion. The ADR shall be calculated by the GLAs concerned and agreed as being the average of those of the costs used to set the annual inter GLA ship hire rates extended into the column headed 'costs only' in the specimen formula set out in schedule 2. Schedule 2 to this MoU will be updated and produced annually by the GLA currently holding the chair of the Inter-GLA Committee 2 (Finance) ('IGC2') and shall form part of the MoU for the relevant financial year to which it relates.

iv. The resulting ADR will be taken into account:

a) Insofar as the CIL is concerned, by the UK DfT and the ROI DTTAS in calculating the cost of ship sharing services received by IL to be included in the annual contribution to the General Lighthouse Fund by the Republic of Ireland Government;

And

b) By the GLAs to adjust their vessel costs in calculating unit costs and for the purposes of calculating performance indicators.

v. Within 10 days of the end of each calendar month the GLAs will agree a financial statement of working days undertaken in respect of the sharing of vessels during the month in question including any relevant mobilisation or demobilisation fees. A copy of such statement will be provided to each of the Heads of Finance of the GLAs to reconcile notional charges made under this MoU within the year end accounting arrangements. By 30 April each year the GLAs will agree a financial statement of working days undertaken in respect of the sharing of vessels during the preceding financial year including any relevant mobilisation or demobilisation fees. A copy of such statement will be provided to each of the Heads of Finance of the GLAs to reconcile notional charges made under this MoU within the year end accounting arrangements.

vi. All fuel oil, moorings, chain, shackles, general stores or other items supplied for the purposes of carrying out the agreed work or otherwise will be invoiced and charged at cost price and the receiving GLA will pay the charges without delay; such costs will exclude any of the costs of bunkers, stores or any cost otherwise associated with the operation of the vessel included in the ADR or the mobilisation or demobilisation rate. Any charges for the helicopter usage will be borne by the GLA receiving the services of another GLA's vessel.

vii. For the avoidance of doubt working days under this arrangement will be where specific tasks are completed and does not include positioning for Risk Response where vessels are not required to proceed into another GLAs area.

8 Obligations of the GLAs

At all times during the sharing of vessels, each GLA will ensure that:

8.1 Its vessel is navigated and operated in a proper and seamanlike manner and made available to the receiving GLA for the agreed time, subject to any emergency.

8.2 The master of its vessel:-

(a) applies due diligence in the performance of the programme of work;

(b) carries out vessel operations in accordance with his ship's operations book, International Safety Management Code (ISM) operations manuals, International Ship and Port Facility Security Code (ISPS) procedures and complies with the health and safety and other policies and laws of the area of operation; and

(c) maintains all log-books, other records and anything else to be properly maintained to comply with the ship's classification.

8.3 The rightful ownership of the vessels is safeguarded in accordance with the terms and conditions of any relevant charterparty agreements and best endeavours are made to avoid arrest, distraint, seizure or delay of the vessels.

8.4 Classification, radio licences and other consents, permits, accreditations and approvals are maintained in respect of its ship including requirements in respect of the ISM Code and ISPS regulations.

8.5 Its vessel carries or acquires full electronic and paper chart outfits for the other GLAs' areas.

8.6 Tasks are executed during the agreed time in a cost effective, timely and efficient manner.

8.7 The insurances for the vessels remain valid and all debts, damages, claims and liabilities are paid and discharged to avoid any liens on the vessels.

8.8 Relevant information is exchanged during the operation of one GLA's vessel in the area of another, including all broadcasts and notices and warnings of any known or likely hazards or hindrances to the operation of the vessel and the safety of her crew.

8.9 Its vessels are maintained, repaired, stored and bunkered sufficiently at all times to be able to meet the requirements of this MOU.

9 Variations

9.1 Any variation, modification or waiver of the MOU shall be by mutual agreement in writing between the GLAs.

10 Liabilities

10.1 There will be a mutual hold harmless in respect of the liabilities of each of the parties to this MoU. Each party will be deemed to have given the others an indemnity against claims, loss, damage, personal injury, industrial illness or death, so that neither the GLAs collectively nor individually will have any liability for such occurrences arising out of the performance or non-performance of the provisions of this MoU, except as expressly provided herein.

Schedule 1 – Operation of the GLA Tender Fleet

TH	THV PATRICIA
	THV GALATEA
	THV ALERT *
	MV MAIR *
NLB	NLV PHAROS
	NLV POLE STAR
IRISH LIGHTS	ILV GRANUAILE

* It is not envisaged THV Alert and MV Mair will be utilised outwith TH waters.

Schedule 2 Calculation of Inter-GLA Ship Sharing Average Daily Rate (ADR) Charge - Year 2017/2018 (Excluding Fuel)

	CIL (€000's) Granuaile	CIL (£000's) Granuaile	TH (£000's) Patricia	TH (£000's) Galatea	TH (£000's) TH Total	NLB (£000's) Pole Star	NLB (£000's) Pharos	NLB (£000's) NLB Total	COST ONLY Total (£000's)
exchange rate	*1.25*								
Operating Costs:									
- Pay (including pension cont.)	[redacted]								10,005
- Non-Pay (excluding fuel)									3,213
- Ship Fuel	-	-	-	-	-	-	-	-	-
Total operating costs									**13218**
Capital Expenditure:									
- Annualised DD&R and other misc proj.s	[redacted]								888
Total Annual Costs	**2,859**	**2,287**	**3,337**	**3,011**	**6,348**	**2,439**	**3,032**	**5,471**	**14,106**
Number of Ships									5
Average Total Cost per ship									2,821
Average annual availablity per ship (days)	**345**	**345**	**345**	**345**	**345**	**345**	**345**	**345**	345
	€	£	£	£	£	£	£	£	£
Average daily cost per ship	[redacted]								8178
Per Hour (divide by 12)									681
Per Hour (divide by 24)									341

Work Package 2 – Coordinated Planning

Phase 1 Establish Tri-GLA framework, organisation, procedures and initial planning tool

Coordinated Planning Report

GLA Fleet Review – Phase 2

Report to Project Management Working Group

Work Package 2: Coordinated Planning

Phase 1

Author: Tony Wright, CFM Chair

Date: 12/04/17

Document No: 348674

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
Issue 1	06/10/2016	Draft
Issue 1 / Amend 1	20/10/2016	Updated following discussions at PMWG meeting 03
Issue 1 / Amend 2	28/11/2016	Updated following items raised at PMWG 05 meeting
Issue 1 / Amend 3	04/01/2017	Amended flow diagrams as raised at PMWG 06 meeting
Issue 1 / Amend 4	03/02/2017	Amended "Unplanned" flow diagram as raised at PMWG 07 meeting
Issue 1 / Amend 5	28/03/2017	Added Sections "Base Line Plan", "GLA Fleet Plan Assessment", "Definitions" and "Proformas"
Issue 1 / Amend 6	12/04/2017	Amended flow diagrams and associated text to reflect reporting to CEO's. Raised at PMWG 10.
Issue 1 / Amend 7	05/06/2017	Amended Annex 1 – "Incident Report" (v5). Added Section 6.3 "Reports" and Contents page.
Issue 1 / Amend 8	28/03/2018	Approved at Project Board
Issue 1 / Amend 9	29/03/2018	Approved PDF

Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

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- 2.3 Work-Package Responsibility Matrix
- 2.4 Acceptance Criteria

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- 3.2 Organisation Structure

4. GLA Fleet Plan
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- 4.2 Base Line Plan
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- 4.4 Disputes
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Work Package 2 – Coordinated Planning – Phase 1

1. Introduction

The draft Houlder Report identifies Centralised Fleet Control and Scheduling (to be retitled and explained in final report) as a prerequisite for efficient operation of the GLA Fleet. Houlder have modelled this approach on the advances already made in Coordinated Fleet Management and recommend the development of a fully integrated fleet schedule which would be actively managed and controlled centrally.

This approach requires vessel capacity to be managed from a fleet wide perspective with fully coordinated programmes down to BSL level and integration of operations across GLA boundaries. Houlder consider that this will enhance the GLA ability to meet their statutory requirements while still potentially allowing use of reserve capacity for commercial purposes. Houlder also recognise that responsibility and legal liability for the delivery of the AtoN service lies with the Chief Executives of each GLA.

The GLA accept the Houlder analysis of the benefits of this arrangement. However, the GLA believe that their individual statutory obligations require control of vessel operations, AtoN provision and primary response decisions in relation to AtoN casualties, wreck and new dangers within their geographical areas. The GLA have developed the following arrangements which retain control with the individual GLA while still delivering the benefits of integrated operations as recommended by Houlder.

Taking into account that the Houlder Report recommends action on this issue at the earliest opportunity the GLA propose to commence implementation of this process without delay.

2. Objective

To establish Tri-GLA framework, organisation, procedures, initial planning tool.

2.1 Deliverable

Phase 1 – Establish Tri-GLA framework, organisation, procedures, initial planning tool

- Coordinated Planning - Tri-GLA framework proposal
- Coordinated Planning - Organisational proposal
- Coordinated Planning – Establish planning procedures
- Coordinated Planning - Establish initial planning tool
- Coordinated Planning – Input current plans to Coordinated Planning tool
- Coordinated Planning – Go Live and Report

2.2 Delivery Schedule

Commencing 1st April 2016, review and report on the proposal of the organisation and procedures for coordinated planning – Report and Go Live date 31/10/16.

2.3 Work-Package Responsibility Matrix

Note: All draft reports will be approved by the Project Management Working Group prior to final report distribution to approval level.

Work Package Number	Description	Responsible Team	Team Leader for WP	Supporting Team or Team member	Approval & Sign-Off
Phase 1	Tri-GLA framework, organisation, procedures and initial planning tool				
	Tri-GLA framework Proposal	Planning task group	Tony Wright	CFM Team	PMWG
	Organisation proposal	Planning task group	Tony Wright	CFM Team	PMWG
	Establish planning procedures	Planning task group	Tony Wright	CFM Team	PMWG
	Establish initial planning tool	Planning task group	Tony Wright	CFM Team	PMWG
	Input current plans into Coordinated Planning tool	Planning task group	Tony Wright	CFM Team	PMWG
	Go-Live and report				

2.4 Acceptance Criteria

Three GLA Operations Directors to sign document that the organisation structure and procedures are appropriate for the purpose of coordinated planning.

3. Coordinated Planning Phase 1 Proposals:

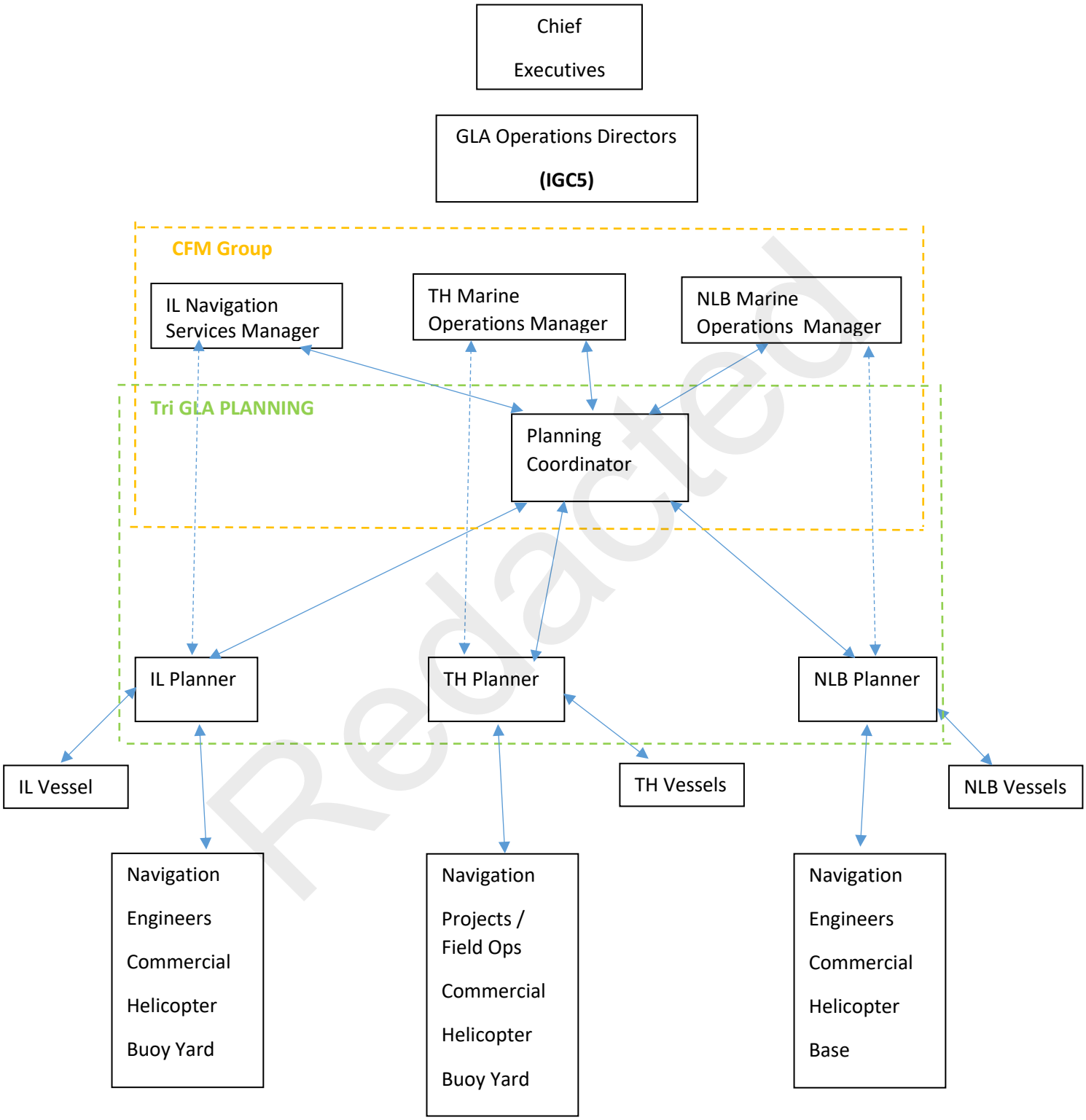
3.1 Tri-GLA framework

Coordinated Planning will aim to meet the GLA Integrated Fleet Deployment and Response Arrangements as recommended by Houlder while still respecting the individual GLA statutory obligations and in accordance with the GLA Memorandum of Understanding (MOU) as revised 3rd August 2016 (Draft). The principal features of this arrangement are:-

- The principles of individual GLA statutory responsibility, optimised fleet operations and active risk management are core to these arrangements.
- Control and safe management of each ship rests with the GLA holding the Document of Compliance for the vessel
- Statutory responsibilities are as set out in Merchant Shipping Act and ultimate liability rests with individual GLA Boards
- As accepted by Houlder the arrangements will be largely manpower neutral with the benefits arising from improved fleet operations.

3.2 Organisation Structure

The following diagram illustrates the proposed organisational structure of the Coordinated Planning group and reporting lines with IGC5 CFM, and GLA departments.



IGC5 – IGC5 will be accountable to the Chief Executives for the operations of these arrangements under Coordinated Planning. IGC5 will provide guidance to CFM on the

acceptable levels of risk, oversee the operation of the plan through regular reporting and provide input on planning decisions where required.

Central Fleet Management (CFM) - The chair of IGC5 and CFM being from the same GLA on a rotational basis, will be able to maintain close cooperation at this level with regular informal discussion and early raising of any issues.

Planning Coordinator – The Planning Coordinator would form part of the CFM group, be based in Harwich and be part of the Planning Centre team. The Planning Coordinator will work with each of the GLA local Planners in maintaining the GLA Fleet Plan. The Planning Coordinator will prepare the annual integrated plan with the Planners and actively manage its implementation.

The Planning Coordinator will approve updates to the plan to reflect new tasks and completed tasks and provide advice to CFM Managers on scenarios to address any changes to the plan required by plan implementation issues or unplanned activity. The Planning Coordinator will regularly update the plan and provide ongoing reports to CFM and Local Operations.

IL, TH, NLB Local Planner(s) – Each GLA has their own local Planner(s), the composition of which will be determined by the individual GLA to meet their planning requirements. The Planner(s) will coordinate the requirements from the various internal customers for their resources.

The Planner(s) will work with the Planning Coordinator to ensure that the spread of resources will meet the tri-GLA RRC.

Ships Master - Operational work will be executed through the local Planner(s) for their GLA with day to day implementation of work managed by the Master.

4. GLA Fleet Plan

4.1 Compilation of Annual GLA Fleet Plan:

The GLA Fleet Plan should consider all of the requirements to meet RRC, AtoN Maintenance, Projects and pre-existing contractual commitments utilising the GLA Fleet in a manner that minimises risk and optimises fleet efficiency.
The plan should commence utilising a GLA's vessel(s) to cover their risk response areas and other planned work in the first instance and then look to the interaction of other vessels where this cannot be achieved, thus overall, gaining greater efficiency from the fleet.

The process in compiling the following years GLA Fleet Plan is:

- IL, TH, NLB Planners obtain the requirements for ship resources from their respective internal departments. (September/October)

- The Planning Coordinator with the Planners will compile the GLA Fleet Plan from the resource requirements ensuring that the requirements under the GLA MOU are accounted for. (November / December)
- The draft annual GLA Fleet Plan will be agreed by the CFM Managers (January/February) prior to the Plan being submitted to IGC5 for sign-off.
- GLA Fleet Plan operational from 1st April to 31st March.

4.2 Base Line Plan

The following documents will be frozen prior to the planed year start (1st April) and will be filed as the Base Line plan. Read Access will only be available to these documents which will be maintained by the Planning Coordinator.

The Base Line Plan consists of the following calendars and spreadsheets:

- GLA Annual Plan Summary
- GLA Risk Response Analysis (Bubble Assessments)
- GLA Work Plan Calendars
- GLA Resource Capacity
- GLA Critical Area Coverage

4.3 Updating

The Planning Coordinator will advise any changes to the Fleet Plan to the CFM Managers.

The Planning Coordinator will report to IGC5 who will report twice yearly to the Chief Executives The report should include a gap analysis detailing where the required risk response has not been achieved and also the status of operational maintenance undertaken in relation to the target requirements .

Ships Masters will provide ongoing feedback with the tri GLA Planner monitoring implementation and action amendments as required.

Only the Planners will have access to update the GLA Fleet plan for their vessel(s). The Planning Coordinator will have full access to amend any of the GLA Fleet Plan documents.

The Planning Coordinator will teleconference at least weekly with the individual local Planners and provide routine.

4.4 Disputes

The modus operandi of these arrangements will be cooperation and efficiency. Where agreement cannot be reached the Chair of the CFM Group will make a recommendation to the three GLA Operations Directors with an ultimate appeal if required to the Chief Executives.

4.5 GLA Coverage by other GLA Vessels

Where a GLA requires to utilise another GLA's vessel for coverage/operational work and whether planned or unplanned, the requests for the utilisation of ship resources will go through the appropriate CFM Manager for the respective GLA. This process will be formalised using the form "INTER-GLA SHIP SUPPORT – REQUESTING COVERAGE" (an example is contained in Annex 1).

The form is in two sections, the first is a request for the coverage/work required, the second section details the work that was undertaken and is only completed once the vessel is released from the commitment.

5. Changes to the GLA Fleet Plan

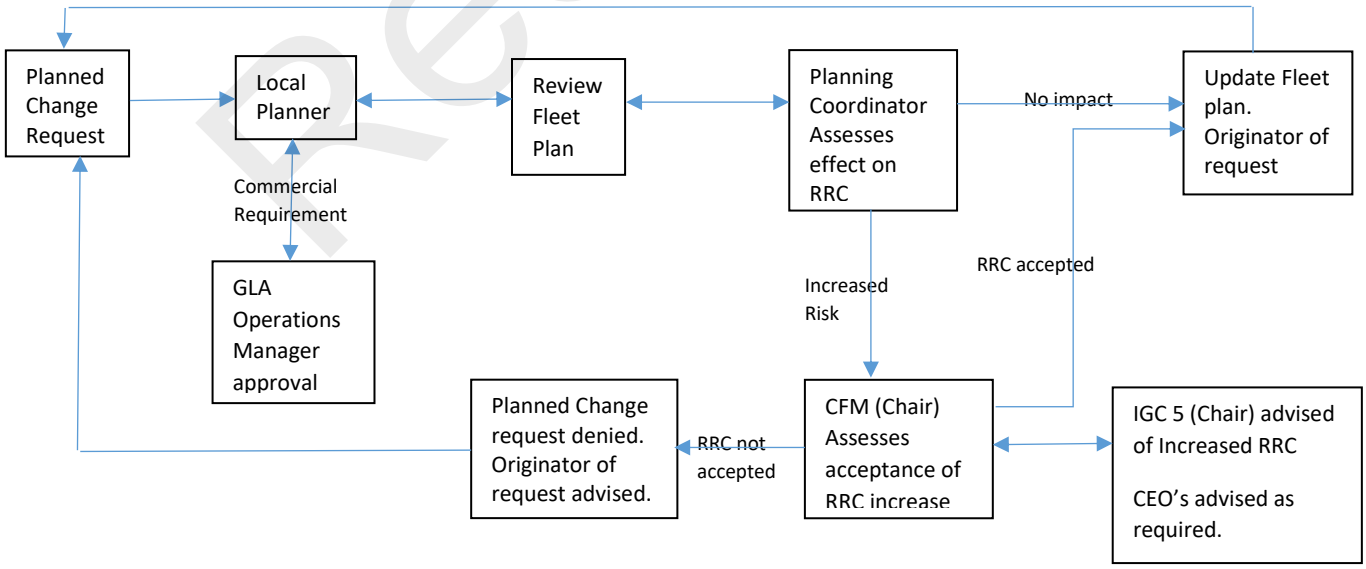
5.1 Planned

All requests for changes and / or additions to routine (planned) work are to be made to the local Planner who will assess the GLA Fleet Plan if the request can be accommodated within the existing plan. The Planner will advise the Planning Coordinator by phone, confirming by e-mail of the changes to be made to the Plan. The Planning Coordinator will assess the impact on RRC and where the risk of exposure has been increased shall advise the CFM Group accordingly.

Where the Planning Coordinator has assessed changes to the GLA Fleet Plan have resulted in an increase of a GLA's exposure to risk response, they will advise the CFM (Chair) and also provide options to reduce this risk. The CFM (Chair), in consultation with the appropriate GLA Operations Manager, will then assess the proposed options and/or the increased risk. Where the proposed options and/or the increased risk are accepted then the Fleet Plan is to be updated and the request originator advised. Where the planned change request is denied the originator of the request is to be advised and Fleet plan remains unaltered.

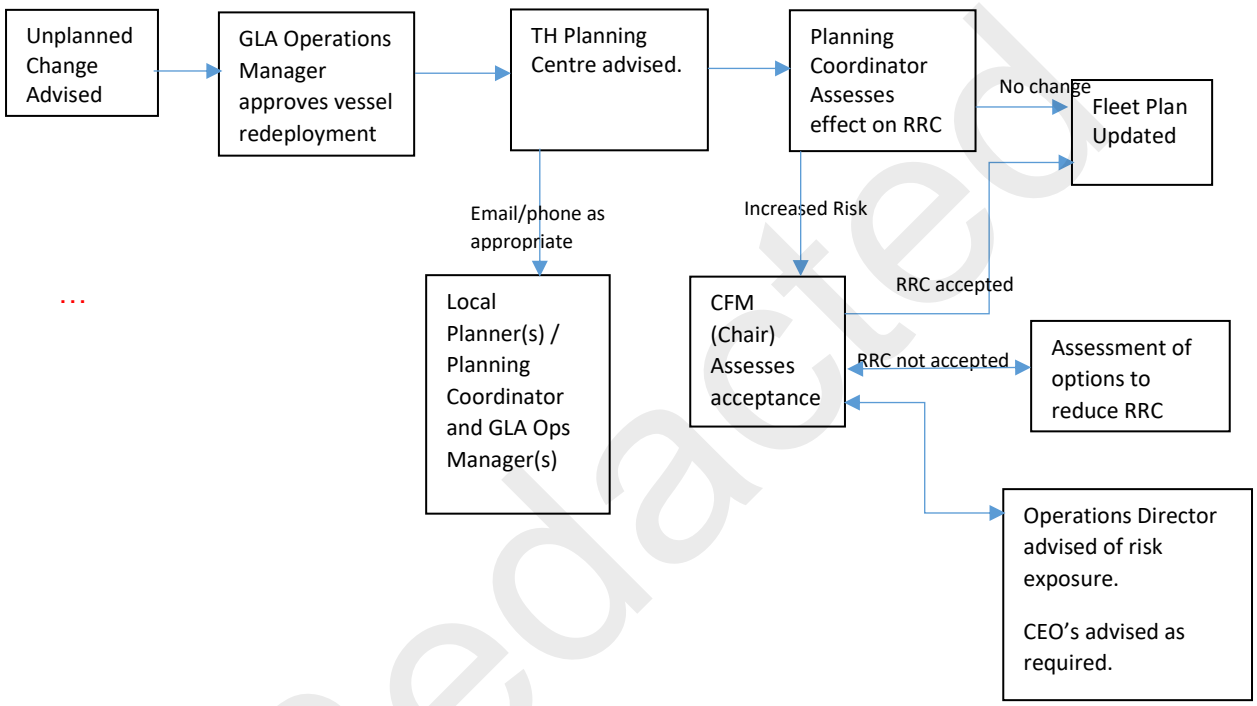
The CFM (Chair) will advise IGC5 (Chair) of any significant changes to RRC. IGC5 to raise these changes with the CEO's as they deem necessary.

Decisions on deployment of vessels for commercial opportunities and consequent cover arrangements will initially be made by the GLA's Operations Manager with advice from the Planning Coordinator with regard to effect on RRC.



5.2 Unplanned

Unplanned work is generally required to be taken at short notice such as to attend a wreck, new dangers, AtoN casualties, unplanned vessel maintenance or any other non-routine activity. The decision for a vessel to be deployed is made by the appropriate GLA Operations Manager (which may or may not be in consultation with their IGC5 Director). The Operations Manager will advise the Trinity House Planning Centre at the earliest opportunity of the redeployment of their vessel(s) who will then inform the Local Planner, Planning Coordinator and Operation managers as appropriate. The Planning Coordinator will assess the effect on risk response coverage and if there is no change will update the Fleet Plan.



Where the Planning Coordinator has assessed changes to the GLA Fleet Plan have resulted in an increase of a GLA's exposure to risk response, they will advise the CFM (Chair) and also provide options to reduce this risk. The CFM (Chair), in consultation with the appropriate GLA Operations Manager, will then assess the proposed options and/or the increased risk. Once the proposed options and/or the increased risks are accepted then the Fleet Plan is to be updated.

The CFM (Chair) in consultation with the appropriate Operations manager, will then advise the relevant Operations Director of the increased risk in their area of responsibility. The Director will raise these changes with the CEO's as they deem necessary.

6. GLA Fleet Plan Assessment

6.1 Data Collection

The Planning Coordinator is responsible in ensuring that following working documents are maintained and updated daily (NLB / IL TUD's weekly):

- GLA Annual Plan Summary
- GLA Risk Response Analysis (Bubble Plans)
- GLA Vessel Calendars.
- GLA Critical Area Coverage
- Tender Utilisation Data (TUD's) Excel Spreadsheet (Weekly from NLB/IL)
- Daily Dashboard

In gathering of data for analysis by the Planning Coordinator the TH Operations Officers will:

- Collate Daily Disposition reports
- Produce daily "Bubble" plans
- Collate Weekly TUD's data in Excel format

All the above document to be filed on Worksite

6.2 Key Performance Indicators (KPI's)

From the collated data the following KPI's will be determined and used to measure the performance of the Fleet Plan:

KPI	**Source**
Risk response Area coverage	Risk Response Analysis (Bubble Plans)
Risk comparison for 2017/18 to Holder's Report identified Risk	Risk Response Analysis (Bubble Plans)
GLA coverage of own area (%)	GLA Critical Area Coverage
GLA coverage of other GLA areas (%)	GLA Critical Area Coverage
Duplication of GLA area coverage	GLA Critical Area Coverage
Coverage by third party (%)	GLA Critical Area Coverage
No coverage of RRC (%)	Risk Response Analysis (Bubble Plans)
BSL tasked and completed	GLA Annual Plan Summary GLA Dashboard
Statutory operational undertaking (%)	Tender Utilisation Data (TUD's)
Non Operational undertaking (%)	Tender Utilisation Data (TUD's)
Unplanned Work (%)	Tender Utilisation Data (TUD's) Incident Report
Dedicated Risk and Response cover (%)	Tender Utilisation Data (TUD's)
Third Party Operations undertaking (%)	Tender Utilisation Data (TUD's)

Days lost due to weather. (%)	Tender Utilisation Data (TUD's)
Requested work that could not be undertaken	Commercial Report Planners Report
Vessel Reserve capacity	Base Line Plan
Vessel Spare Capacity	Base Line Plan

6.3 Reports:

6.3.1 Quarterly Report

Report to be submitted to PMWG each quarter and to include:

- Incident Reports - Summary of reports raised.
- Risk response coverage – identify changes of risk response coverage compared with the base-line plan.
- Summary of risk coverage maintained
- Changes in planned work compared to base-line plan
- GLA vessel undertaking unplanned work including commercial operations – assessment of any change in RRC if vessel continued to operating as per base plan.

7. Definitions:

There are a number of terms used in this report that can be defined by the following definitions:

Risk and Response Cover "RRC":

- **Natural Risk and Response Cover:** when a GLA vessel is carrying out operations in its own area of jurisdiction, and due to its geographical position is able to provide **concurrent** cover to meet the RRC in another GLA's area when requested by Planning to do so.

- **Dedicated Risk and Response Cover:** When Planning requires a GLA Vessel to hold station in an area of either their own or another GLA's area of jurisdiction and there is no other outstanding maintenance or requirement.

- **Baseline requirement** – to meet 100% risk response requirement and complete annual operational maintenance.

GLA Resource Capacity:

- **Vessel Reserve Capacity** = 365 days – (Vessel maintenance + statutory AtoN maintenance + weather downtime)

- **Vessel Spare Capacity** = Vessel Reserve Capacity – Planned 3rd Party work. (at time the Fleet Plan is base lined)

8. Proformas

TH Daily Disposition Report Proforma

NLB and IL Daily Disposition Report Proforma

GLA Incident Report Draft Proforma (Appendix 1)

Inter-GLA Ship Support – Requesting Coverage (Appendix 2)

Appendix 1.

GLA CO-ORDINATED PLANNING INCIDENT REPORT No. ? / 2017

Date :	
Subject:	
Wreck Location / AtoN Name:	
Attending Vessel	
Initial Response Position	

Narrative; Description of the Wreck; New danger, AtoN Casualty or other incident eg SAR Ops, Pollution**; (To be completed by TH & IL Captains or by NLB Designated Person(s) ashore)**

Risk Response Narrative; Description of the response requirement: in the case of a Wreck, measured against the GLA Risk Response Criteria; in the case of an AtoN, measured against the individual priority assigned by the individual GLA. For Commercial or other misc. operations the GLA should advise the requirement. **(To be completed by TH & IL Captains or by NLB Designated Person(s) ashore)**

RRC	Hrs	Was the response time achieved (Yes/No)		Time Taken	

AtoN Casualty/Outage Category/priority		Was the response time achieved (Yes/No)		Time Taken	
Vessel Capability;					
Weather Conditions Wind Direction & Speed, Sea & Swell State, Visibility					
Average Speed achieved for Wreck / Casualty response					

Planning Impact; Description of the impact on vessel work / maintenance programmes; summary of tasks to be reprogrammed; number of days lost. **(To be completed by GLA Planning Co-ordinator)**

RRC Coverage; Description of the impact to risk response; impact on other GLA Fleet vessels; double jeopardy **(To be completed by GLA Planning Co-ordinator)**

Risk Response V Capability; Description of the capability of the initial response vessel; Narrative and level of risk as indicated by the matrix below. **(To be completed by GLA Planning Co-ordinator)**

Allocated Vessel	
Reason for Allocation	
Narrative	
Risk Level	

Risk Matrix

1	Resource fully capable of guarding, surveying and marking wreck, new hazard or rectifying casualty/outage; no further attendance required.
3	First Aid attendance; resource only capable of guarding or surveying wreck, or effecting temporary repairs to a casualty/outage; additional resource required to mark a wreck/new hazard or fully restore a casualty/outage.
5	Nearest resource incapable of restoring or unable to attend Wreck, New Hazard or Casualty/Outage; resource with enhanced capability required.

Map info 'Bubbles' Chart shown below; **(To be completed by GLA Planning Co-ordinator)**

Scenarios; comments (case-by-case), where a GLA Fleet vessel becomes unavailable at short notice: a review as to whether the response would have 'theoretically' changed if the vessel had been available. **(To be completed by GLA Planning Co-ordinator)**

Assessment; comments (case-by-case) following PMWG Review**;**

Appendix 2.

INTER-GLA SHIP SUPPORT – REQUESTING COVERAGE

DATE REQUEST MADE	GLA(s) ASKED TO COVER	DATE OF COVERAGE: FROM	DATE OF COVERAGE TO
25th July 2016	**NLB**	**1st September 2016**	**7th September 2016**

Click on Comment in this Cell for Instructions

GLA REQUESTING COVERAGE	AREA OF COVERAGE ONLY	AREA IF VESSEL REQUIRED TO REPOSITION
TH	**N/A**	**England - NE Coast**

Reason: (e.g. DD&R, Self-Refit, Contract, etc)
To carry out annual servicing buoy work in NE Coast Area

Planned Vessel Positions at time of Request (From GLA Fleet Plan)					
THV Galatea	THV Patricia	THV Alert	NLV Pharos	NLV Pole Star	CILV Granuaile
Thames Estuary	**Bristol Channel**	**Thames Estuary**	**Scotland- West Coast**	**Scotland - E Coast**	**NW Scotland - Commercial Contract**

GLA ACCEPT/DECLINE REQUEST (DELETE AS NECESSARY)	PERIOD OTHER GLA(s) CAN COVER	DATE REQUEST ACCEPTED	OPERATOR SIGN TO ACCEPT REQUEST
NLB – NLV Pole Star	**N/A**		[redacted]

Once the above form has been agreed, the following Inter GLA Ship Support Pro-forma Work Schedule should be completed

INTER-GLA SHIP SUPPORT – CONFIRMED WORK SCHEDULE

THE USER	THE OPERATOR	NAME OF SHIP	PERIOD OF USE: FROM DATE/TIME	PERIOD OF USE: TO DATE/TIME	NO.OF WORKING DAYS
TH	**NLB**	**POLE STAR**	**01/09/2016 12:00**	**08/09/2016 12:00**	**7**

NATURE OF WORK TO BE PERFORMED	SPECIAL REQUIREMENTS OF METHOD OF WORK
Carry out annual servicing buoywork in NE Coast Area: Triton, Ridge, Plough Rock, Plough Seat, Goldstone, Swedman, Shoreston, North Sunderland, Newton, Cefas Tyne Tees, Saltscar & Whitby.	**Load CB's SALTSCAR, WHITBY and s/s core RIDGE from Leith Docks 25th August.**

	User Contacts	Operator Contacts

Title	Shipboard Liaison Officer	Responsible Officer/ Shore Contact	Shipboard Representative	Responsible Officer/ Shore Contact
Name	**N/A**	**Bill Summers**		**Ewen Mackerchar**
Telephone Number		[redacted]		[redacted]
e-mail				
Signature				
Date				

INTER-GLA SHIP SUPPORT – COMPLETION: It is confirmed that (Name of Ship)	***Pole Star***	was deployed as follows:

FROM DATE/TIME	TO DATE/TIME	NO.OF WORKING DAYS
01/09/2016 12:00	**08/09/2016 12:00**	**7**

Ship's & Helicopter Fuel consumed – Any Stock items expended	
MGO	
LO	
Jet A-1	
Chain	
Shackles	
etc	

Sign Off Completion:	The User	The Operator
	[redacted]	
Responsible Officer's Signature		
Date		

Work Package 2 – Coordinated Planning

Phase 1 Establish Tri-GLA framework, organisation, procedures and initial planning tool

Developing a GLA Planning Tool

GLA Fleet Review – Phase 2

Work Package 2: Coordinated Planning Update; Developing a GLA Planning Tool

Author: Bill Summers
Date: 05/10/16
Document: 350025

Document Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

Introduction

As part of WP2, the FRWG asked that an investigation be conducted to establish a planning tool sufficient to incorporate all requirements and to provide the outputs required for the execution and adaption of the plan having injected current plans into the tool.

Current Plans

Current Plans are developed by each individual GLA by the following means:

TH: All work and AtoN data is driven by the SRO Maximo MMIS system, with Work programmes created utilising Microsoft Excel.

NLB: AtoN data is provided by Q4 with Work Programmes created via Microsoft Word

Irish Lights: AtoN data is provided their in-house Laton database; a list of all work is provided to the ship at the start of each year; this is managed by ILV Granuaile's Master.

GLA: A GLA Fleet Plan is kept on the Irish Lights Sharefile System which is updated with general information with regards to the disposition of the GLA Fleet and key milestones such as DD&R dates, crew changes, Contract work at each CFMG meeting. This is a Microsoft Word document.

There are other supporting Plans, such as the Tender Overhaul Plan and Helicopter SAP programme which are kept on the Irish Lights Sharefile system.

Requirements

To develop a GLA Plan, the following requirements were identified:

- Given that Planning was to be co-ordinated rather than centralised, each individual GLA required the facility to access and design their own plans, but to give visibility to all the other GLA's.
- The Plans needed to be shared across the GLA and be 'live'; to make visible any changes to all GLA at potentially short notice.
- Improved access to the plans (utilising a single document means that only one user can edit the document at any one time)
- Removal of duplication; to remove the current requirement to edit multiple plans.
- Full access of live data for the GLA Fleet, to remove the need for Work Programmes
- Flexibility; to allow each individual GLA to include as much or as little information as they considered appropriate.

- To overcome the hurdle of individual GLA IT networks/systems

Software Options

The use of current Microsoft programmes was considered, but as referred to above this has limited access, and would not be 'live' data.

The use of Microsoft Project was considered as an option. Although this has some nice features, such as the scheduling view, which allows 'drag and drop' functionality in designing work programmes, overall this was discounted principally due to similar access issues of other Microsoft products.

An external Software product was considered, however, with nothing immediately available or exactly suitable, the current FR Project Timescale precluded this option being taken further at this stage.

One potential solution was identified which met the requirements identified above; Microsoft Outlook. This is a departure for all GLA from the current method of producing plans and hence a trial has begun to test this software option to confirm that it addresses all of the requirements.

Completed Work

The initial hurdle was to resolve the cross-GLA hurdle to create a shared Calendar that could be seen by all the GLA. TH IT were consulted and options explored. The solution arrived at was that TH IT would host a Management System Calendar for the other GLA and a 'GLA Fleet Management Calendar' has been created.

Sitting underneath this are three Calendar Groups, namely 'IL Planner,' 'NLB Planner' and 'TH Planner'. These are the Calendars that the Planners will update.

Permissions have been set up so that each GLA can only edit their own Calendars, but all GLA have visibility of all Calendars.

The data is 'live' so that any changes made by an individual GLA will update immediately and become available to the other GLA's.

Sitting within the 'Planner' Calendars are the calendars if the GLA Fleet vessels. The diagrams below illustrate the various GLA Fleets (monthly view).

Please note that the plans below are for illustrative purposes only; however, you can see that each task has been categorised in a different colour. We have been able to replicate identical categories across all calendars. These can be edited. These categories assist in identifying where the GLA Fleet are on a daily basis as illustrated in Figure 4 the Schedule View.

All GLA now have access to the Calendars and each GLA are starting to test the calendars, provide access to each individual ship with local line managers providing the appropriate level of access. Work has started to populate their respective Calendars with the remainder of this year's planned work. Feedback will be provided at the next CFMG.

Outlook Functionality

With regards to the requirements above, it is worth clarifying a couple of points with regards to the functionality of the Outlook calendars created;

All the calendars are separate and since each GLA can only edit their own calendars, so there is no issue with multiple access, or superseded data.

In the same way that you can copy an e-mail to your calendar, you can edit to add or delete as much text as you wish for each task/appointment. You can attach documents e.g. Notices, AtoN information etc.

You can ‘cut and paste’ task/appointments should you wish i.e. changing tasks between ships.

You can enter recurring tasks e.g. Crew changes.

You can print each calendar for a period of your choice and include as much or as little detail as you wish.

Fig 1: GLA Fleet: TH Vessels shown above

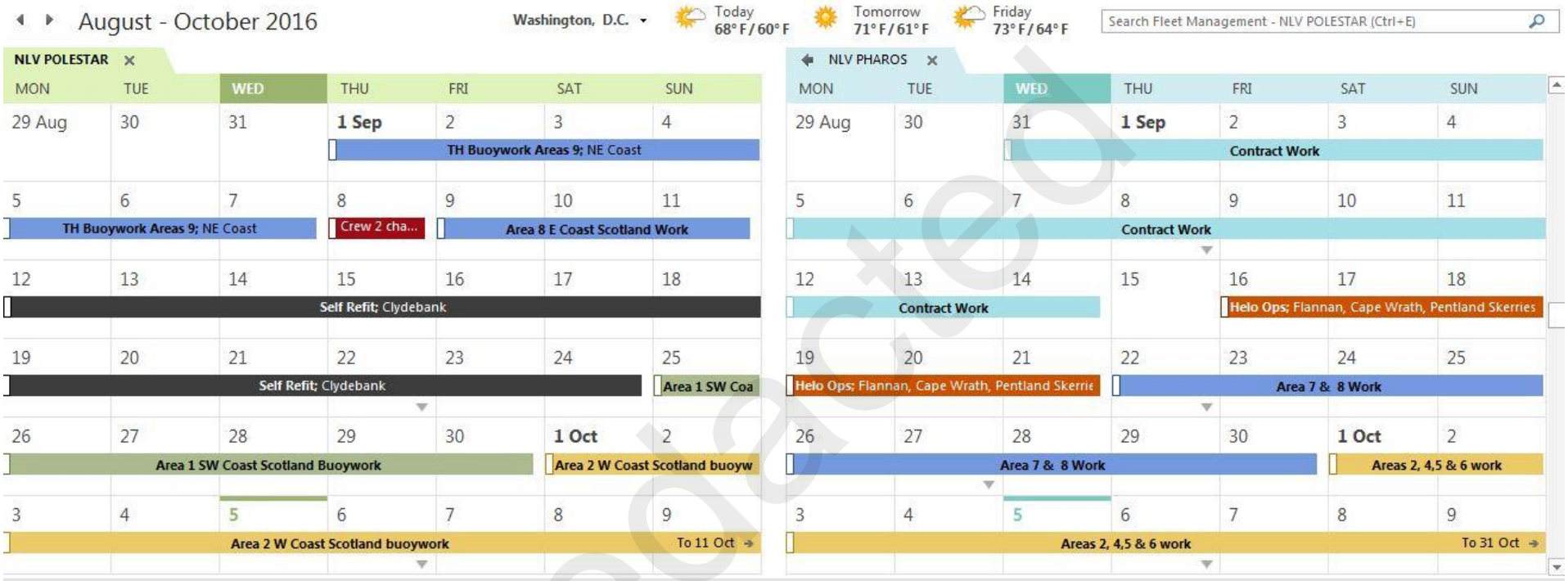


Fig 2: GLA Fleet NLB Fleet Calendars

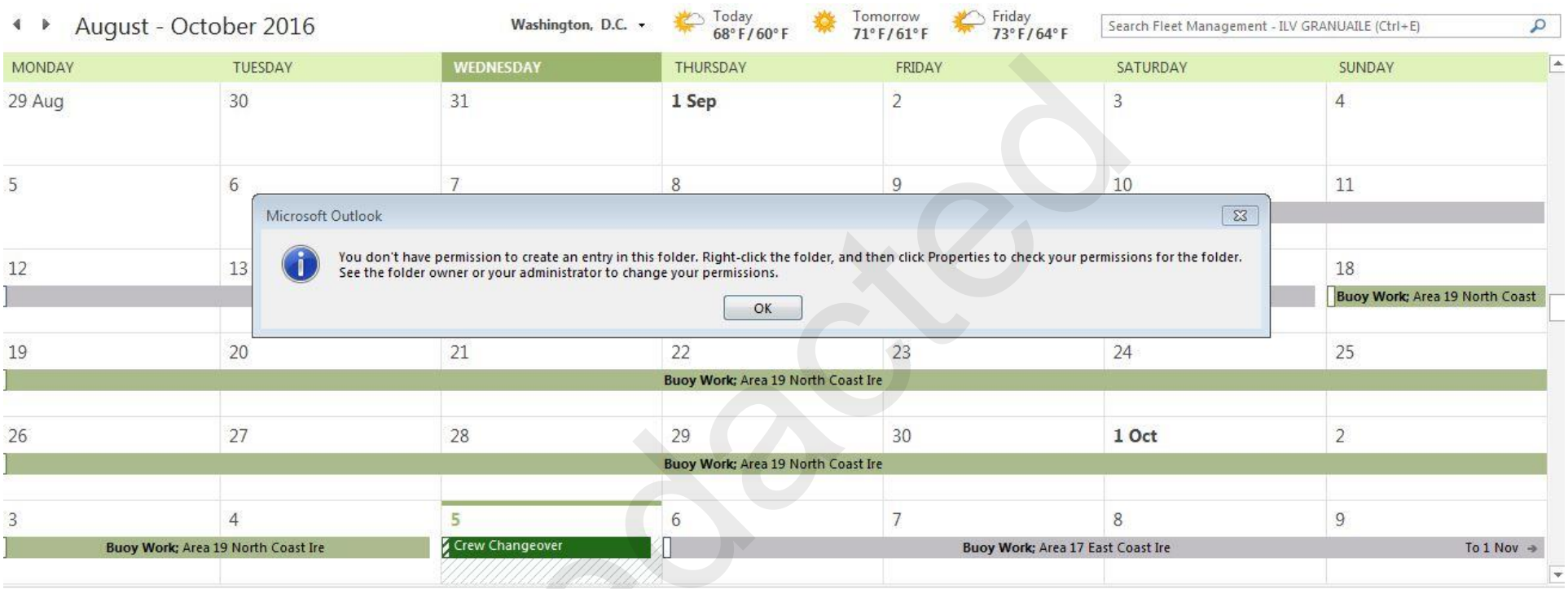


Fig 3: GLA Fleet ILV Granuaile calendar shown above;

Note that TH (or NLB) cannot edit this calendar, the message above appears if you try to edit without permission

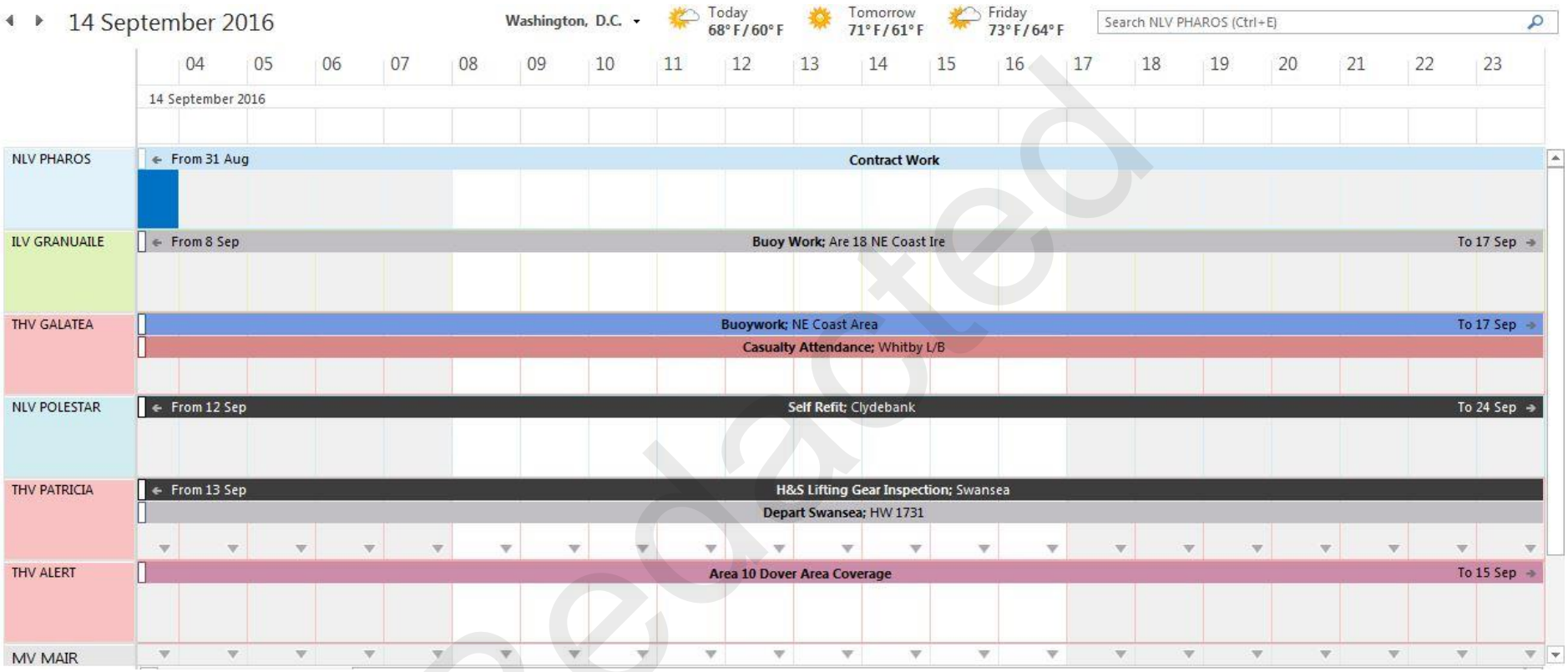


Fig 4: GLA Fleet Schedule View

Different coloured categories allow the reader to scan for vessels that may be working in the same region/area.

One drawback with this view is that is can only see daily schedules rather than monthly.

Next Stages

Since the last CFMG, access to the Calendars has been established at all GLA and the categories have replicated confirming that the IT hurdles seem to have been crossed. Hence the next stages are;

- Work has started to populate the calendars with the existing information on the 2016/17 GLA Fleet Plan. Once this has been done and tested to check that all the information has been replicated, the current word document on the Irish Lights Sharefile system can be superseded. This will be discussed at the next CFMG meeting.

- Providing each vessel in the GLA Fleet with access to its own calendar. This will be left to each individual GLA to set up along with the level of permission/access rights that each GLA deem necessary.

- Data validation / testing of each vessel calendar. Liaison with each Master for feedback regarding Outlook becoming the format for all future work programmes. If successful, current Word and Excel documents can be superseded.

- Creation of 'Read only' calendars for service-wide users within each GLA.

- On successful completion, plans for 2017/18 will be entered in readiness for the 1st April 2017 milestone. A provisional meeting has been arranged in December for the Planners to begin this process.

- Prior to the Planners meeting CFMG Chair will arrange meet with and update the CFMG regarding outputs from FRWG meetings to inform the future TOR for the GLA Planning Teams.

Further development

Although not a direct requirement of WP2, it may be possible to design something similar for Helicopters GLAA and GLAB; given that PDG would also require access.

It may be possible to find an Outlook 'App' to allow a monthly view of the 'Schedule; although nothing is available at the moment.

Conclusion

Progress on the development of Outlook as a GLA Planning tool was discussed at the last CFMG and initial feedback was positive, hence at this stage we remain confident that we have found a tool that can be utilised as the FRWG move towards closer GLA Co-ordinated Planning.

Work Package 2 – Coordinated Planning

Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan

Tri-GLA Coordinated Baseline Annual Plan Summary

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
13	01/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Risk Response	3	Inner Hebrides	Buoywork	10	Dover	On passage	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Bristol Channel	Buoywork
	02/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Risk Response	3	Inner Hebrides	Buoywork	10	Dover	On passage	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Bristol Channel	Buoywork
	03/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Risk Response	3	Inner Hebrides	Buoywork	10	Channel LV	MFA Servicing	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Bristol Channel	On Passage
	04/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Risk Response	3	Inner Hebrides	Buoywork	10	Sevenstones	MFA Servicing	10	Dover	MFA Servicing	9	Lowestoft	Load/Discharging	13	Gloucester	DD&R
	05/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Risk Response	3	Inner Hebrides	Buoywork	11	Scillies	Beacons	10	Dover	MFA Servicing	9	Lowestoft	crewchange	13	Gloucester	DD&R
14	06/04/17	15	South Coast	Buoywork	7 & 8	East Coast	Master Changeover	3	Inner Hebrides	Master Changeover	12	Penzance/ Landsend	Contract Work	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	07/04/17	15	South Coast	Buoywork	7 & 8	East Coast	On passage	3	Inner Hebrides	Buoywork	12	SW Coast	On passage	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	08/04/17	15	South Coast	Buoywork	3 & 4	West Coast	On passage	3	Inner Hebrides	Buoywork	12	Irish Sea	Contract Work	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	09/04/17	15	South Coast	Buoywork	2	West Coast	Load/Discharging	3	Inner Hebrides	Buoywork	12	Irish Sea	Contract Work	10	Dover	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	10/04/17	15	South Coast	Buoywork	2	West Coast	Load/Discharging	3	Inner Hebrides	Buoywork	12	Irish Sea	Contract Work	10	Harwich	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	11/04/17	15	SW Coast	On passage	2	West Coast	On passage	3	Inner Hebrides	Buoywork	12	West Coast	On passage	10	Harwich	MFA Servicing	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	12/04/17	15 & 21	SW Coast	Contract Buoywork	2	McArthur's Head	Helo-Ops (LH)	3	Inner Hebrides	Buoywork	12	Bristol Channel	Buoywork	10	Harwich	MFA Tows	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
15	13/04/17	15 & 21	SW Coast	Contract Buoywork	2	McArthur's Head	Helo-Ops (LH)	3	Inner Hebrides	Buoywork	12	Bristol Channel	Buoywork	10	Greenwich	MFA Tows	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	14/04/17	20	West Coast	On passage	2	McArthur's Head	Helo-Ops (LH)	3 & 4	West & North Coasts	Risk Response	12	Bristol Channel	Buoywork	10	Greenwich	MFA Tows	9	Yarmouth	Hydro Surveys	13	Gloucester	DD&R
	15/04/17	20	West Coast	Contract Buoywork	2	McArthur's Head	Helo-Ops (LH)	3 & 4	West & North Coasts	Risk Response	12	Bristol Channel	Buoywork	10	Harwich	MFA Tows	9	Yarmouth	Hydro Surveys	13	Barry	Load/Discharging
	16/04/17	20, 21, 15	SW Coast	On passage	2	McArthur's Head	Helo-Ops (LH)	3 & 4	West & North Coasts	Risk Response	12	Bristol Channel	Buoywork	10	Harwich	MFA Servicing	9	East Coast	On Passage	13	Barry	Load/Discharging
	17/04/17	15 & 21	SW Coast	On passage	2	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	12	Bristol Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Hydro Surveys	13	Barry	Load/Discharging
	18/04/17	15	South Coast	Buoywork	2	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	12	Swansea	Load/Discharging	10	Harwich	Load/Discharging	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
	19/04/17	15	Cork	Crewchange	2	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	13	Swansea	Crewchange	10	Harwich	Crewchange	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
16	20/04/17	15	South Coast	Buoywork	2	Oban	Crewchange	3 & 4	West & North Coasts	Crewchange	13	Swansea	Load/Discharging	9	Yarmouth	Contract Buoywork	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
	21/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Swansea	Load/Discharging	9	Humber	Contract Buoywork	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
	22/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Swansea / Cardiff	Buoywork	9	Coquet	Boatwork (LH)	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
	23/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Swansea / Cardiff	Buoywork	9	Coquet	Boatwork (LH)	10	Dover	Hydro Surveys	13	Bristol Channel	Buoywork
	24/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Swansea / Cardiff	Buoywork	9	Longstone	Boatwork (LH)	10	Dover	Hydro Surveys	13	Mumbles	Project Support
	25/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Mumbles	Project Support	9	longstone	Buoywork	10	Ramsgate	Load/Discharging	13	Mumbles	Project Support
	26/04/17	15	South Coast	Lighthouses	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Mumbles	Project Support	9	NE Coast	Pax Changeover	10	Ramsgate	crewchange	13	Mumbles	Project Support
17	27/04/17	15	South Coast	Beacons	2 & 3	West Coast	Contract Work	3 & 4	West & North Coasts	Risk Response	13	Smalls	Helo-Ops (LH)	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	28/04/17	15	South Coast	Beacons	1, 2 & 3	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	13	Milford	Buoywork	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	29/04/17	15	South Coast	Beacons	1, 2 & 3	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	13	Swansea	Buoywork	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	30/04/17	15	South Coast	Beacons	1, 2 & 3	West Coast	Risk Response	3 & 4	West & North Coasts	Risk Response	12	Swansea Area	Buoywork	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	01/05/17	15	South Coast	Beacons	1, 2 & 3	West Coast	Risk Response	3	Sound of Harris	Buoywork	12	Swansea	Load/Discharging	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	02/05/17	15	South Coast	IOS - Local Lights	1, 2 & 3	West Coast	Risk Response	3	Sound of Harris	Buoywork	12	Plymouth	VC/ Audits /ISM	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	03/05/17	15	South Coast	IOS - Local Lights	1, 2 & 3	West Coast	Risk Response	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	NE Coast	Pax Changeover	10	Dover	Risk Response	13	Mumbles	Project Support
18	04/05/17	15	South Coast	IOS - Local Lights	2	Oban	Master Changeover	3	Sound of Harris	Master Changeover	12	SW Coast	VC/ Audits /ISM	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	05/05/17	15	South Coast	IOS - Local Lights	2	Oban	Load/Discharging	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	06/05/17	15	South Coast	IOS - Local Lights	2	Oban	Audits/ISM	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	07/05/17	15	South Coast	IOS - Local Lights	2	Oban	Audits/ISM	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	NE Coast	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	08/05/17	16	Dun Laoghaire	Load/Discharging	2	Oban	Load/Discharging	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	NE Coast	On Passage	10	Dover	Risk Response	13	Barry	Risk Response
	09/05/17	18	Maidens L/H	Helo-Ops (LH)	2	Rubha Nan Gall	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Coast	VC/ Audits /ISM	9	Harwich	Load/Discharging	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	10/05/17	18	Maidens L/H	Helo-Ops (LH)	2	Rubha Nan Gall	Helo-Ops (LH)	3	Sound of Harris	Buoywork	13	Swansea	Crewchange	9	Harwich	Crewchange	10	Dover	Risk Response	13	Mumbles	Project Support
19	11/05/17	18	Maidens L/H	Helo-Ops (LH)	2	Rubha Nan Gall	Helo-Ops (LH)	3	Sound of Harris	Buoywork	13	Swansea	Training	9	Harwich	Load/Discharging	10	Dover	Risk Response	13	Mumbles	Project Support
	12/05/17	18	Maidens L/H	Helo-Ops (LH)	3	Hyskeir	Helo-Ops (LH)	3	Sound of Harris	Buoywork	13	SW Coast	On passage	9	Wash	Buoywork	10	Dover	Risk Response	13	Mumbles	Project Support
	13/05/17	16	Dun Laoghaire	Load/Discharging	2	Skerryvore	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	14/05/17	16	South Coast	On passage	2	Skerryvore	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	15/05/17	15	South Coast	IOS - Local Lights	2	Skerryvore	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	16/05/17	15	South Coast	IOS - Local Lights	2	Dubh Artach	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Load/Discharging	13	Bristol Channel	Hydro Surveys
	17/05/17	15	Cork	Crewchange	2	Dubh Artach	Helo-Ops (LH)	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Yarmouth	Pax Changeover	10	Dover/ Ramsgate	crewchange	13	Mumbles	Project Support
20	18/05/17	21	SW Coast	Buoywork	2	Oban	Crewchange	3	Sound of Harris	Crewchange	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Harwich/ Estuary	IOS - Local Lights	13	Bristol Channel	Hydro Surveys
	19/05/17	21	SW Coast	Buoywork	2	Oban	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	20/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	21/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	22/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Hydro Surveys	13	Flatholm	Boatwork (LH)
	23/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Hydro Surveys	13	Flatholm	Boatwork (LH)
	24/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Yarmouth	Pax Changeover	10	Dover	Hydro Surveys	13	Mumbles	Project Support
21	25/05/17	21	SW Coast	Buoywork	2	Oban	Commissioners	3	Sound of Harris	Buoywork	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Hydro Surveys	13	Flatholm	Boatwork (LH)
	26/05/17	21	SW Coast	Buoywork	2	Oban	Commissioners	4	North Coast	Risk Response	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Hydro Surveys	13	Flatholm	Boatwork (LH)
	27/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	4	North Coast	Risk Response	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	28/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	4	North Coast	Risk Response	12	SW Area (K1)	Contract Work	9	Wash	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
22	29/05/17	21	SW Coast	Buoywork	1 & 2	West Coast	Commissioners	4	North Coast	Risk Response	12	SW Area (K1)	Contract Work	9	East Coast	On Passage	10	Dover	Risk Response	13	Bristol Channel	Buoywork
	30/05/17	21	SW Coast	Lighthouses	1 & 2	West Coast	Commissioners	4	North Coast	Risk Response	13	Swansea	Load/Discharging	10	Harwich	Load/Discharging	10	Dover	Risk Response	13	Bristol Channel	Buoywork
	31/05/17	21	SW Coast	Lighthouses	2	Oban	Commissioners	4	North Coast	Risk Response	13	Swansea	Crewchange	10	Harwich	Crewchange	10	Dover	Risk Response	13	Mumbles	Project Support
	01/06/17	21	SW Coast	Lighthouses	2	Oban	Master Changeover	3	Outer Hebrides	Master Changeover	13	Swansea	Load/Discharging	10	NHR-S (DW Route)	Buoywork	10	Dover	Risk Response	13	Hugo Bank	Hydro Surveys
	02/06/17	21	SW Coast	Lighthouses	2	Oban	Load/Discharging	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Harwich	MFA Tows	10	Dover	Risk Response	13	Hugo Bank	Hydro Surveys
	03/06/17	21	SW Coast	Lighthouses	2	Oban	Load/Discharging	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	NE Coast	MFA Tows	10	Dover	Risk Response	13	Barry	Risk Response
	04/06/17	21	SW Coast	Lighthouses	2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	NE Coast	MFA Tows	10	Dover	Risk Response	13	Barry	Risk Response
	05/06/17	21	SW Coast	Lighthouses	1	Sanda	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Buoywork
	06/06/17	21	SW Coast	Lighthouses	1	Sanda	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Dover	Load/Discharging	13	Bristol Channel	Buoywork
	07/06/17	21	SW Coast	Beacons	1	Sanda	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Yarmouth	Pax Changeover	10	Dover	crewchange	13	Mumbles	Project Support
23	08/06/17	21	SW Coast	Beacons	1 & 2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Estuary	Contract Buoywork	13	Mumbles	Project Support
	09/06/17	21	SW Coast	Beacons	2	McArthur's Head	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Estuary	Contract Buoywork	13	Mumbles	Project Support
	10/06/17	21	SW Coast	Hydro Surveys	2	McArthur's Head	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Estuary	Buoywork	13	Barry	Risk Response
	11/06/17	21	SW Coast	IOS - Local Lights	2	McArthur's Head	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	Wash	Buoywork	10	Estuary	Buoywork	13	Barry	Risk Response
24	12/06/17	21	SW Coast	IOS - Local Lights	2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	9	East Coast	On Passage	10	Estuary	Buoywork	13	Mumbles	Project Support
	13/06/17	21	SW Coast	IOS - Local Lights	2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	10	Harwich	Load/Discharging	10	Estuary	Buoywork	13	Mumbles	Project Support
	14/06/17	21	Foynes	Crewchange	2	Oban	Load/Discharging	3	Outer Hebrides	Buoywork	13	Swansea/ Cardiff	buoywork	10	Harwich	Pax Changeover	9	Yarmouth	Hydro Surveys	13	Mumbles	Project Support
	15/06/17	21	Foynes	Bunkering	2	Oban	Crewchange	3	Outer Hebrides	Crewchange	13	Swansea/ Cardiff	buoywork	10	Dover	Buoywork	9	Yarmouth	Hydro Surveys	13	Titan Survey	Contract Work
	16/06/17	21	SW Coast	IOS - Local Lights	2	Oban	Load/Discharging	3	Outer Hebrides	Buoywork	13	Swansea	Load/Discharging	10	Dover	Buoywork	9	Yarmouth	Hydro Surveys	13	Titan Survey	Contract Work
	17/06/17	21	SW Coast	IOS - Local Lights	2	Oban	Load/Discharging	3	Outer Hebrides	Buoywork	13	Swansea	Load/Discharging	10	Dover	Buoywork	9	Yarmouth	Hydro Surveys	13	Barry	Risk Response
	18/06/17	21	SW Coast	IOS - Local Lights	1 & 2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea/ Milford	On passage	10	Dover	Buoywork	9	Yarmouth	Hydro Surveys	13	Barry	Risk Response
	19/06/17	21	SW Coast	IOS - Local Lights	1	Chicken Rock	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	14	St Tudwals	Helo-Ops (LH)	10	Dover	Buoywork	9	Yarmouth	Hydro Surveys	13	Mumbles	Project Support
	20/06/17	21	SW Coast	IOS - Local Lights	1	Chicken Rock	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	W Wales	On passage	10,11	SE Coast	On Passage	9	Yarmouth	Hydro Surveys	13	Titan Survey	Contract Work
	21/06/17	21	SW Coast	Aquaculture	1 & 2	West Coast	On passage	3	Outer Hebrides	Buoywork	13	Swansea	Crewchange	11	Portland	Crewchange	10	River Deben	IOS - Local Lights	13	Mumbles	Project Support
25	22/06/17	21	SW Coast	Aquaculture	2	Rubha Nan Gall	Helo-Ops (LH)	3	Outer Hebrides	Buoywork	13	Swansea	Load/Discharging	11	Casquets	Helo-Ops (LH)	10	Mistley & Orwell Whiting	Load/Discharging	13	Mumbles	Project Support
	23/06/17	21	SW Coast	Aquaculture	2	Rubha Nan Gall	Helo-Ops (LH)	4	North Coast	Risk Response	13	Swansea/ Cardiff	buoywork	11	Casquets	Helo-Ops (LH)	10	Bank Whiting	Hydro Surveys	13	Mumbles	Project Support
	24/06/17	21	SW Coast	Aquaculture	2	Rubha Nan Gall	Helo-Ops (LH)	4	North Coast	Risk Response	13	Swansea/ Cardiff	buoywork	11	Casquets	Helo-Ops (LH)	10	Bank	Hydro Surveys	13	Mumbles	Project Support
	25/06/17	21	SW Coast	IL Casualty Cover	2	Oban	Load/Discharging	4	North Coast	Risk Response	13	Swansea/ Cardiff	buoywork	11	Casquets	Helo-Ops (LH)	10	Estuary	Buoywork	13	Mumbles	Project Support
	26/06/17	21	SW Coast	On passage	2	Oban	Load/Discharging	4	North Coast	Risk Response	13	Swansea/ Cardiff	buoywork	11	Channel	Buoywork	10	Estuary	Buoywork	13	Mumbles	Project Support

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
26	27/06/17	20	Galway Bay	Commissioners	2	Oban bay	Audits/ISM	4	North Coast	Risk Response	13	Mumbles	Project Support	11	Channel	Buoywork	10	Harwich	Load/Discharging	13	Mumbles	Project Support
	28/06/17	20	Galway Bay	Commissioners	2	Oban	Load/Discharging	4	North Coast	Risk Response	13	Mumbles	Project Support	11	Dartmouth	Pax Changeover	10	Harwich	crewchange	13	Mumbles	Project Support
	29/06/17	20	Galway Bay	Commissioners	2	Oban	Master Changeover	4	North Coast	Master Changeover	13	Mumbles	Project Support	11	Channel/ Wight	Buoywork	10	Harwich/ Estuary	Buoywork	13	Mumbles	Project Support
	30/06/17	20	Galway Bay	Commissioners	2	Oban	Load/Discharging	4	North Coast	Risk Response	13	Swansea	Load/Discharging	11	Channel/ Wight	Buoywork	10	Harwich/ Estuary	Buoywork	13	Mumbles	Project Support
	01/07/17	20	Galway	Commissioners	2	Oban	Load/Discharging	4	North Coast	Risk Response	13	Swansea	Load/Discharging	11	Channel/ Wight	Buoywork	10	Harwich/ Estuary	Buoywork	13	Bristol Channel	Risk Response
	02/07/17	20	Galway	Commissioners	2	West Coast	On passage	4	North Coast	Risk Response	13	SW Coast	On passage	11	Channel/ Wight	Buoywork	10	Harwich/ Estuary	Buoywork	13	Bristol Channel	Risk Response
	03/07/17	20-18	W- NE Coasts	On passage	3	Ushenish	Helo-Ops (LH)	4 & 6	Orkney & Shetland	Buoywork	11	S Coast	On passage	12	Penzance	Buoywork	10	Harwich/ Estuary	Buoywork	13	Bristol Channel	On Passage
	04/07/17	18	Maidens L/H	Helo-Ops (LH)	3	Ushenish	Helo-Ops (LH)	4 & 6	Orkney & Shetland	Buoywork	10	E Coast	On passage	12	Penzance	Buoywork	10	Harwich/ Estuary	Buoywork	14	W Wales	On Passage
	05/07/17	20	West Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	4 & 6	Orkney & Shetland	Buoywork	9	Wash	MFA Tows	12	Plymouth	Pax Changeover	10	Dover	Contract Buoywork	14	N Wales	Contract Work
27	06/07/17	20	West Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	4 & 6	Orkney & Shetland	Buoywork	9	Wash	MFA Tows	12	Penzance	Contract Buoywork	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	07/07/17	20	West Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	4 & 6	Orkney & Shetland	Buoywork	9	Wash	MFA Tows	12	Penzance	Contract Buoywork	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	08/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Risk Response	4 & 6	Orkney & Shetland	Buoywork	10	Harwich Haven	Contract Work	12	Penzance	Contract Buoywork	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	09/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Risk Response	4 & 6	Orkney & Shetland	Buoywork	10	Harwich Haven	Contract Work	12	Penzance	Contract Buoywork	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	10/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Risk Response	4 & 6	Orkney & Shetland	Buoywork	10	Harwich Haven	Contract Work	12	SW Coast	On Passage	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	11/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Risk Response	4 & 6	Orkney & Shetland	Buoywork	10	Harwich	Load/Discharging	13	Swansea	Load/Discharging	10	Dover/ Estuary	Buoywork	14	N Wales	Contract Work
	12/07/17	20	Galway Bay	Crewchange	2 & 3	West Coast	Risk Response	4 & 6	Orkney & Shetland	Buoywork	10	Harwich	Crewchange	13	Swansea	Crewchange	10	Dover/ Estuary	Risk Response	14	N Wales	Contract Work
28	13/07/17	20	West Coast	Buoywork	2	Oban	Crewchange	4 & 6	Orkney & Shetland	Crewchange	10	Harwich	Load/Discharging	13	Swansea	Load/Discharging	10	Dover/ Estuary	Risk Response	14	N Wales	Contract Work
	14/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Estuary	buoywork	13	Swansea	Buoywork	10	Dover/ Estuary	Risk Response	14	N Wales	Contract Work
	15/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Estuary	buoywork	13	Swansea	Buoywork	10	Dover/ Estuary	Risk Response	14	N Wales	Contract Work
	16/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Estuary	buoywork	13	Swansea	Buoywork	10	Dover/ Estuary	Risk Response	14	N Wales	Contract Work
	17/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Estuary	buoywork	13	Lundy	Helo-Ops (LH)	10	Estuary	Risk Response	14	Mid Wales	Contract Work
	18/07/17	20	West Coast	Buoywork	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Estuary	buoywork	12	Penzance	Risk Response	10	Harwich	Load/Discharging	14	Mid Wales	Contract Work
	19/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Royal Sov LH	Boatwork (LH)	12	Plymouth	Pax Changeover	10	Harwich	crewchange	14	Mid Wales	Contract Work
29	20/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Royal Sov LH	Helo-Ops (LH)	12	Penzance	Risk Response	9	Yarmouth	Hydro Surveys	13	Bristol Channel	On Passage
	21/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	4 & 6	Orkney & Shetland	Buoywork	10	Dover	Buoywork	12	Eddystone	Boatwork (LH)	9	Yarmouth	Hydro Surveys	12	Raymond Bcn	Project Support
	22/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	10	Dover	Buoywork	12	Eddystone	Boatwork (LH)	9	Yarmouth	Hydro Surveys	12	Raymond Bcn	Project Support
	23/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	10	Dover	Buoywork	12	Eddystone	Boatwork (LH)	9	Yarmouth	Hydro Surveys	12	Raymond Bcn	Project Support
	24/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	10	Dover	Buoywork	12	Penzance	Risk Response	9	Yarmouth	Hydro Surveys	12	Raymond Bcn	Project Support
	25/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	10	Royal Sov LH	Helo-Ops (LH)	12	Penzance	Risk Response	9	Yarmouth	Hydro Surveys	12	Raymond Bcn	Project Support

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
30	26/07/17	20	West Coast	Lighthouses	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	11	Casquets	Helo-Ops (LH)	12	Plymouth	Pax Changeover	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	27/07/17	20	West Coast	Beacons	2	Oban	Master Changeover	7 & 8	East Coast	Master Changeover	11	Channel/ Wight	On passage	12	Plymouth	Contract Buoywork	10	Dover	Hydro Surveys	12	Raymond Bcn	Project Support
	28/07/17	20	West Coast	Beacons	3	West Coast	Commissioners	4	Stromness	Commissioners	11	Wight	Buoywork	12	Eddystone	Helo-Ops (LH)	10	Dover	Hydro Surveys	12	Raymond Bcn	Project Support
	29/07/17	20	West Coast	Beacons	3	West Coast	Commissioners	4	Stromness	Commissioners	11	Wight	Buoywork	12	Penzance	Risk Response	10	Dover	Hydro Surveys	12	Raymond Bcn	Project Support
	30/07/17	20	West Coast	Beacons	3	West Coast	Commissioners	4	Stromness	Commissioners	11	Wight	Buoywork	12	Penzance	Risk Response	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	31/07/17	20	West Coast	Beacons	3	Rona	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	11	Wight	Corporate	12	SW Coast	On Passage	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	01/08/17	20	West Coast	Hydro Surveys	3	Rona	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	11	Wight	Corporate	13	Swansea	Load/Discharging	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	02/08/17	20	West Coast	Hydro Surveys	3	Rona	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	11	Southampton	Crewchange	13	Swansea	Crewchange	10	Dover	Risk Response	12	Raymond Bcn	Project Support
31	03/08/17	19	Inishtrahull	Helo-Ops (LH)	3	West Coast	Risk Response	7 & 8	East Coast	Buoywork	11	SE Coast	On passage	13	W Wales	On Passage	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	04/08/17	20	West Coast	Hydro Surveys	3	West Coast	Risk Response	7 & 8	East Coast	Buoywork	11	Harwich	Load/Discharging	14	Holyhead/ Milford	Risk Response	10	Dover	Risk Response	12	Raymond Bcn	Project Support
	05/08/17	20	West Coast	IOS - Local Lights	3	West Coast	Risk Response	7 & 8	East Coast	Buoywork	11	Yarmouth	Buoywork	14	Holyhead/ Milford	Risk Response	10	Dover	Risk Response	12	Penzance	Contract Buoywork
	06/08/17	20	West Coast	IOS - Local Lights	3	West Coast	Risk Response	7 & 8	East Coast	Buoywork	10	Yarmouth	Buoywork	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Penzance / SW Coast	Contract Buoywork
	07/08/17	20	West Coast	IOS - Local Lights	3	West Coast	Risk Response	7 & 8	East Coast	Buoywork	9	Yarmouth	Buoywork	13	Smalls	Helo-Ops (LH)	10	S Dover/ Brighton	Risk Response	12	Penzance / SW Coast	Contract Buoywork
	08/08/17	20-15	West Coast	On passage	4	West Coast	On passage	7 & 8	East Coast	Buoywork	9	Yarmouth	Buoywork	13	Smalls	Helo-Ops (LH)	10	Ramsgate	Load/Discharging	12	Penzance / SW Coast	Contract Buoywork
	09/08/17	X	DD&R	Crewchange	8	East Coast	On passage	7 & 8	East Coast	Buoywork	9	Yarmouth	Buoywork	13	Milford	Pax Changeover	10	Ramsgate	crewchange	12	Penzance / SW Coast	Contract Buoywork
32	10/08/17	X	DD&R	DD&R	8	Dundee	Crewchange	7 & 8	East Coast	Crewchange	9	NE Coast	On passage	13	Smalls	Helo-Ops (LH)	10	S Dover/ Brighton	Risk Response	12	Penzance / SW Coast	Contract Buoywork
	11/08/17	X	DD&R	DD&R	8	Bell Rock	Contract Work	7 & 8	East Coast	Buoywork	9	NE Coast	On passage	13	Smalls	Helo-Ops (LH)	10	S Dover/ Brighton	Risk Response	12	Penzance / SW Coast	Contract Buoywork
	12/08/17	X	DD&R	DD&R	8	Bell Rock	Contract Work	7 & 8	East Coast	Buoywork	8	Dundee	Load/Discharging	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Penzance / SW Coast	Contract Buoywork
	13/08/17	X	DD&R	DD&R	8	Bell Rock	Contract Work	7 & 8	East Coast	Buoywork	8	Dundee	Load/Discharging	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Coast	Contract Buoywork
	14/08/17	X	DD&R	DD&R	8	East Coast	On passage	9	East Coast TH waters	Risk Response	7	Scot NE Coast	On passage	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Penzance	Risk Response
	15/08/17	X	DD&R	DD&R	4	West Coast	On passage	9	East Coast TH waters	Risk Response	5	Copinsay	Helo-Ops (LH)	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Penzance	Risk Response
	16/08/17	X	DD&R	DD&R	2	Oban	Bunkering	9	East Coast TH waters	Risk Response	5	Copinsay	Helo-Ops (LH)	14	Holyhead	Pax Changeover	10	S Dover/ Brighton	Risk Response	12	Penzance	Risk Response
33	17/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	5	Copinsay	Helo-Ops (LH)	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Penzance	Risk Response
	18/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	5	Copinsay	Helo-Ops (LH)	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	19/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	5	Copinsay	Helo-Ops (LH)	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	20/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	7	Scot NE Coast	On Passage	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	21/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	8	Bell Rock	Helo-Ops (LH)	14	Holyhead/ Milford	Risk Response	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	22/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	8	Bell Rock	Helo-Ops (LH)	14	Holyhead	Load/Discharging	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	23/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	8	Dundee	Crewchange	14	Holyhead	Crewchange	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
34	24/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Master Changeover	8	Dundee	Load/Discharging	14	Irish Sea	IOS - Local Lights	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	25/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	7	Scot NE Coast	Risk Response	14	Irish Sea	IOS - Local Lights	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	26/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	7	Scot NE Coast	Risk Response	14	Irish Sea	IOS - Local Lights	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	27/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	7	Scot NE Coast	Risk Response	14	Irish Sea	IOS - Local Lights	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	28/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	9	East Coast TH waters	Risk Response	6	Scot NE Coast	Risk Response	14	Irish Sea	IOS - Local Lights	10	S Dover/ Brighton	Risk Response	12	Cressar	Project Support
	29/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	6	Scot NE Coast	On passage	14	Irish Sea	IOS - Local Lights	10	Dover/ Ramsgate	Load/Discharging	12	Cressar	Project Support
	30/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	6	Fugla Ness	Helo-Ops (LH)	14	Holyhead	Pax Changeover	10	Dover/ Ramsgate	crewchange	12	Cressar	Project Support
35	31/08/17	X	DD&R	DD&R	2 & 3	West Coast	Contract Work	7 & 8	East Coast	Buoywork	6	Fugla Ness	Helo-Ops (LH)	14	Holyhead	On Passage	10	Estuary	Hydro Surveys	12	Cressar	Project Support
	01/09/17	X	DD&R	DD&R	2	West Coast	On passage	7 & 8	East Coast	Buoywork	6	Fugla Ness	Helo-Ops (LH)	13	Milford	Buoywork	10	Estuary	Hydro Surveys	12	Cressar	Project Support
	02/09/17	X	DD&R	DD&R	5	Pentland Skerries	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	7	Scot NE Coast	On passage	13	Milford	Buoywork	10	Estuary	Hydro Surveys	12	Cressar	Project Support
	03/09/17	X	DD&R	DD&R	5	Pentland Skerries	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	8	Dundee	Load/Discharging	13	Milford	Buoywork	10	Estuary	Risk Response	12	Cressar	Project Support
	04/09/17	X	DD&R	DD&R	3	Neist Point	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	9	Scot NE Coast	On passage	13	Smalls	Helo-Ops (LH)	10	Estuary	Hydro Surveys	12	Cressar	Project Support
	05/09/17	X	DD&R	DD&R	3	Neist Point	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	9	Wash	buoywork	14	Skerries/S Stack	Helo-Ops (LH)	10	Estuary	Hydro Surveys	12	Penzance	Load/Discharging
	06/09/17	X	DD&R	Crewchange	3	Neist Point	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	9	Wash	buoywork	13	Milford	Pax Changeover	10	Estuary	Hydro Surveys	12	Penzance	Risk Response
36	07/09/17	17	At sea	On passage	3	Stornoway	Crewchange	7 & 8	East Coast	Crewchange	9	Wash	buoywork	12	Wolf Rock	Helo-Ops (LH)	10	Estuary	Hydro Surveys	13	SW Coast	On Passage
	08/09/17	20	NW Coast	IOS - Local Lights	3	Neist Point	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	9	Wash	buoywork	12	Bishop Rock /Round Island	Helo-Ops (LH)	10	Estuary	Risk Response	13	SW Coast	On Passage
	09/09/17	20	NW Coast	IOS - Local Lights	3	Neist Point	Helo-Ops (LH)	7 & 8	East Coast	Buoywork	9	Wash	buoywork	11	Sevenstones	MFA Servicing	10	Estuary	Hydro Surveys	13	Barry	Risk Response
	10/09/17	20	NW Coast	IOS - Local Lights	2	West Coast	On passage	7 & 8	East Coast	Buoywork	9	Wash	buoywork	11	Sevenstones	MFA Servicing	10	Estuary	Hydro Surveys	13	Barry	Risk Response
	11/09/17	20	NW Coast	IOS - Local Lights	1	Sanda	Helo-Ops (LH)	8	East Coast	Self Refit	9	East Coast	On Passage	11	Sevenstones	MFA Servicing	10	Estuary	Risk Response	13	Titan Survey	Contract Work
	12/09/17	20	NW Coast	IOS - Local Lights	1	Sanda	Helo-Ops (LH)	8	East Coast	Self Refit	10	Harwich	Load/Discharging	11	Portland	Load/Discharging	10	Estuary	Risk Response	13	Titan Survey	Contract Work
	13/09/17	20	NW Coast	IOS - Local Lights	1	Sanda	Helo-Ops (LH)	8	East Coast	Self Refit	10	Harwich	Crewchange	11	Portland	Crewchange	10	Estuary	Risk Response	13	Bristol Channel	Risk Response
37	14/09/17	20	NW Coast	IOS - Local Lights	1	Sanda	Helo-Ops (LH)	8	East Coast	Self Refit	10	Harwich	Load/Discharging	11	Portland	On Passage	10	Estuary	Risk Response	13	Bristol Channel	Risk Response
	15/09/17	20	NW Coast	Aquaculture	2	Oban	Load/Discharging	8	East Coast	Self Refit	11	Wight	Hydro Surveys	10	Dover	MFA Servicing	10	Estuary	Risk Response	13	Bristol Channel	Risk Response
	16/09/17	20	NW Coast	Aquaculture	2	Oban	Load/Discharging	8	East Coast	Self Refit	11	Wight	Hydro Surveys	10	Dover	MFA Servicing	10	Estuary	Risk Response	13	Barry	Risk Response
	17/09/17	19-17	North East Coast	On passage	2 & 3	West Coast	On passage	8	East Coast	Self Refit	11	Wight	Hydro Surveys	10	Dover	MFA Servicing	10	Estuary	Risk Response	13	Barry	Risk Response
	18/09/17	17	Rockabill	Helo-Ops (LH)	3	Barra Head	Helo-Ops (LH)	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Estuary	Risk Response	13	Bristol Channel	Hydro Surveys
	19/09/17	17	Rockabill	Helo-Ops (LH)	3	Barra Head	Helo-Ops (LH)	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Harwich	Load/Discharging	13	Bristol Channel	Hydro Surveys
	20/09/17	20	NW Coast	Aquaculture	3	Barra Head	Helo-Ops (LH)	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	Pax Changeover	10	Harwich	crewchange	13	Bristol Channel	Hydro Surveys
38	21/09/17	20	NW Coast	Aquaculture	3	Stornoway	Master Changeover	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Bristol Channel	Hydro Surveys

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	22/09/17	19	North Coast	Buoywork	4	Cape Wrath	Helo-Ops (LH)	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Bristol Channel	Hydro Surveys
	23/09/17	19	North Coast	Buoywork	3	West Coast	On passage	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Barry	Risk Response
	24/09/17	19	North Coast	Buoywork	3	Flannans	Risk Response	8	East Coast	Self Refit	11	Wight	Buoywork	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Barry	Risk Response
	25/09/17	19	North Coast	Buoywork	3	Flannans	Helo-Ops (LH)	8	East Coast	Self Refit	11	Channel	MFA Servicing	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Bristol Channel	Hydro Surveys
	26/09/17	19	North Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	8	East Coast	Self Refit	11	Channel	MFA Servicing	10	Dover	MFA Servicing	10	Harwich/ Yarmouth	Risk Response	13	Bristol Channel	Hydro Surveys
	27/09/17	19	North Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	8	East Coast	Self Refit	11	Channel	MFA Servicing	10	Margate	Pax Changeover	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
39	28/09/17	19	North Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	8	East Coast	Self Refit	11	Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	29/09/17	19	North Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	8	East Coast	Self Refit	11	Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Risk Response	13	Bristol Channel	Hydro Surveys
	30/09/17	19	North Coast	Buoywork	3	Ushenish	Helo-Ops (LH)	7 & 8	East Coast	On passage	11	Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Risk Response	13	Barry	Risk Response
	01/10/17	19	North Coast	Buoywork	3	Rona	Helo-Ops (LH)	3 & 4	East Coast	On passage	11	Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Risk Response	13	Barry	Risk Response
	02/10/17	19	North Coast	Lighthouses	3	Rona	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	11	Channel	Buoywork	10	Harwich	MFA Servicing	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	03/10/17	19	North Coast	Lighthouses	3	Rona	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	11	Sark	Helo-Ops (LH)	10	Harwich	Load/Discharging	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	04/10/17	18	Belfast	Crewchange	2	Oban	Load/Discharging	1 & 2	Clyde area	Buoywork	11	Portland	Crewchange	10	Harwich	Crewchange	10	Dover	Risk Response	13	Bristol Channel	Risk Response
40	05/10/17	19	North Coast	Lighthouses	2	Oban	Crewchange	1 & 2	Clyde area	Crewchange	11	Sark	Helo-Ops (LH)	10	Harwich	Load/Discharging	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	06/10/17	19	North Coast	Lighthouses	2	Oban	Load/Discharging	1 & 2	Clyde area	Buoywork	11	Sark	Helo-Ops (LH)	10	Harwich	Buoywork	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	07/10/17	19	North Coast	Lighthouses	2	Oban	Load/Discharging	1 & 2	Clyde area	Buoywork	11	Sark	Helo-Ops (LH)	10	Harwich	Buoywork	10	Dover	Risk Response	13	Barry	Risk Response
	08/10/17	19	North Coast	Lighthouses	2, 3 & 4	West Coast	On passage	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Buoywork	11	Wight	Buoywork	13	Barry	Risk Response
	09/10/17	19	North Coast	Beacons	4 & 6	North Coast	On passage	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Buoywork	11	Wight	Buoywork	13	Bristol Channel	Risk Response
	10/10/17	19	North Coast	Beacons	6	Shetland	IOS - Local Lights	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Buoywork	11	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
	11/10/17	19	North Coast	Beacons	6	Shetland	IOS - Local Lights	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Pax Changeover	11	Cowes	crewchange	13	Bristol Channel	Risk Response
41	12/10/17	19	North Coast	Beacons	6	Shetland	IOS - Local Lights	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Load/Discharging	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
	13/10/17	19	North Coast	Beacons	6	Out Skerries	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	Harwich	Load/Discharging	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
	14/10/17	19	North Coast	Beacons	6	Muckle Flugga	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	East Coast	On Passage	11	Cowes	Buoywork	13	Barry	Risk Response
	15/10/17	19	North Coast	Beacons	6	Muckle Flugga	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	10	East Coast	On Passage	11	Cowes	Buoywork	13	Barry	Risk Response
	16/10/17	19	North Coast	Beacons	6	Fugla Ness	Helo-Ops (LH)	1 & 2	Clyde area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
	17/10/17	19-16	NE Coast	On passage	6	Fugla Ness	Helo-Ops (LH)	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
	18/10/17	16	Dun Laoghaire	Commissioners	6	Fugla Ness	Helo-Ops (LH)	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
42	19/10/17	18	Belfast Lough	Commissioners	6	Lerwick	Master Changeover	2	Oban area	Master Changeover	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Bristol Channel	Risk Response
	20/10/17	18	Belfast Lough	Commissioners	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Bristol Channel	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	21/10/17	19	North Coast	Hydro Surveys	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Barry	Risk Response
	22/10/17	19	North Coast	IOS - Local Lights	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Buoywork	13	Barry	Risk Response
	23/10/17	19	North Coast	IOS - Local Lights	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Dover	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	24/10/17	19	North Coast	IOS - Local Lights	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Harwich	Load/Discharging	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	25/10/17	19	North Coast	IOS - Local Lights	6	Shetland	IOS - Local Lights	2	Oban area	Buoywork	10	Harwich	Crewchange	9	Tees TBC	Crewchange	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
43	26/10/17	19	North Coast	Aquaculture	4 & 6	Northern Isles	On passage	2	Oban area	Buoywork	10	Harwich	Load/Discharging	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	27/10/17	19	North Coast	Aquaculture	4	Sule Skerry	Helo-Ops (LH)	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	28/10/17	18	NE Coast	Buoywork	4	Sule Skerry	Helo-Ops (LH)	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Barry	Risk Response
	29/10/17	18	NE Coast	Buoywork	7	East Coast	On passage	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Barry	Risk Response
	30/10/17	18	NE Coast	Buoywork	7	Invergordon	Load/Discharging	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	31/10/17	18	NE Coast	Buoywork	7	Invergordon	Load/Discharging	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
	01/11/17	18	Belfast	Crewchange	7	Invergordon	Load/Discharging	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	crewchange	13	Bristol Channel	Risk Response
44	02/11/17	18	NE Coast	Buoywork	7	Invergordon	Crewchange	2	Oban area	Crewchange	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	03/11/17	18	NE Coast	Buoywork	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	04/11/17	18	NE Coast	Buoywork	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Barry	Risk Response
	05/11/17	18	NE Coast	Buoywork	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Barry	Risk Response
	06/11/17	18	NE Coast	Buoywork	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	07/11/17	19	Inishtrahull	Helo-Ops (LH)	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	08/11/17	19	Inishtrahull	Helo-Ops (LH)	6, 7 & 8	North Sea	Rig Inspections	2	Oban area	Buoywork	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
45	09/11/17	19	Inishtrahull	Helo-Ops (LH)	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	10/11/17	18	NE Coast	Lighthouses	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Bristol Channel	Risk Response
	11/11/17	18	NE Coast	Lighthouses	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	IOS - Local Lights	13	Barry	Risk Response
	12/11/17	18	NE Coast	Beacons	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	10	Estuary	Buoywork	9	Tees TBC	DD&R	11	Cowes	Risk Response	13	Barry	Risk Response
	13/11/17	18	NE Coast	Beacons	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	11	Estuary	Buoywork	10	Harwich	Load/Discharging	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	14/11/17	18	NE Coast	IOS - Local Lights	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	11	Harwich	Load/Discharging	10	Harwich	Load/Discharging	11	Cowes	Risk Response	13	Bristol Channel	Risk Response
	15/11/17	18	NE Coast	IOS - Local Lights	6, 7 & 8	North Sea	Rig Inspections	1 to 4	West Coast	IOS - Local Lights	11	Harwich	Crewchange	10	Harwich	Crewchange	10	Cowes	Buoywork	13	Bristol Channel	Risk Response
46	16/11/17	18	NE Coast	IOS - Local Lights	2	Oban	Master Changeover	1 to 4	West Coast	Master Changeover	11	Harwich	Load/Discharging	9	East Coast	On passage	10	Cowes	Buoywork	13	Bristol Channel	Risk Response
	17/11/17	18	NE Coast	IOS - Local Lights	3	Barra Head	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth	IOS - Local Lights	10	Cowes	Buoywork	13	Bristol Channel	Risk Response
	18/11/17	18	NE Coast	Aquaculture	3	Barra Head	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth	IOS - Local Lights	10	Cowes	Buoywork	13	Barry	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	19/11/17	17	East Coast	Buoywork	3	Barra Head	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth	IOS - Local Lights	10	Cowes	Buoywork	13	Barry	Risk Response
	20/11/17	17	East Coast	Buoywork	3	Barra Head	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth	IOS - Local Lights	10	Cowes	Buoywork	13	Bristol Channel	Risk Response
	21/11/17	17	East Coast	Buoywork	3 & 4	West Coast	On passage	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth	IOS - Local Lights	10	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
	22/11/17	17	East Coast	Buoywork	4	North Rona	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth/ NE Coast	IOS - Local Lights	10	Cowes	crewchange	13	Bristol Channel	Risk Response
47	23/11/17	17	East Coast	Buoywork	4	North Rona	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth/ NE Coast	IOS - Local Lights	10	Cowes	Risk Response	13	Bristol Channel	Risk Response
	24/11/17	17	East Coast	Buoywork	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth/ NE Coast	IOS - Local Lights	10	Cowes	Risk Response	13	Bristol Channel	Risk Response
	25/11/17	17	East Coast	Buoywork	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth/ NE Coast	IOS - Local Lights	10	Cowes	Risk Response	13	Barry	Risk Response
	26/11/17	17	East Coast	Lighthouses	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	Yarmouth/ NE Coast	IOS - Local Lights	10	Cowes	Risk Response	13	Barry	Risk Response
	27/11/17	17	East Coast	Lighthouses	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	SE Coast	On passage	13	Newlyn	Risk Response
	28/11/17	17	East Coast	Lighthouses	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Thames River	IOS - Local Lights	13	Newlyn	Risk Response
	29/11/17	16	Dun Laoghaire	Crewchange	5	Copinsay	Helo-Ops (LH)	1 to 4	West Coast	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Dover	Risk Response	13	Newlyn	Risk Response
48	30/11/17	17	East Coast	Lighthouses	5	Kirkwall	Crewchange	1 to 4	West Coast	Crewchange	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Dover	Risk Response	13	Newlyn	Risk Response
	01/12/17	17	East Coast	Beacons	2 & 3	West Coast	On passage	4 to 8	North & East Coasts	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Dover	Risk Response	13	Newlyn	Risk Response
	02/12/17	17	East Coast	IOS - Local Lights	2 & 3	West Coast	On passage	4 to 8	North & East Coasts	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Dover	Risk Response	13	Barry	Risk Response
	03/12/17	17	East Coast	IOS - Local Lights	2	Oban	Load/Discharging	4 to 8	North & East Coasts	IOS - Local Lights	11	Wight	Buoywork	9	NE Coast	IOS - Local Lights	10	Dover	Risk Response	13	Barry	Risk Response
	04/12/17	17	East Coast	IOS - Local Lights	2	Oban	Load/Discharging	4 to 8	North & East Coasts	IOS - Local Lights	11	Estuary/ Harwich	Buoywork	9	NE Coast	On Passage	10	Dover	Risk Response	13	Bristol Channel	Risk Response
	05/12/17	17	East Coast	IOS - Local Lights	2	Oban	Load/Discharging	4 to 8	North & East Coasts	IOS - Local Lights	11	Portland	Load/Discharging	10	Harwich	Load/Discharging	9	Dover	Risk Response	13	Titan Survey	Contract Work
	06/12/17	17	East Coast	IOS - Local Lights	2	Oban	Training	4 to 8	North & East Coasts	IOS - Local Lights	11	Portland	Crewchange	10	Harwich	Crewchange	9	Dover	Risk Response	13	Titan Survey	Contract Work
49	07/12/17	17	East Coast	IOS - Local Lights	2	Oban	Training	4 to 8	North & East Coasts	IOS - Local Lights	11	Portland	Load/Discharging	10	Harwich	Load/Discharging	9	Dover	Risk Response	13	Bristol Channel	Risk Response
	08/12/17	17	East Coast	IL Casualty Cover	2	Oban	Training	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	09/12/17	17	East Coast	IL Casualty Cover	2	Oban	Training	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Barry	Risk Response
	10/12/17	17	East Coast	IL Casualty Cover	2	West Coast	On passage	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Barry	Risk Response
	11/12/17	17	East Coast	IL Casualty Cover	3	Neist Point	Helo-Ops (LH)	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	12/12/17	17	East Coast	IL Casualty Cover	3	Neist Point	Helo-Ops (LH)	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	10	Lowestoft	Load/Discharging	13	Bristol Channel	Risk Response
	13/12/17	17	East Coast	IL Casualty Cover	3	Neist Point	Helo-Ops (LH)	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	10	Lowestoft	crewchange	13	Bristol Channel	Risk Response
50	14/12/17	17	East Coast	IL Casualty Cover	3	Stornoway	Master Changeover	4 to 8	North & East Coasts	Master Changeover	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	15/12/17	17	East Coast	IL Casualty Cover	3	Neist Point	Helo-Ops (LH)	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	16/12/17	17	East Coast	IL Casualty Cover	3	Neist Point	Helo-Ops (LH)	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance Channel/	Buoywork	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Barry	Risk Response
	17/12/17	17	East Coast	IL Casualty Cover	2	Oban	Load/Discharging	4 to 8	North & East Coasts	IOS - Local Lights	11	Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Barry	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	18/12/17	17	East Coast	IL Casualty Cover	2	Oban	Load/Discharging	4 to 8	North & East Coasts	IOS - Local Lights	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	19/12/17	17	East Coast	IL Casualty Cover	2 & 3	West Coast	On passage	4 to 8	North & East Coasts	On passage	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	20/12/17	17	East Coast	IL Casualty Cover	7 & 8	East Coast	On passage	2 & 3	West Coast	On passage	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
51	21/12/17	17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	22/12/17	17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Bristol Channel	Risk Response
	23/12/17	17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Channel/ Penzance	Risk Response	10	Estuary	Buoywork	9	Yarmouth	Risk Response	13	Barry	Risk Response
	24/12/17	16	Dun Laoghaire	Load/Discharging	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Portland	Personnel Moves	10	Harwich	Personnel Moves	10	Dover	Personnel Moves	13	Barry	Risk Response
	25/12/17	16	Dun Laoghaire	Load/Discharging	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Portland	Personnel Moves	10	Harwich	Personnel Moves	10	Dover	Personnel Moves	13	Bristol Channel	Risk Response
	26/12/17	16	Dun Laoghaire	Load/Discharging	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Portland	Personnel Moves	10	Harwich	Personnel Moves	10	Dover	Personnel Moves	13	Bristol Channel	Risk Response
	27/12/17	16	Dun Laoghaire	Crewchange	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	11	Portland	Crewchange	10	Harwich	Crewchange	11	Wight	Risk Response	13	Bristol Channel	Risk Response
52	28/12/17	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Crewchange	2	Oban	Crewchange	11	South Coast	On Passage	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	29/12/17	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	30/12/17	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	31/12/17	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	01/01/18	16	Dublin	Audits/ISM	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	02/01/18	16	Dublin	Audits/ISM	7 & 8	East Coast	IOS - Local Lights	2	Oban	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
	03/01/18	16	Dublin	Audits/ISM	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Cowes	crewchange	13	Bristol Channel	Risk Response
1	04/01/18	16	Dublin	Audits/ISM	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	05/01/18	16	Dublin	Audits/ISM	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	06/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	12	Penzance	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	07/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	12	SW Coast	On Passage	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	08/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	11	Channel	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bideford	Hydro Surveys
	09/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	11	Sark	Helo-Ops (LH)	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bideford	Hydro Surveys
	10/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	IOS - Local Lights	1 to 4	West Coast	Risk Response	11	Sark	Helo-Ops (LH)	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bideford	Hydro Surveys
2	11/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Master Changeover	1 to 4	West Coast	Master Changeover	11	Portland/ Plymouth	Load/Discharging	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bideford	Hydro Surveys
	12/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	11	S Coast	On Passage	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bideford	Hydro Surveys
	13/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Bristol Channel	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	14/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Bristol Channel	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	15/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Bristol Channel	Buoywork	10	Estuary	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	16/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Load/Discharging	10	Harwich	Load/Discharging	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	17/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Crewchange	10	Harwich	Crewchange	11	Wight	Risk Response	13	Bristol Channel	Risk Response
3	18/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Load/Discharging	9	Harwich	Load/Discharging	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	19/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	20/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	21/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	22/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	23/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
4	24/01/18	16	Dun Laoghaire	Crewchange	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Cowes	crewchange	13	Bristol Channel	Risk Response
	25/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Crewchange	1 to 4	West Coast	Crewchange	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	26/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	27/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	28/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	29/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	30/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	31/01/18	16, 17	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
5	01/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	02/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	03/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	04/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	05/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Cardiff	Buoywork	9	Yarmouth	On Passage	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	06/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Load/Discharging	10	Harwich	Load/Discharging	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	07/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Crewchange	10	Harwich	Crewchange	11	Wight	Risk Response	13	Bristol Channel	Risk Response
6	08/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Master Changeover	1 to 4	West Coast	Master Changeover	12	Wolf Rock	Helo-Ops (LH)	10	Harwich	Load/Discharging	11	Channel/ Penzance	Risk Response	13	Bristol Channel	Risk Response
	09/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	12	S Coast	On Passage	10	Estuary	Buoywork	11	Channel/ Penzance	Risk Response	13	Bristol Channel	Risk Response
	10/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Channel/ Penzance	Risk Response	13	Barry	Risk Response
	11/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Channel/ Penzance	Risk Response	13	Barry	Risk Response
	12/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Channel/ Penzance	Risk Response	13	Bristol Channel	Risk Response
	13/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Portland	Load/Discharging	13	Bristol Channel	Risk Response

Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
	14/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Portland	crewchange	13	Bristol Channel	Risk Response
7	15/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	16/02/18	16	East Coast	Buoywork	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	17/02/18	16	East Coast	Lighthouses	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Barry	Risk Response
	18/02/18	16	East Coast	Lighthouses	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Barry	Risk Response
	19/02/18	16	East Coast	Lighthouses	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	20/02/18	16	Dublin	Bunkering	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	21/02/18	16	Dun Laoghaire	Crewchange	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
8	22/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Self Refit	4	North Coast	Crewchange	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	23/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	24/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Barry	Risk Response
	25/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Self Refit	4	North Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Barry	Risk Response
	26/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Wight	Buoywork	10	Estuary	Buoywork	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	27/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Southampton	Load/Discharging	10	Harwich	Load/Discharging	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
	28/02/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Southampton	Crewchange	10	Harwich	Crewchange	11	Penzance Channel/	Risk Response	13	Bristol Channel	Risk Response
9	01/03/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Southampton	Load/Discharging	10	Harwich	Load/Discharging	11	Penzance	Risk Response	13	Bristol Channel	Risk Response
	02/03/18	16	East Coast	Hydro Surveys	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	03/03/18	16	East Coast	IOS - Local Lights	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	04/03/18	16	East Coast	IOS - Local Lights	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	05/03/18	16	East Coast	IOS - Local Lights	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
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10	08/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Master Changeover	1 to 4	West Coast	Master Changeover	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	09/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
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Tri GLA CO-ORDINATED ANNUAL PLAN 2017-18 SUMMARY

Week No.	Date	Granuaile			Pharos			Pole Star			Galatea			Patricia			Alert			Mair		
		GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?	GLA Area	Where is the ship?	What is it doing?
11	15/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	16/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	17/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	18/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	19/03/18	16	East Coast	IL Casualty Cover	7 & 8	East Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
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	21/03/18	16	Dun Laoghaire	Crewchange	5	North Coast	Risk Response	1 to 4	West Coast	Risk Response	13	Swansea	Crewchange	10	Harwich	Crewchange	11	Wight	Risk Response	13	Bristol Channel	Risk Response
12	22/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Crewchange	1 to 4	West Coast	Crewchange	13	Swansea	Load/Discharging	10	Harwich	Load/Discharging	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	23/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	24/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	25/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	26/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	27/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Cowes	Load/Discharging	13	Bristol Channel	Risk Response
	28/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Cowes	crewchange	13	Bristol Channel	Risk Response
13	29/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	30/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Bristol Channel	Risk Response
	31/03/18	16	East Coast	IL Casualty Cover	5	Orkney	Helo-Ops (LH)	1 to 4	West Coast	Risk Response	13	Swansea	Buoywork	10	Harwich	Buoywork	11	Wight	Risk Response	13	Barry	Risk Response
	01/04/18										13	Swansea	Buoywork	10			11	Wight	Risk Response	13	Barry	Risk Response

Work Package 2 – Coordinated Planning

Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan

GLA Fleet Plan - Final

GLA Fleet Plan 2017-18

Final

Planning Zones

Zone 1 NW Coast Scotland- including GLA Area 4 West of Cape Wrath

Zone 2 NE Coast Scotland

Zone 3 East coast England

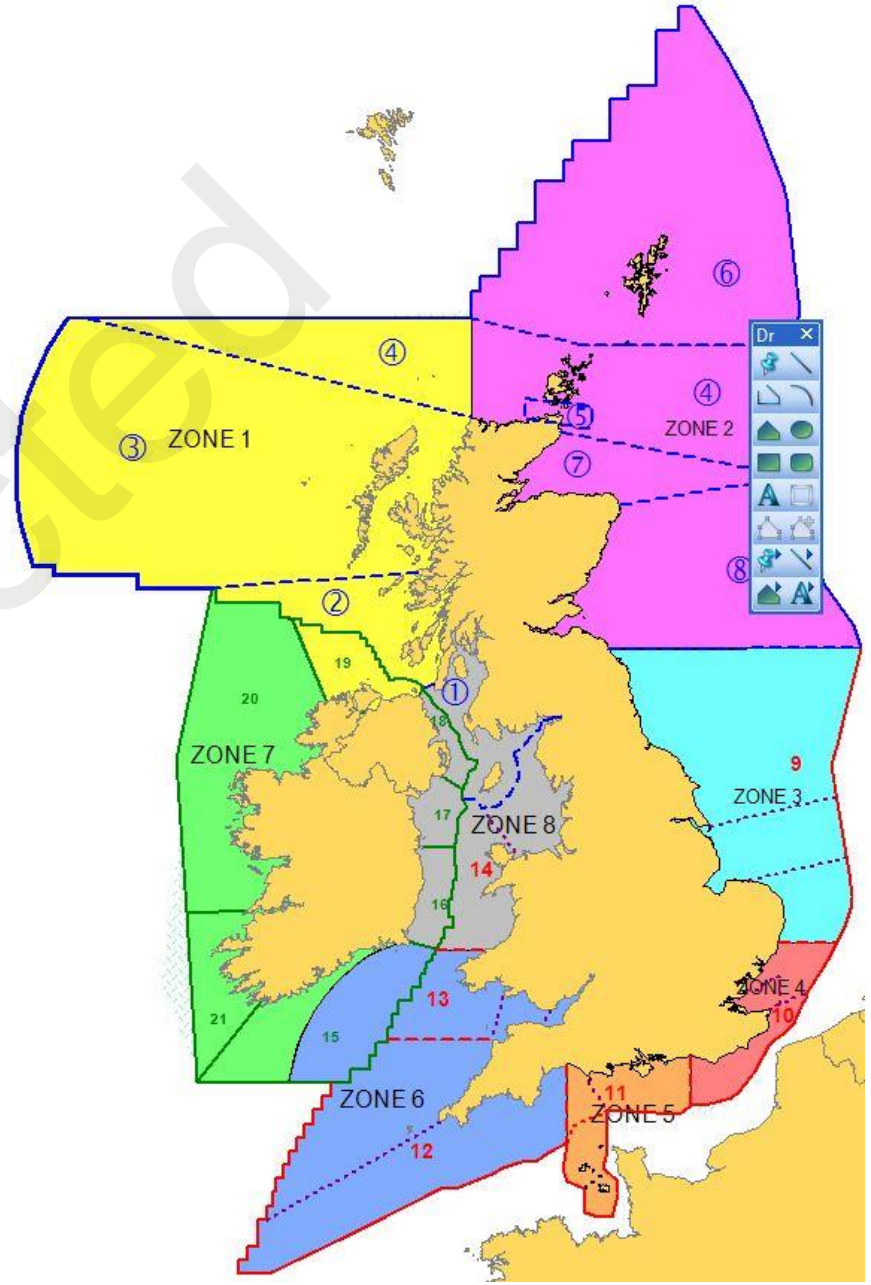
Zone 4 Dover Straits- there must be an asset in this area for 6 Hrs response RRC

Zone 5 South Coast

Zone 6 SW Coast & Bristol Channel

Zone 7 South & West Coast Ireland

Zone 8 Central Zone; GLA Areas 1, 14, 16, 17 & 18



Week 14 (3rd April)

THV Patricia- Dover area carrying out MFA inspections.

THV Galatea- South Coast steaming towards Channel LV thereafter West Coast

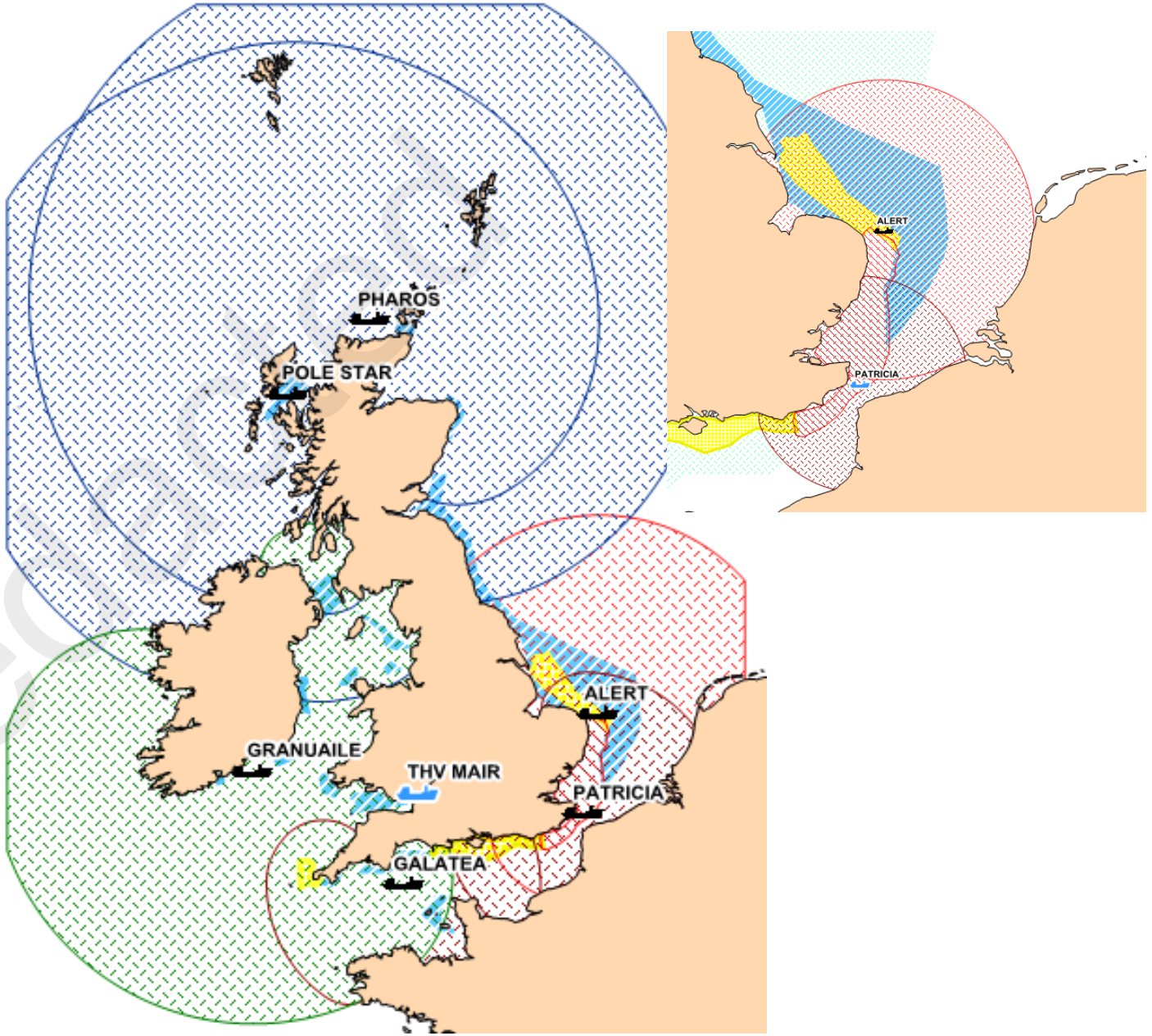
THV Alert- Yarmouth BCL and 6 & 12 Hr response-coverage

MV Mair at DD&R

ILV Granuaile in Area 15- South Coast routine buoywork.

NLV Pharos- On passage from East Coast

NLV Pole Star Inner Hebrides buoy work



Week 15 (10th April)

THV Patricia- Estuary Area buoywork; Wight Area Coverage.

THV Galatea- Irish Sea to Bristol Channel- Kings Scar & Hugo

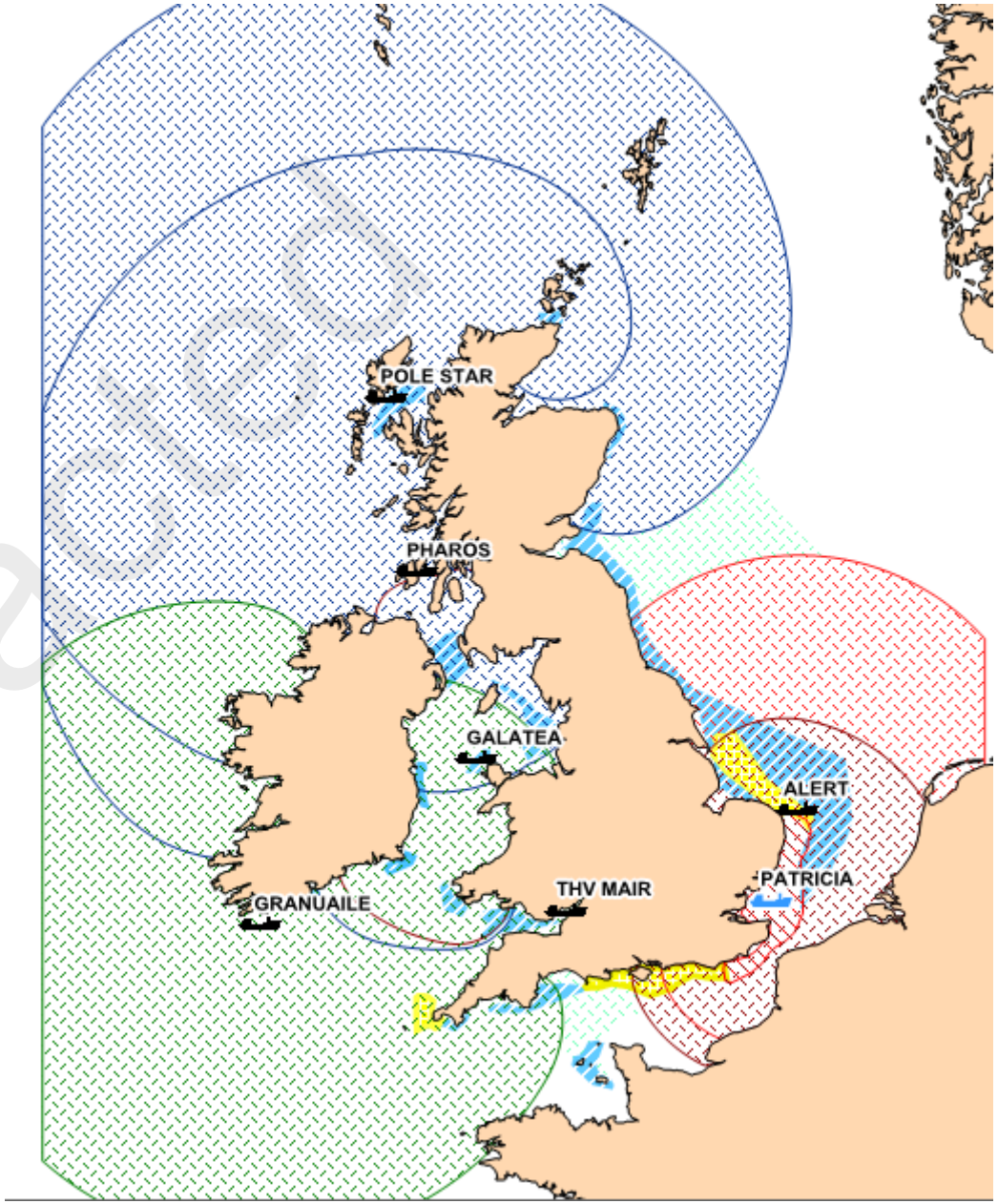
THV Alert- Yarmouth BSL and 6 & 12 Hr & 24 Hr response-coverage

MV Mair at DD&R

ILV Granuaile in Area 15- routine work – moving SW towards area 21.

NLV Pharos- Area 2 – McArthur's head Heli-ops

NLV Pole Star Area 3 - Inner Hebrides buoy work and north coast risk response



Week 16 (17th Apr)

THV Patricia- Loading/Crew change. Start of Pax Season in Harwich, then proceeding NE Coast. Humber 12 Hrs coverage

THV Galatea- Swansea crew change and loading Mumbles Project equipment/materials. Land's End 12 Hr coverage

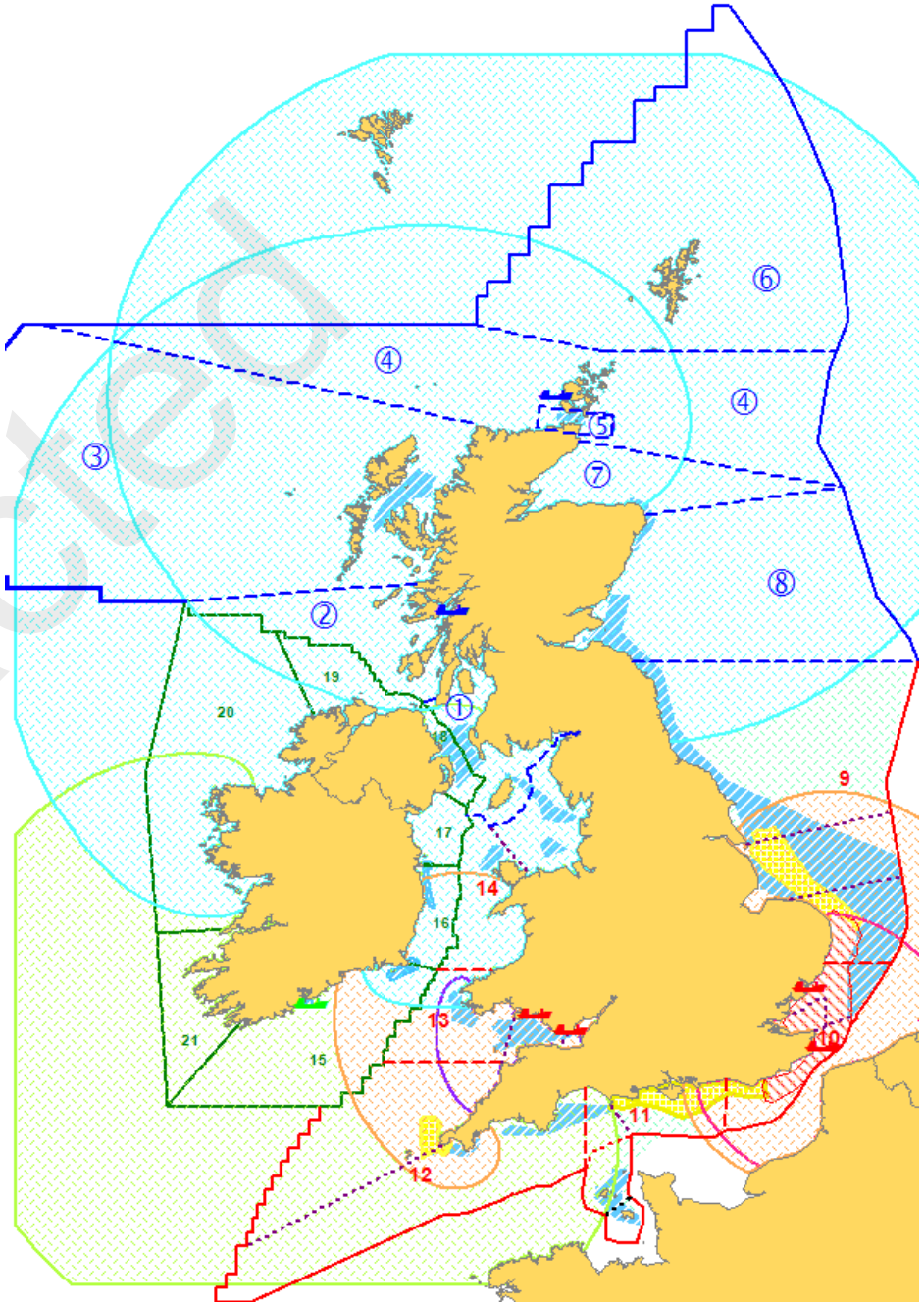
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair Bristol Channel Area

ILV Granuaile in Area 15- routine work – South Coast Ireland

NLV Pharos- Area 2 – Oban crewchange, then Areas 2 & 3 Contract work

NLV Pole Star Areas 3 & 4 - Crewchange



Week 17 (24th Apr)

THV Patricia- NE Coast.

THV Galatea- Mumbles Project mobilisation Heli-ops and Smalls Heli-Ops. Land's End 12 Hr coverage

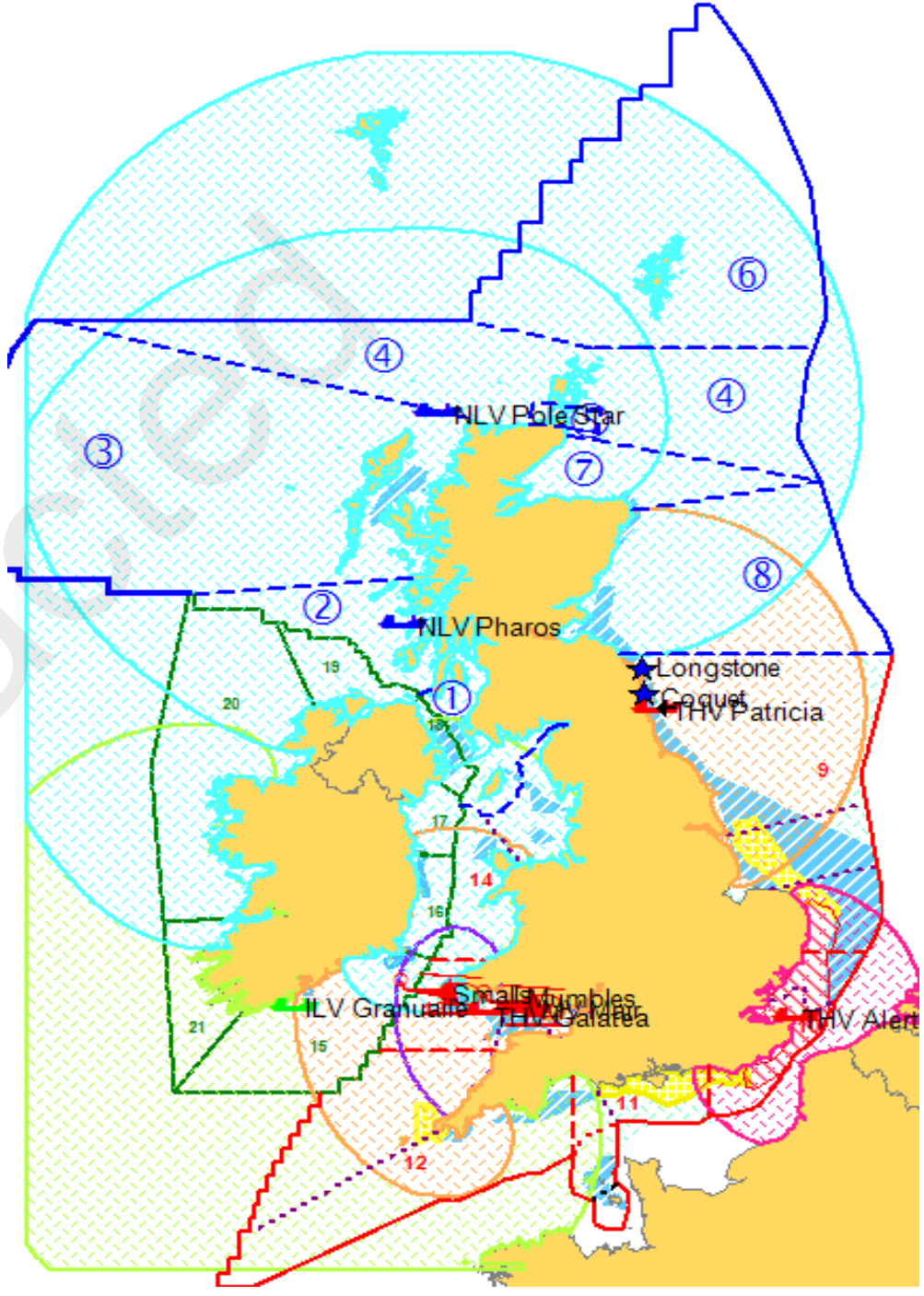
THV Alert- Ramsgate crewchange; Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair Mumbles Project Support

ILV Granuaile in Area 15- routine work – South West Coast Ireland

NLV Pharos- Area 1,2,3 – Contract Work

NLV Pole Star Areas 3 & 4 - Routine buoywork



Week 18 (1st May)

THV Patricia- NE Coast. Humber 12 Hrs coverage

THV Galatea- VC1 SW Coast: Land's End 12 Hr coverage.

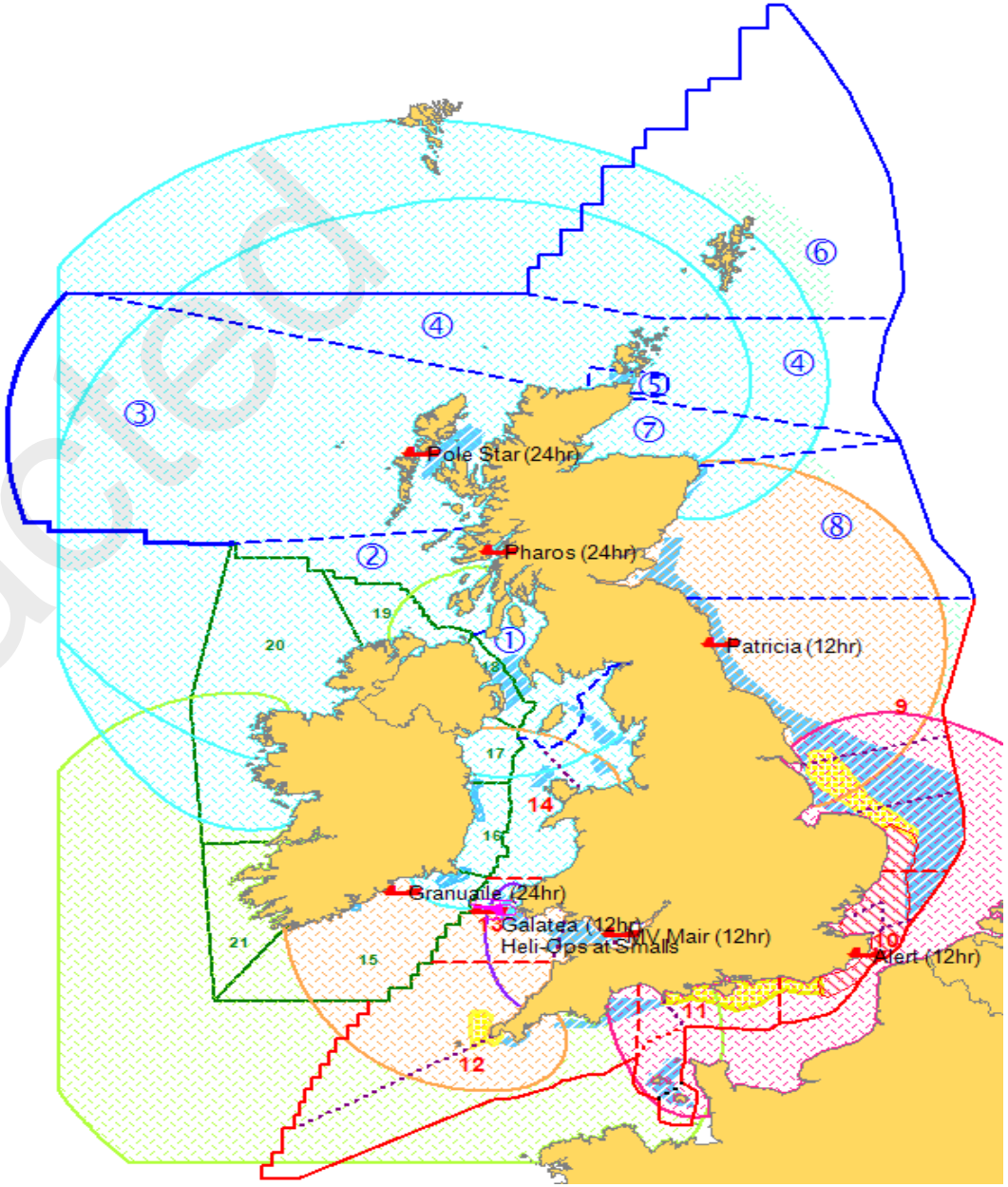
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 15- routine work – South West Coast Ireland

NLV Pharos- Area 1,2,3 – Contract Work, Master's crewchange Oban

NLV Pole Star Areas - Routine buoywork Sound of Harris



Week 19 (8th May)

THV Patricia- Harwich crewchange and loading, then Wash Area. Humber 12 Hrs coverage

THV Galatea- VC1 completion in Swansea for loading and crewchange : Land's End 12 Hr coverage. SW Corner

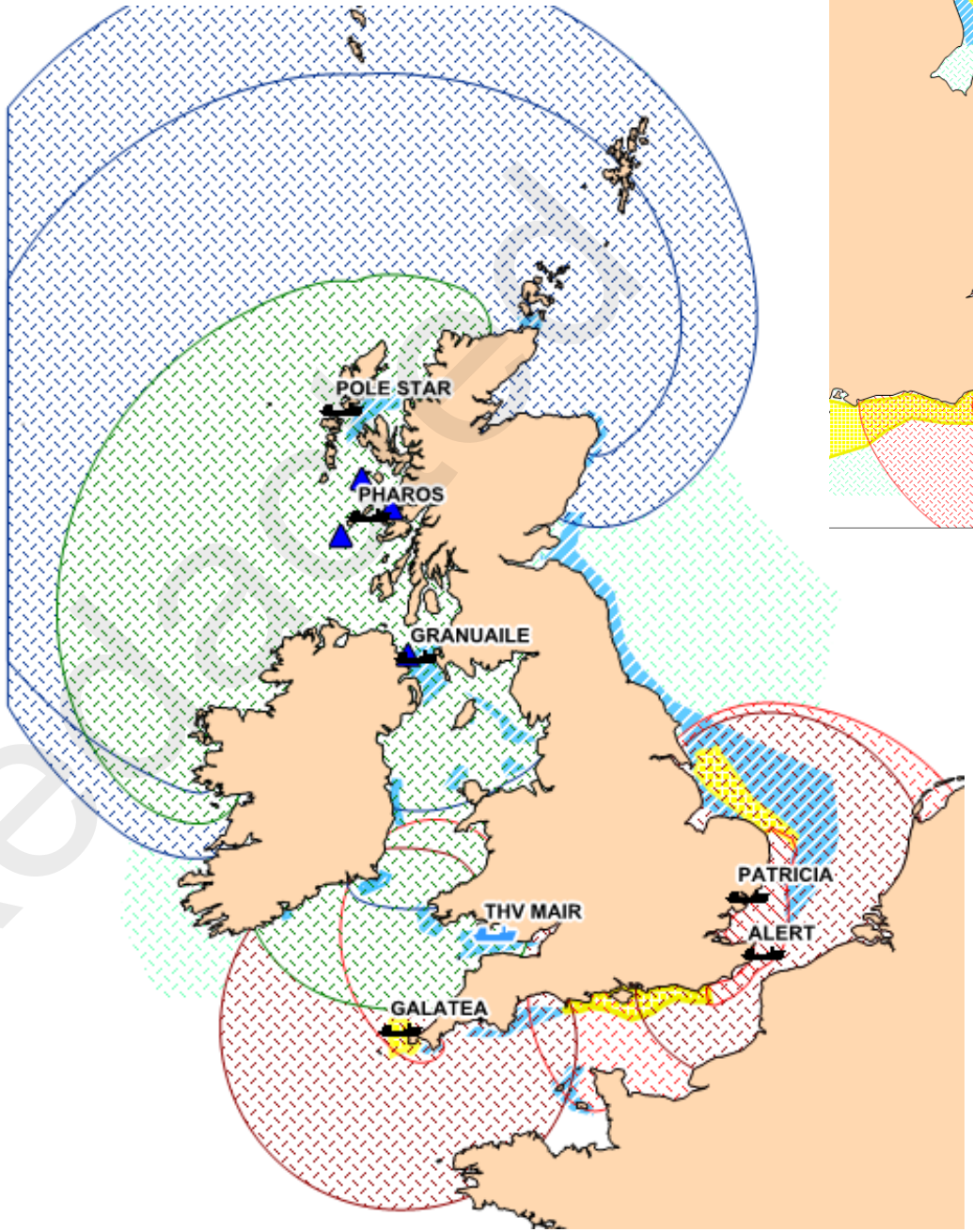
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

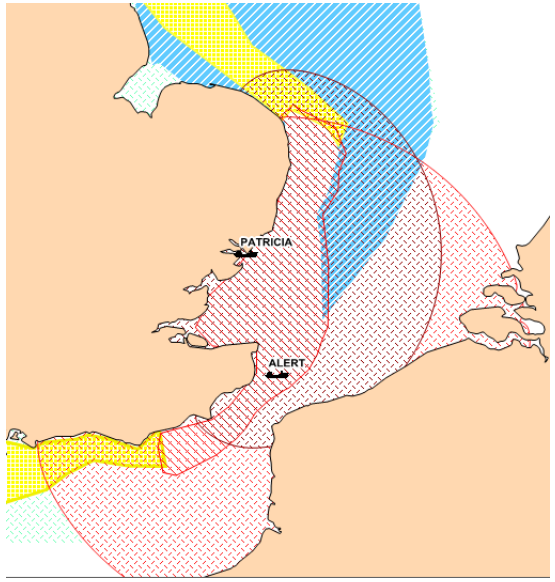
MV Mair Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 18 - Heli-Ops at Maidens

NLV Pharos- Area 2 – Heli-Ops at Rubha Nan Gall & Hyskier & Skerryvore

NLV Pole Star Areas - Routine buoywork Sound of Harris





Week 20 (15th May)

THV Patricia- Wash Area. Humber 12 Hrs coverage

THV Galatea- K1 buoy area contract work.

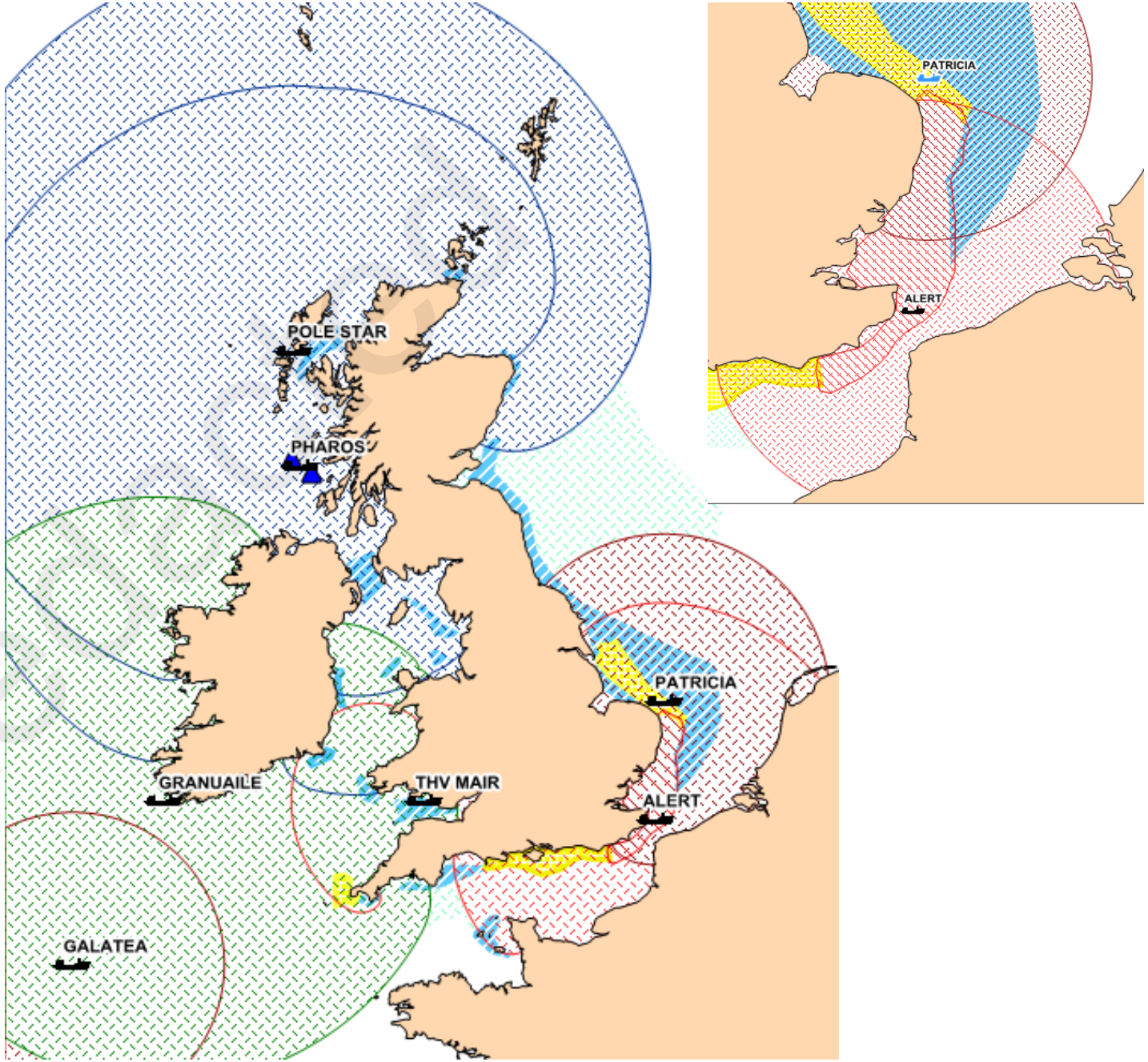
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 15 – Crewchange, Area 21 SW Coast

NLV Pharos- Area 2 – Heli-Ops Skerryvore & Dubh Artach, then crewchange to embark Commissioners

NLV Pole Star Areas - Routine buoywork Sound of Harris, crewchange



Week 21 (22nd May)

THV Patricia- Wash Area. Humber 12 Hrs coverage

THV Galatea- K1 Area SW Coast.

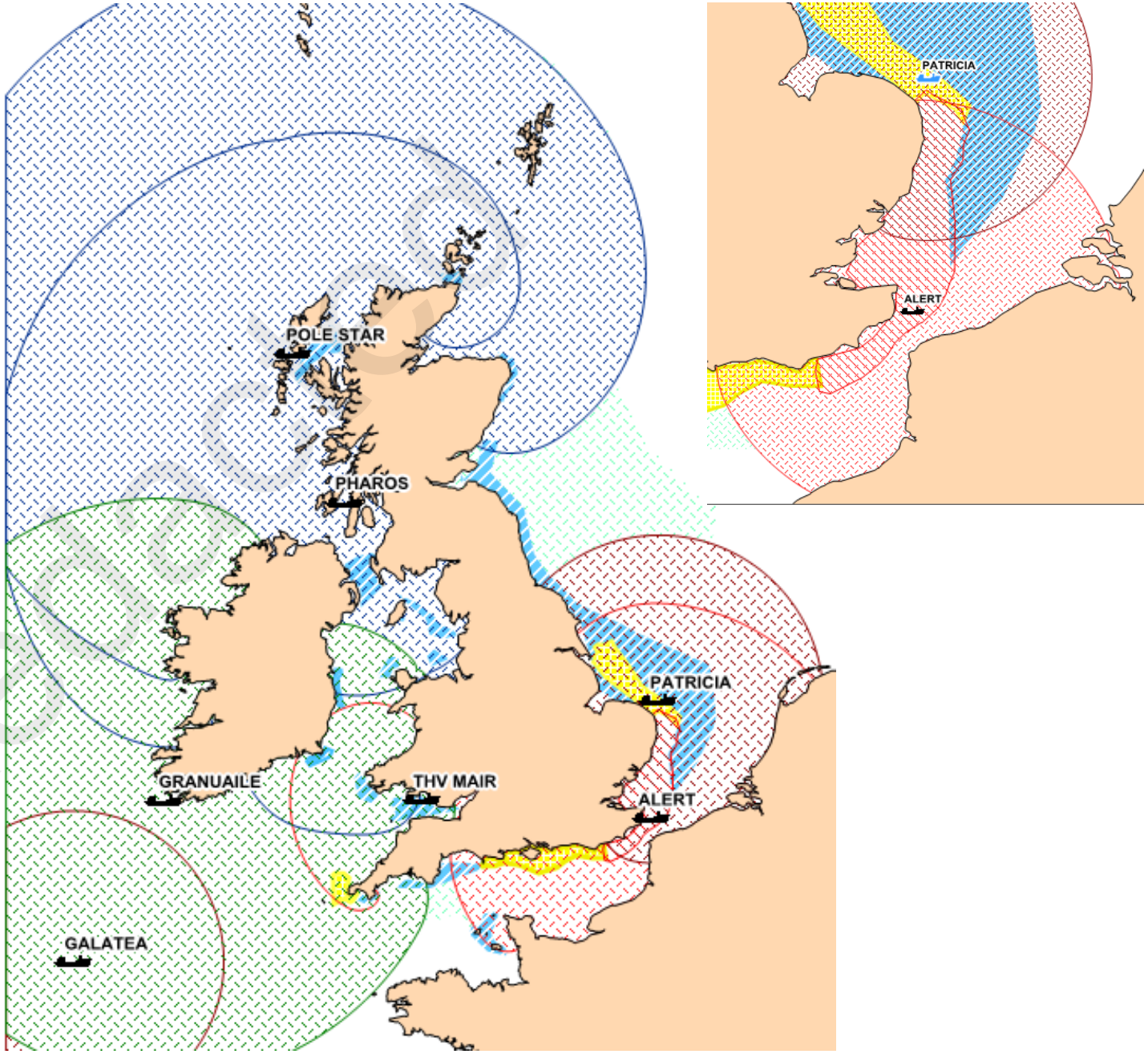
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair- Flatholm Transfers, Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 21 SW Coast (37 to 40 days work)

NLV Pharos- Area 1 & 2 – Commissioners on board

NLV Pole Star Areas - Routine buoywork Sound of Harris & Area 4



Week 22 (29th May)

THV Patricia- Harwich crewchange, NHR-S buoymove then commence tow of LV 5 to DD&R. Humber 12 Hrs coverage

THV Galatea- Swansea Area: Land's End coverage.

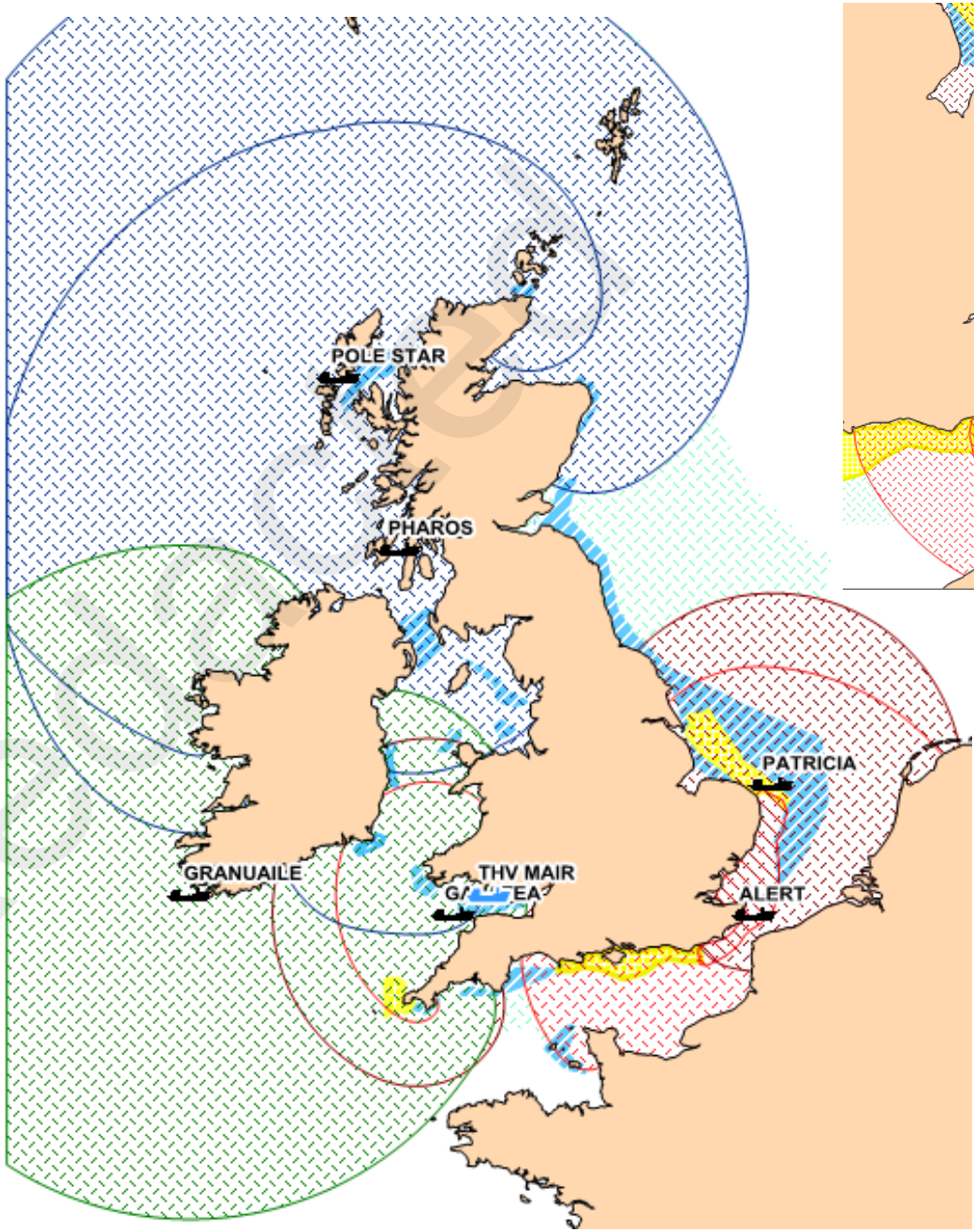
THV Alert- Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

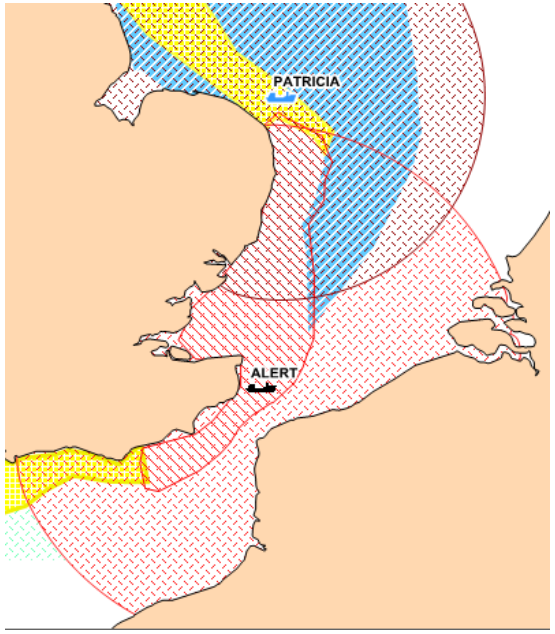
MV Mair- Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 21 SW Coast (37 to 40 days work)

NLV Pharos- Area 1 & 2 – Commissioners voyage completes Oban, Masters changeover then loading

NLV Pole Star Areas - Routine buoywork Outer Hebrides





Week 23 (5th June)

THV Patricia- Wash Area. Humber 12 Hrs coverage

THV Galatea- Swansea Cardiff area : Land's End & Wight 12 Hrs coverage.

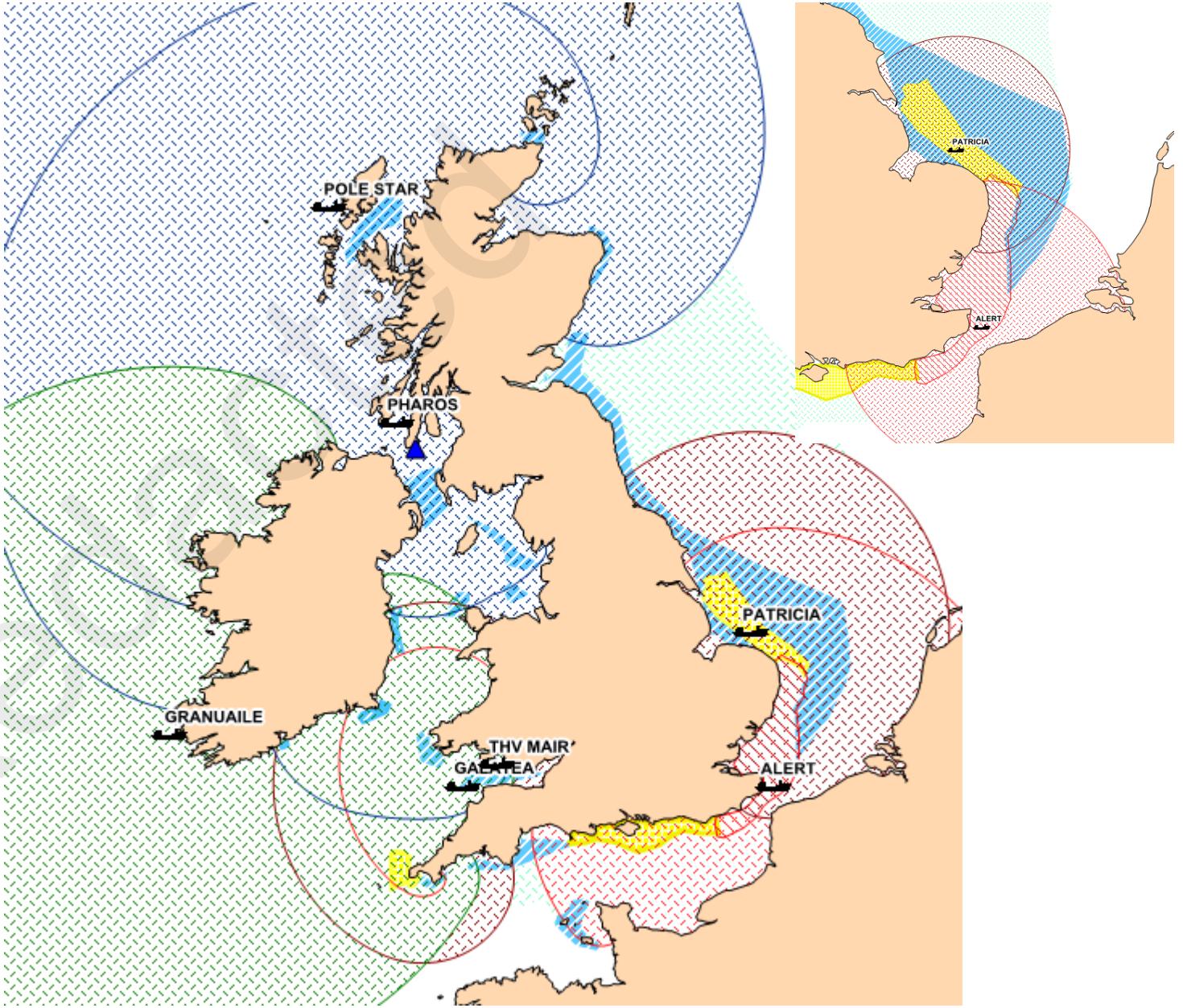
THV Alert- Harwich crewchange. Dover Area 6 Hrs response coverage & 12 Hrs Wight Coverage

MV Mair- Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 21 SW Coast (37 to 40 days work)

NLV Pharos- Areas 1 & 2 – Heli-Ops at Sanda & McArthurs Head

NLV Pole Star Areas - Routine buoywork Outer Hebrides



Week 24 (12th June)

THV Patricia- Harwich loading then Dover Area. Dover 6 Hrs & Wight 12 Hrs coverage

THV Galatea- Swansea Area (& loading): Land's End 12 Hrs coverage.

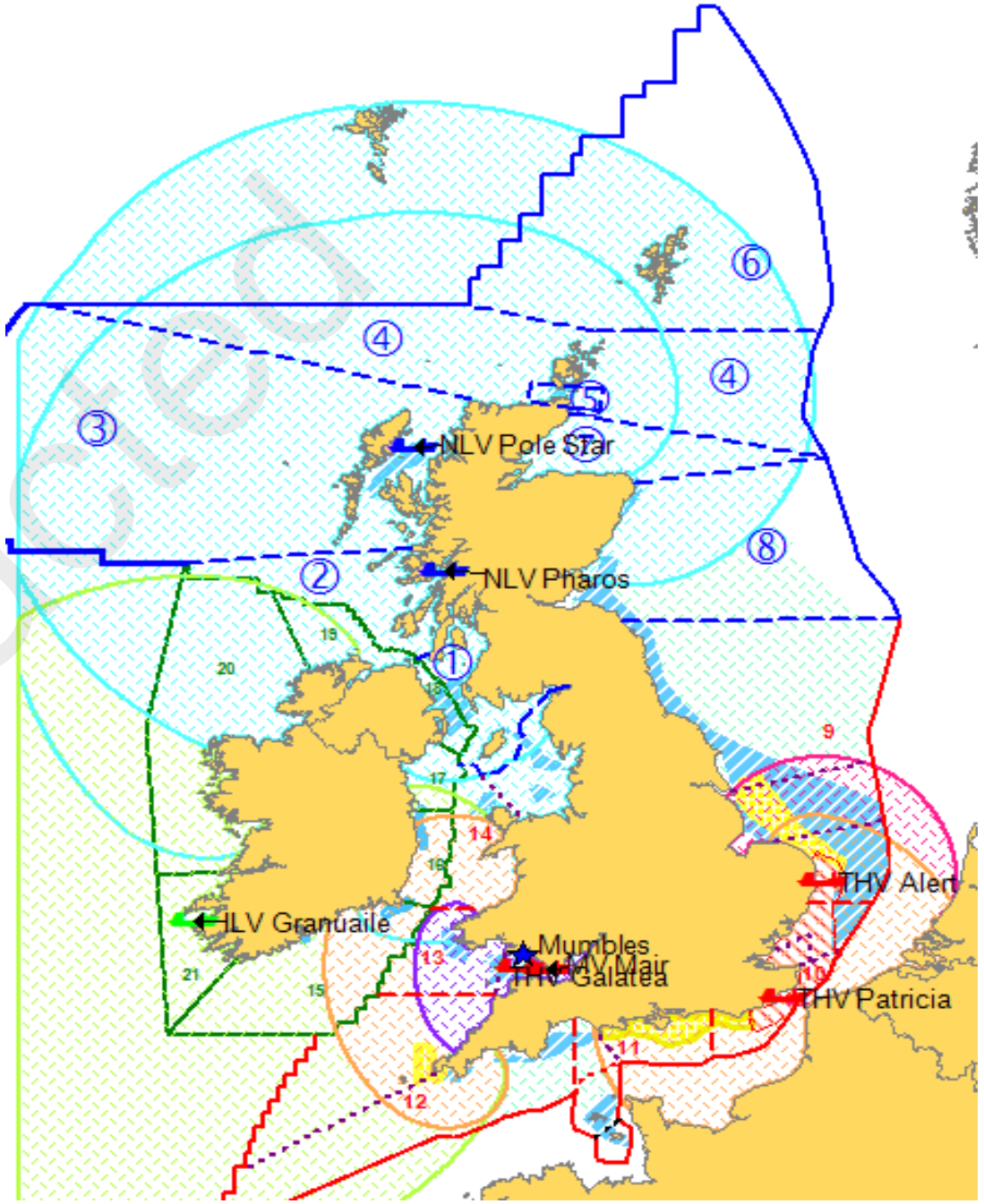
THV Alert- Yarmouth Area work. Dover Area 6 Hrs response coverage, 12 Hrs Humber & NE Coast Coverage

MV Mair- Mumbles Project Support & Bristol Channel Area

ILV Granuaile in Area 21 SW Coast (37 to 40 days work)

NLV Pharos- Areas 1 & 2 – Oban Area including crewchange

NLV Pole Star - Routine buoywork Outer Hebrides and crewchange



Week 25 (19th June)

THV Patricia- Portland crewchange. Area 11 work, Casquets Heli-Ops. Wight 12 Hrs coverage

THV Galatea- St Tudwals Heli-Ops. Swansea Area and crewchange: Land's End 12 Hrs coverage.

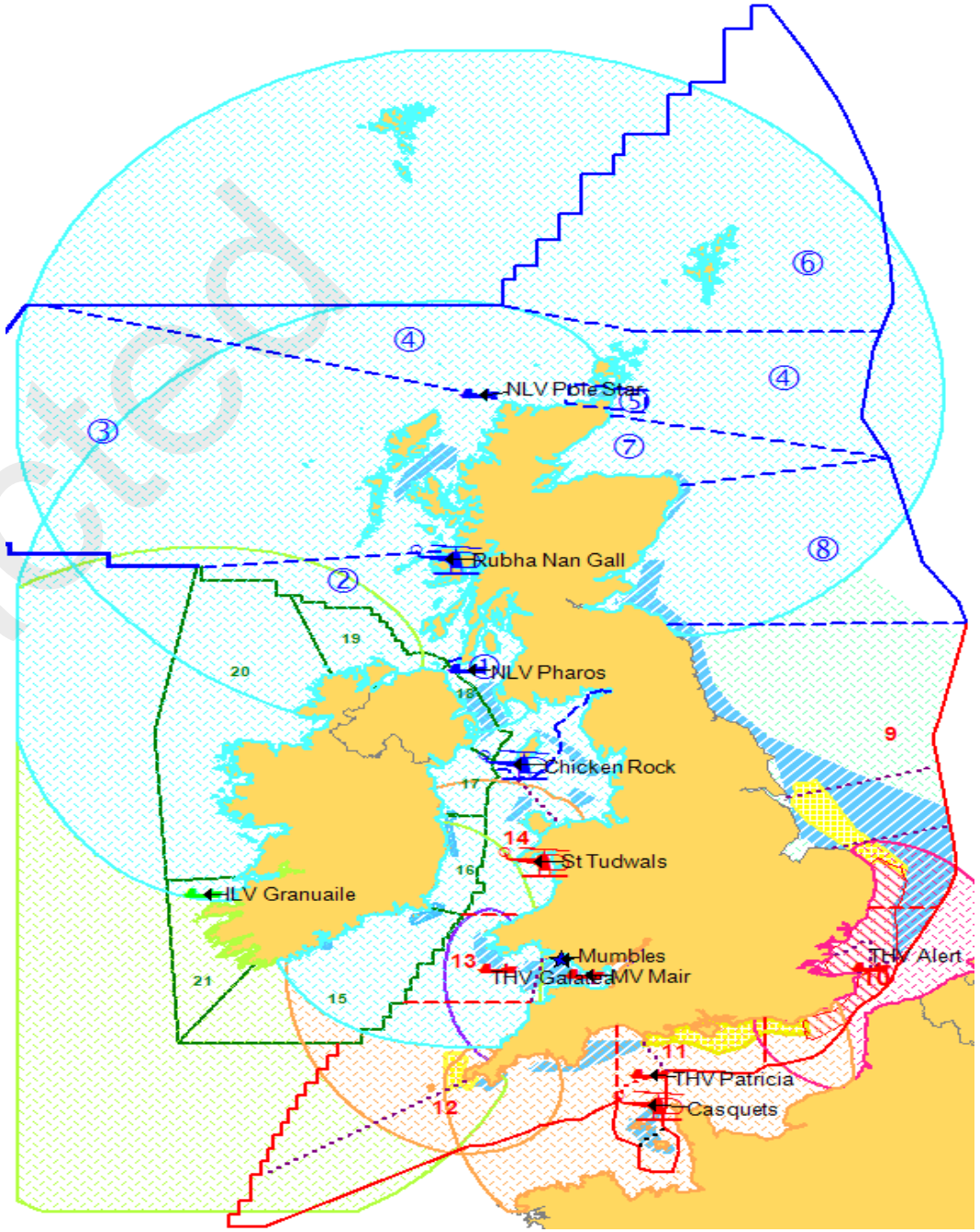
THV Alert- Yarmouth, Dover, Estuary Area work. Dover Area 6 Hrs response coverage, 12 Hrs Humber & NE Coast Coverage

MV Mair- Mumbles Project Support & Bristol Channel Area. Land's End 12 Hrs coverage

ILV Granuaile in Area 21 SW Coast (37 to 40 days work)

NLV Pharos- Areas 1 & 2 – Rubha Nan Gall and Chicken Rock heli-Ops

NLV Pole Star - Routine buoywork Outer Hebrides



Week 26 (26th June)

THV Patricia- Areas 11 & 12 South Coast. Wight & Land's End 12 Hrs coverage

THV Galatea- Mumbles demobilisation- heli-Ops: Land's End 12 Hrs coverage.

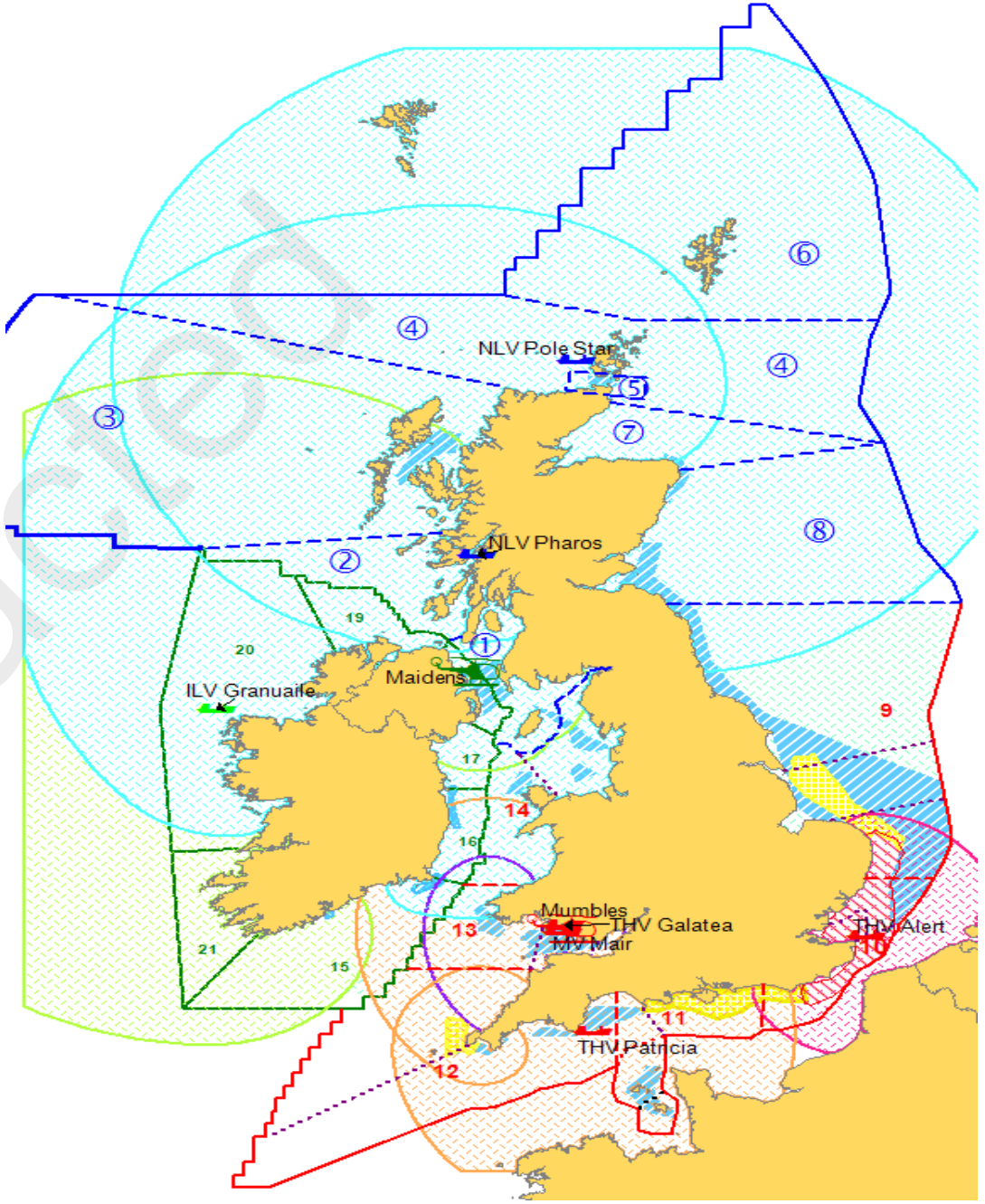
THV Alert- Dover, Estuary Area work. Dover Area 6 Hrs response coverage, 12 Hrs Humber & NE Coast Coverage

MV Mair- Mumbles Project Support & Bristol Channel Area. Land's End 12 Hrs coverage

ILV Granuaile in Area 20 Galway bay (37 to 40 days work)

NLV Pharos- Areas 1 & 2 – Oban discharging, loading and Masters changeover

NLV Pole Star - Area 4 North Coast, Masters Changeover Stromness



Week 27 (3rd July)

THV Patricia- Area 12 South Coast. Lands End 12 Hrs coverage

THV Galatea- Wash Area , tow LV05 from DD&R towards Harwich: Humber 12 Hrs coverage.

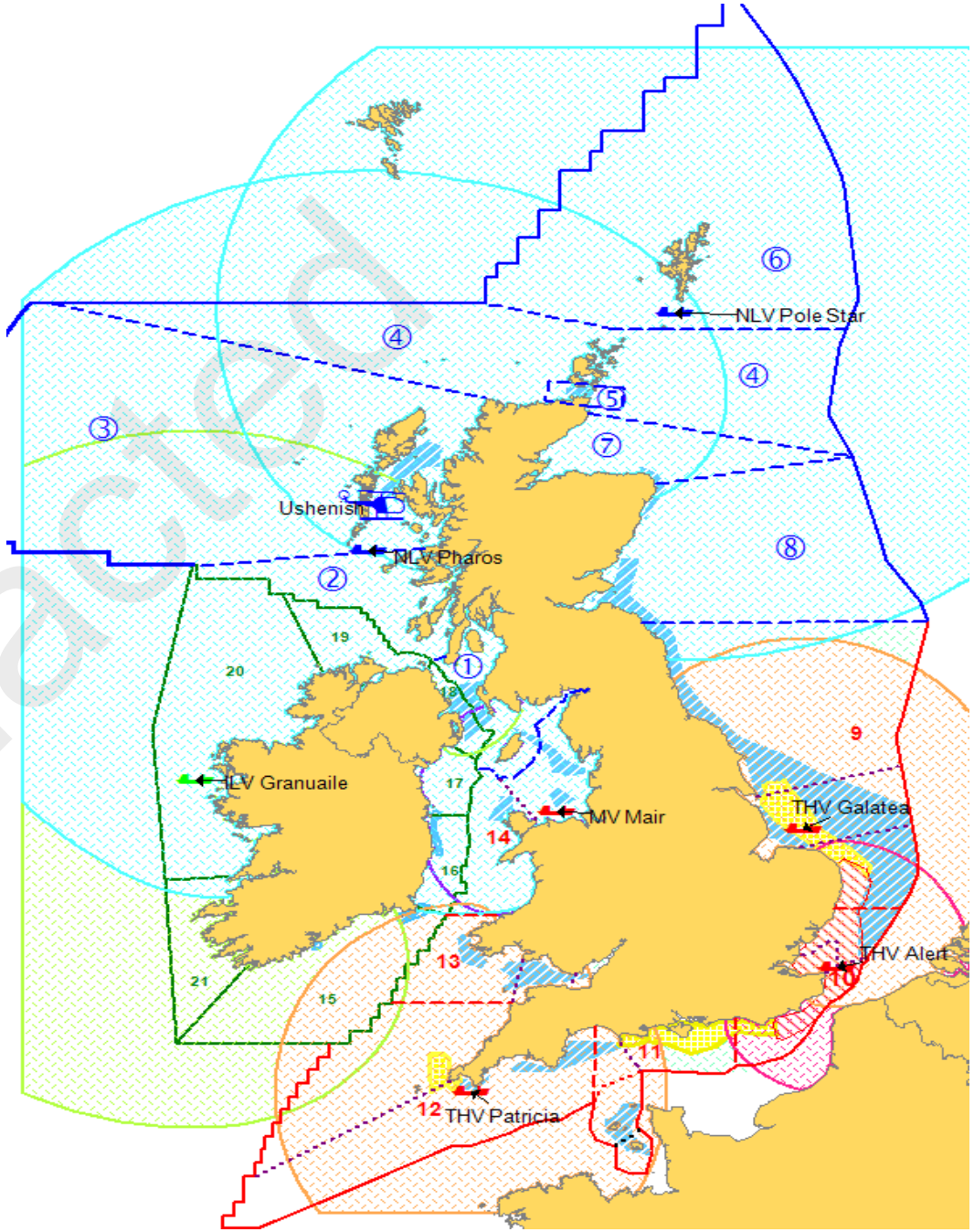
THV Alert- Dover, Estuary Area work. Dover Area 6 Hrs response coverage

MV Mair- Area 14: [redacted] Work

ILV Granuaile in Area 20 SW Coast (37 to 40 days work) & Maidens Heliops Area 18

NLV Pharos- Areas 2 & 3 – Ushenish Heli-Ops

NLV Pole Star - Orkneys & Shetland buoywork



Week 28 (10th July)

THV Patricia- Swansea Area, crewchange, loading. Lands End 12 Hrs coverage

THV Galatea- Harwich Area, crewchange, loading. Humber 12 Hrs coverage.

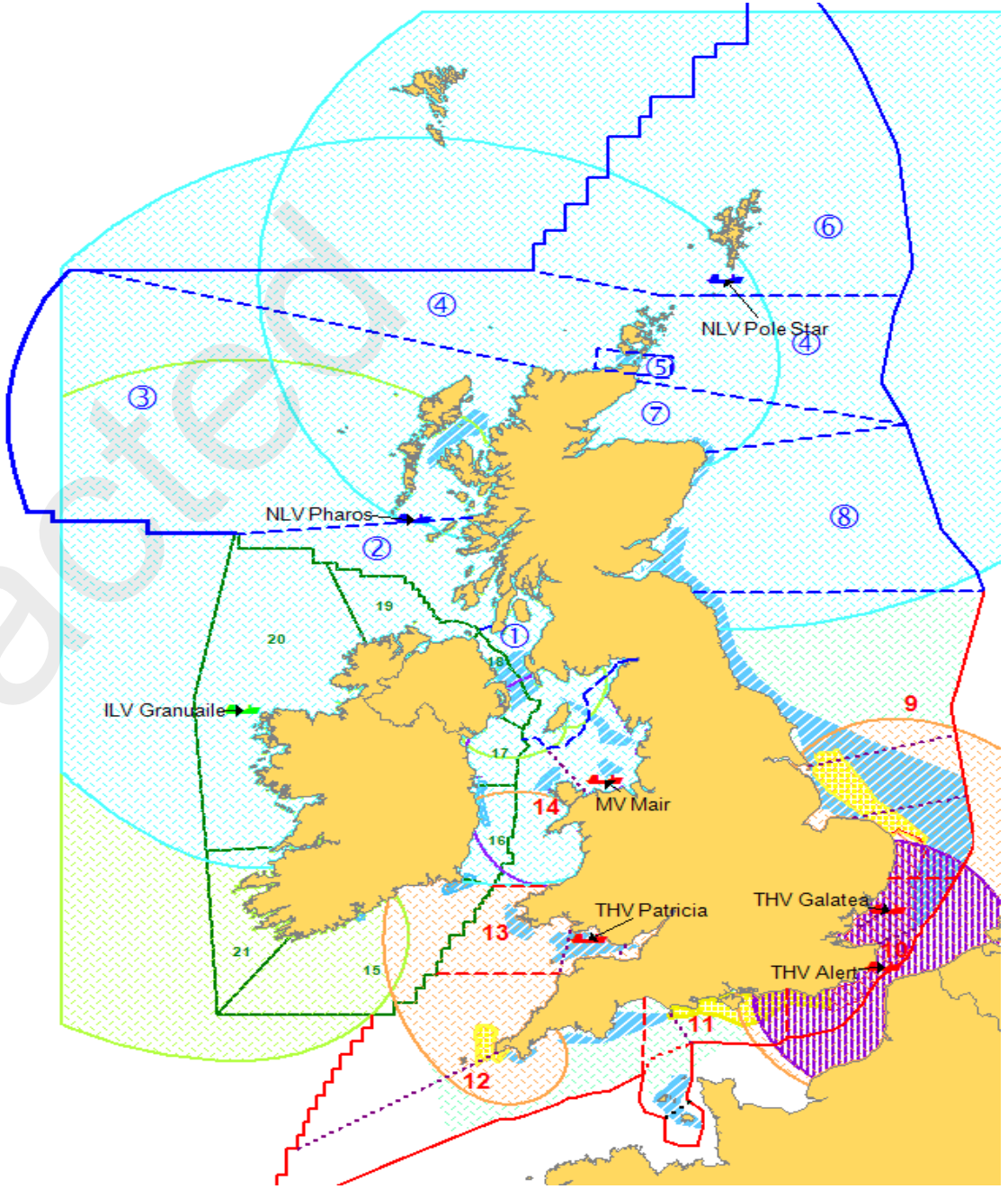
THV Alert- Dover, Estuary Area work. Dover Area 6 Hrs response & Wight 12 Hrs coverage

MV Mair- Area 14: [redacted] Work

ILV Granuaile in Area 20 SW Coast (37 to 40 days work)

NLV Pharos- Areas 2 & 3 – Oban Crewchange, commence contract work

NLV Pole Star - Orkneys & Shetland buoywork & crewchange



Week 29 (17th July)

THV Patricia- Land's End Area, Lundy Heli-Ops. Lands End 12 Hrs coverage

THV Galatea- Estuary/Dover Areas, Royal Sovereign heli-Ops. Wight 12 Hrs coverage.

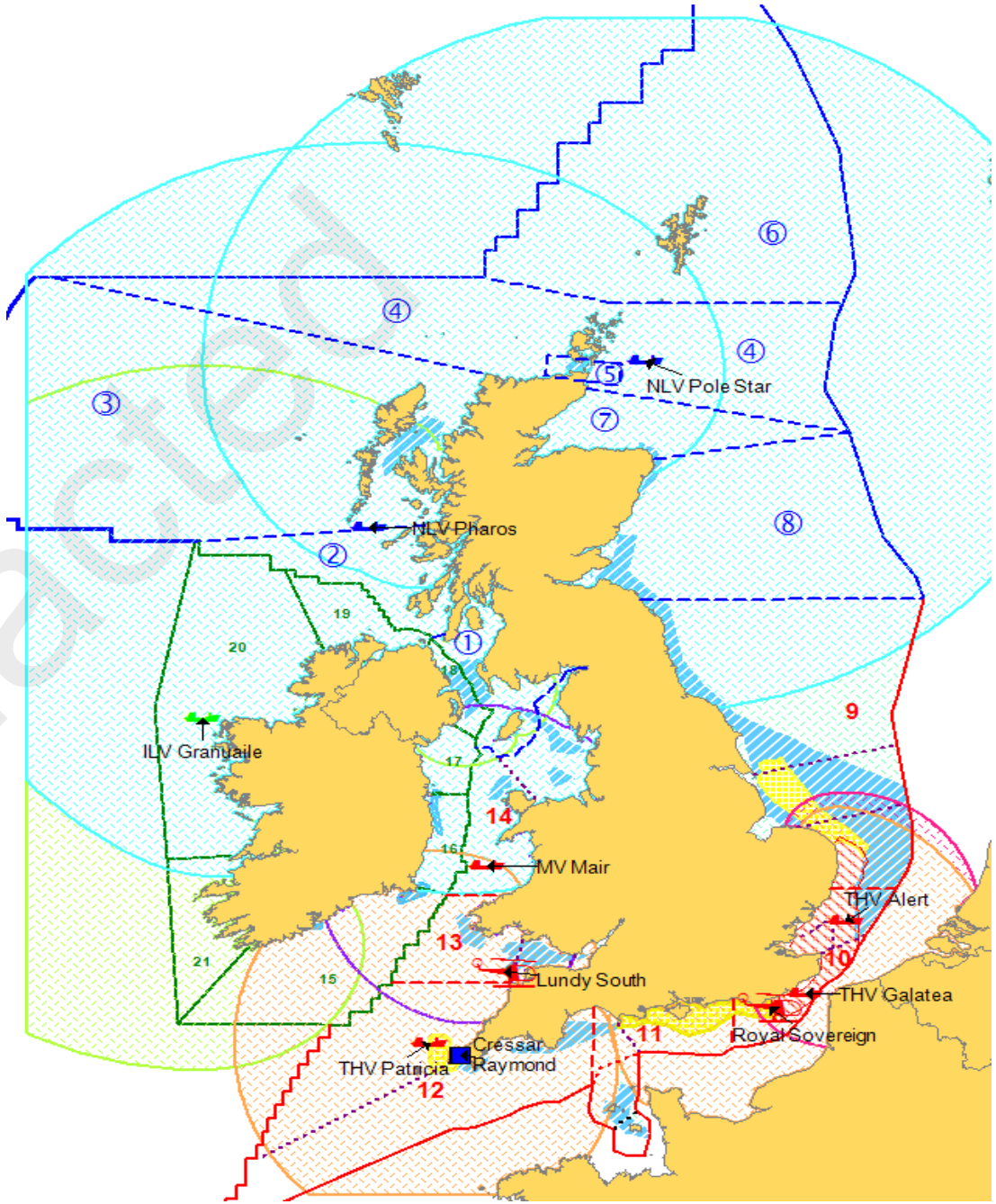
THV Alert- Harwich Area work. Dover Area 6 Hrs response & Humber 12 Hrs coverage Stanford Channel Survey

MV Mair- Area 14: [redacted] Work

ILV Granuaile in Area 20 SW Coast (37 to 40 days work)

NLV Pharos- Areas 2 & 3 – Contract work

NLV Pole Star - Orkneys & Shetland buoywork



Week 30 (24th July)

THV Patricia- Penzance Area, Eddystone Heli-Ops. Lands End 12 Hrs coverage

THV Galatea- Dover & Area 11, Royal Sovereign & Casquets heli-Ops. Wight 12 Hrs coverage.

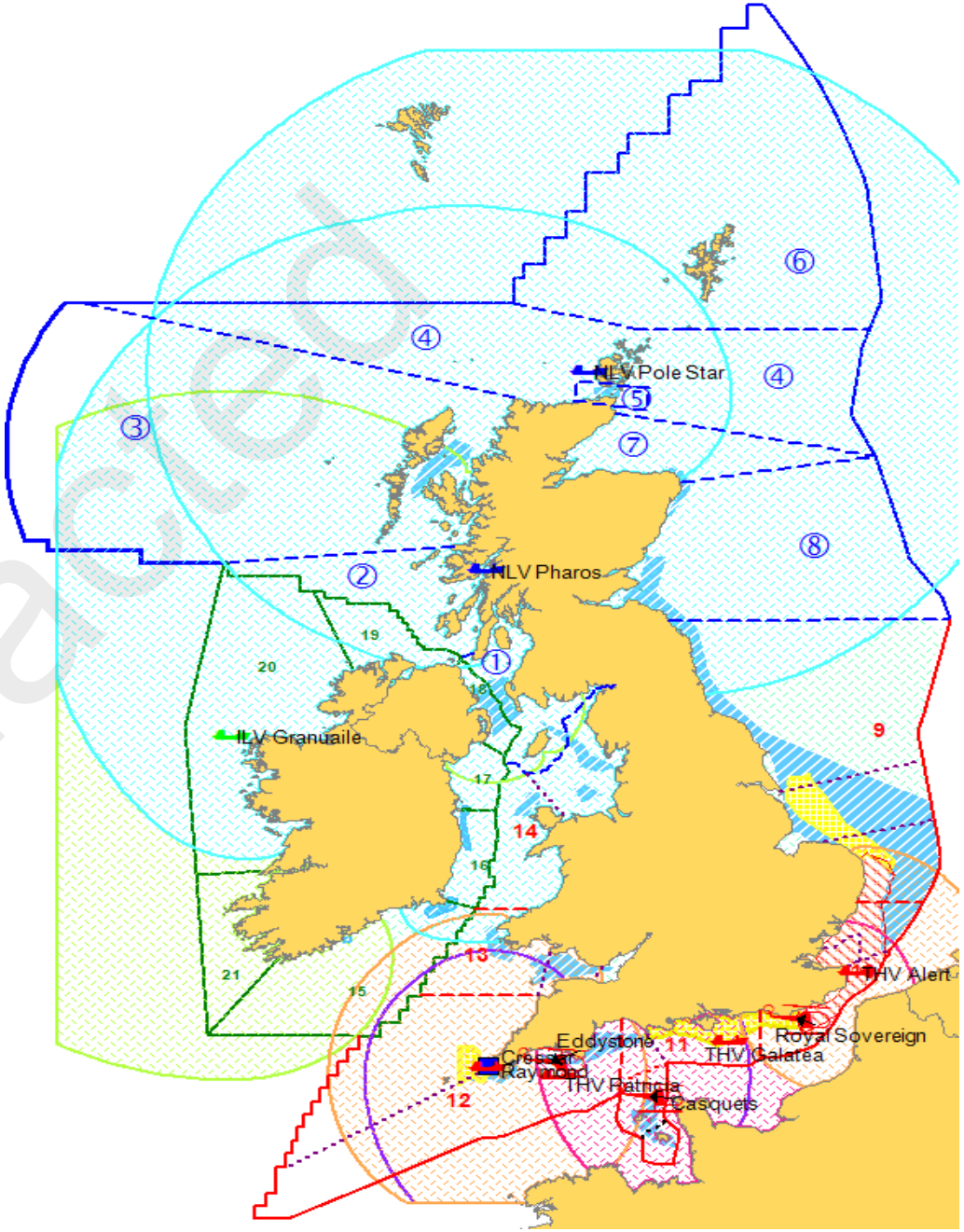
THV Alert- Dover Area. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Area 12: Penzance beacon Project Works: Land's End 12 Hrs coverage.

ILV Granuaile in Area 20 SW Coast (37 to 40 days work)

NLV Pharos- Areas 2 & 3 – Complete Contract work, Masters changeover

NLV Pole Star - Area 7 & 8 East Coast buoywork & Masters changeover



Week 31 (31st July)

THV Patricia- Swansea loading & crewchange, then West Coast

THV Galatea- Cowes Area, Southampton crewchange & Area 11. Wight 12 Hrs coverage.

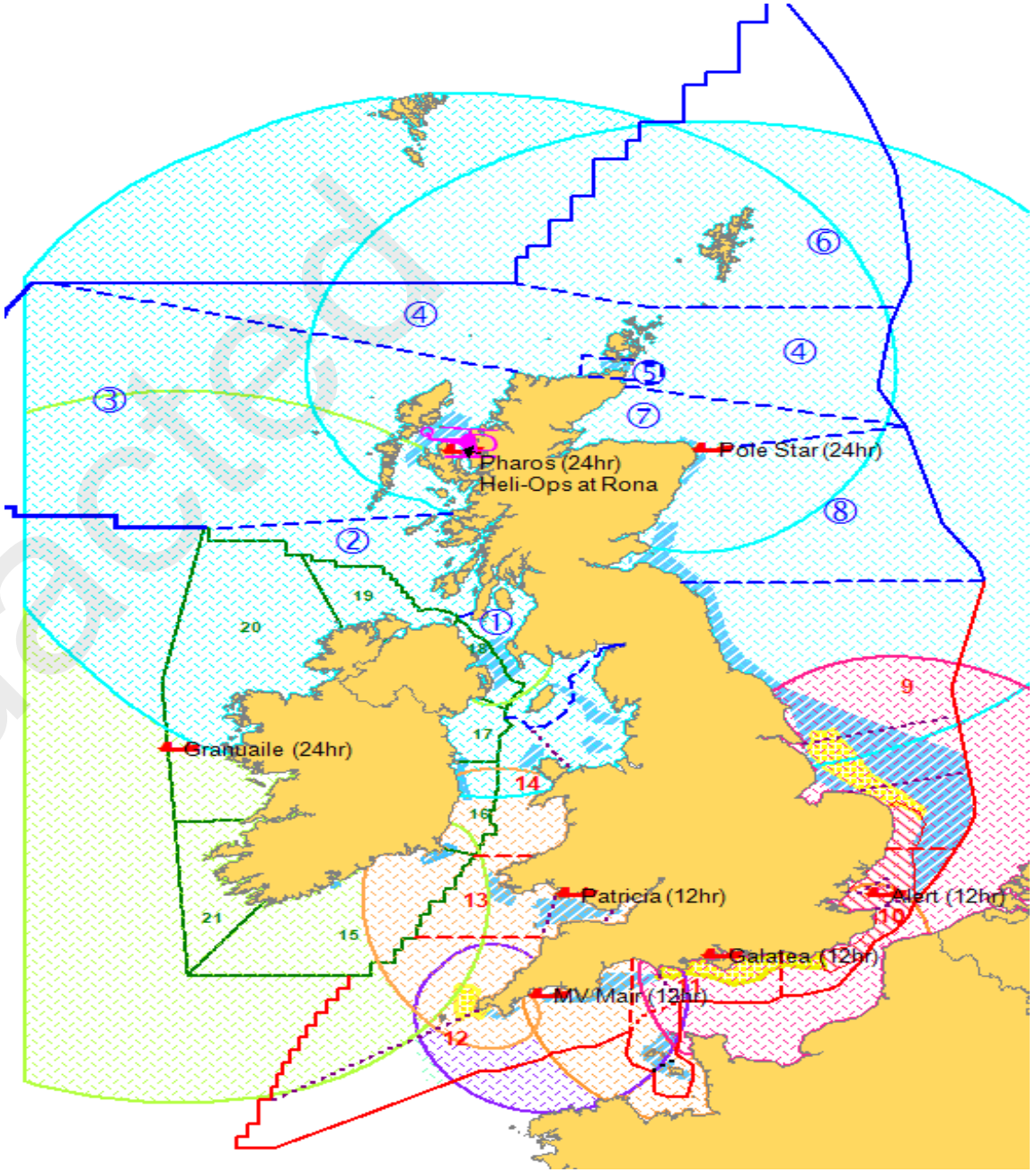
THV Alert- Dover Area. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Area 12: [redacted] Contract Work: Land's End 12 Hrs coverage.

ILV Granuaile in Complete Area 20 W Coast (37 to 40 days work), Heli-Ops Inishtrahull Area 19, Commence DD&R

NLV Pharos- Areas 2 & 3 – Heli-Ops Rona then Oban

NLV Pole Star - Area 7 & 8 East Coast buoywork



Week 32 (7th Aug)

THV Patricia- West Coast coverage, Smalls heli-Ops TBC

THV Galatea- Yarmouth Area. North Dover 6 Hr & Humber 12 Hrs coverage.

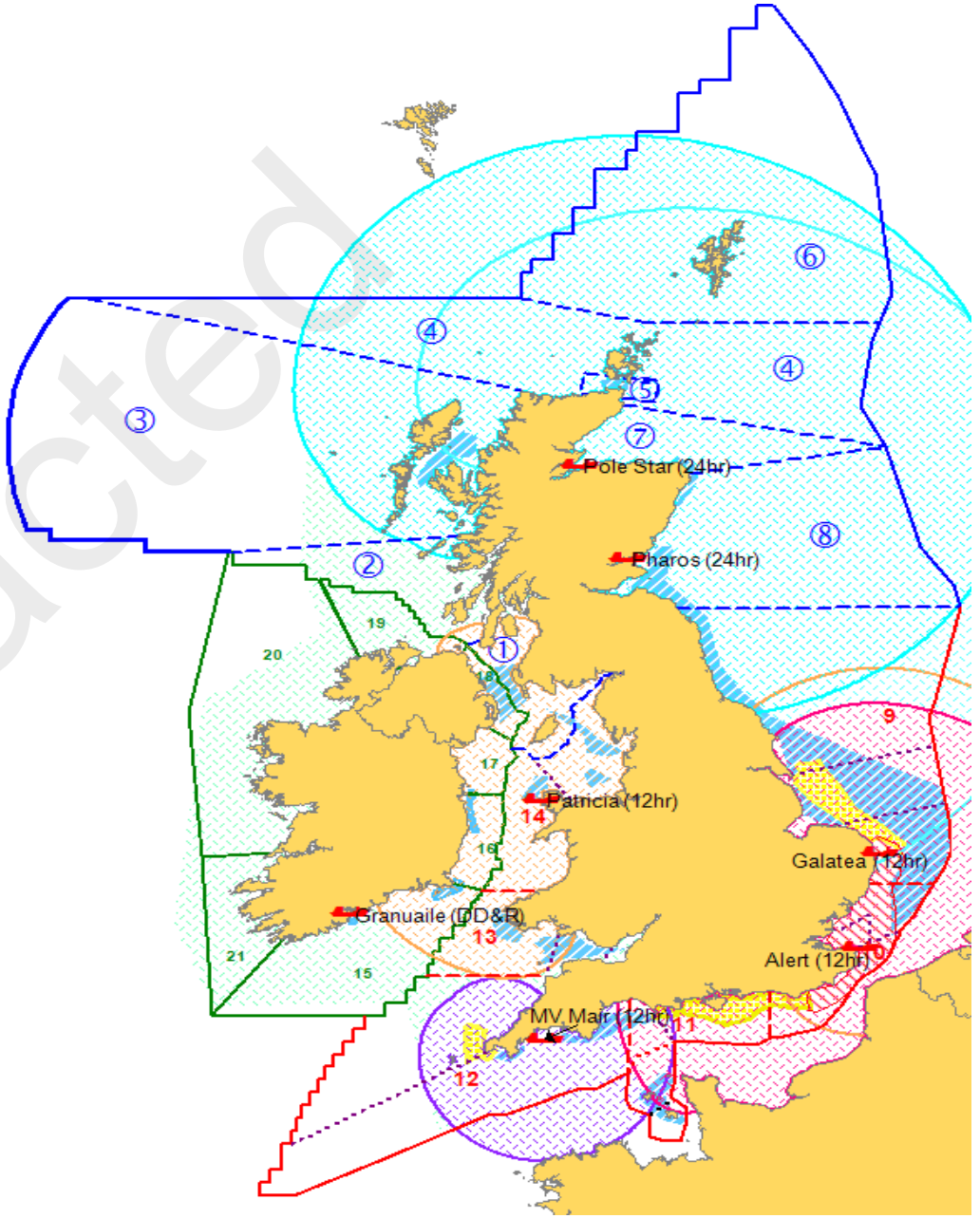
THV Alert- Ramsgate crewchange then Brighton Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Area 12: [redacted] Contract Work: Land's End 12 Hrs coverage.

ILV Granuaile in DD&R

NLV Pharos- Area 8; Dundee crewchange, Commence contract work Bell Rock

NLV Pole Star - Area 7 East Coast buoywork, crewchange Invergordon



Week 33 (14th Aug)

THV Patricia- West Coast coverage

THV Galatea- Areas 4&5; Copinsay Heli-Ops

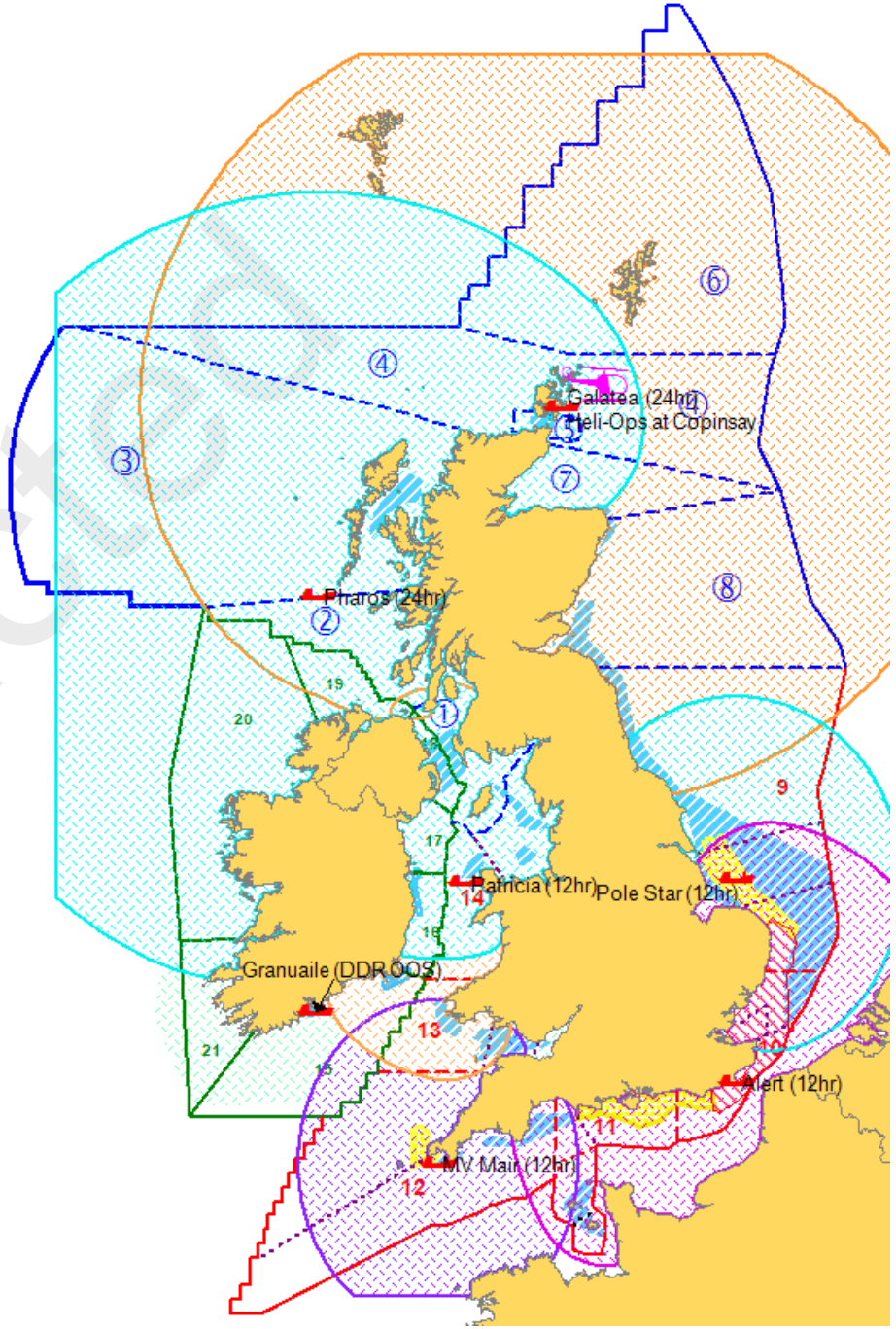
THV Alert- Brighton Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Area 12: Penzance area: Land's End 12 Hrs coverage.

ILV Granuaile in DD&R

NLV Pharos- Areas 2&3; Contract Work

NLV Pole Star - Area 9 Wash - East Coast buoywork; Humber 12 Hr coverage



Week 34 (21st Aug)

THV Patricia- Holyhead crewchange; West Coast Rigs & coverage

THV Galatea- Areas 8, Heli-Ops Bell Rock, NE Zone coverage. Dundee crewchange.

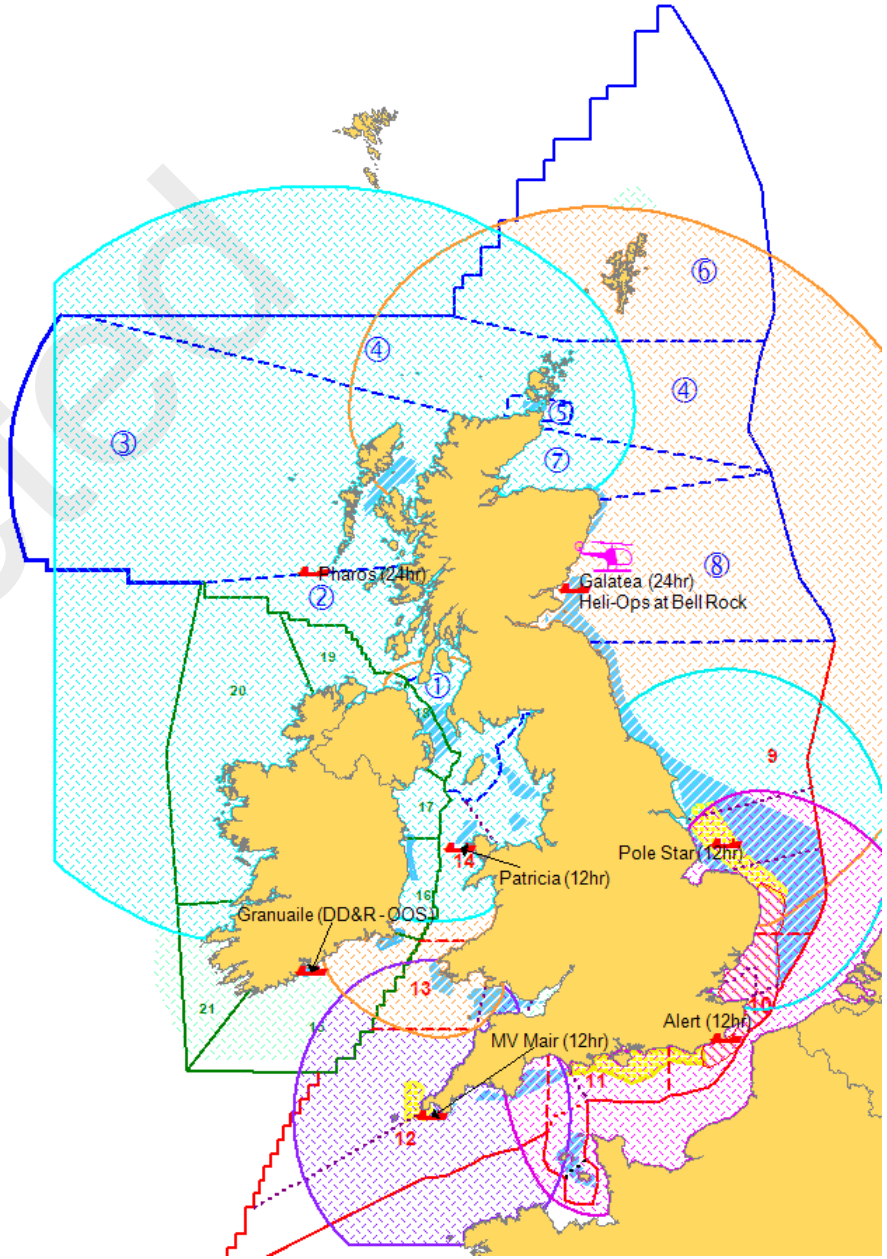
THV Alert- Brighton Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Area 12: Penzance area: Penzance Beacon project Works. Land's End 12 Hrs coverage.

ILV Granuaile in DD&R

NLV Pharos- Areas 2&3 Contract work, Masters changeover

NLV Pole Star - Area 9 Wash Area east coast buoywork; Humber 12 Hr coverage Masters changeover



Week 35 (28th Aug)

THV Patricia- Complete West Coast Rigs & west coast coverage

THV Galatea- Areas 6, Heli-Ops Fulga Ness

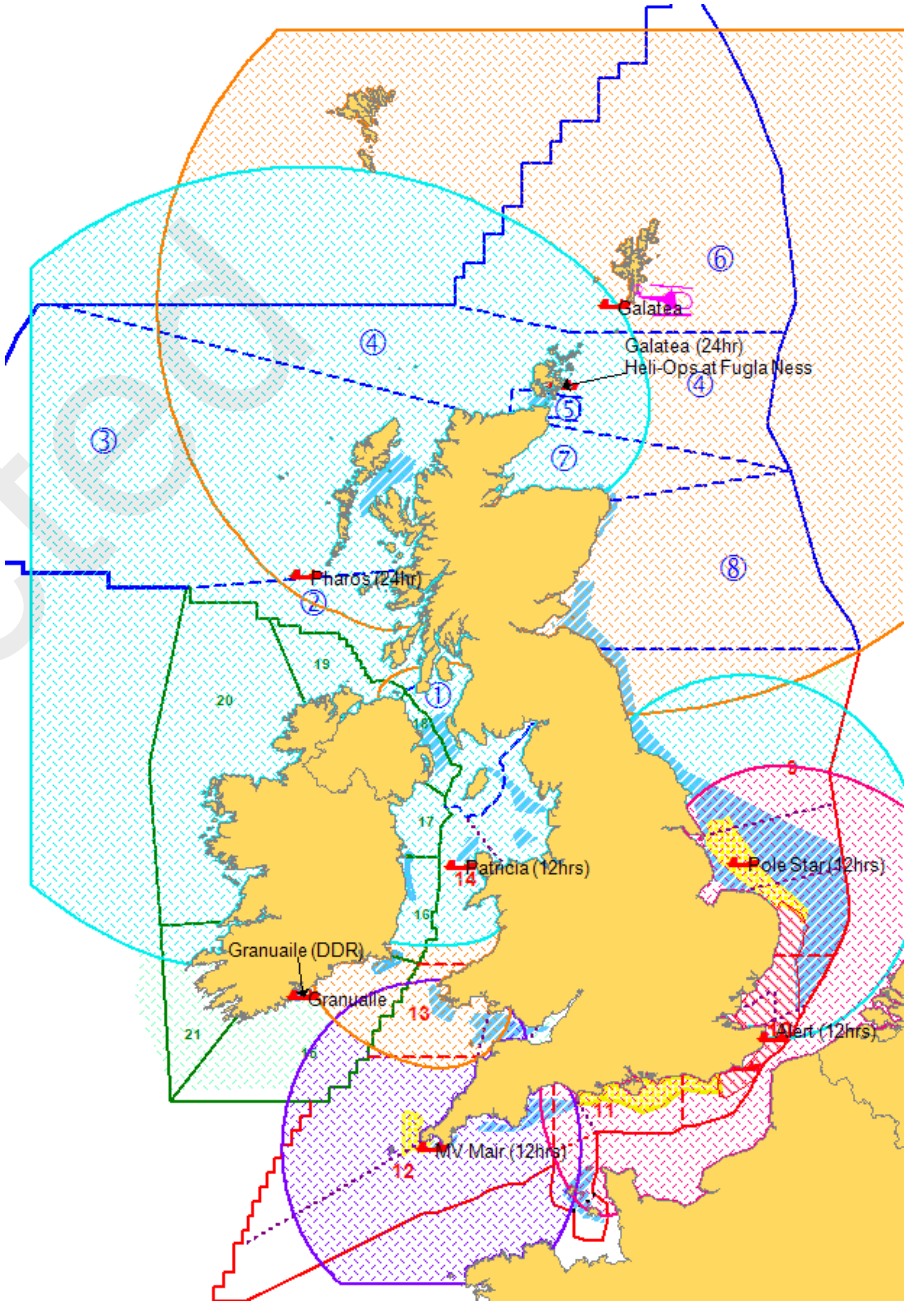
THV Alert- Harwich crewchange. Estuary Area Survey work. Dover 6 Hrs & Wight 12 Hrs coverage

MV Mair- Area 12: Penzance area. Land's End 12 Hrs coverage.

ILV Granuaile in DD&R

NLV Pharos- Areas 2 & 3 Contract Work, Pentland Skerries heli-ops

NLV Pole Star - Area 7,8,9 Wash & NE Coast buoywork – Humber 12 Hr coverage



Week 36 (4th Sept)

THV Patricia- West Coast coverage; Helicopter work all week- South Stack, Smalls, Skerries, Wolf Rock, Bishop Rock & Round Island

THV Galatea- Wash Area buoywork. North Dover 6 Hr & Humber 12 Hrs coverage.

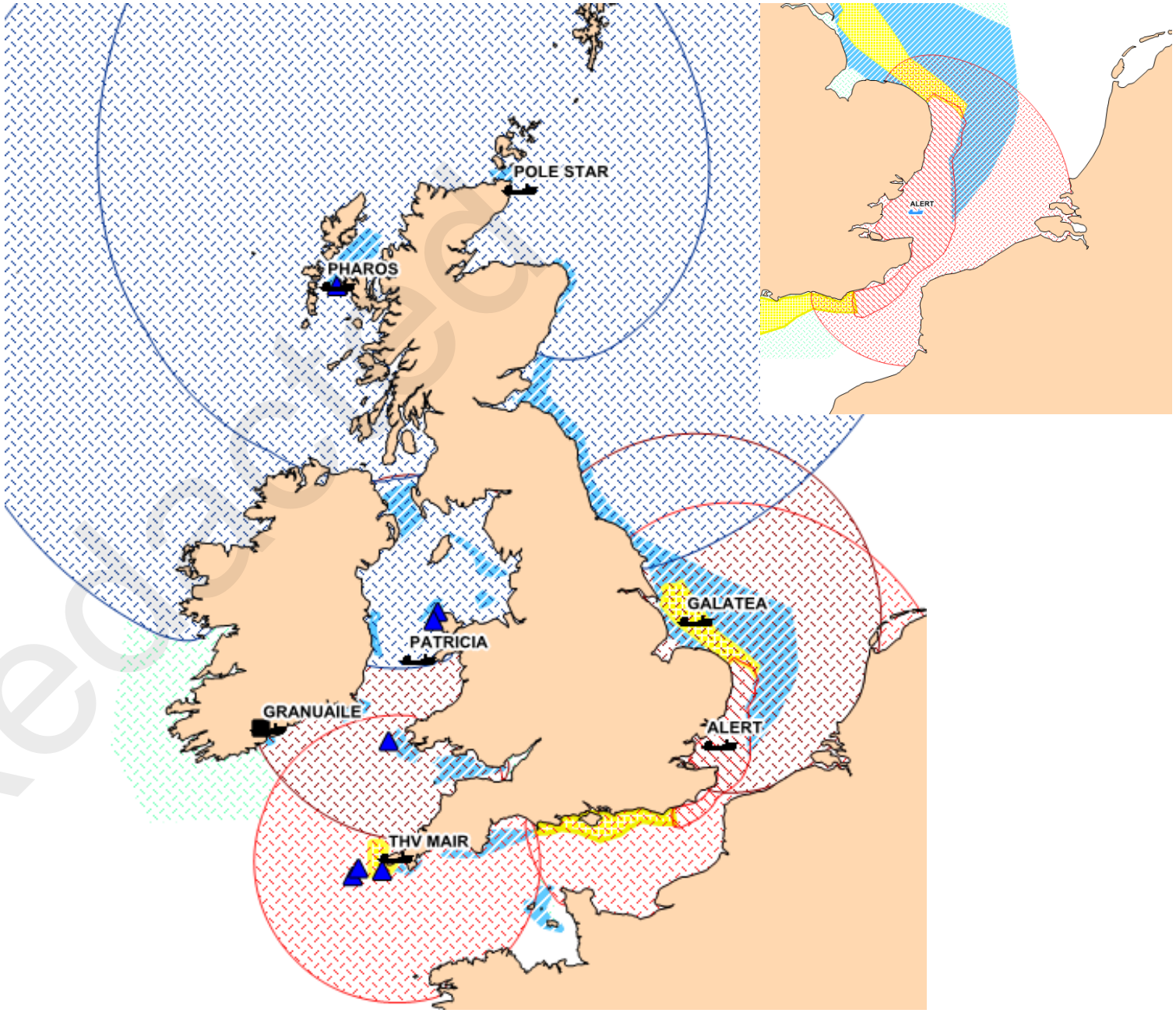
THV Alert- Harwich crewchange, Estuary Area, Copperas Channel Survey. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Area 12: Penzance Beacon Contract Work: Land's End 12 Hrs coverage.

ILV Granuaile in DD&R, Area 20 NW Coast

NLV Pharos- Area 3; Stornoway crewchange, Heli-Ops at Neist Point

NLV Pole Star - Areas 6 to 8 remaining East Coast to clear up buoywork, crewchange East Coast



Week 37 (11th Sept)

THV Patricia- Portland crewchange, heading east for Dover MFA work. Dover Area 6 Hrs & Humber 12 Hrs coverage.

THV Galatea- Harwich crewchange, then proceeding Wight area work; Wight 12 Hrs coverage.

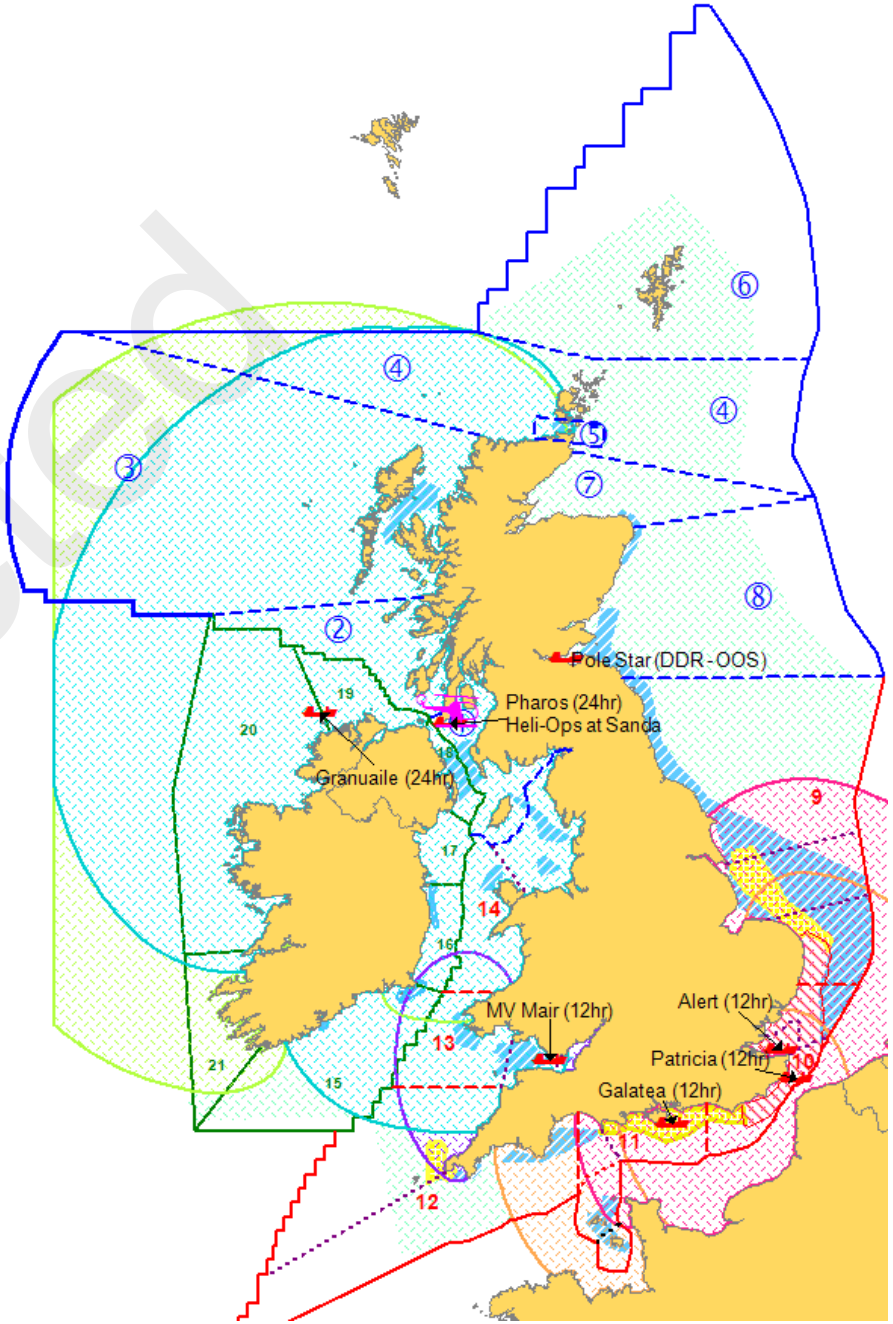
THV Alert- Estuary Area survey work. Dover Area 6 Hrs & Wight/Humber 12 Hrs coverage

MV Mair- Area 13: Bristol Channel. [redacted] Survey- Land's End 12 Hrs coverage.

ILV Granuaile in Area 19/20 (20 days work)

NLV Pharos- Areas 1 & 2; Heli-Ops at Sanda LH

NLV Pole Star - Self Refit Leith



Week 38 (18th Sept)

THV Patricia- Dover MFA work. Dover Area 6 Hrs & Humber 12 Hrs coverage.

THV Galatea- Wight area work; Wight 12 Hrs coverage.

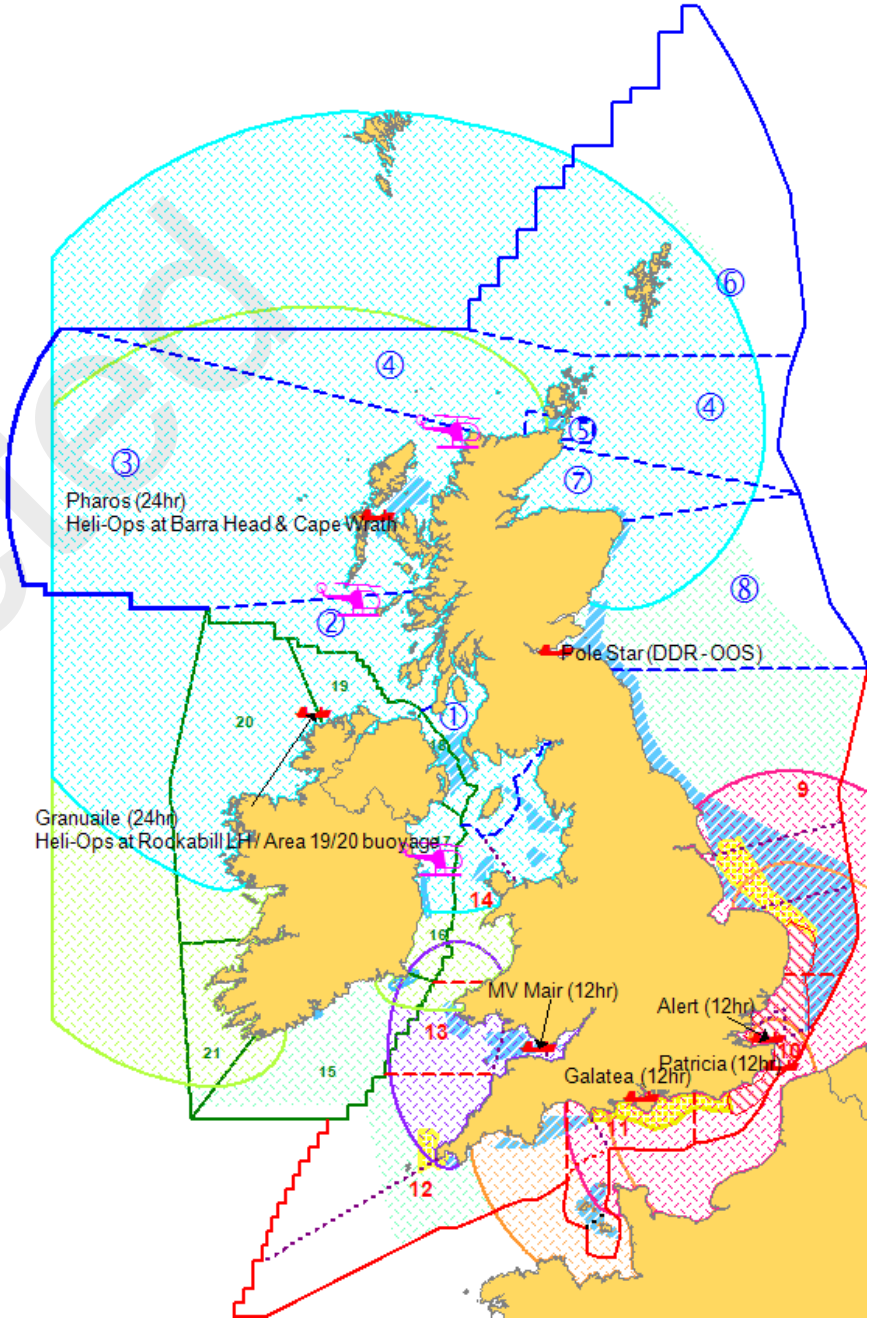
THV Alert- Harwich crewchange Estuary Area work. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Area 13: Bristol Channel. [redacted] Survey- Land's End 12 Hrs coverage.

ILV Granuaile in Area 17,19,20 - Rockabill Heli-Ops

NLV Pharos- Areas 3; Heli-Ops at Barra Head, & Cape Wrath, Masters Changeover

NLV Pole Star - Self Refit Leith, Masters changeover



Week 39 (25th Sept)

THV Patricia- Harwich MFA work. Dover Area 6 Hrs & Humber 12 Hrs coverage.

THV Galatea- Channel Area 11 work; Wight & Land's End 12 Hrs coverage.

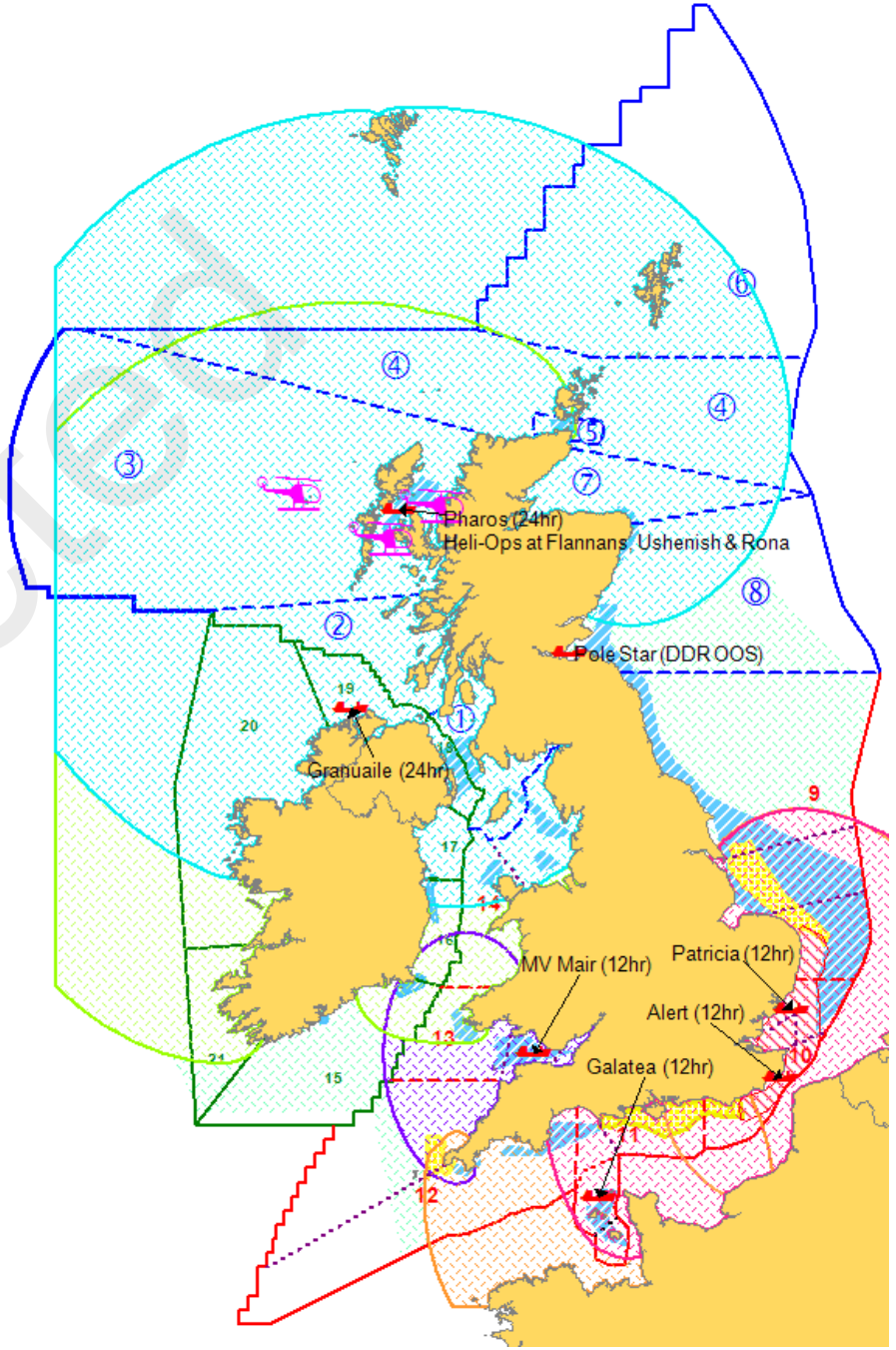
THV Alert- Dover Area work. Dover Area 6 Hrs.

MV Mair- Area 13: Bristol Channel. Land's End 12 Hrs coverage.

ILV Granuaile in Area 19 (20 days work).

NLV Pharos- Areas 3; Heli-Ops at Flannans, Ushenish & Rona

NLV Pole Star - Self Refit, Leith



Week 40 (2nd Oct)

THV Patricia- Harwich crewchange, then Dover area (10); Humber 12 Hrs Coverage

THV Galatea- Portland crewchange- Sark Heliops Wight & Land's End 12 Hrs coverage.

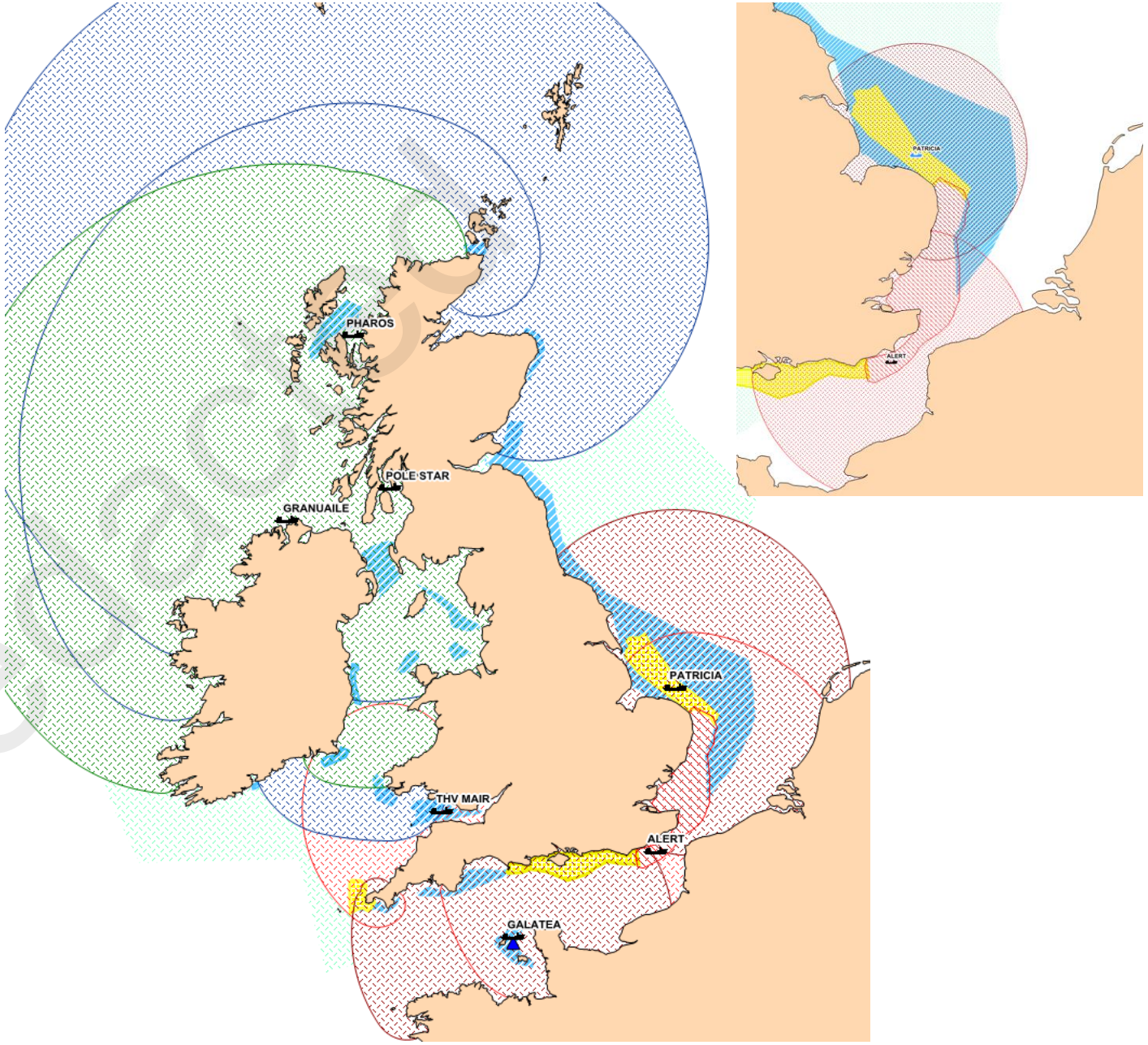
THV Alert- Ramsgate crewchange then Brighton Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel area: Land's End 12 Hrs coverage.

ILV Granuaile; completing work in Area 19 – 10 days work

NLV Pharos- Area 3 Rona, Area 2 Oban crewchange & loading

NLV Pole Star - Areas 1&2 Clyde buoywork West



Week 41 (9th Oct)

THV Patricia- Harwich to destore Humber 12 Hrs Coverage

THV Galatea- Making passage East from Channel Area to Dover area buoy work, then Dover 6 Hrs & Humber 12 Hrs area coverage.

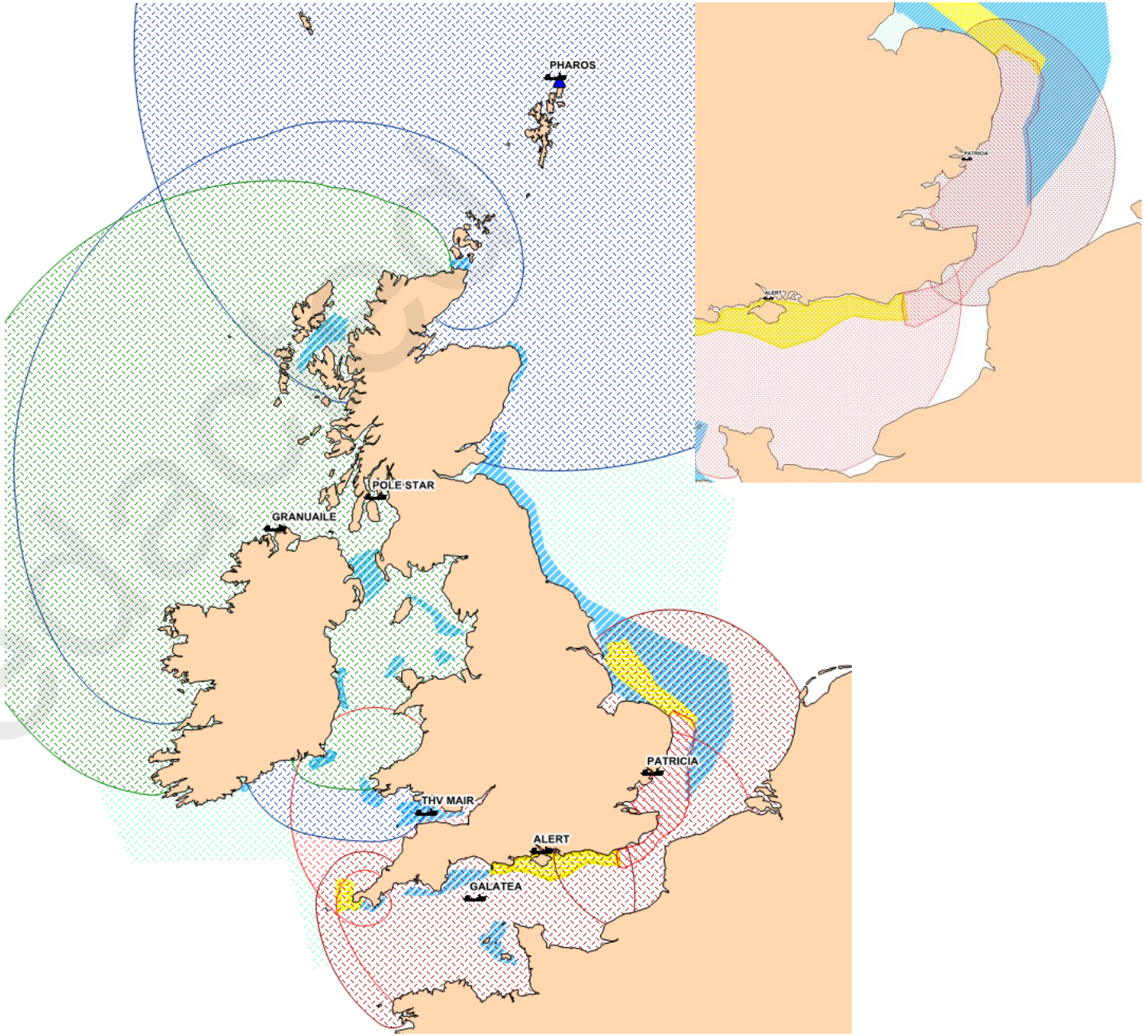
THV Alert- Cowes crewchange then Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel area: Land's End 12 Hrs coverage.

ILV Granuaile; returning to work in Area 19 Beacons.

NLV Pharos- Area 6 Shetland Light Inspections & Shetland Storing- Muckle Flugga

NLV Pole Star - Areas 1 & 2 Clyde area buoyage



Week 42 (16th Oct)

THV Patricia- at DD&R

THV Galatea- Dover/Estuary Areas Work Dover 6 Hrs & Humber 12 Hrs area coverage.

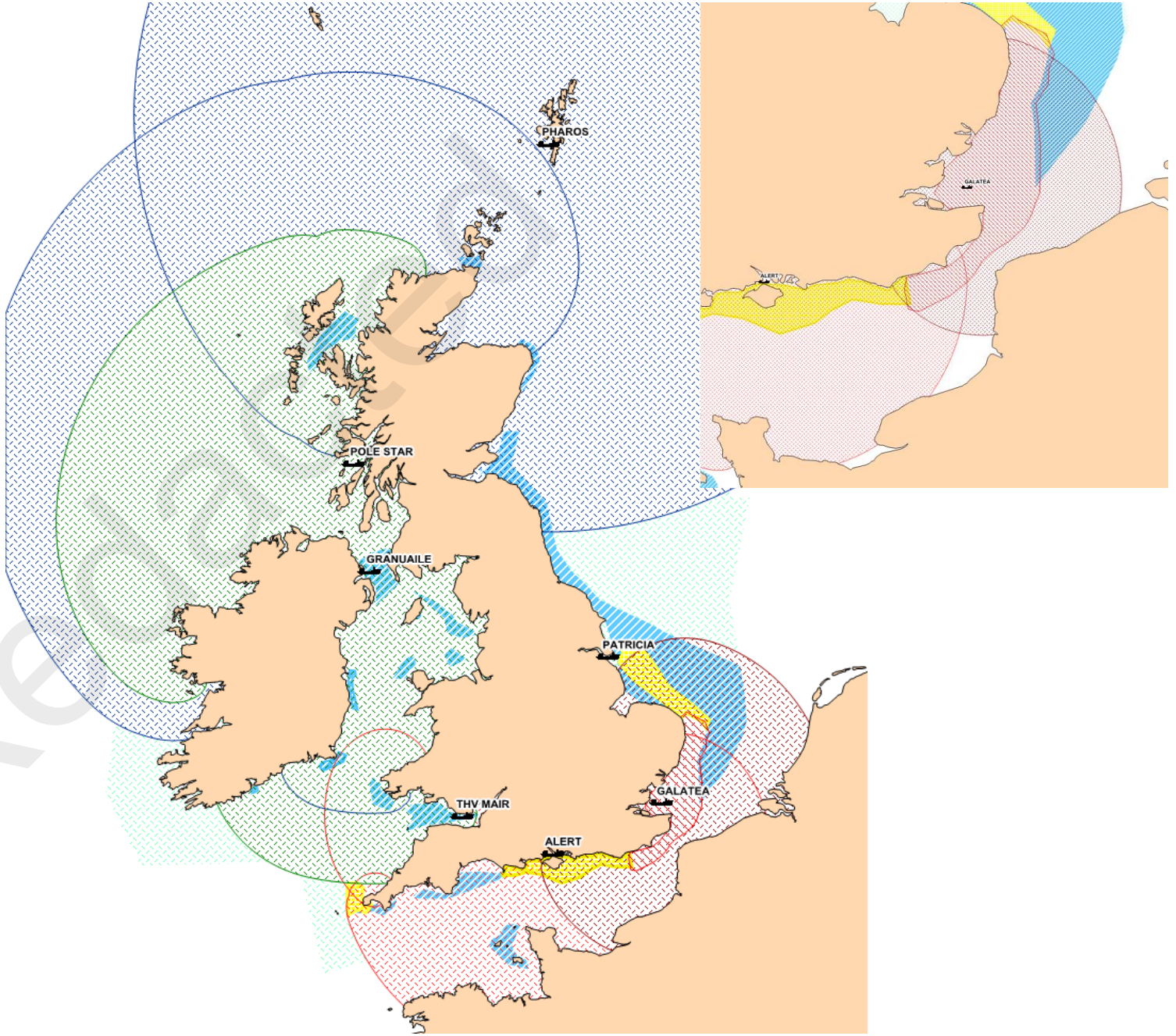
THV Alert- Wight Area work. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel area: Land's End 12 Hrs coverage.

ILV Granuaile; Area 19, 18, 16 Commissioners.

NLV Pharos- Area 6; Fugla ness heli-Ops, masters changeover

NLV Pole Star - Areas 1 & 2 Oban area buoyage, Masters changeover



Week 43 (23rd Oct)

THV Patricia- at DD&R; crew changeover

THV Galatea- Harwich crew change, Estuary Areas Work Dover 6 Hrs & Humber 12 Hrs area coverage.

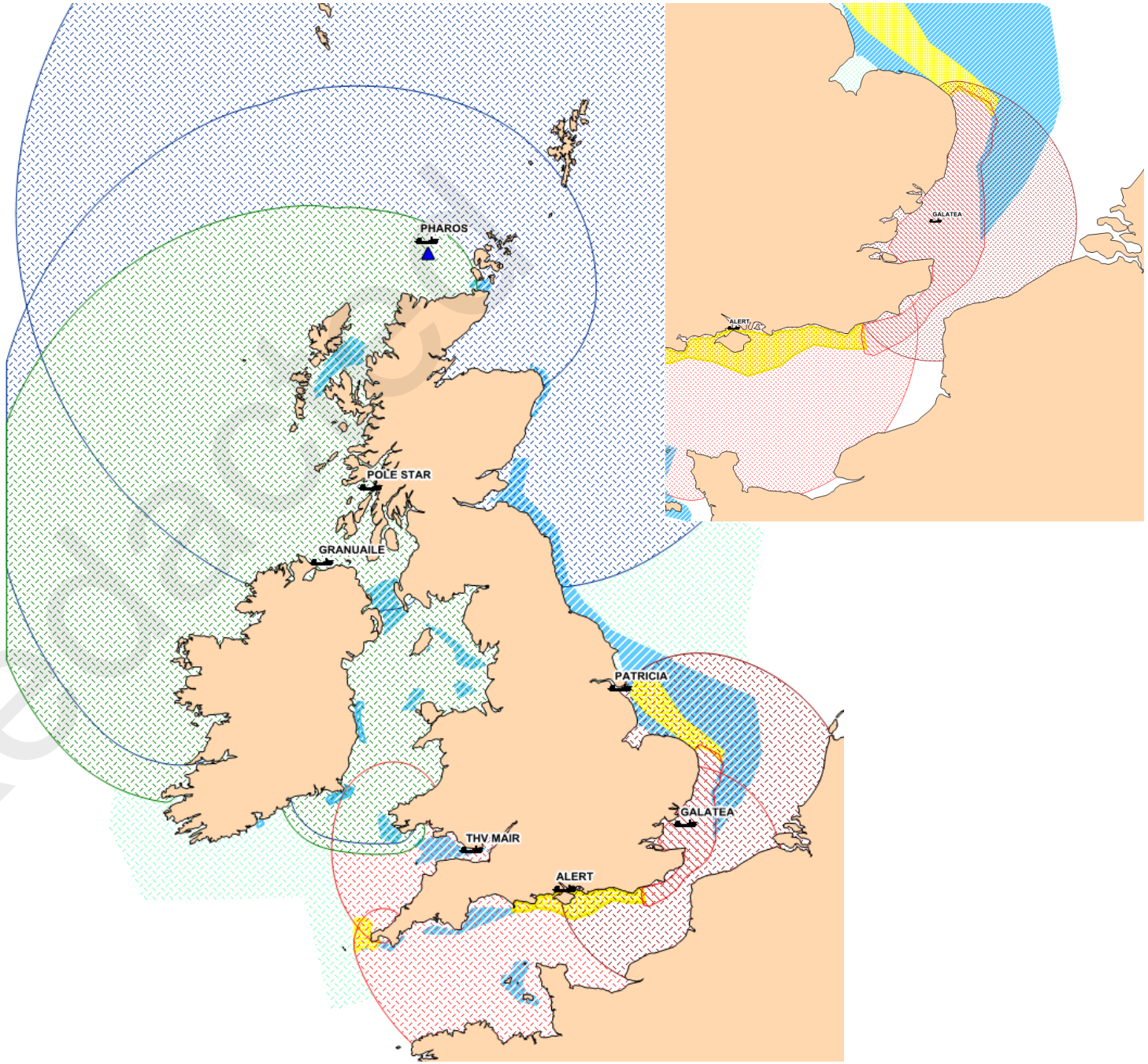
THV Alert- Wight Area work. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel area: Land's End 12 Hrs coverage.

ILV Granuaile; Area 19 Local Lights, Aquaculture.

NLV Pharos- Area 4 LLA Inspections, Sule Skerry Heli-Ops

NLV Pole Star - Area 2 Oban area buoyage



Week 44 (30th Oct)

THV Patricia- at DD&R; crew changeover

THV Galatea- Estuary Area Work Dover 6 Hrs & Humber 12 Hrs area coverage.

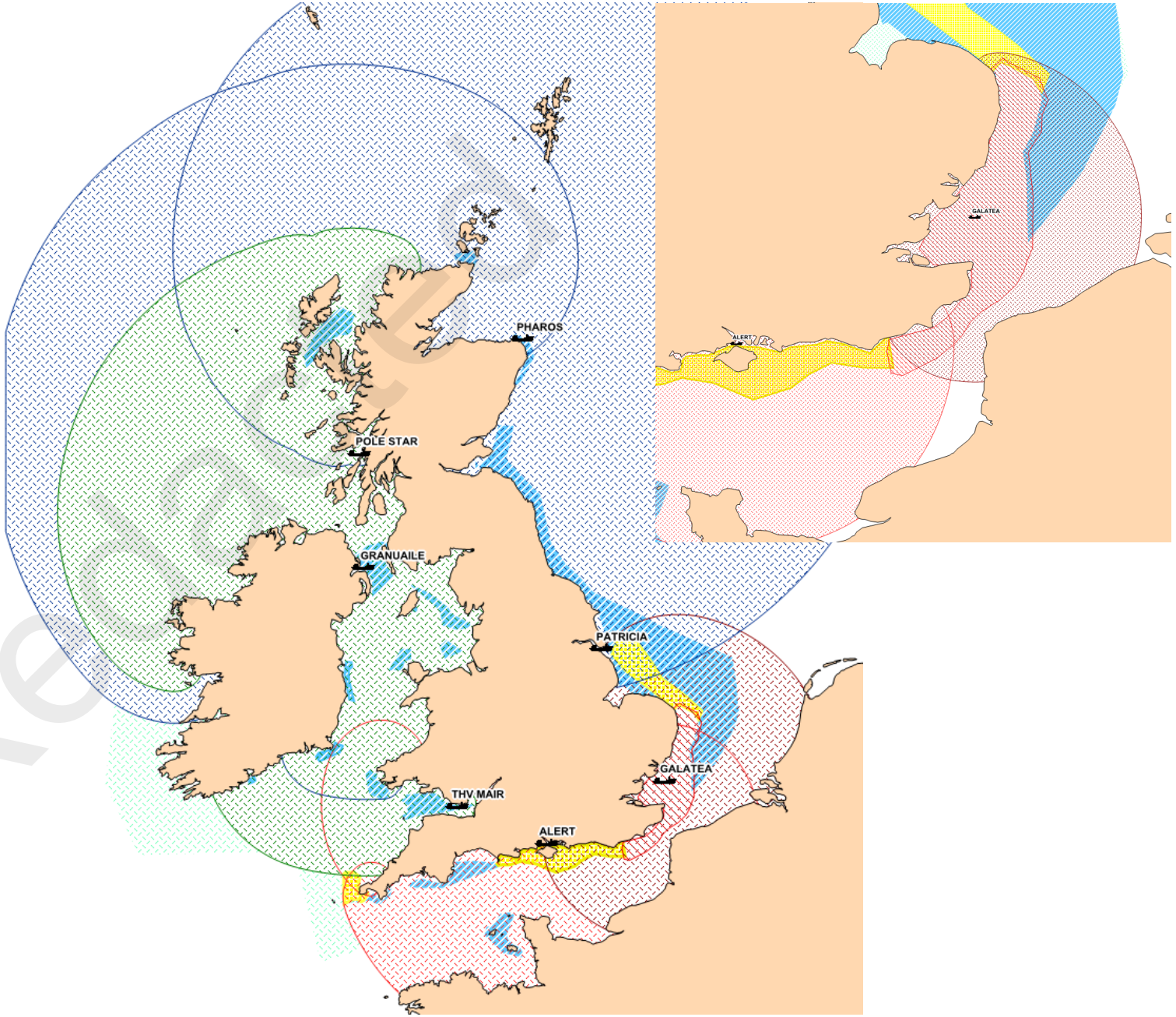
THV Alert- Cowes crewchange. Wight Area work. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 18 buoywork, Belfast crew change

NLV Pharos- Area 7 Invergordon crew change, commence Rig Inspections

NLV Pole Star - Area 2 Oban area buoyage, Oban crewchange



Week 45 (6th Nov)

THV Patricia- at DD&R; crew changeover

THV Galatea- Estuary Area Work Dover 6 Hrs & Humber 12 Hrs area coverage.

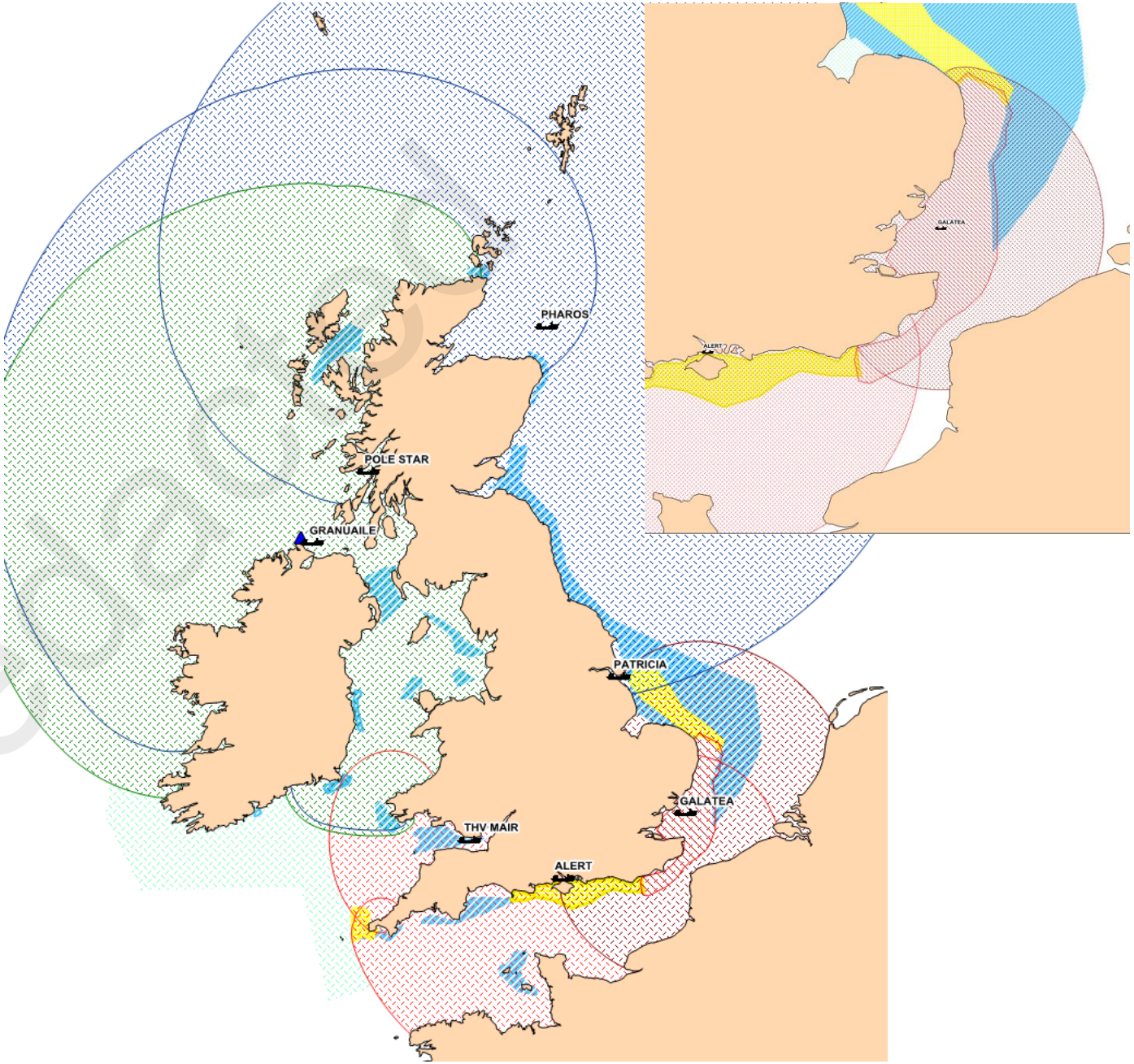
THV Alert- Wight Area work. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 18/19 buoywork- Inishtrahull heli-Ops

NLV Pharos- Area 6,7 & 8 Rig Inspections

NLV Pole Star - Area 2 Oban area buoyage



Week 46 (13th Nov)

THV Patricia- Harwich restore and crewchange then passage to North Sea for East Coast Rig Inspections.

THV Galatea- Harwich crewchange, then remaining Estuary, Harwich Buoywork. Dover 6 Hrs & Wight 12 Hrs area coverage.

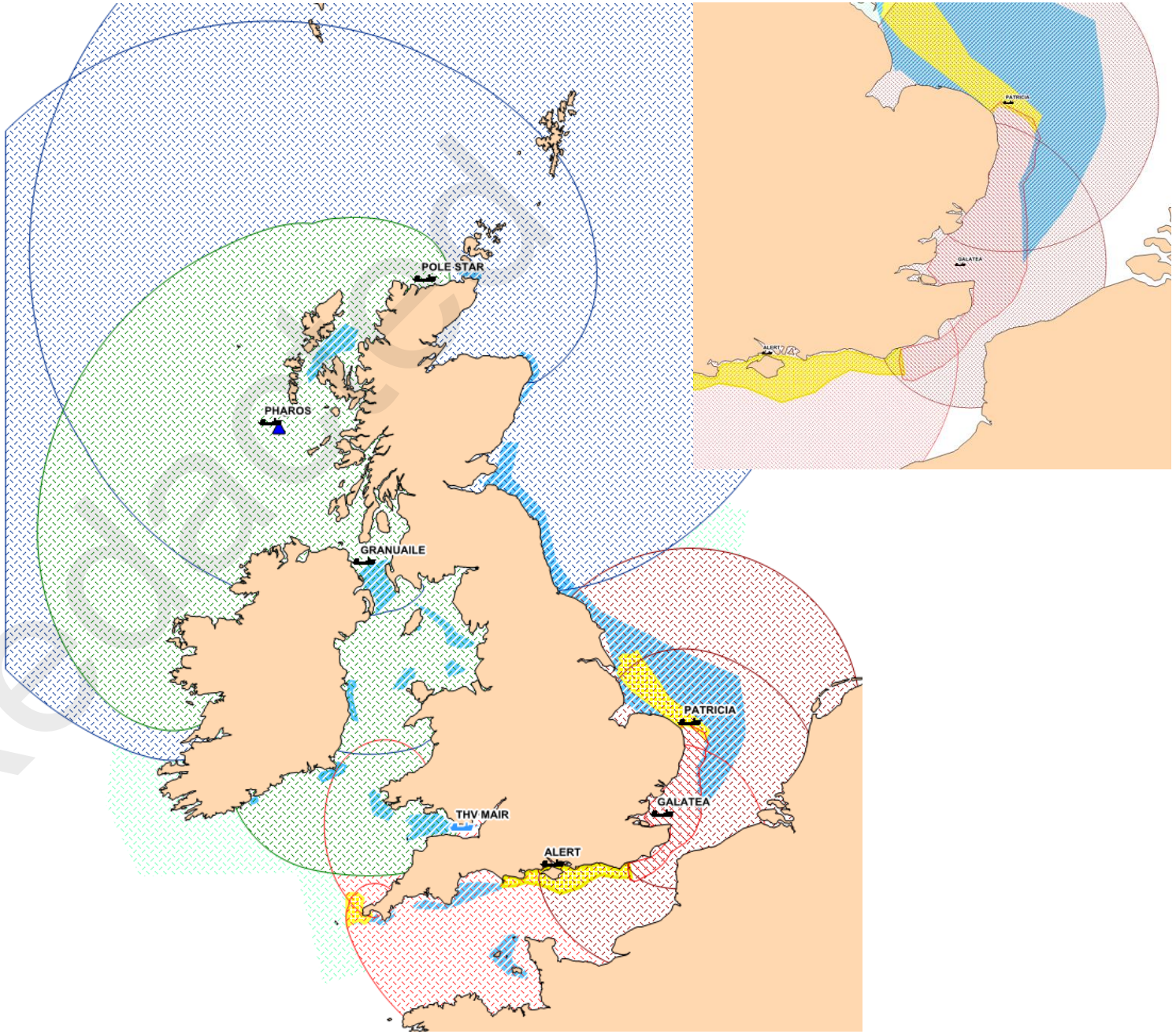
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 18 buoywork.

NLV Pharos- Area 6,7 & 8 Rig Inspections, Masters changeover, then Area 3 for Barra Head Heli-Ops

NLV Pole Star - Casualty cover Areas 1,2,3 & 4, Masters changeover



Week 47 (20th Nov)

THV Patricia- Yarmouth/Wash Areas- East Coast Rig Inspections. Humber 12 Hrs coverage.

THV Galatea- Estuary Area BSL (11); 6 hour coverage.

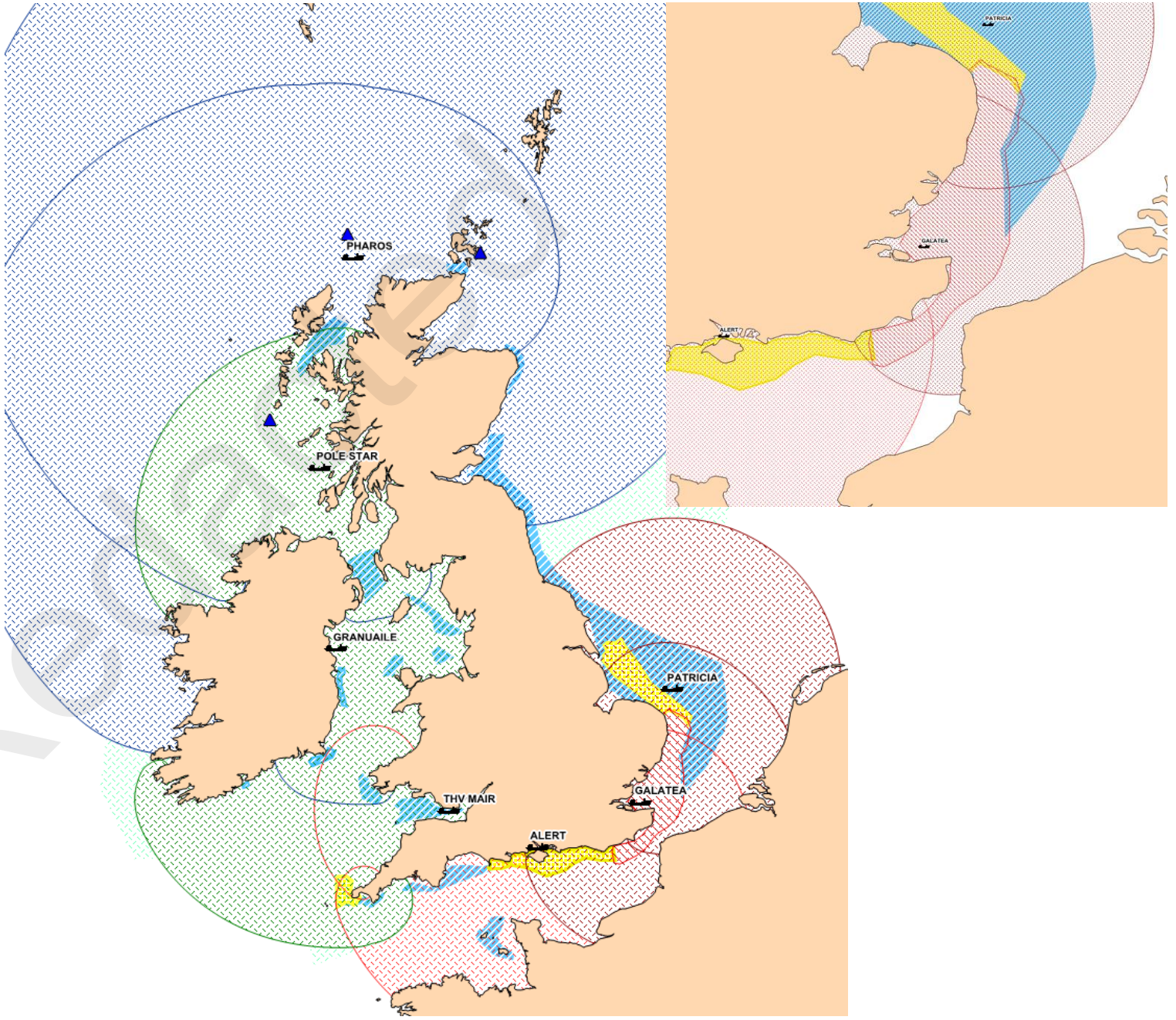
THV Alert- Cowes; Wight Area. 12 Hr coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 17 (25 days work).

NLV Pharos- Area Barra Head, then Area 4 North Rona & Area 5 Copinsay Heli-Ops

NLV Pole Star - Casualty cover Areas 1,2,3 & 4, passage to areas 1 & 2



Week 48 (27th Nov)

THV Patricia- Wash / NE Coast Areas- East Coast Rig Inspections. Humber 12 Hrs coverage.

THV Galatea- Wight Area BSL (11); Wight 12 Hrs area coverage.

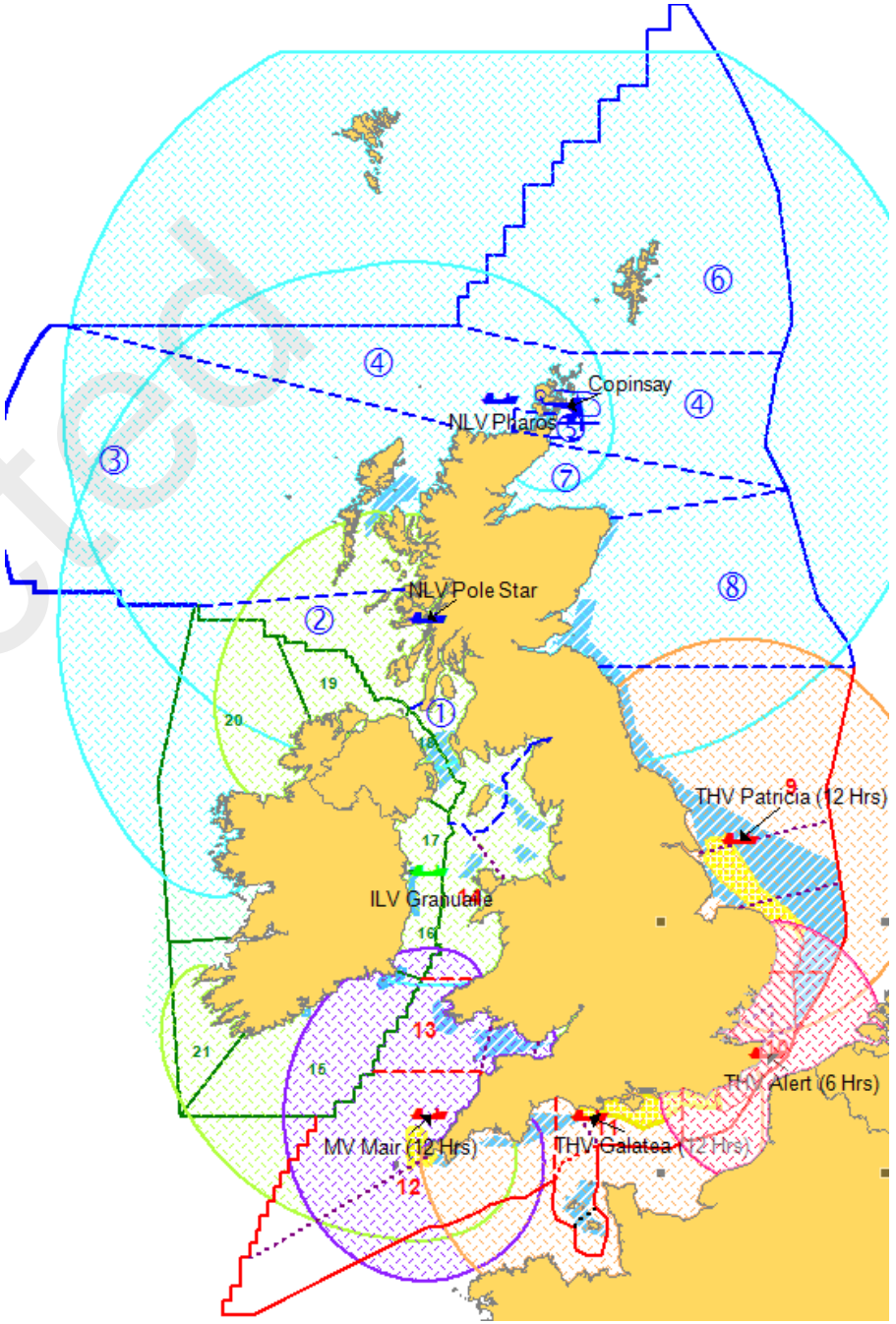
THV Alert- Dover Estuary Area. Dover Area 6 Hrs coverage

MV Mair- Newlyn: Land's End 12 Hrs coverage.

ILV Granuaile; Area 17 (25 days work). Crew changeover

NLV Pharos- Area 5 Copinsay Heli-Ops, Crew Changeover.

NLV Pole Star - Casualty cover Areas 1,2,3 & 4, Oban crew Change then passage East



Week 49 (4th Dec)

THV Patricia- Harwich crewchange Estuary area work. Dover 6 Hrs coverage.

THV Galatea- Portland crewchange Wight Area BSL (11); Land's End & Wight 12 Hrs area coverage.

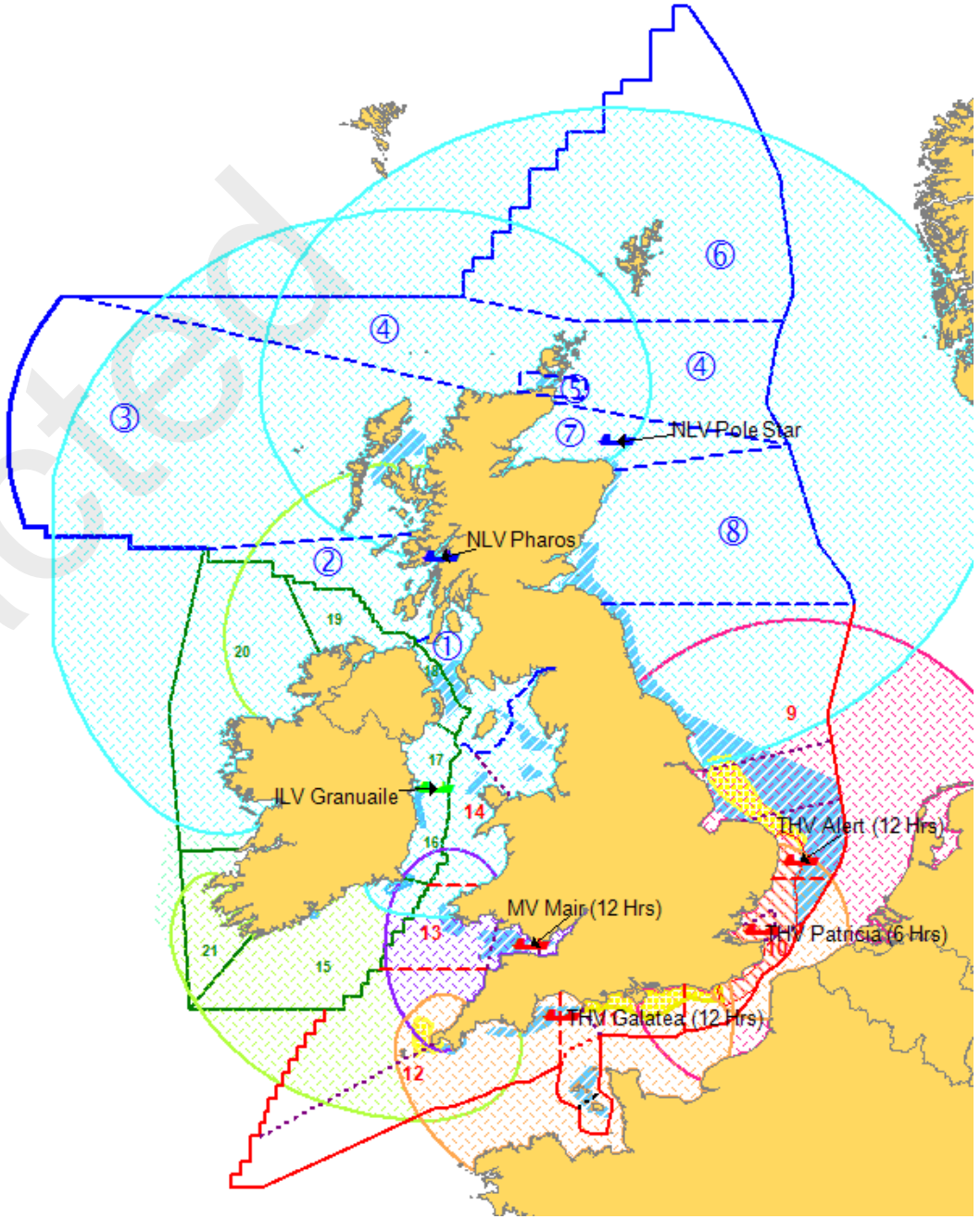
THV Alert- Yarmouth Area work. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Bristol Channel, [redacted] Survey: Land's End 12 Hrs coverage.

ILV Granuaile; Area 17 Based East Coast- Casualty Cover

NLV Pharos- Areas 2 & 3 Oban.

NLV Pole Star - Casualty cover and LLA Inspections Areas 5,6,7 & 8.



Week 50 (11 Dec)

THV Patricia- Estuary area work. Dover 6 Hrs coverage.

THV Galatea- Channel/Penzance Area BSL (11); Land's End & Wight 12 Hrs area coverage.

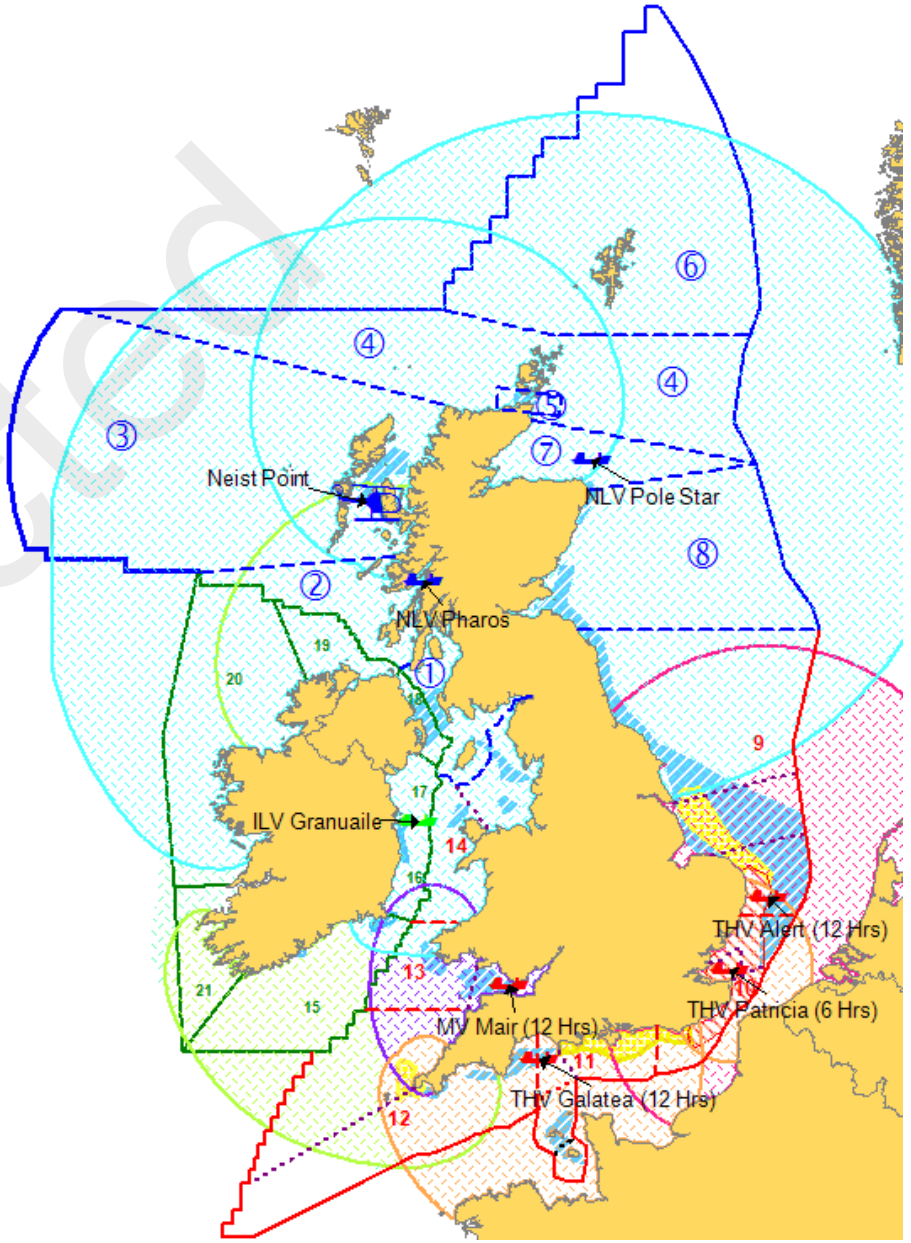
THV Alert- Yarmouth Area work. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 17 Based East Coast- Casualty Cover

NLV Pharos- Areas 2 & 3 Heli-Ops Neist Point, Masters changeover.

NLV Pole Star - Casualty cover and LLA Inspections Areas 5,6,7 & 8. Masters changeover



Week 51 (18th Dec)

THV Patricia- Estuary area work. Dover 6 Hrs coverage.

THV Galatea- Wight/Channel Area BSL (11); Land's End & Wight 12 Hrs area coverage.

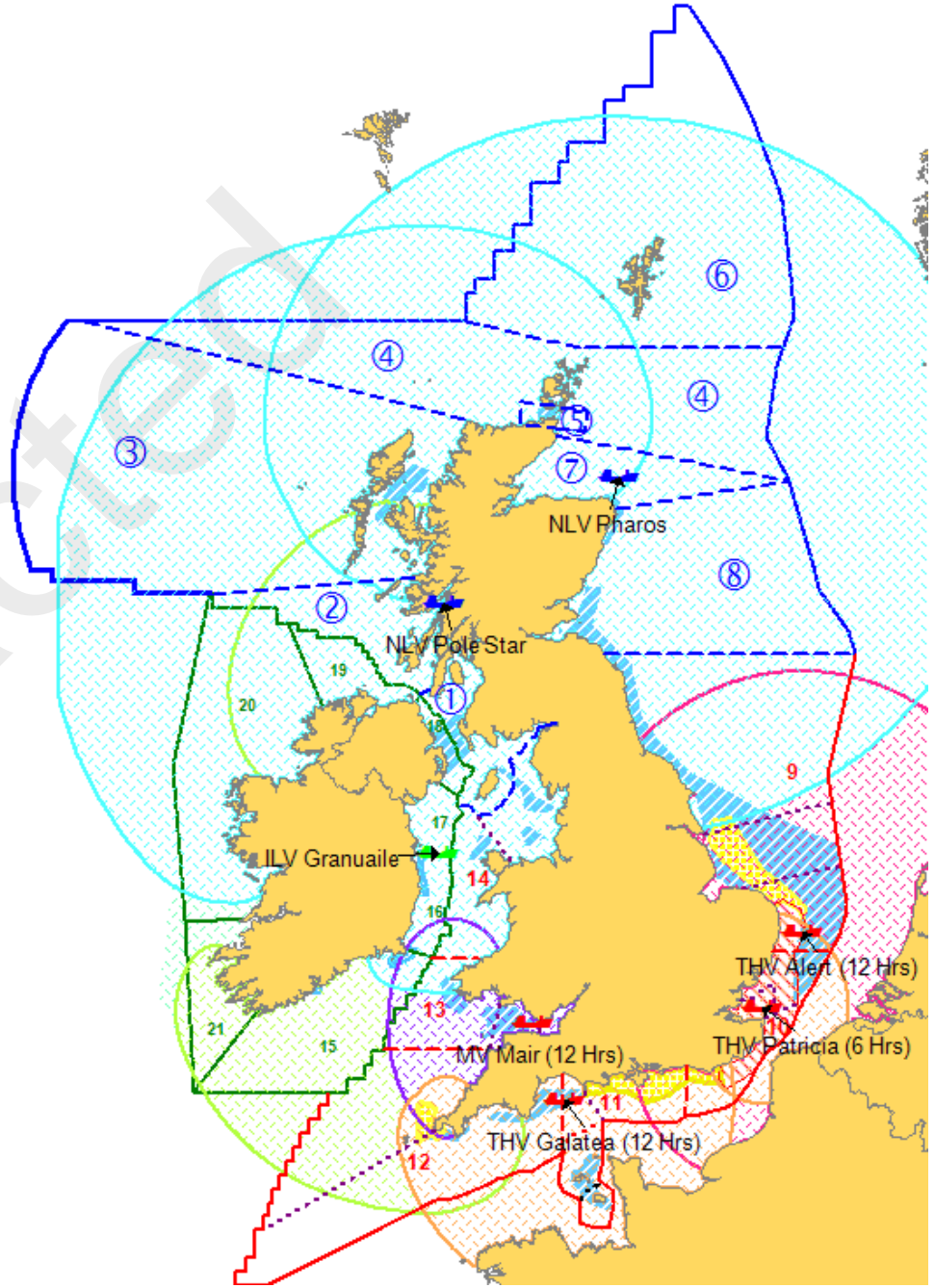
THV Alert- Yarmouth Area work. Dover Area 6 Hrs & Humber 12 Hrs coverage

MV Mair- Bristol Channel: Land's End 12 Hrs coverage.

ILV Granuaile; Area 17 Based East Coast- Casualty Cover

NLV Pharos- Areas 2 & 3 then passage East to areas 7 & 8 for LLA Inspections.

NLV Pole Star - Casualty cover and LLA Inspections Areas 5,6,7 & 8 then passage West to Oban.



Week 52 (25th Dec)

THV Patricia- Harwich crew change – Humber 12 Hrs Coverage.

THV Galatea- Portland crew change: Land's End & Wight 12 Hrs area coverage.

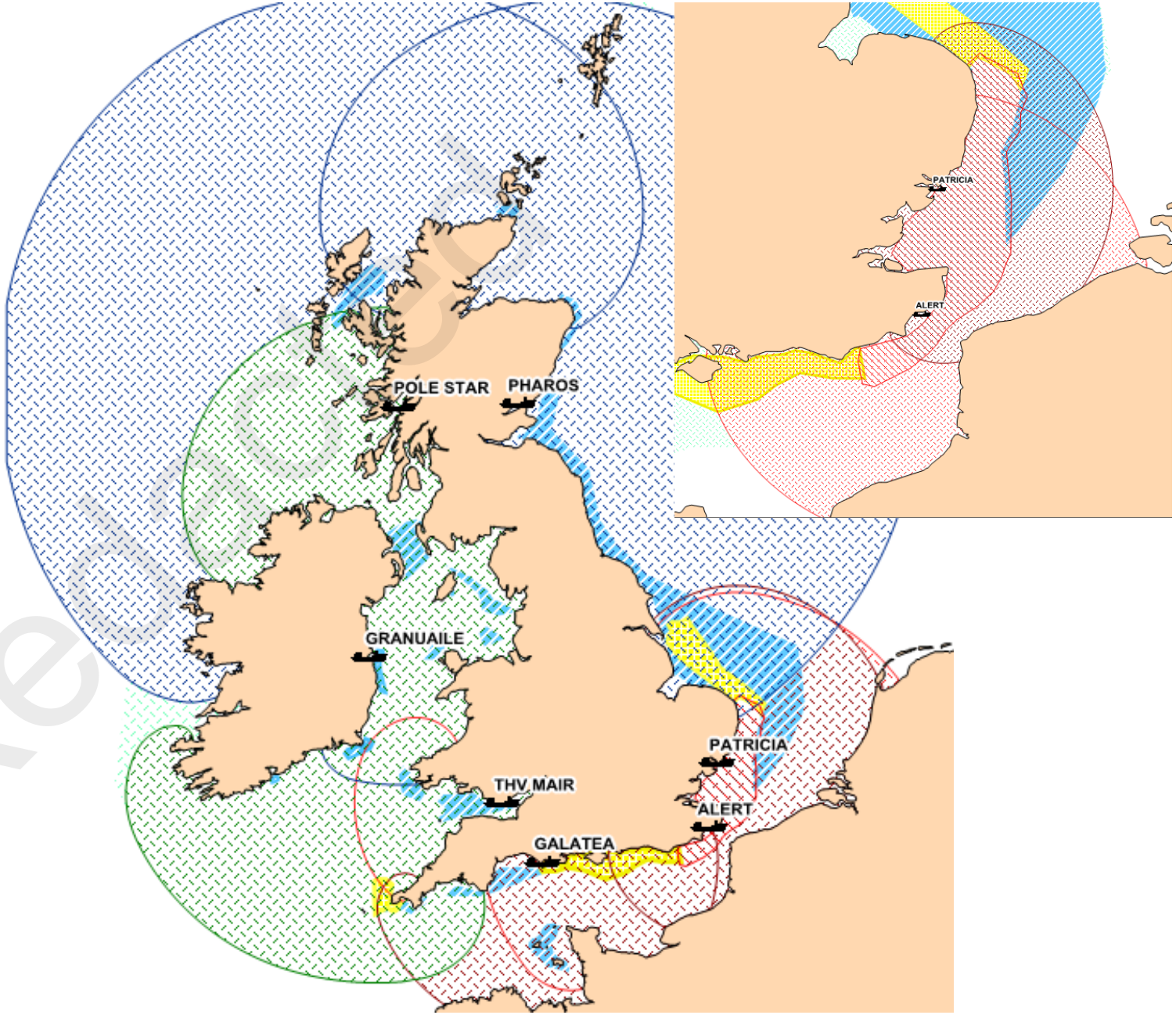
THV Alert- Dover, then head to Wight after Christmas. Dover Area 6 Hrs & Wight 12 Hrs coverage

MV Mair- Barry.

ILV Granuaile; Area 16/17 Dun Laoghaire Crewchange; Based East Coast- Casualty Cover

NLV Pharos- Area 7 & 8 LLA Inspections. East Coast crew change.

NLV Pole Star - Oban crew change Casualty cover Areas 1 - 4.



Week 1 – 1st Jan 2018

THV Patricia- Estuary Area – Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Penzance Area BSL : Land's End & Wight 12 Hrs area coverage.

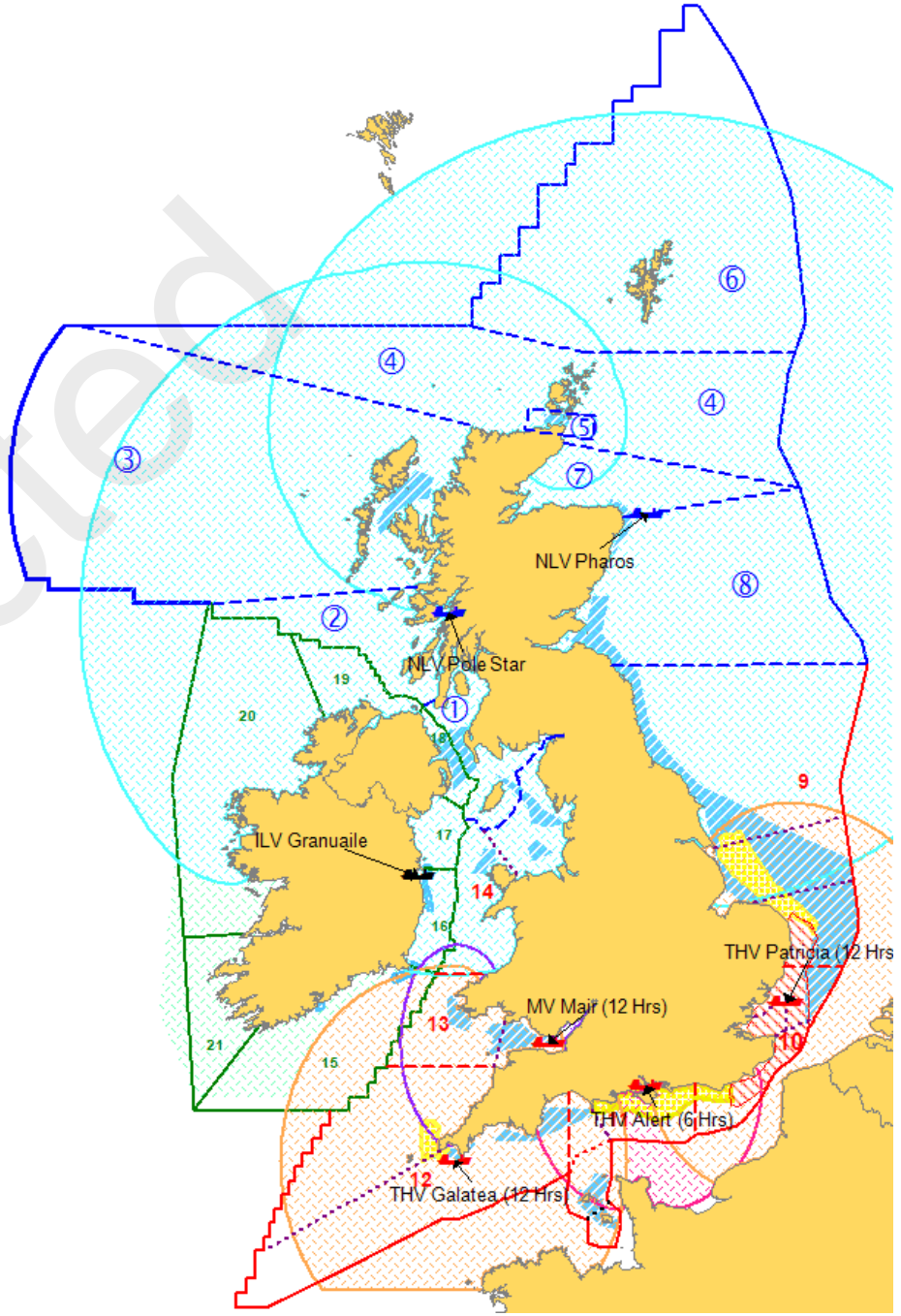
THV Alert- Cowes crew change then Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel area.

ILV Granuaile; Area 16/17 Dun Laoghaire Statutory Surveys

NLV Pharos- Area 7 & 8 LLA Inspections.

NLV Pole Star - Oban crew change Casualty cover Areas 1 - 4.



Week 2 (8th Jan)

THV Patricia- Estuary Area – Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Channel islands- Sark heli-ops then passage West Coast; Land's End & Wight 12 Hrs area coverage.

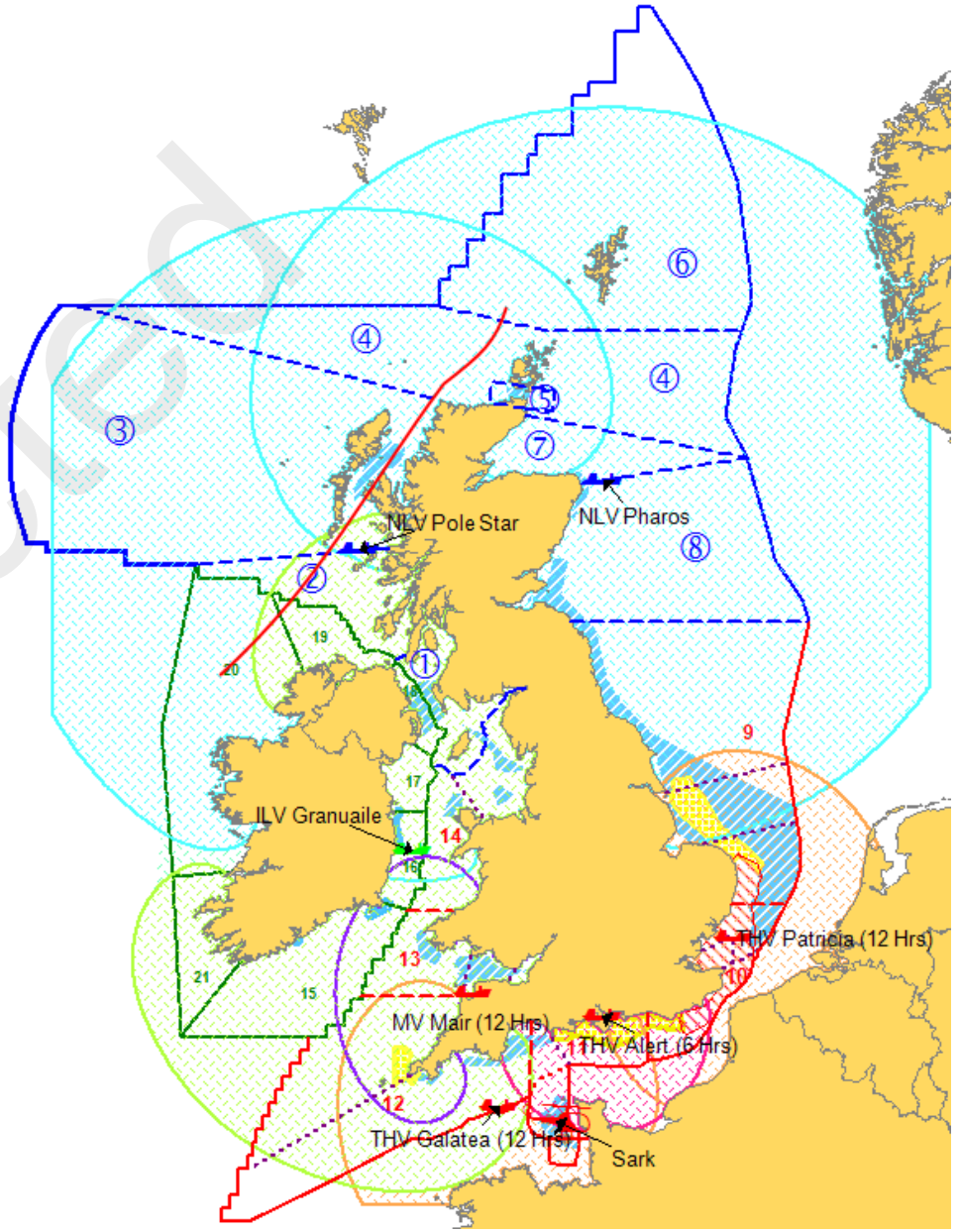
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; Bideford Channel Survey.

ILV Granuaile; Area 16/17 Ireland East Coast casualty cover.

NLV Pharos- Casualty cover Areas 7 & 8; Masters changeover

NLV Pole Star - Casualty cover Areas 1 – 4; Masters changeover.



Week 3 (15th Jan)

THV Patricia- Harwich crewchange; Yarmouth Area Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Swansea crew change. Cardiff Area work; Land's End 12 Hrs area coverage.

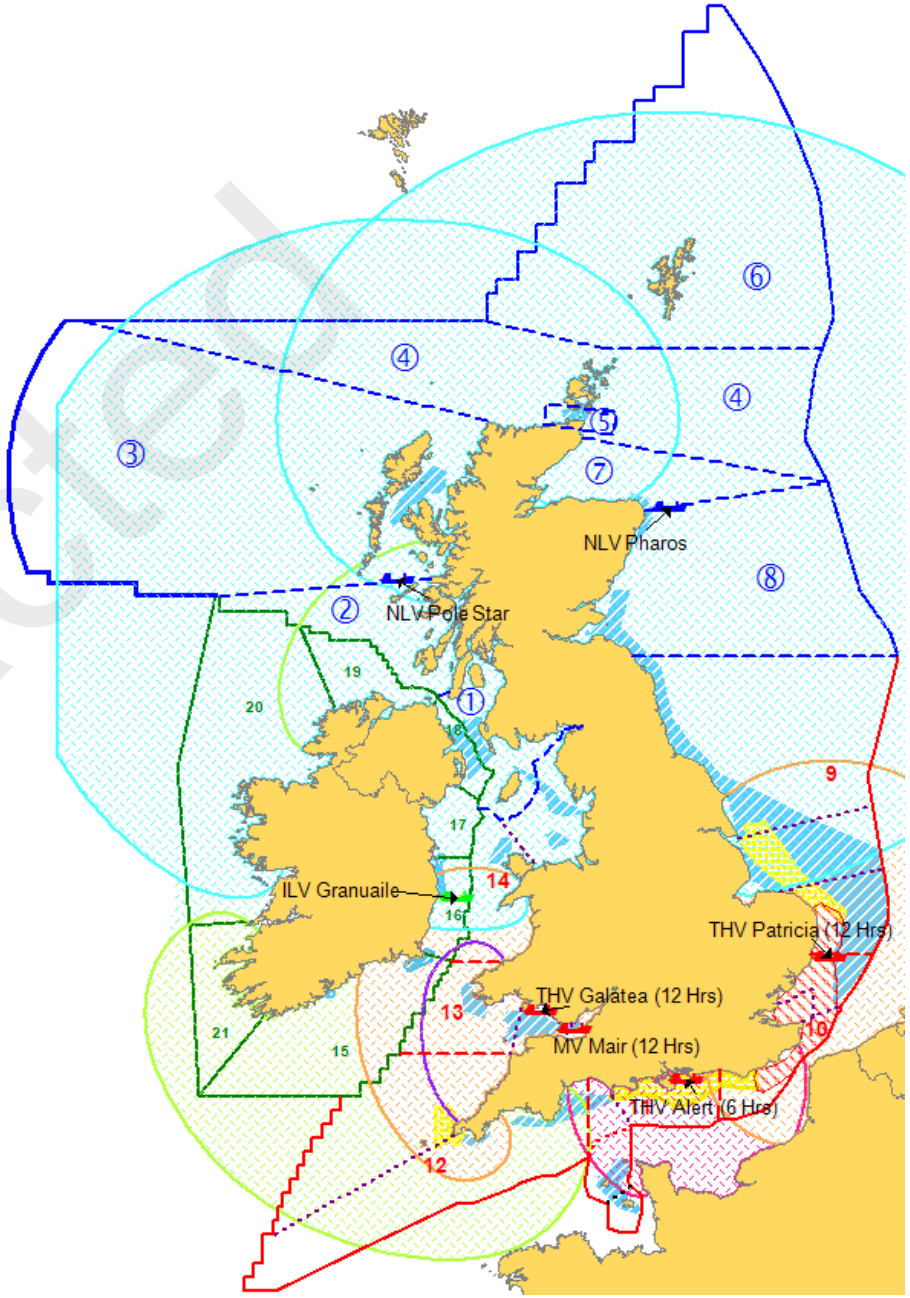
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs land's End coverage

ILV Granuaile; Area 16/17 Ireland East Coast casualty cover.

NLV Pharos- Casualty cover Areas 7 & 8 .

NLV Pole Star - Casualty cover Areas 1 – 4.



Week 4 (22nd Jan)

THV Patricia- Yarmouth Area Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Cardiff Area work; Land's End 12 Hrs area coverage.

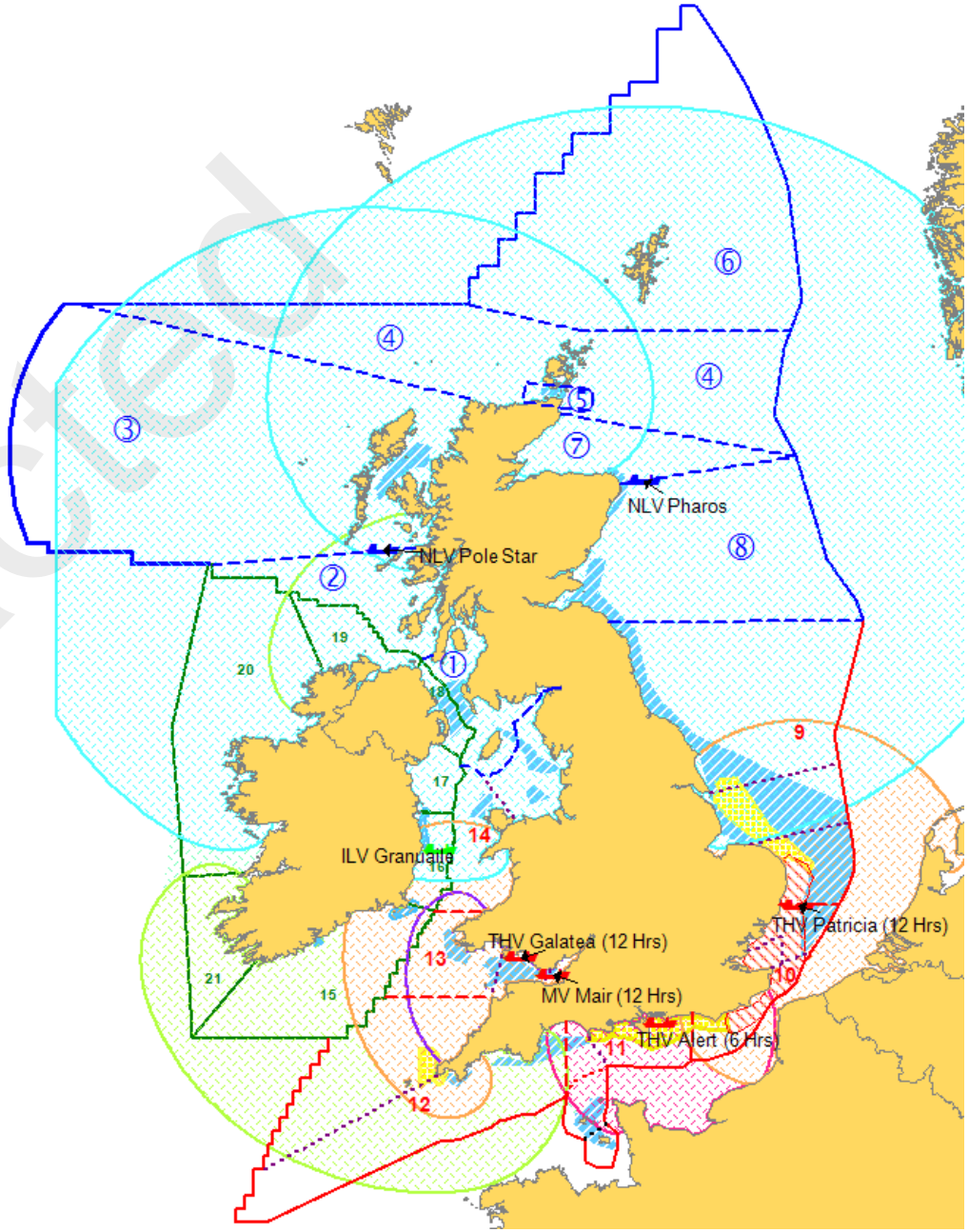
THV Alert- Cowes Crew change. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs land's End coverage

ILV Granuaile; Area 16/17 Ireland East Coast casualty cover.

NLV Pharos- Casualty cover Areas 7 & 8 ; Crew Changeover

NLV Pole Star - Casualty cover Areas 1 – 4; Crew Changeover.



Week 5 (29th Jan)

THV Patricia- Yarmouth Area Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Cardiff Area work; Land's End 12 Hrs area coverage.

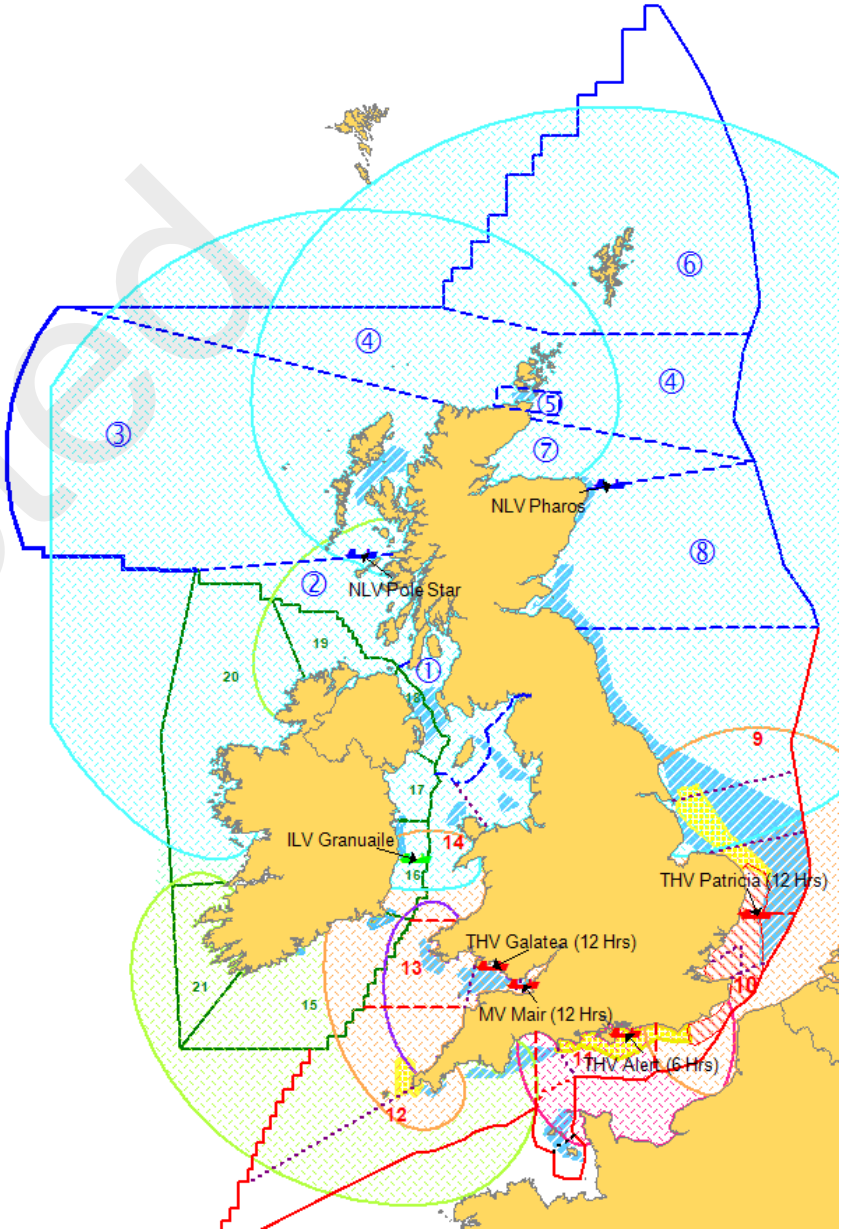
THV Alert- Cowes Crew change. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs land's End coverage

ILV Granuaile; East Coast; area 16/17 buoywork.

NLV Pharos- Casualty cover Areas 7 & 8;

NLV Pole Star - Casualty cover Areas 1 – 4;



Week 6 (5th Feb)

THV Patricia- Harwich Crewchange. Estuary Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Swansea Crewchange; Wolf Rock Heli-Ops then remain south coast. Land's End 12 Hrs area coverage.

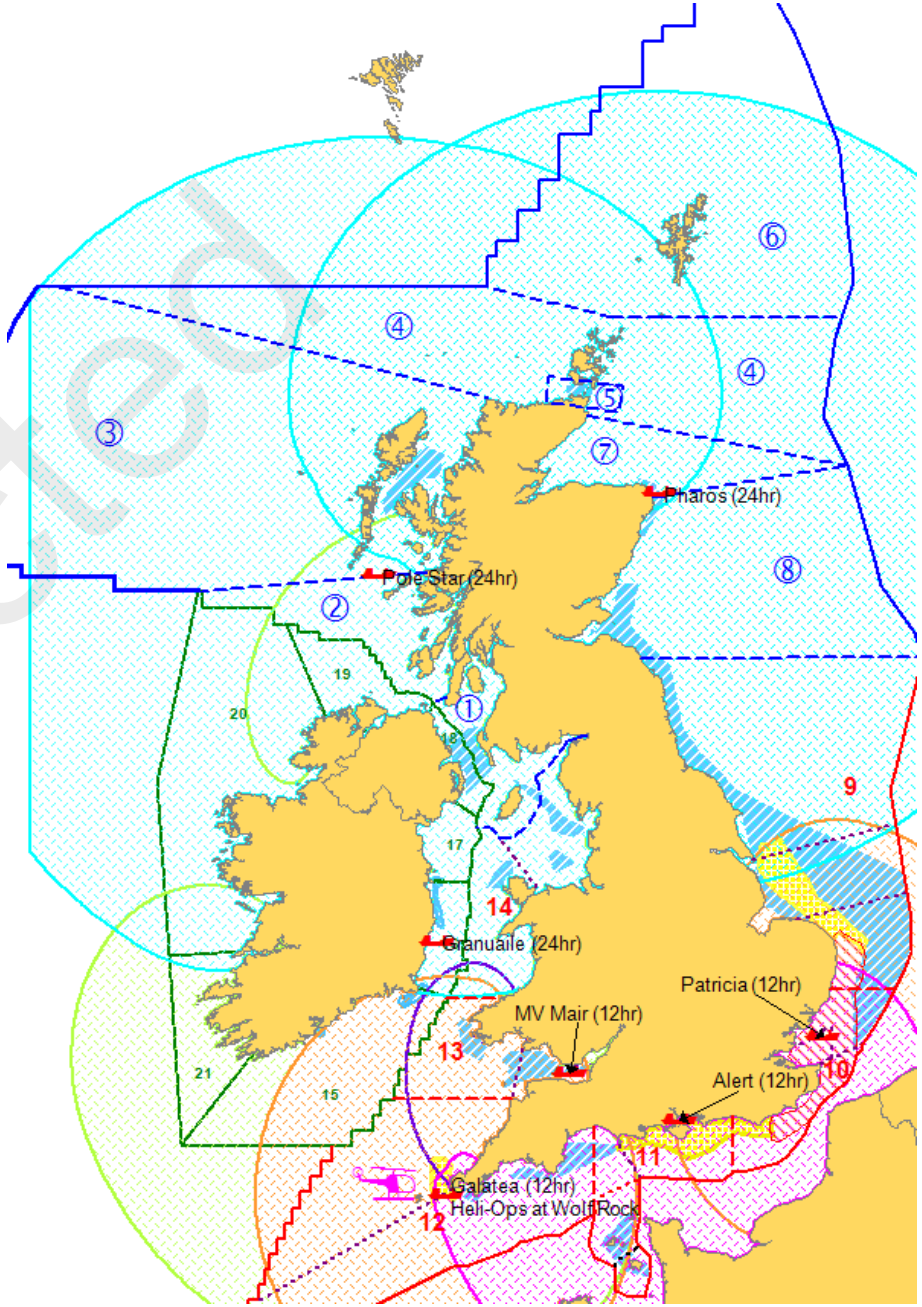
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover Areas 7 & 8, Masters Changeover.

NLV Pole Star - Casualty cover Areas 1 – 4; Masters Changeover.



Week 7 (12th Feb)

THV Patricia- Estuary Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Wight area BSL. Land's End 12 Hrs area coverage.

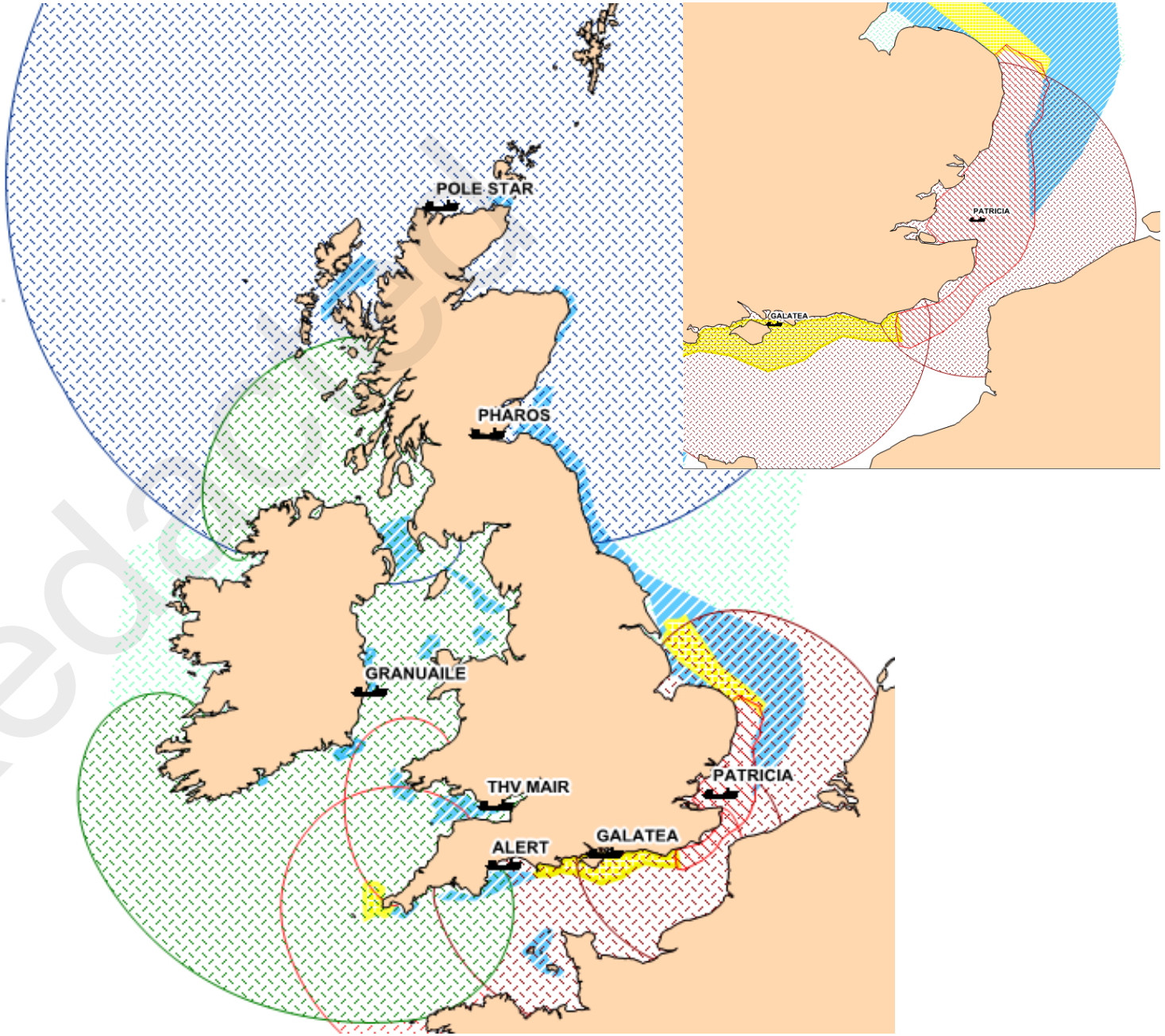
THV Alert- Portland/Channel Area crew change; Wight Area. Wight & Landsend 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Self Refit

NLV Pole Star - Area 4 – East & West Coast coverage.



Week 8 (19th Feb)

THV Patricia- Estuary Work– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea- Wight Area BSL. Wight 12 Hrs area coverage.

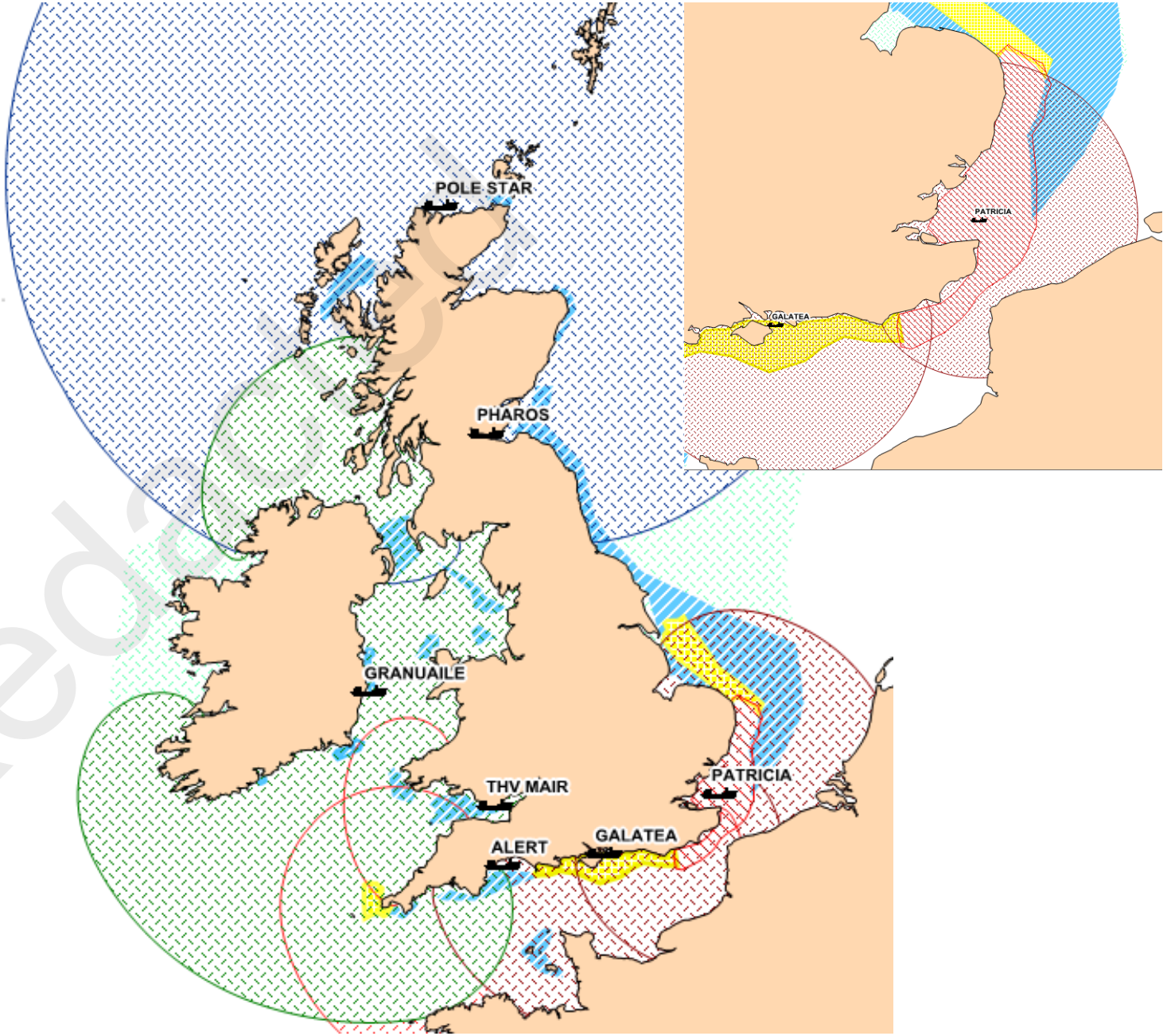
THV Alert- Channel/Penzance. Landsend & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork. Dun Laoghaire crew change.

NLV Pharos- Self Refit; Crew changeover

NLV Pole Star - Area 4 – East & West Coast coverage. Crew changeover.



Week 9 (26th Feb)

THV Patricia- Harwich Area for crewchange and buoywork– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea-Southampton for crewchange and then passage to Bristol Channel. Land's End 12 Hrs area coverage.

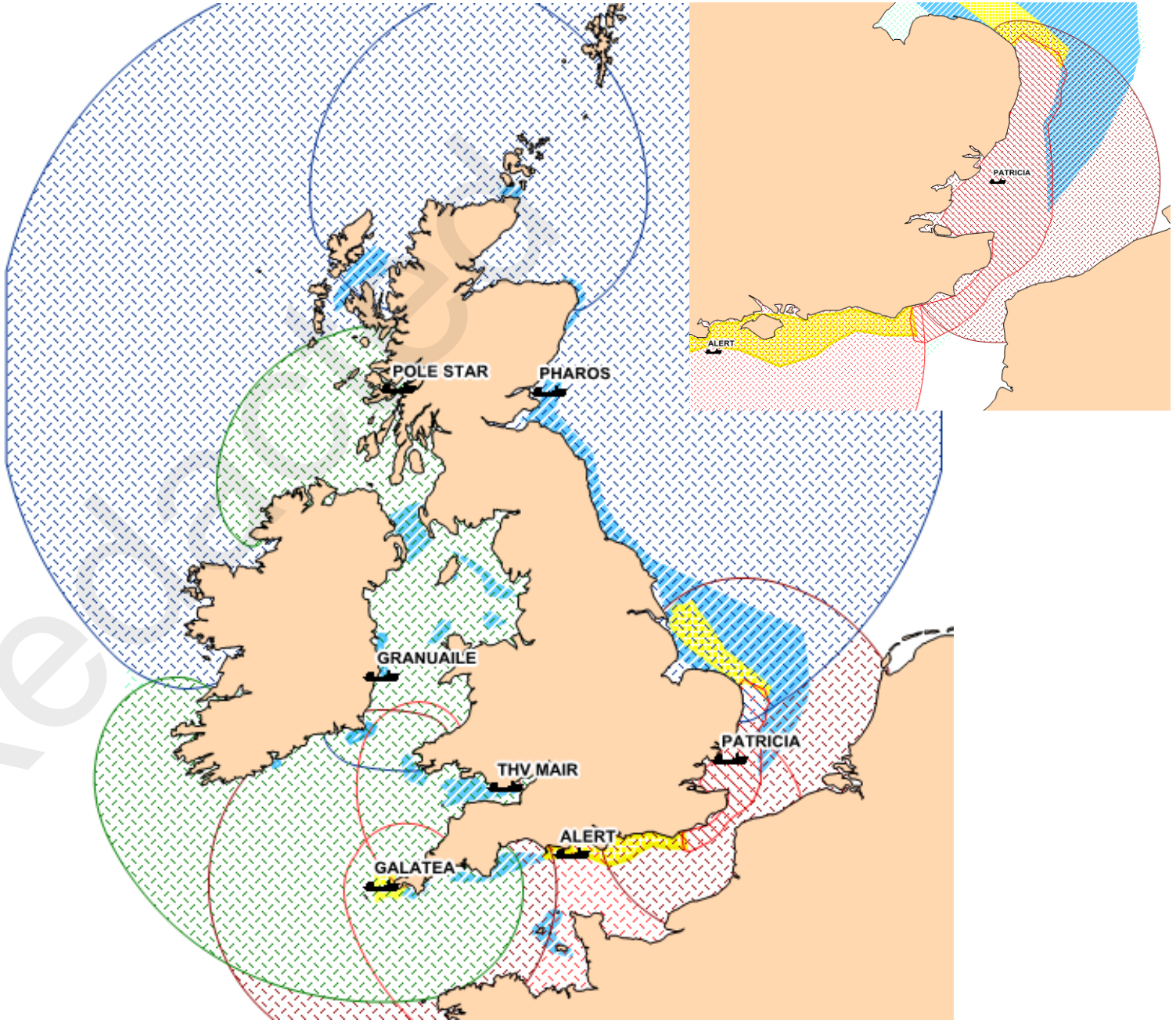
THV Alert- Channel /Penzance Area; then Wight area when Galatea heads west coast. Landsend & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover areas 4 – 8; Heli-Ops to be confirmed.

NLV Pole Star - Area 4 – Casualty cover Areas 1 – 4.



Week 10 (5th Mar)

THV Patricia- Harwich Area buoywork– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea-Swansea Area buoywork. Land's End 12 Hrs area coverage.

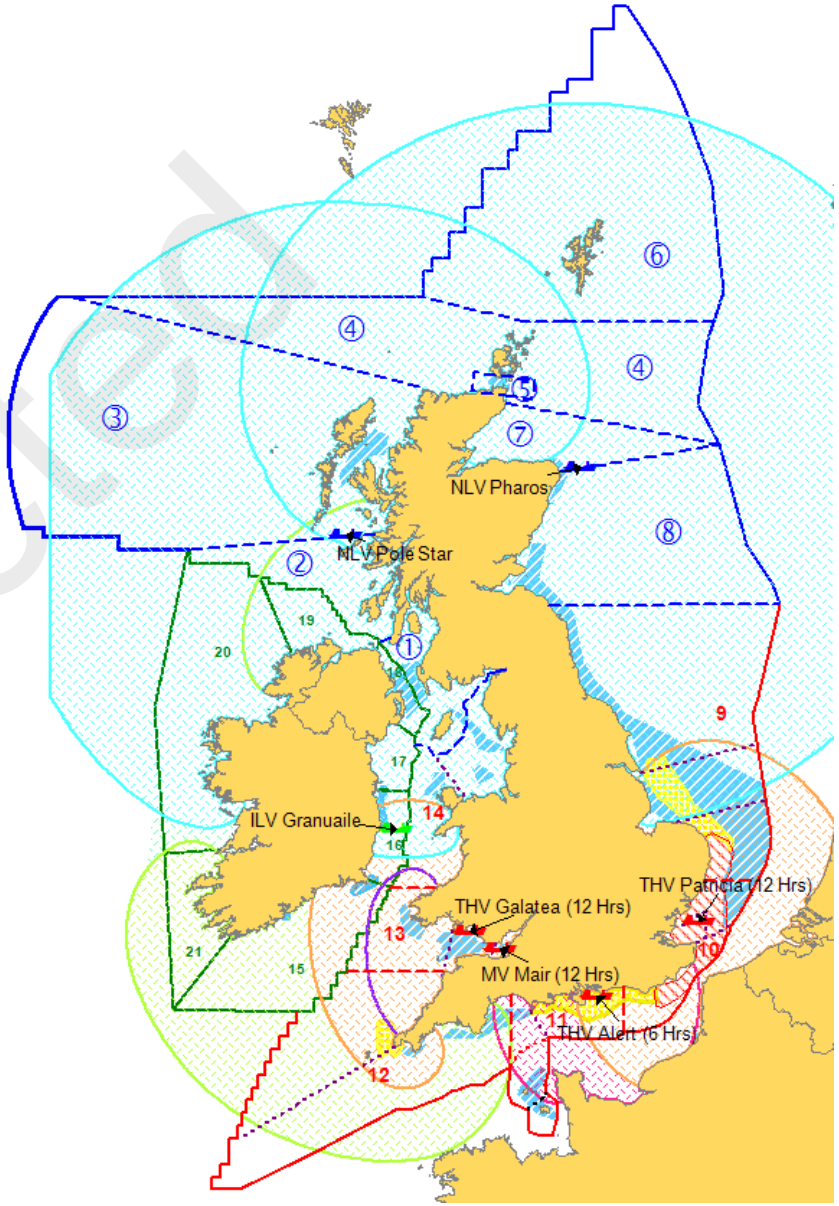
THV Alert- Cowes crew change. Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; [redacted] Survey; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover areas 4 – 8; Masters changeover.

NLV Pole Star - Area 4 – Casualty cover Areas 1 – 4. Masters changeover.



Week 11 (12th Mar)

THV Patricia- Harwich Area buoywork– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea-Swansea Area for buoywork. Land's End 12 Hrs area coverage.

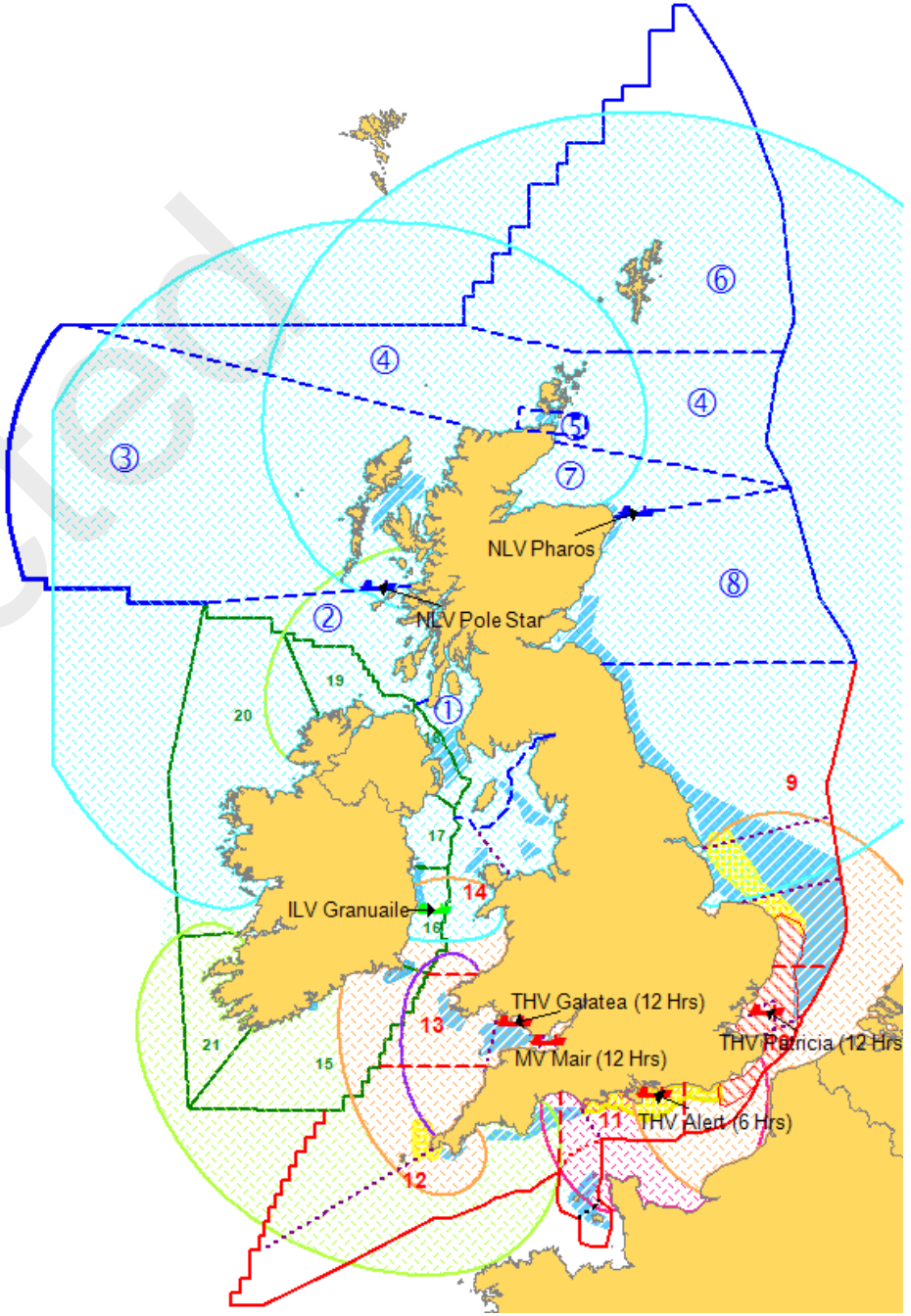
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover areas 4 – 8;

NLV Pole Star Area 4 – Casualty cover Areas 1 – 4.



Week 12 (19th Mar)

THV Patricia- Harwich Area crewchange & buoywork– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea-Swansea Area crewchange & buoywork. Land's End 12 Hrs area coverage.

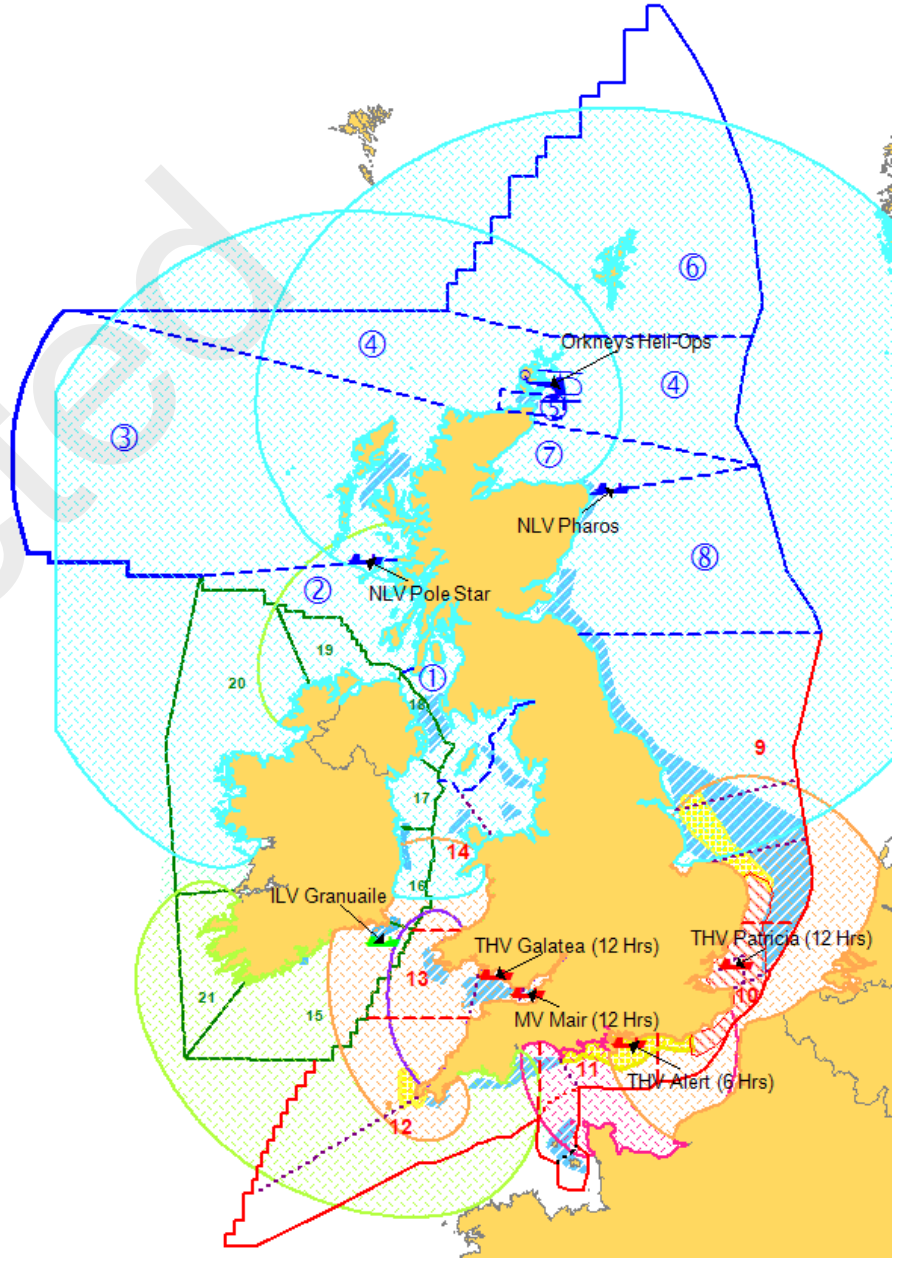
THV Alert- Wight Area. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover areas 4 – 8; crew changeover, Orkney Heli-Ops

NLV Pole Star - Area 4 – Casualty cover Areas 1 – 4. Crew changeover.



Week 13 (26th Mar)

THV Patricia- Harwich Area buoywork– Dover 6 Hrs & Humber 12 Hrs Coverage.

THV Galatea-Swansea Area buoywork. Land's End 12 Hrs area coverage.

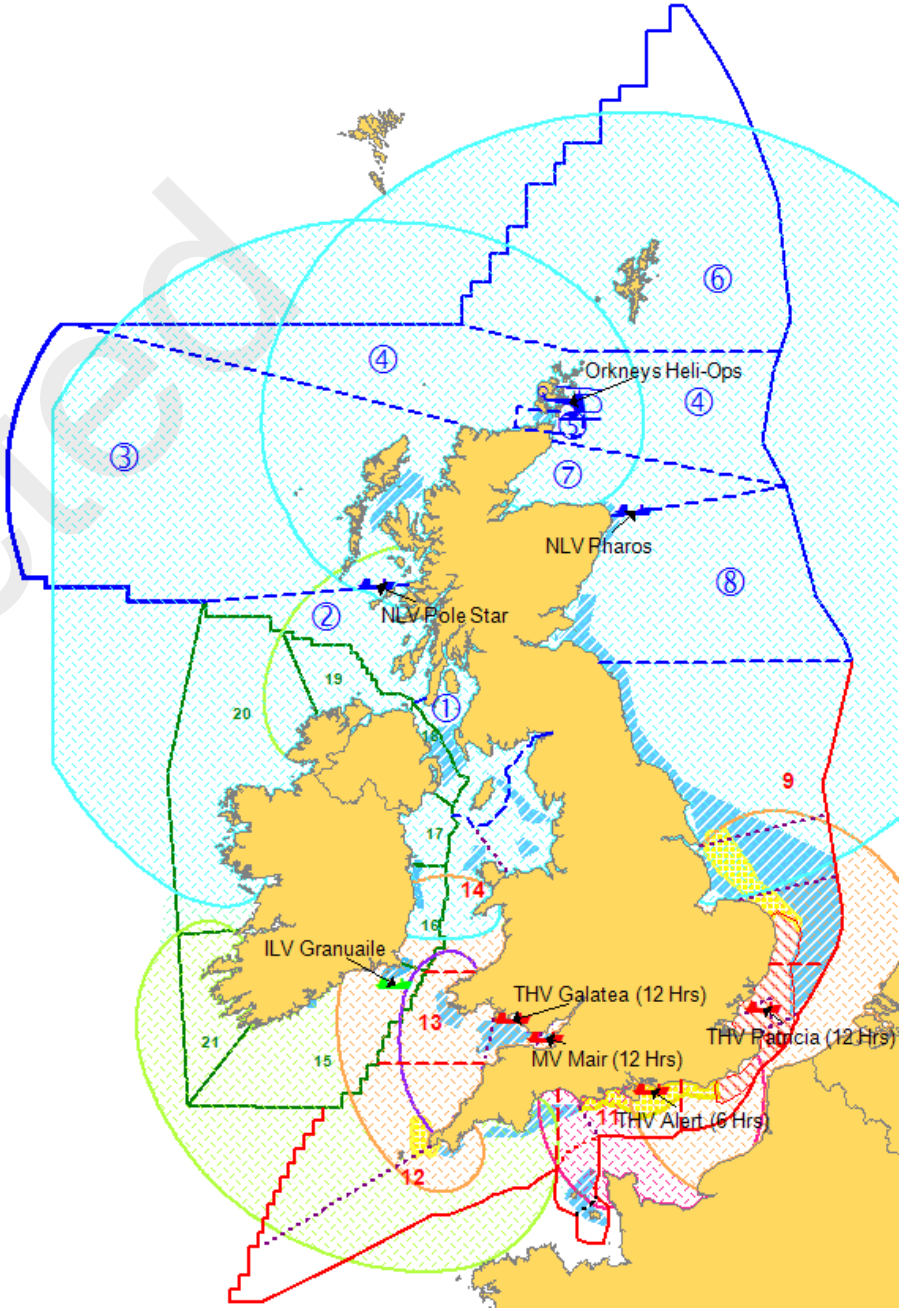
THV Alert- Wight Area. Cowes crewchange. Dover Area 6 Hrs & Wight 12 Hrs coverage.

MV Mair- Bristol Channel Area; 12 Hrs Land's End coverage

ILV Granuaile; East Coast; area 16 buoywork.

NLV Pharos- Casualty cover areas 4 – 8; Orkney Heli-Ops

NLV Pole Star - Area 4 – Casualty cover Areas 1 – 4.



2017

GLA Area	TH Area	Minimum	Week 14	Week 15	Week 16	Week 17	Week 18	Week 19	Week 20	Week 21	Week 22	Week 23	Week 24	Week 25	Week 26	Week 27	Week 28	Week 29	Week 30	Week 31	Week 32	Week 33	Week 34	Week 35	Week 36	Week 37	Week 38	Week 39
1		24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	TH	NLB	NLB	NLB	NLB	NLB	NLB	NLB
2		>24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	ZB	NLB	NLB	NLB	NLB	NLB	NLB	NLB
3		24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB
4		>24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	ZB	NLB	NLB
5		24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	TH	TH	TH	NLB	NLB	NLB	NLB
6		>24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	TH	TH	TH	NLB	ZB	NLB	NLB
7		24	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	TH	TH	TH	NLB	ZB	NLB	NLB
8		24	TH	TH	NLB	NLB	NLB	ZB	TH	TH	TH	TH	TH	NLB	NLB	NLB	NLB	NLB	NLB	NLB	NLB	TH	TH	TH	NLB	TH	TH	TH
9	NE Coast	12	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	ZB	NLB	TH	TH	NLB	ZB	NLB	NLB	NLB	NLB	NLB	TH	TH	TH	TH
9	Wash	12	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	NLB	NLB	NLB	TH	TH	TH	TH
9	Yarmouth	6	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	NLB	NLB	NLB	TH	TH	TH	TH
10	Harwich	6	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
10	Estuary	6	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
10	Dover	6	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
11	Wight	12	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
11	Channel	24	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
12	Penzance	12	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
12	Lands End	12	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
13	Milford	24	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
13	Swansea	24	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
13	Cardiff	24	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH
14	Holyhead	24	IL	IL	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	IL	IL
14	Irish Sea	24	IL	IL	NLB	NLB	NLB	TH	TH	NLB	NLB	NLB	NLB	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	TH	IL	IL	IL
15		24	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	TH	IL	IL	IL	TH	TH	TH	TH	TH	NLB	IL	ZB
16		24	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	TH	TH	TH	TH	NLB	IL	TH	TH	TH	TH	TH	IL	IL	IL	
17		24	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	NLB	NLB	IL	TH	IL	NLB	IL	TH	TH	TH	TH	TH	IL	IL	IL	
18		24	IL	IL	IL	IL	IL	IL	NLB	NLB	NLB	NLB	NLB	IL	IL	IL	IL	IL	IL	IL	TH	TH	TH	TH	NLB	IL	IL	IL
19		>24	IL	NLB	NLB	NLB	NLB	IL	IL	IL	IL	NLB	IL	IL	IL	IL	IL	IL	IL	IL	TH	TH	TH	TH	NLB	IL	IL	IL
20		>24	NLB	NLB	NLB	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	TH	TH	TH	TH	NLB	IL	IL	IL
21		>24	IL	IL	IL	IL	IL	TH	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	IL	TH	TH	TH	TH	TH	IL	IL	IL

Planned 2017-18 GLA Fleet RRC = 100%

This figure above includes where GLA's are working in their respective areas of jurisdiction, but because of their area of operation, are also able to supply 'natural coverage' in another GLA area if the need arises.

Maintenance requirements?

Data from Spreadsheets supplied by each GLA has been collated per GLA area.

GLA Area	Minimum	No. of Days Work Required per area	Insufficent Resource?
1	24	51	
2	>24	60	
3	24	107	
4 West	>24	28	
4 East	>24	29	
5	24	6	
6	>24	37	
7	24	20	
8	24	29	
9	6	101	
10	6	191	
11	12	50	
12	12	59	
13	24	107	
14	24	29	
15	24	33	
16	24	33	
17	24	1	
18	24	25	
19	>24	43	
20	>24	37	
21	>24	37	

Work Package 2 – Coordinated Planning

Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan

Critical Area Baseline Coverage

2017-18 Baseline Plan Coverage

GLA Area(s)	Mapinfo Region	Risk Area Name	RRC	2017 Week 14 Coverage Details			Week 15 Coverage Details			Week 16 Coverage Details			Week 17 Coverage Details			Week 18 Coverage Details			Week 19 Coverage Details			Week 20 Coverage Details			Week 21 Coverage Details			Week 22 Coverage Details			Week 23 Coverage Details			Week 24 Coverage Details			Week 25 Coverage Details			Week 26 Coverage Det	
				GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No
1 18	9	North Channel	24	NLB	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
3	5	The Minch	24	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
5	8	Pentland Firth	24	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
7 8	7	Aberdeen & NE Coast	24	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
8 9 10	6	Southern North Sea to the Tay	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
9	3	Humber to Cromer	12	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
9 10	1	Cromer to Dover Strait	6	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
10 11	2	Portland Bill to Beachy Head	12	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
11	21	Channel Islands	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
11 12	12	Penzance to Portland Bill	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
12	19	Penzance to Scillies	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
12	4	Land's End	12	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
13	12	Milford Haven Approaches	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
13	13	Bristol Channel	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
14	10	Holyhead Approaches	24	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
1 14	15	Morecambe Bay	24	NLB	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
1	17	Isle of Man	24	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes
14	16	Liverpool Bay	24	NLB	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes
16	11	Dublin Bay & East Irish Coast	24	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	TH	Yes
15 16	20	SE Irish Coast	24	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	TH	Yes
15	18	Cork Approaches	24	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes

	2017																			2017																										
	Week 27			Week 28			Week 29			Week 30			Week 31			Week 32			Week 33			Week 34			Week 35			Week 36			Week 37			Week 38			Week 39			Week 40			Week 41			
ails	Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Cov
%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	TH	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL
100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	ZB	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL
100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	NLB	Yes	100	ZB	Yes	100	ZB	Yes	100	TH	Yes	100	TH	Yes	100	IL

2017																
Week 42		Week 43			Week 44			Week 45			Week 46			Week 47		
erage Details		Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details		
Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100

Week 48			Week 49			Week 50			Week 51			Week 52		
Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details		
GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100

2018														
Week 1			Week 2			Week 3			Week 4			Week 5		
Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details		
GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100

				2018													2018						
	Week 6			Week 7			Week 8			Week 9			Week 10			Week 11			Week 12			Week 13	
	Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details			Coverage Details	
GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%	GLA	Yes/No	%
NLB	Yes	100	IL	Yes	100	IL	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
NLB	Yes	100	IL	Yes	100	IL	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
NLB	Yes	100	IL	Yes	100	IL	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100	NLB	Yes	100
TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100	TH	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100
IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100	IL	Yes	100

2017-18 Baseline Cover Duplication

Risk Area		2017																																				
Name	RRC	Week 14				Week 15				Week 16				Week 17				Week 18				Week 19				Week 20				Week 21				Week 22				Week 23		
		Vessel Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details				Coverage Details		
		Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name
North Channel	24	PH	PS	GR	3	GA	PH	PS	3	PH	GR	GA	3	PH	GR	GA	3	PH	PS	GA	3	GR	PH	PS	3	PH	PS		2	PH	PS		2	PH	PS	GA	3	PH	PS	GA
The Minch	24	PH	PS		2	PH	PS	GA	3	PH	PS		2	PH	PS		2	PS	PH		2	PS	PH	GR	3	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS	
Pentland Firth	24	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS	PA	3	PS	PH	PA	3	PS	PH		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS	
Aberdeen & NE Coast	24	PH	PS		2	PS			1	PH	PS		2	PS	PA	PH	3	PS	PA		2	PS	PH		2	PH	PS		2	PS			1	PS			1	PS		
Southern North Sea to the Tay	24	PH	AL	PA	3	AL	PA	PS	3	PA	PS	AL	3	PA	PS	PA	3	PA	AL		2	PS	PA		2	PA			1	PA			1	PA			1	PA		
Humber to Cromer	12	AL	PA		2	AL	PA		2	PA	AL		2	AL			1	AL			1	PA	AL		2	PA	AL		2	PA	AL		2	PA	AL		2	PA	AL	
Cromer to Dover Strait	6	AL	PA		2	AL	PA		2	PA	AL		2	AL			1	AL			1	AL	PA		2	AL	PA		2	AL	PA		2	AL	PA		2	AL	PA	
Portland Bill to Beachy Head	12	AL	PA	GA	3	AL	PA		2	PA	AL		2	AL			1	AL			1	AL	PA		2	AL			1	AL			1	AL			1	AL		
Channel Islands	24	GA			1	AL	PA		2	PA	AL	GR	3	GA	GR		2	GA	GR		2	GA	PA		2	AL	PA		2	AL	PA		2	GA	PA		2	GA		
Penzance to Portland Bill	24	GA	GR		2	PA	GA	GR	3	GA	GR		2	GA	GR		2	GA	GR		2	GA			1	AL	PA	GA	3	MA	GR		2	GA			1	GA		
Penzance to Scillies	24	GA	GR		2	GA	PA	GR	3	GA	GR		2	GA	MA	GR	3	GA	MA	GR	3	GA			1	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	GR
Land's End	12	GA	GR		2	GA			1	GA			1	GA	MA	GR	3	GA	MA	GR	3	GA	MA		2	MA			1	MA			1	GA	MA		2	GA	MA	
Milford Haven Approaches	24	GA	GR		2	GA	GR	PH	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	MA	GR		2	MA	GR	PH	3	GA	MA	GR	3	GA	MA	GR
Bristol Channel	24	GA	GR		2	GA	GR	PA	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA		2	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	
Holyhead Approaches	24	GA	GR	PS	3	GA	GR	PH	3	PA	GR	PH	3	GA	PH	GR	3	GA	PH	GR	3	GA	GR	PH	3	MA	GR	PH	3	MA	GR	PH	3	GA	PH	GR	3	GA	PH	
Morecamble Bay	24	PH	PS	GR	3	GA	PH	PS	3	PH	PA	GR	3	PH	GA	GR	3	PH	GA	GR	3	PH	GR	GA	3	PH	PS	GR	3	PH	PS		2	PH	GA	PS	3	PH	PS	GA
Isle of Man	24	PS	GR		2	PH	PS	GA	3	PH	PA	GR	3	PH	GA	GR	3	PH	PS	GA	3	PH	GR	GA	3	PH	PS	GR	3	PH	PS		2	PH	GA	PS	3	PH	PS	GA
Liverpool Bay	24	PS	GR		2	GA	PH	GR	3	GA	PH	GR	3	GA	PH	GR	3	GA	PH	GR	3	GA	GR	PH	3	MA	PH	PS	3	MA	PH	PS	3	GA	PH	PS	3	GA	PH	
Dublin Bay & East Irish Coast	24	GR	PS	GA	3	GR	GA	PH	3	GR	PH	GA	3	GR	GA	PH	3	GR	GA	PH	3	GR	GA	PH	3	GR	PH		2	GR	PH		2	GR	GA	PH	3	GR	PH	GA
SE Irish Coast	24	GR	GA		2	GR	GA	PH	3	GR	PH	GA	3	GR	GA	PH	3	GR	GA	PH	3	GR	GA	PH	3	GR			1	GR	PH		2	GR	GA	PH	3	GR	PH	GA
Cork Approaches	24	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA	PH

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Week 24 Coverage Details				Week 25 Coverage Details				Week 26 Coverage Details				Week 27 Coverage Details				Week 28 Coverage Details				Week 29 Coverage Details				Week 30 Coverage Details				Week 31 Coverage Details				Week 32 Coverage Details				Week 33 Coverage Details				Week 34 Coverage Details			
No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.
3	PH	PS	GA	3	PH	PS	GA	3	PH	GR	GA	3	PH	GR	MA	3	PH	GR	MA	3	PH	GR		2	PH	GR		2	PH	GR	PA	3	PA			1	PH	PA		2	PH	PA		2
2	PH	PS		2	PH	PS		2	PH	PS	GR	3	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PS			1	PH	GA		2	PH			1
2	PH	PS		2	PS	PH		2	PS	PH		2	PH	PS		2	PS	PH		2	PH	PS		2	PH	PS		2	PH	PS		2	PS	PH		2	GA	PH		2	PH	GA		2
1	PS			1	PS			1	PS			1	PS	PH		2	PS	PH		2	PH	PS		2	PS			1	PH	PS		2	PS	PH		2	GA			1	GA			1
1	PS	PA	ZB	3	PS	PA	ZB	3	PS	AL	ZB	3	GA	PS		2	GA	PS		2	PS	AL	ZB	3	PS	AL	ZB	3	PS	AL		2	GA	PS	PH	3	PS	GA		2	PS	GA		2
2	AL	PA		2	AL			1	AL			1	GA	AL		2	GA	AL		2	AL			1	AL			1	AL			1	GA			1	PS			1	PS			1
2	PA	AL		2	AL			1	AL			1	AL	GA		2	AL	GA		2	AL	GA		2	AL			1	AL			1	AL			2	AL	PS		2	AL	PS		2
1	PA			1	PA	AL		2	PA			1	AL			1	AL			1	GA			1	GA	PA		2	GA			1	AL			1	AL			1	AL			1
1	PA	GA		2	PA			1	PA	GA		2	PA			1	PA	GA		2	PA	GA		2	GA	PA		2	GA	PA		2	GA			1	AL	MA	ZB	3	AL	MA	ZB	3
1	GA	PA		2	PA	GA		2	PA	GA		2	PA	AL		2	PA	AL		2	PA			1	PA	MA		2	MA	GA		2	MA			1	MA			1	MA			1
3	GA	MA	GR	3	GA	PA	GR	3	PA	GA		2	PA			1	PA	AL		2	PA	MA		2	PA	MA		2	MA	PA		2	MA	PA		2	MA	PA		2	MA	PA		2
2	GA	MA		2	GA	MA		2	GA	MA	PA	3	PA			1	PA			1	PA	MA		2	PA	MA		2	MA	PA		2	MA			1	MA			1	MA			1
3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	PA	3	PA	MA		2	PA	MA		2	PA	MA		2	PA	MA		2	MA	PA		2	PA	MA		2	PA	MA		2	PA	MA		2
2	GA	MA		2	GA	MA		2	GA	MA	PA	3	PA	MA		2	PA	MA		2	PA	MA		2	PA	MA		2	MA	GA		2	PA	MA		2	PA	MA		2	PA	MA		2
2	GA	MA	PH	3	GA	MA	PH	3	GA	PH		2	MA	PA	PH	3	MA	PA	PH	3	PA	PH		2	PA	PH		2	PA	PH		2	PA			1	PA	PH		2	PA	PH		2
3	PH	PS	GA	3	PH	GA		2	PH	GA		2	PH	PA	MA	3	PH	PA	MA	3	PH	PA		2	PH			1	PH	PA		2	PA			1	PH	PA		2	PH	PA		2
3	PH	PS	GA	3	PH	GA		2	PH	GA	GR	3	PH	PA	MA	3	PH	PA	MA	3	PH	PA		2	PH	GR		2	PH	PA	GR	3	PA			1	PH	PA		2	PH	PA		2
2	GA	PH		2	GA	PH		2	GA	PH		2	PA	MA	PH	3	PA	MA	PH	3	PA	PH		2	PA	PH		2	PA	PH		2	PA			1	PA	PH		2	PA	PH		2
3	GR	GA	PH	3	GR	GA	PH	3	GA	PA	PH	3	PA	PH		2	PA	PH		2	PA	PH		2	PH	PA		2	PA	PH		2	PA			1	PA	PH		2	PA	PH		2
3	GR	GA	PH	3	GR	GA	PH	3	GA	PA	PH	3	PA			1	PA			1	PA			1	PA	PH		2	PA			1	PA	MA		2	PA			1	PA			1
3	GR	GA		2	GR	GA	PH	3	GR	GA	PA	3	GR	PA		2	GR	PA		2	GR	PA		2	GR	PA		2	GR	PA		2	PA			1	PA			1	PA			1

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Week 35 Coverage Details				Week 36 Coverage Details				Week 37 Coverage Details				Week 38 Coverage Details				Week 39 Coverage Details				Week 40 Coverage Details				Week 41 Coverage Details				Week 42 Coverage Details				Week 43 Coverage Details				Week 44 Coverage Details				Week 45 Coverage Details			
Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.
PH	PA		2	PH	PA		2	PH	GR		2	PH	GR		2	PH	GR		2	PH	PS	GR	3	PS	GR		2	GR	PS		2	GR	PS		2	PS	GR		2	PS	GR		2
PH	GA		2	PH	PS		2	PH	GR		2	PH	GR		2	PH	GR		2	PH	PS	GR	3	PS	PH	GR	3	PS	PH	GR	3	PH	PS	GR	3	PS	PH	GR	3	PS	PH	GR	3
PH	GA		2	PS	PH		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2
GA			1	PS	PH		2	PS	ZB		2	PH	PS		2	PH	PS		2	PH			1	PH			1	PH			1	PH			1	PH			1	PH			1
PS	GA		2	GA			1	AL	PA	PS	3	AL	PA	PS	3	PA	PS		2	PA			1	PA	PH	ZB	3	GA	PH		2	GA	PH		2	GA	PH		2	GA	PH		2
PS			1	GA	AL		2	AL	PA		2	PA	AL		2	PA			1	PA			1	PA			1	GA			1	GA			1	GA			1	GA			1
AL	PS		2	AL	GA		2	AL			1	AL	PA		2	AL	PA		2	AL	PA		2	PA	AL		2	GA			1	GA			1	GA			1	GA			1
AL			1	AL			1	GA			1	GA			1	GA	AL		2	AL	GA		2	AL			1	AL			1	AL			1	AL			1	AL			1
AL	MA	ZB	3	AL	PA		2	GA			1	GA			1	GA			1	GA			1	GA	AL		2	AL	GA		2	AL	GA		2	AL	GA		2	AL	GA		2
MA			1	MA	PA		2	GA			1	GA			1	GA			1	GA			1	GA			1	AL	MA		2	AL	MA		2	AL	MA		2	AL	MA		2
MA	PA		2	MA	PA		2	GA	MA		2	GA	MA		2	MA	GA		2	GA	MA		2	GA	MA		2	MA			1	MA			1	MA			1	MA			1
MA			1	MA			1	MA			1	MA			1	MA			1	MA	GA		2	GA	MA		2	MA	AL		2	MA	AL		2	MA	AL		2	MA	AL		2
PA	MA		2	PA	MA		2	MA	GA	PH	3	MA	GA		2	MA	GA		2	MA	GA	PS	3	MA	GA	PS	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3
PA	MA		2	PA	MA		2	MA	GA	PH	3	MA	GA		2	MA	GA		2	MA	GA		2	MA	GA		2	MA	GR		2	MA			1	MA	GR		2	MA			1
PA	PH		2	PA	PH		2	MA	PH	GR	3	MA	GR	PH	3	MA	GR	PH	3	MA	PS	GR	3	MA	PS	GR	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3
PH	PA		2	PH	PA		2	PH	GR	MA	3	PH	GR	MA	3	PH	GR	MA	3	PS	GR	PH	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3
PH	PA		2	PH	PA		2	PH	GR	MA	3	PH	GR	MA	3	PH	GR	MA	3	PS	GR	PH	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3
PA	PH		2	PA	PH		2	MA	PH	GR	3	MA	GR	PH	3	MA	GR	PH	3	MA	PS	GR	3	MA	PS	GR	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PS	3
PA	PH		2	PA	PH		2	GR	PH		2	GR	PH		2	GR	PH		2	GR	PS	PH	3	GR	PS		2	GR	PS		2	GR	PS		2	GR	PS		2	GR	PS		2
PA			1	PA			1	PH			1	ZB	MA		2	GR	MA		2	GR	PS	GA	3	GR	PS	GA	3	GR	PS		2	GR	PS		2	GR	PS		2	GR	PS		2
PA			1	PA			1	PH			1	ZB	MA		2	ZB	MA		2	GA			1	GA			1	GR			1	ZB	MA		2	GR			1	ZB	MA		2

2017															
Week 46				Week 47				Week 48				Week 49			
Coverage Details				Coverage Details				Coverage Details				Coverage Details			
Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.
PH	PS	GR	3	PS	GR	PH	3	PS	GR		2	PH	GR		2
PH	PS	GR	3	PH	PS		2	PS	PH		2	PH	PS		2
PS	PH		2	PH	PS		2	PH	PS		2	PH	PS		2
PS			1	PH			1	PH			1	PS			1
PA	PS		2	PA	PH		2	PA	PH		2	PA	PS		2
PA			1	PA			1	PA			1	PA	AL		2
GA			1	GA			1	AL			1	PA	AL		2
AL			1	AL			1	GA	AL		2	GA	PA		2
GA	AL	PA	3	GA	AL		2	GA			1	GA			1
AL	MA		2	AL	MA		2	GA			1	GA			1
MA			1	MA			1	MA	GA		2	GA	MA		2
MA	AL		2	MA	AL		2	MA			1	MA	GA		2
MA	GR		2	MA	GR	PS	3	MA	GA	GR	3	MA	GA	GR	3
MA			1	MA	GR		2	MA	GA	GR	3	MA	GA	GR	3
MA	GR	PH	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PH	3
PH	GR	MA	3	PS	GR	MA	3	PS	GR		2	PH	GR	MA	3
PH	GR	MA	3	PS	GR	MA	3	PS	GR		2	PH	GR	MA	3
MA	GR	PH	3	MA	GR	PS	3	MA	GR	PS	3	MA	GR	PH	3
GR	PH		2	GR	PS		2	GR	PS		2	GR	PH		2
GR			1	GR	PS		2	GR	PS	GA	3	GR	PH	GA	3
GR			1	GR			1	GR	GA		2	GR	GA		2

2017											
Week 50				Week 51				Week 52			
Coverage Details				Coverage Details				Coverage Details			
Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.
PH	GR		2	PS	GR		2	PS	GR		2
PH	PS		2	PS	PH		2	PS			1
PH	PS		2	PS	PH		2	PS	PH		2
PS			1	PH			1	PH			1
PA	PS		2	PA	PH		2	PA	PH		2
PA	AL		2	PA	AL		2	PA	AL		2
PA	AL		2	PA	AL		2	AL	PA		2
GA	PA		2	GA	PA		2	GA	AL		2
GA			1	GA			1	GA			1
GA			1	GA			1	GA			1
GA	MA		2	GA	MA		2	GA	MA		2
MA	GA		2	MA	GA		2	MA	GA		2
MA	GA	GR	3	MA	GA	GR	3	MA	GA	GR	3
MA	GA	GR	3	MA	GA	GR	3	MA	GA	GR	3
MA	GR	PH	3	MA	GR	PS	3	MA	GR	PS	3
PH	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3
PH	GR	MA	3	PS	GR	MA	3	PS	GR	MA	3
MA	GR	PH	3	MA	GR	PS	3	MA	GR	PS	3
GR	PH		2	GR	PS		2	GR	PS		2
GR	PH	GA	3	GR	PS	GA	3	GR	PS	GA	3
GR	GA		2	GR	GA		2	GR	GA		2

2018															
Week 1				Week 2				Week 3				Week 4			
Coverage Details				Coverage Details				Coverage Details				Coverage Details			
Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.
PS	GR		2	PS	GR		2	PS	GR		2	PS	GR		2
PS	PH		2	PS	PH		2	PS	PH		2	PS	PH		2
PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2
PH			1	PH			1	PH			1	PH			1
PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2
PA			1	PA			1	PA			1	PA			1
AL	PA		2	AL	PA		2	AL	PA		2	AL	PA		2
AL			1	AL			1	AL			1	AL			1
GA	AL		2	GA			1	AL	PA		2	AL	PA		2
GA			1	GA			1	AL			1	AL			1
GA	MA		2	GA	MA		2	GA	MA		2	GA	MA		2
GA	MA		2	MA	GA		2	GA	MA		2	GA	MA		2
GA	MA	GR	3	MA	GA	GR	3	GA	MA	GR	3	GA	MA	GR	3
GA	MA	GR	3	MA	GA	GR	3	GA	MA	GR	3	GA	MA	GR	3
GA	MA	GR	3	MA	GR	PS	3	GA	MA	GR	3	GA	MA	GR	3
PS	GR	GA	3	PS	GR	MA	3	PS	GR	GA	3	PS	GR	GA	3
PS	GR	GA	3	PS	GR	MA	3	PS	GR	GA	3	PS	GR	GA	3
GA	MA	GR	3	MA	GR	PS	3	GA	MA	GR	3	GA	MA	GR	3
GR	GA	PS	3	GR	PS		2	GR	GA	PS	3	GR	GA	PS	3
GR	GA	PS	3	GR	GA		2	GR	GA		2	GR	GA		2
GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2

2018																																								
Week 5 Coverage Details				Week 6 Coverage Details				Week 7 Coverage Details				Week 8 Coverage Details				Week 9 Coverage Details				Week 10 Coverage Details				Week 11 Coverage Details				Week 12 Coverage Details				Week 13 Coverage Details										
Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.	Name	Name	Name	No.					
PS	GR		2	PS	GR		2	GR	PS		2	GR	PS		2	PS	GR		2	PS	GR		2	PS	GR		2	PS	GR		2	PS	GR		2					
PS	PH		2	PS	PH		2	PS			1	PS			1	PS			1	PS	PH		2	PS	PH		2	PS	PH		2	PS	PH		2					
PH	PS		2	PH	PS		2	PS	PH		2	PS	PH		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2	PH	PS		2					
PH			1	PH			1	PS	PH		2	PS	PH		2	PH			1	PH			1	PH			1	PH			1	PH			1					
PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2	PA	PH		2					
PA			1	PA			1	PA			1	PA			1	PA			1	PA			1	PA			1	PA			1	PA			1					
AL	PA		2	AL	PA		2	PA			1	PA			1	PA			1	AL	PA		2	AL	PA		2	AL	PA		2	AL	PA		2					
AL			1	AL			1	GA			1	GA			1	AL			1	AL			1	AL			1	AL			1	AL			1					
AL	PA		2	GA	AL		2	GA			1	GA			1	GA	AL		2	AL	PA		2	AL	PA		2	AL	PA		2	AL	PA		2					
AL			1	GA	AL		2	AL			1	AL			1	GA	AL		2	AL			1	AL			1	AL			1	AL			1					
GA	MA		2	GA	MA		2	AL			1	AL			1	GA	MA		2	GA	MA		2	GA	MA		2	GA	MA	GR	3	GA	MA	GR	3					
GA	MA		2	GA	MA		2	AL	MA		2	AL	MA		2	GA	MA		2	GA	MA		2	GA	MA		2	GA	MA	GR	3	GA	MA	GR	3					
GA	MA	GR	3	MA	GA	GR	3	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3					
GA	MA	GR	3	MA	GA	GR	3	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3					
GA	MA	GR	3	GA	MA	GR	3	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3					
PS	GR	GA	3	PS	GR	GA	3	GR	MA		2	GR	MA		2	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3					
PS	GR	GA	3	PS	GR	GA	3	GR	MA		2	GR	MA		2	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3	PS	GR	GA	3					
GA	MA	GR	3	GA	MA	GR	3	MA	GR		2	MA	GR		2	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3	GA	MA	GR	3					
GR	GA	PS	3	GR	PS	GA	3	GR			1	GR			1	GR	GA	PS	3	GR	GA	PS	3	GR	GA	PS	3	GR	GA	PS	3	GR	GA	PS	3					
GR	GA		2	GR	GA		2	GR			1	GR			1	GR	GA	PS	3	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2					
GR	GA		2	GR	GA		2	GR			1	GR			1	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2	GR	GA		2					

Baseline Maintenance Coverage

GLA		No. of Days Work Required per area	No.of work days planned per area
Area	Minimum		
1	24	51	56
2	>24	60	157
3	24	107	167
4 West	>24	28	45
4 East	>24	29	44
5	24	6	25
6	>24	37	40
7	24	20	87
8	24	29	107
9	**6**	107	135
10	**6**	175	226
11	12	52	105
12	12	59	76
13	24	123	144
14	24	49	66
15	24	37	37
16	24	37	90
17	24	18	54
18	24	18	28
19	>24	31	36
20	>24	40	52
21	>24	34	42

Work Package 2 – Coordinated Planning

Phase 2 – Establish Individual GLA operational requirements and develop coordinated fleet plan

GLA Baseline Resource Capacity

Trinity House

Areas

Av 3

GLA Area	TH Area	No. of Days Work																										Reserve Capacity Work			
		Pat/Gal												Alert												Mair							Area	Contract Work (Non TH Equip)			
		TOTAL	LH	BCNS	MFA	Tows	BUOYS	Contract	Wrecks	SURVEYS	IOS	Rigs	Coverage	TOTAL	LH	BCNS	MFA	Tows	BUOYS	Contract	Wrecks	SURVEYS	IOS	Coverage	TOTAL	LH	BCNS	MFA	BUOYS	Contract	Wrecks	SURVEYS	Coverage	Total	TOTAL	Tender	Alert	Mair
9	NE Coast	17	4.50				3.00	3.50	0.00	0.00	5.50			0							0.00	0.00			0						0.00	0.00		17	2.00	2.00	0.00	0.00
9	Wash	29	0.00			4.00	12.67	4.33	0.00	0.00	5.00	2.50		5	2.00						2.00	1.00			0						0.00	0.00		34	2.67	2.67	0.00	0.00
9	Yarmouth	31	0.00				18.33	3.00	1.00	0.00	1.00	7.50		25					1.00	0.00	1.00	23.00			0						0.00	0.00		56	0.33	0.33	0.00	0.00
10	Harwich	33	0.00		4.00		22.50	3.50	0.00	0.00	3.00		0	28	1.00				21.00	0.00	0.00	4.00	2.00	97	5						0.00	5.00		66	2.00	2.00	0.00	0.00
10	Estuary	23	0.00				18.40	1.60	0.00	0.00	3.00			32	2.00				13.00	5.00	0.00	9.00	3.00		0						0.00	0.00		55	0.00	0.00	0.00	0.00
10	Dover	45	4.50		10.00	3.00	22.00	4.33	0.00	0.00	1.00			9			1.00		0.00	1.00	0.00	7.00			0						0.00	0.00		54	3.00	2.00	1.00	0.00
11	Wight	26	2.00	1.00			16.67	2.33	0.00	0.00	3.50			7					5.00	0.00	0.00	2.00			0						0.00	0.00		33	4.00	1.00	2.00	1.00
11	Channel	19	11.50		2.00		4.00	1.00	0.00	0.00	0.50			0							0.00	0.00			0						0.00	0.00		19	3.00	2.00	0.00	0.00
12	Penzance	25	8.00	1.00			8.00	2.00	1.00	0.00	4.50			0							0.00	0.00			18	15.00			2.00	0.00	1.00	0.00		43	2.00	2.00	0.00	0.00
12	Lands End	16	3.50	3.00	2.00		5.33	1.00	0.00	0.00	1.00			0							0.00	0.00			0				0.00	0.00	0.00	0.00		16	3.00	2.00	0.00	1.00
13	Milford	17	9.00				4.33	0.67	0.00	0.00	3.00			0							0.00	0.00			0				0.00	0.00	0.00	0.00		17	5.00	0.00	0.00	5.00
13	Swansea	19	10.00				7.33	0.33	0.00	0.00	1.00			0							0.00	0.00			52	33.00			8.00	0.00	1.00	10.00		71	8.00	1.00	0.00	7.00
13	Cardiff	12	0.25				9.67	0.00	0.00	0.00	2.00			0							0.00	0.00			23	15.00			0.00	0.00	0.00	8.00		35	9.33	1.33	0.00	8.00
14	Holyhead	9	0.50	2.00			3.33	0.33	0.00	0.00	2.50			0							0.00	0.00			3				2.00	0.00	1.00	0.00		12	10.00	0.00	0.00	10.00
14	Irish Sea	23	0.00	1.00	1.00		7.00	0.33	3.00	0.00	6.50	4.00		0							0.00	0.00			14				10.00	0.00	0.00	4.00		37	7.00	0.00	0.00	7.00
	NLB Area Work																																	26.00	26.00			
	CIL Area Work																																	0.00				
	MOD Work																																	19.00	19.00			
	PM Total	341												203											115									562	106	63	3	39

Additional Works:	197		70		13	
Wrecks	4	Varies from year to year	4	Varies from year to year	1	Varies from year to year, although not often called
Casualties	27	2012- 15.75 days; 2013- 16.5 days; 2014- 46.75 days. Av = 26.33 days. (Note- 40 Casualties in 2016/17)	2	Maximo total for 2016/17	5	Maximo total for 2016/17
Incidents	20	No. of days in 2016/17= 19.4 days; will hopefully trend down in future years	1	Maximo total for 2016/17	1	Maximo total for 2016/17
SAR Ops	3	Average over period 2012-14; doesn't change much year on year	0	Average over period 2012-14; doesn't change much year on year	0	
VC - Audit	8	VC1 - May 2nd to 9th inc	0	N/A	0	
Engineering	0	See above : Mumbles 9 days, Sark 8 days, Eddystone 4 days, R Sov 3 Days	0	None	0	Penzance Beacons & Mumbles Support
Navigation	4	THNM's buoymoves etc etc	4	Navigation Survey requirements	1	Navigation Survey Requirements
Corporate	2	Solent	0	N/A	0	
Loading/Discharging	34	One day per crewchange	17	One day per crewchange	0	Storing over weekends
Pax	17	17 Passenger changes for Patricia	0	N/A	0	N/A
EWMB's	0	EWMB's have been removed from Dover	1	Harwich EWMB's	1	Barry EWMB's
R&RNav	0	10 day MOU Allocation for R&Rnav- no days requested in 2017/18- vAIS	2	8 days MOU Allocation for R&Rnav remaining	0	N/A
Audit/ISM	10	Around 5 days per year on average per ship	5	Around 5 days per year on average per ship	0	N/A
Training	10	Assuming 1 training week per vessel	5	Assuming 1 training week per vessel	0	N/A
Personnel	10	This should reduce this year given that TOTO leave is stopping	1	This should reduce this year given that TOTO leave is stopping	4	Crew changes during Summer months
Repairs	14	Should only be 14 days for self refit period for vessel not due DD&R, however Patricia age increases risk	11	Should only be 14 days for self refit period for vessel not due DD&R	0	DD&R during 2017/18
Crewchange	34	3 week trips, 17 crew changes per vessel per year	17	3 week trips, 17 crew changes per vessel per year	0	N/A
Heliops	13	St Tuds 1 day, Casq 5 days, Wolf 2 day, Lundy S 1 day, Eddy 1 day, Skerries & S Stack 1 day, Bishp Rk 1 day Round Is 1 day				
Statutory Total	551		273		128	952
Initial Availability	730	2 ships at 365 days per year	365	Days per year	365	Days per year
DD&R	34	28 days DD&R with 3 days destore, 3 days restore	0	No DD&R 2017/18	8	
Weather	85		89	TUDS figures ; average 2010-2014	92	TUDS figures ; average 2010-2014
Weekend RRC					104	
Baseli Availability	611		276		161	
Additional Contract Work	63		3		39	
Overall Total	614		276		167	

Tender Reserve capacity	60	days	Alert Reserve capacity	3	days	MV Mair Reserve capacity	33	days
Current Residual Capacity	-3	days	Current Residual Capacity	0	days	Current Residual capacity	-6	days

NLB Areas

GLA Area	Minimum	RRC Risk	Cover days	NLB Areas² Km²	NLB Areas² NM²	Buoy Density per 10NM²
1	24	99.00%	361		0	
2	>24	As Reqd	As Reqd		0	
3	24	99.00%	361		0	
4	>24	As Reqd	As Reqd		0	
5	24	99.00%	361		0	
6	>24	As Reqd	As Reqd		0	
7	24	99.00%	361		0	
8	24	99.00%	361		0	
PM Total					0	

Av 3

No. of Days Work														Area	Reserve Capacity Work		
Pharos							Pole Star								Contract Work (Non NLB Equip)		
TOTAL	LH	SURVEYS	IOS	Rigs	Coverage	TOTAL	BUOYS	Contract	Wrecks	SURVEYS	IOS	Coverage	Total	TOTAL	Pharos	Pole Star
19	17	0.00	2.00	0.00	0	32	6.33	4.00	0.00	20.00	2.00	0	51	0	0.00	0.00
36	34	0.00	2.00	0.00	0	24	17.67	0.67	0.00	4.00	2.00	0	60	29	29.00	0.00
68	66	0.00	2.00	0.00	0	39	22.67	10.33	0.00	4.00	2.00	0	107	29	29.00	0.00
35	33	0.00	2.00	0.00	0	22	4.67	7.67	0.00	8.00	2.00	0	57	0	0.00	0.00
4	2	0.00	2.00	0.00	0	2	0.00	0.00	0.00	0.00	2.00	0	6	0	0.00	0.00
33	29	0.00	2.00	2.00	0	4	1.67	0.00	0.00	0.00	2.00	0	37	0	0.00	0.00
11	3	0.00	2.00	6.00	0	9	6.33	1.00	0.00	0.00	2.00	0	20	0	0.00	0.00
19	11	0.00	2.00	6.00	0	10	0.67	5.67	0.00	2.00	2.00	0	29	0	0.00	0.00
225						143							368	58	58	0

Additional Works:		84	48	
Wrecks	*New Dangers where vessel was diverted to investigate, survey and mark as required*	0	0	
Casualties	*Based on the worst case scenario over the last 8 years*	0	0	
Incidents	*Comms failures, low battery voltages etc: any equipment failures that are not AtoN casualties (but could become casualties if not attended)*	0	0	
SAR Ops	*Based on an average over the three year period from 2012, 2013 & 2014*	0	0	
VC - Audit	*Based on anticipated requirements*	0	0	
Engineering	*Support of Capex Project Works, mobilisation, demobilisation, Safety boat work- Tuds Figures 2010-2014 inc*	0	0	
Navigation	*Shoaling-Surveys-Buoymoves, Notices to mariners, ViewingTrials*	0	0	
Corporate	*e.g. Master attendance (included in LH total)*	10	0	
Loading/Discharging		50	24	
R&RNav	*MOU in place ? Days per year*	0	0	
Audit/ISM	*Statutory surveys, certification and Audits; Tuds figures 2010-14*	0	0	
Training	*HR arranged courses for SVS staff*	0	0	
Personnel	*Personnel transfers, based on Tuds Figures 2010-14*	12	12	
Repairs	*Repairs to Ships equipment, winches, crane etc etc (where vessel is not out of commission)*	0	0	
Crewchange	*Including storing and bunkering*	12	12	
	Total	**309**	**191**	**500**
Baseline Availability		365	365	
DD&R	*Ship repairs where vessel is out of commission*	14	14	
Weather	*Based on Tuds figures 2010-14*	90	90	
Adjusted Availability		**261**	**261**	

Irish Lights Areas

GLA Area	Minimum	RRC Risk	Cover days	Irish Lights Areas² Km²	NM²	Buoy Density per 10NM²
15	24	99.00%	361		1040	
16	24	99.00%	361		980	
17	24	99.00%	361		280	
18	24	99.00%	361		468	
19	>24	As Reqd	As Reqd		365	
20	>24	As Reqd	As Reqd		1400	
21	>24	As Reqd	As Reqd		912	
PM Total					**5445**	

Av 3

No. of Days Work											Reserve Capacity Work	
Granuaile										Area	Contract Work (Non IL Equip)	
TOTAL	LH	BCNS	BUOYS	Contract	Wrecks	SURVEYS	IOS	Rigs	Coverage	Total	TOTAL	Granuaile
37	6.00	4.00	12.00	6.00	0.00	0.00	8.00	1.00	0	37	8	**8.00**
37	3.00	0.00	20.00	2.00	0.00	9.00	3.00	0.00	0	37	22	**22.00**
18	4.00	1.00	7.00	0.00	0.00	0.00	6.00	0.00	0	18	27	**27.00**
18	2.00	2.00	9.00	1.00	0.00	0.00	4.00	0.00	0	18	28	**28.00**
31	6.00	8.00	10.00	2.00	0.00	1.00	4.00	0.00	0	31	14	**14.00**
40	8.00	5.00	13.00	1.00	0.00	3.00	10.00	0.00	0	40	6	**6.00**
34	8.00	3.00	12.00	2.00	0.00	1.00	8.00	0.00	0	34	11	**11.00**
215										**215**	**116**	**116**

	Additional Works:	26
Wrecks	*New Dangers where vessel was diverted to investigate, survey and mark as required*	0
Casualties	*Based on the worst case scenario over the last 8 years*	12
Incidents	*Comms failures, low battery voltages etc: any equipment failures that are not AtoN casualties (but could become casualties if not attended)*	0
SAR Ops	*Based on an average over the three year period from 2012, 2013 & 2014*	0
VC - Audit	*Based on anticipated requirements*	0
Engineering	*Support of Capex Project Works, mobilisation, demobilisation, Safety boat work- Tuds Figures 2010-2014 inc*	8
Navigation	*Shoaling-Surveys-Buoymoves, Notices to mariners, ViewingTrials*	0
Corporate	*e.g. Master attendance*	6
Loading/Discharging		0
R&RNav	*MOU in place ? Days per year*	0
Audit/ISM	*Statutory surveys, certification and Audits; Tuds figures 2010-14*	0
Training	*HR arranged courses for SVS staff*	0
Personnel	*Personnel transfers, based on Tuds Figures 2010-14*	0
Repairs	*Repairs to Ship's equipment, winches, crane etc etc (where vessel is not out of commission)*	0
Crewchange	*Including storing and bunkering*	0
	Total	**241**

Baseline Availability		124
DD&R	*Ship repairs where vessel is out of commission*	28
Weather	*Based on Tuds figures 2012-16*	15
Total		**81**

Work Package 2 – Coordinated Planning

Phase 3 – Evaluate, refine centralise planning model and build coordinated plan

Second Quarter Report - Coordinated Fleet Management Planning Summary

GLA Fleet Review – Phase 2

Co-ordinated Fleet Management Group Planning Summary Report to the Project Management Working Group

Work Package 2: Second Quarter: 1st July to 30th Sept 2017

Author: Bill Summers, GLA Planning Co-ordinator

Date: 10/10/17

Document: 370954

Document Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

Introduction:

This is the second report to update the PMWG on the output of the WP2 data collected so far and covers the first and second quarter's ; period 1st April to 30th September 2017.

Objective:

As indicated in section 6.3.1 of the Phase 2 Co-ordinated planning Report (DMS 348674) the quarterly report includes:

- Incident Reports – A Summary of incident reports raised.
- Risk response coverage – identify changes of risk response coverage compared with the base-line plan.
- Summary of risk coverage maintained
- Changes in planned work compared to base-line plan
- GLA vessel undertaking unplanned work including commercial operations – assessment of any change in RRC if vessel continued to operating as per base plan.

Data Collection:

Data collection has continued during the second quarter; details as per the 1st quarter report dated 12.07.17

Data Analysis & Results:

RRC

The results from the analysis of the daily 'bubbles' is collected on the FR Vessel Analysis Sheet saved in the Project Folders on Worksite DMS 357833. This document is a live document; the data sheet was copied and limited to 30th September 2017 (end of the second quarter) before being imported into the Daily Dashboard for review by the PMWG.

Following the gathering of data in the first quarter of Phase 2, a summary of the level of overall coverage in the RRC areas is below. All the figures are above the identified risk thresholds for the minimum coverage requirements as previously accepted.

6 hrs	98.32%
12 hrs	95.41%
24 hrs	98.66%
48 hrs	100.00%

Incident Reports

Incident Reports are drafted for either of two scenarios:

- A draft report has been sent to the GLA Planner regarding a particular wreck, outage, vessel defect or significant change of plan.
- The results of the bubbles calculation indicates that the RRC has fallen short of the required threshold in a particular area.

Since the first quarter a further 42 incidents have been listed in the Incident Register; of these a further 18 affect the RRC coverage to some degree.

This brings the total of incidents to 109 of which some 36 (33%) affect the RRC.

As reported previously, an incident report will be raised for incidents affecting RRC. 19 of these reports have been collated so far- a question of available time and resource to complete the remainder.

The updated Incident Register is available to view on Worksite: DMS No. 364579.

TUDS Data

The results from the analysis of the TUDS data from all the vessels was collated on one spreadsheet and saved in the Project Folders on Worksite DMS 370680. Again as with RRC, this data was copied and limited to 30th Sept 2017 (end of the second) before being imported into the Daily Dashboard for review by the PMWG.

Maintenance Progress Data

The collating of all the lists of all AtoN tasking including buoy work, project works, local lights data has been combined on to one spreadsheet within the Daily Dashboard- the TAB named 'BSL & Commercial Progress Data'. As the TUDS information that is supplied by each GLA indicates that the tasks have been completed, this spreadsheet is updated, which feeds the Daily Dashboard sheet.

The Daily Dashboard

The result from the data collection and analysis is displayed on the FR Daily Dashboard spreadsheet, on the TAB named 'Fleet Review Dashboard.

Since the last report, work has been developed on three additional TABS:

- Statutory & Commercial Progress data
- Live 17-18 Annual Plan Summary
- Casualty Data

This Dashboard should still be considered a draft; with development & design work still in progress hence feedback and comment from PMWG will be welcome to ensure the GLA

Planners are capturing the data that is required, plus to advise any newly identified requirements while the Dashboard is still in the development phase.

The Casualty data TAB contains the data which measures the GLA response to Casualties/Outages by the category of the AtoN. The Bar Charts on the dashboard represent the result so far.

The live 17-18 Annual Plan Summary indicates the amount of changes there have been made to the baseline plan on a daily basis. This is not a measure of planned versus unplanned which can also be seen on the start centre.

However, whenever the GLA Fleet has to attend some additional unplanned work, the planned maintenance tasks have to be reprogrammed and hence this measure reflects the amount of changes to the baseline plan; like a 'coefficient of change'. If this figure were to reach 100% this would be the equivalent of 'fire-fighting'.

Currently the figure is around 60%; which is manageable given the number of resources within the GLA fleet; as the number of resources reduces, then this figure will increase which is indicated on the sheet. This together with the measure of the completion of Statutory and Commercial tasking will give an indication as to the amount of future resource required.

Some data is still required with regards to Statutory & Commercial progress with regards to Local Lights and Lighthouse inspections and this will be submitted through CFMG.

Reports

All documentation has been saved on to Worksite. The Fleet Review Daily Dashboard – 2nd Quarter is DMS 370772.

Summary & Actions:

Data for the first two quarters has been collected.

All RRC measurements are above the minimum acceptable coverage Threshold.

Feedback from the last PMWG to include a date and to separate 'weather-bound' data and to add conditional formatting to the RRC figures has been completed.

Access to the Sharefile 'Fleet Review 2' folder has not been possible, hence all reports are located in the project folders on Worksite only.

Work Package 2 – Coordinated Planning

Phase 3 – Evaluate, refine centralise planning model and build coordinated plan

Coordinated Planning Final Report

GLA Fleet Review – Phase 2

Co-ordinated Fleet Management Group Planning Summary Report to the Project Management Working Group

Work Package 2: Co-ordinated Planning – Phase 2 – Final Report

Author: Bill Summers, GLA Planning Co-ordinator

Date: 12/03/18

Document: 380033

Document Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

Introduction:

The Houlder Report identified Centralised Fleet Control and scheduling (to be retitled and explained in final report) as a prerequisite for efficient operation of the GLA Fleet. Houlder have modelled this approach on the advances already made in Coordinated Fleet Management and recommend the development of a fully integrated fleet schedule which would be actively managed and controlled centrally.

This approach required vessel capacity to be managed from a fleet wide perspective with fully coordinated programmes down to BSL level and integration of operations across GLA boundaries. Houlder considered that this would enhance the GLA ability to meet their statutory requirements while still potentially allowing use of reserve capacity for commercial purposes. Houlder also recognised that responsibility and legal liability for the delivery of the AtoN service lies with the Chief Executives of each GLA.

The GLA accepted the Houlder analysis of the benefits of this arrangement. However, the GLA believe that their individual statutory obligations require local control of vessel operations, AtoN provision and primary response decisions in relation to AtoN casualties, wreck and new dangers within their geographical areas. Subsequent to the Houlder Report, the GLA enhanced the pre-existing co-ordinated planning arrangements which retain control with the individual GLA while still delivering the benefits of integrated operations as recommended by Houlder.

This is the third and **final** report to update the PMWG on the progress and output of the WP2 processes and procedures and to summarise the data collected so far and covers the first three quarters of 2017/18; period 1st April to 31st December 2017.

Objective:

To review the Objectives and Deliverables outlined in the report 'Work Package 2: Co-ordinated Planning Phase 1' (DMS 348674).

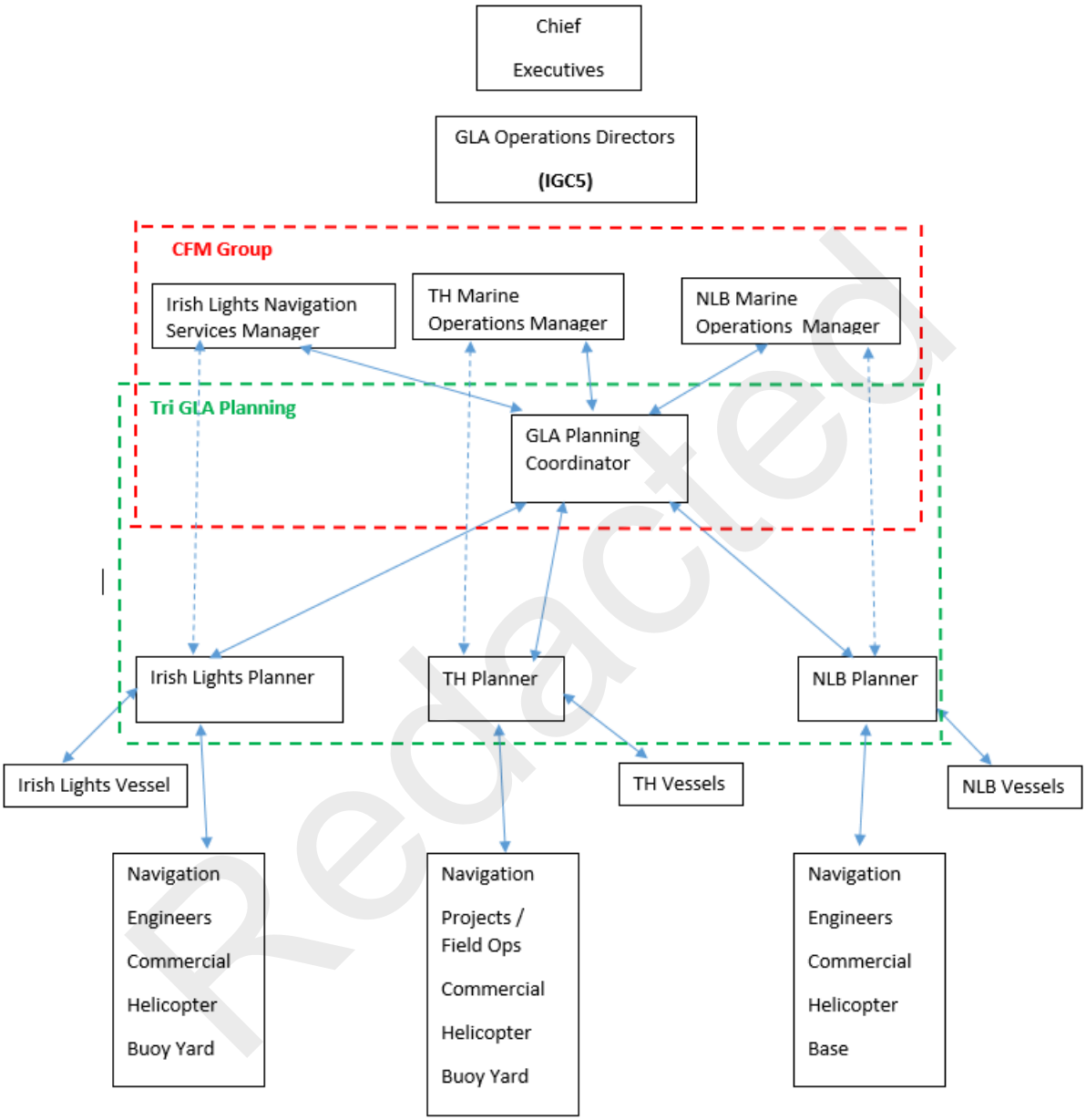
Tri-GLA Framework:

Throughout Phase 2 of the project, Coordinated Planning has continued to meet the GLA Integrated Fleet Deployment and Response Arrangements as recommended by Houlder whilst still respecting the individual GLA statutory obligations and in accordance with the GLA Memorandum of Understanding (MOU) as revised 3rd August 2016 (Draft). The principal features of this arrangement are:-

- The principles of individual GLA statutory responsibility, optimised fleet operations and active risk management are core to these arrangements.
- Control and safe management of each ship rests with the GLA holding the Document of Compliance for the vessel
- Statutory responsibilities are as set out in Merchant Shipping Act and ultimate liability rests with individual GLA Boards
- As accepted by Houlder, the arrangements were manpower neutral with the benefits arising from improved fleet operations.

Organisational Structure:

The following diagram illustrates the organisational structure of the Coordinated Planning Group and reporting lines with IGC5, CFMG, and GLA departments which operated during Phase 2 of the project.



IGC5 – accountable to the Chief Executives for the Tri-GLA Coordinated Planning arrangements, have overseen the operation of the plan; quarterly reports have been submitted by the GLA Planning Co-ordinator. IGC5 have provided guidance to CFMG on the acceptable levels of risk- these are illustrated below:

Routine Risk Thresholds- Taking into account the level of risk acceptance identified, the 6, 12 and 24 areas have differing minimum acceptable coverage requirements. These are defined as

Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24hrs	1@ 15%	2 hrs

*All other areas to be 100% covered both in area and time to respond

GLA Planning Coordinator – The GLA Planning Coordinator is now a member of the CFMG and is based in Harwich and head GLA of the Planning Centre team. The GLA Planning Coordinator:

- Prepared the 2017-18 annual integrated plan with the Planners and has been actively managing its delivery through Phase 2 of the Project. This plan was baselined on 23rd March 2017.
- Approved updates to the baseline plan to reflect new tasks and completed tasks and provide advice to IGC5 (PMWG) and CFMG managers on scenarios to address any changes to the plan required by plan implementation issues or unplanned activity.
- Liaised with the CFMG throughout Phase 2 of the project to provide updates to the plan and provide ongoing reports to CFMG and Local Operations.
- Worked with each of the GLA local Planners in maintaining the GLA Fleet Plan to ensure that the spread of resources will meet the tri-GLA RRC. Weekly meetings have been held throughout Phase 2 of the project.

Local Planner(s) – The local GLA Planners (TH, NLB & IL) have coordinated the requirements from the various internal customers for their resources and have liaised with the individual Ship's Masters with regards to the day to day operations and the delivery of the plan and implementation of work on board managed by the Master.

The above structure is now well established and has worked well during Phase 2 of the Project and recommend that this should continue to function unchanged on completion of the project.

Compiling GLA Fleet Plans:

The GLA Fleet Plan for 2017-18 considered all of the requirements to meet RRC, AtoN Maintenance, Projects and pre-existing contractual commitments utilising the GLA Fleet in a manner that minimised risk and optimised fleet efficiency.

The framework of the plan was set by utilising the individual local GLA's vessel(s) to cover their own risk response areas and other planned work in the first instance and then looked to the interaction of other vessels where this could not be achieved, thus overall, gaining greater efficiency from the GLA fleet.

The process in compiling the 2017-18 GLA Fleet Plan was:

- IL, TH, NLB local Planners obtain the requirements for ship resources from their respective internal departments. (September/October)
- The GLA Planning Coordinator with the Planners will compile the GLA Fleet Plan from the resource requirements ensuring that the requirements under the GLA MOU are accounted for. (November / December)
- The draft annual GLA Fleet Plan will be agreed by the CFM Managers (January/February) prior to the Plan being submitted to IGC5 for sign-off.
- GLA Fleet Plan operational from 1st April to 31st March.

This was successfully completed and the same process / procedure will be used in developing the 2018-19 GLA Fleet Plan.

2017-18 Base Line Plans

The following documents were frozen on 23rd March 2017 prior to the 2017-18 planning year which commenced 1st April 2017. These were filed separately as the Base Line plan with 'Read Access' only available; maintained by the GLA Planning Coordinator.

The Base Line Plan consisted of the following calendars and spreadsheets:

- GLA Annual Plan Summary
- GLA Risk Response Analysis (Bubble Assessments)
- GLA Work Plan Calendars
- GLA Resource Capacity
- GLA Critical Area Coverage

This facilitated the measurement of performance (KPI's) later in the project as the plan was delivered as will be highlighted later in this report.

Updating GLA Fleet Plans - Calendars

The local GLA Planners have been updating the GLA Fleet plan for their own vessel(s) liaising with the Ships Masters as appropriate.

The Planning Coordinator has advised changes to the Fleet Plan to the CFMG Managers throughout the reporting period, and has provided quarterly reports to IGC 5 (reporting twice yearly to the Chief Executives) which have included a gap analysis detailing where the required risk response has not been achieved and also the status of operational

maintenance undertaken in relation to the target requirements. This information is shown later in this report for the reporting period.

The introduction of Outlook Calendars across the GLA incorporating 'live' access for the GLA Fleet for maintaining up to date GLA Fleet Plans has been successful and it is recommended that these are continued after the conclusion of the project.

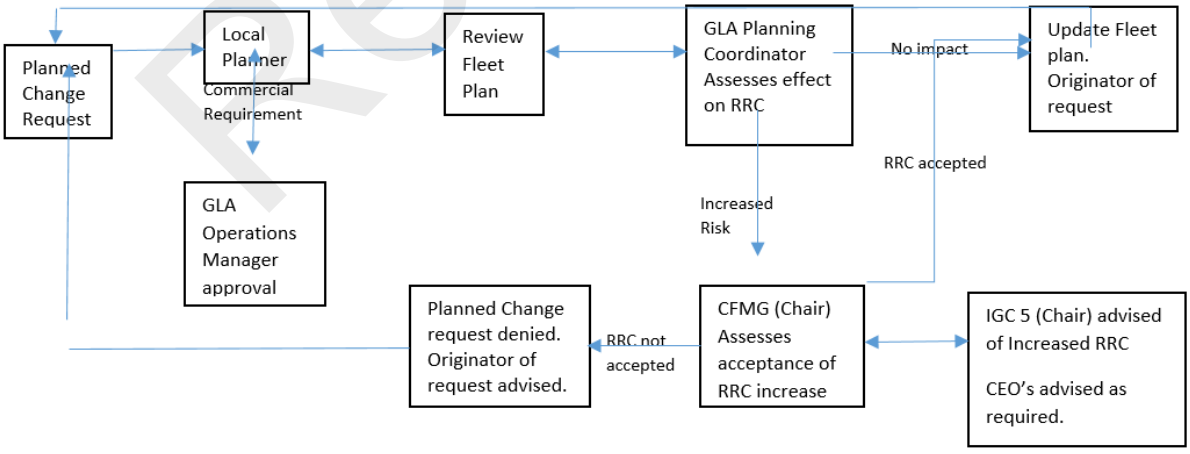
GLA Coverage by other GLA Vessels

Where a GLA requires to utilise another GLA's vessel for coverage/operational work and whether planned or unplanned, the requests for the utilisation of ship resources have been made through the appropriate CFM Manager for the respective GLA. During the reporting period the requests are summarised below:

- June: Irish Sea/West coast coverage by NLB: TH attending Sunk Centre LV off station.
- October: NLB attended Lune Deep casualty/outage on behalf of TH
- November: NLB attended Baggy Leap and Ten Feet Bank casualties/outages on behalf of TH
- December: NLB attended Swedman casualty/outage on behalf of TH

Management of changes to the GLA Fleet Plan:

The procedure for making '**Planned'** changes to the GLA Fleet Plan were proposed in the 'Work Package 2: Coordinated Planning Phase 1' document. The flow chart is shown below:



Following the proposed procedure in practice has been difficult throughout Phase 2 of the project and hence this has not always been followed: For example

- Where a vessel has required essential maintenance, this was a necessity to get the vessel back into service, and therefore the planned change was just been agreed locally with the GLA Planning Coordinator advised.

- Similarly where a local GLA has been approached for some new Commercial Tasking, the planned change has just been agreed locally with the GLA Planning Coordinator advised.

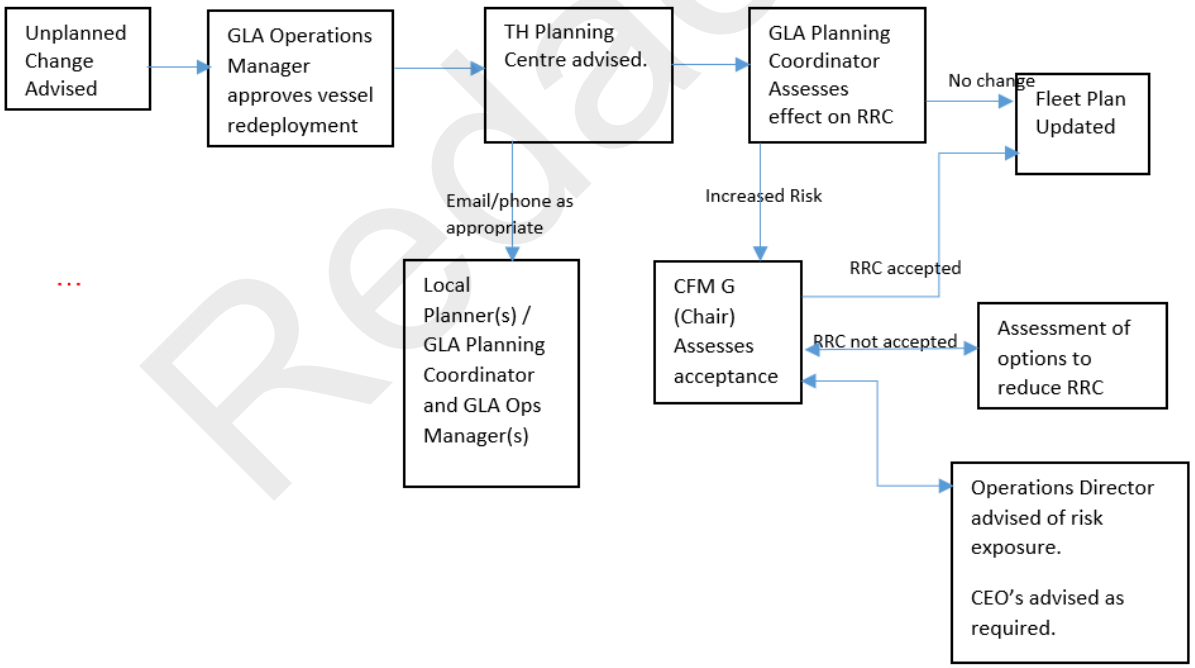
To meet the requirement of this procedure for every change to Planned work for all of the GLA Fleet vessels would require additional resource and contrary to the Tri-GLA Framework (i.e. not 'manpower neutral').

There have been no occasions in the period 1st April to 31st December 2017 where the **planned** change request was denied to the local originator of the request.

There have been no occasions where the Chair of CFMG has needed direction from IGC5 to resolve any Planning conflicts during the reporting period.

Consequently the measurement of the impact to the RRC has been carried out retrospectively throughout Phase 2 of the project.

Similarly, the procedure for making '**Unplanned'** changes to the GLA Fleet Plan were proposed in the 'Work Package 2: Coordinated Planning Phase 1' document. The flow chart is shown below:



Throughout Phase 2 of the project, this procedure has not been always relevant, given that whether it has been the wrecks at 'Fluvius Tamar', 'Ella' or 'Shanie', or significant storm events which have caused casualty/outages to numerous AtoN such as hurricane 'Ophelia' or storm 'Brian', GLA resources have been diverted to attend. This may increase the risk in other areas but the GLA Fleet are responding as required to mitigate the risk caused by a new danger whatever that may be.

Consequently, as was the case with **'Planned'** changes, the measurement of the impact to the RRC due to any '**Unplanned'** changes has been carried out retrospectively throughout Phase 2 of the project.

Hence as an output from this project, given that the proposed planned and unplanned procedures are not always being followed, it is recommended that IGC5/CFMG review these processes and the changes should be incorporated into the Terms of Reference of the CFMG.

As will be seen later in the report, over the period from 1st April to 31st December 2017, whether due to the direct impact of specific planned or unplanned changes made, or due to the indirect impact as the Fleet Plans have been rescheduled, GLA Fleet vessels have either changed their tasking or have been repositioned in a different location approximately 60% of the time when compared to the Baseline Plan.

Data Collection:

During the project, the following data has been gathered to form the basis for the analysis contained in this report through the 'Daily Dashboard' which has been designed to meet the KPI requirements of the project in the period 1st April to 31st December 2017-

- Daily GLA Fleet Disposition Reports**-** live data submitted from the Ship's Masters with regards to actual operations: work completed, work planned; actual ships speed; actual weather- these were sent to the Planning Centre on a daily basis.

- Daily RRC 'Bubble' Plots- each day the Operations Officers plotted the disposition of the GLA Fleet with the reported actual speeds to determine the coverage of the critical RRC areas around the coast and thus provided and recorded a measure of the percentage level coverage of Risk Response for each individual RRC area for each day. The information was used to provide input for the Risk Response Analysis for the duration of the project, benchmarked against the RRC Risk Thresholds.

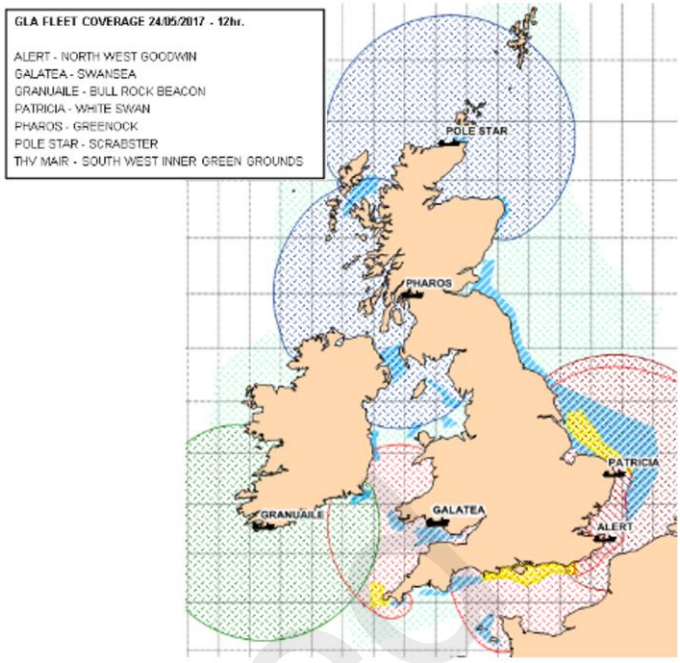
- GLA Critical Area Coverage: similarly the above figures were benchmarked against the Baseline Plan- The GLA Critical Area coverage was 100% when the plans were baselined.

- GLA Fleet 'Live' Annual Plan Summary: The information from the Daily Disposition Reports was also recorded on this document to monitor changes from the baseline plan, both to record additional tasking (Planned and Unplanned) and to see the indirect effects to the rescheduled plan.

- A Daily Dairy (extract shown below with the RRC Area Coverage Report) summarising the above data was collated on a daily basis during the reporting period.

24th May 2017	Daily Diary Narrative
THV Patricia	*Passenger change in Great Yarmouth*
THV Galatea	*Passage back to Swansea for MOD demobilisation*
THV Alert	*Gull Stream Survey; made passage to Harwich pm*
MV Mair	*Mumbles project work; made passage to Barry; on completion; RIB made passage to Flatholm with technicians.*
NLV Pharos	*Greenock, disembark Commissioners; passage to Proaig Bay*
NLV Pole Star	*Alongside Scrabster loading and discharging; commenced passage to Stronsay*
ILV Granuaile	*Routine Ops area 15*

Wreck, AtoN Casualty, RRC Incidents	
None	



File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV MAIR

- Tender Utilisation Data; this data has been submitted on a weekly basis to the GLA Planning Co-ordinator and Planning Centre for further analysis.
- Incident Reports: Any incidents within individual GLA were reported by GLA Ops Managers and reported to the GLA planning Co-ordinator- these were recorded in the Incident Register.

The collection of data has been a labour intensive process throughout the period of the project. A review of data collection needs to be carried out on completion of the project to remove any data duplication and to identify core data inputs that will remain relevant for future KPI's.

Data Definitions:

Throughout the project there are a number of terms used in the analysis section of the report is report that can be defined as follows:

- **Risk Response Criteria (RRC)** – A baseline requirement as defined in Risk Response Criteria document revised and published 2014.The key points are 6, 12 and 24hour areas 100% of time in moderate conditions where service speed can be achieved
- **Risk Appetite (RA)** - as defined in Paper 'Additional Recommendations on risk' (document number. 358,119) The key points are 6, 12 and 24-hour areas are 95%, 90% and 85% respectively which introduces a risk tolerance in terms of area and time but only accepting one area to be within this tolerance at any given time.
- **Risk Appetite in Actual Conditions (RAAC)** - utilising the basis of the RRC coupled with risk response appetite in terms of tolerance and using the actual operational conditions and 'layered vessel' capabilities experienced on the day gives the GLA boards a more realistic appreciation of the ability to respond

GLA Resource Capacity:

- **Vessel Reserve Capacity** = 365 days – (Vessel maintenance + statutory AtoN maintenance + weather downtime)

- **Vessel Spare Capacity** = Vessel Reserve Capacity – Planned 3rd Party work. (at time the Fleet Plan is base lined)

Data Analysis: KPI Workshop – 14th February 2017

Data Analysis commenced with a workshop held in London to determine the measurements (KPI's) to capture following data analysis. The following criteria were agreed at the Workshop:

- The GLA Fleet vessels are available for 'Natural Risk & Response Cover (RRC) throughout 24 hours. This meant that whether a vessel was 'on passage', 'at anchor' 'or alongside' the vessel remained operational and available to provide Natural RRC coverage. This criteria applies equally when a vessel is weatherbound.
- Dedicated RRC, (where a GLA Fleet vessel vessel is required to maintain a geographical position to provide RRC where there is no outstanding maintenance task to be completed), would be measured separately.
- When a GLA Fleet vessel was operational two task categories were agreed:
    - Operational Statutory (Routine maintenance, Helicopter Operations, Seamarks Inspections, Audits, Training, i.e. any work/function to enable completion of a statutory task)
    - Third Party (Extraneous buoy work, Contract Operations, Inter Governmental [IG] Operations)
- Non Operational Statutory is when a vessel is at DD&R, Self-Refit or due to a breakdown.
- PMWG requested that periods when the vessel was unable to work due to weather was measured separately.

Tender Utilisation Data System (TUDS)

The basis for the collection of data to measure the above Task Categories was taken from TUDS. The data supplied had to be adjusted to provide the measurements required to meet the Workshop Criteria above.

The TUDS data capture supplied by each vessel is based on the utilisation of each vessel in the GLA Fleet in carrying out AtoN maintenance throughout the year; and hence utilisation of the vessel for maintenance tasks is considered over a 12 hour working day from 0800 to 2000 and so there are periods within this data set where the vessel is categorised as 'non-utilised'.

Following the KPI Workshop referred to above, it was recognised that GLA Fleet vessels are always available to provide natural RRC throughout 24 hours as there may be a requirement to respond to a wreck or new danger, and are always geographically positioned ready to be utilised; whether that vessel was 'on passage', 'at anchor' 'or alongside'. The only exceptions being when the vessel was 'non-operational' (e.g. DD&R) or weatherbound.

Therefore the 'non-utilised' periods within the basic TUDS data set was adjusted to align with the categories indicated in the 'Tasking' section of this report that follows. The premise on which all the data has been collated is that the time taken to complete a given task is equal to the time taken to position to the location plus the time taken on station (AtoN).

A couple of example follow to illustrate the difference:

- A vessel is carrying out buoy work starting 0800 on 1st and night anchors at 1800 before resuming work at 0800 on 2nd for another days buoy work before heading into port to load Contractors equipment at 1600.

  The original TUDS data would split this into different categories of Operational, Shared tasking and non-Utilised Tasking. Fleet Review Data would report that the vessel was on Operational Statutory Tasking from 0800 on 1st to 1600 on 2nd before heading into port on Third Party Tasking.

- Similarly, a vessel is buoy working but at 1200 on 1st decides to make passage for shelter and anchors at 1800 remains anchored weatherbound for 2 days. The basic TUDS data would split the tasking over 'utilised' and 'non-utilised' periods.

  The data used to compile the Fleet Review data changes the category to the total time that the vessel was weatherbound i.e. including the basic TUDS non-utilised time, until such time as the vessel resumes working and is available for RRC.

The results from the analysis of the adjusted TUDS data from all the vessels has been collated on one spreadsheet and saved in the Project Folders on Sharefile and on Worksite DMS 376628. This data was copied and limited to 31st Dec 2017 (end of the third quarter) before being imported into the Daily Dashboard for review by the PMWG.

The process of collating this data is laborious, and it is recommended that a review of TUDS is carried out on completion of the project by CFMG to validate the data to be collected and facilitate the ships supplying the data required directly. Meanwhile TUDS data will continue to be collected throughout 2018 in the above format.

Incident Reports

Incident Reports were compiled for the following scenarios:

- A draft report has been sent to the GLA Planner regarding a particular wreck, outage, vessel defect or significant change of plan.
- The results of the bubbles calculation indicates that the RRC has fallen short of the required threshold in a particular area.
- By the GLA Planning Co-ordinator to report a particular issue to PMWG

Each Incident reported was listed in the Incident Register; not all of these have generated a report. The updated Incident Register dated 31st December 2017 is available to view on Sharefile and on Worksite: DMS No. 378561.

During the period 1st April to 31st December there were 202 Incidents listed on the Register- of these just under 25% requiring a report. The production of the Incident reports was useful in highlighting to CFMG and PMWG any issues that have occurred during the project which could not have been anticipated.

On completion of the project, it is recommended that an Incident Register is maintained and the Incident Report format is retained to report as follows:

- Where the GLA Planning Co-ordinator or member of the CFMG wishes to advise IGC of a potential issue arising
- Where IGC5 require a more detailed investigation (RCA) regarding a specific incident

RRC

The results from the analysis of the daily 'bubbles' is collected on the Fleet Review Vessel Analysis Sheet saved in the Project Folders on Worksite DMS 357833. This document is a live document; the data sheet was copied and limited to 31st December 2017 (end of the third quarter) before being imported into the Daily Dashboard for review by the PMWG.

This is a fundamental part of the Daily dashboard and this will be maintained into the future. It should be noted, with reference to the definitions above, that the output is a measure of the Risk Appetite in Actual Conditions (RAAC) - utilising the basis of the RRC coupled with risk response appetite in terms of tolerance and using the actual operational conditions and 'layered vessel' capabilities experienced on the day gives the GLA boards a more realistic appreciation of the ability to respond.

Maintenance Progress Data

The collating of all the lists of all AtoN tasking including buoy work, project works, local lights data has been combined on to one spreadsheet within the Daily Dashboard- the TAB named 'BSL & Commercial Progress Data'. As the TUDS information that is supplied by each GLA indicates that the tasks have been completed, this spreadsheet is updated, which feeds the Daily Dashboard sheet.

The Daily Dashboard

The result from the data collection and analysis is displayed on the FR Daily Dashboard spreadsheet, on the TAB named 'Fleet Review Dashboard.

On the document the TABS named below contain all the data collated for the period 1st April to 31st December 2017:

- Risk Response Delivery from 1st April 2017
- Statutory & Commercial Progress data; from 1st April 2017
- Live 17-18 Annual Plan Summary- indicates the amount of changes there have been made to the baseline plan on a daily basis. This is not a measure of planned versus unplanned which can also be seen on the start centre.
- TUDS Data- modified to measure Fleet Review requirements
- Wrecks Data – for attendance at Wrecks & New dangers during the reporting period
- Casualty/outage Data – during the reporting period

A copy of the Dashboard dated 31st December was made and saved on to Sharefile and Worksite DMS 376629.

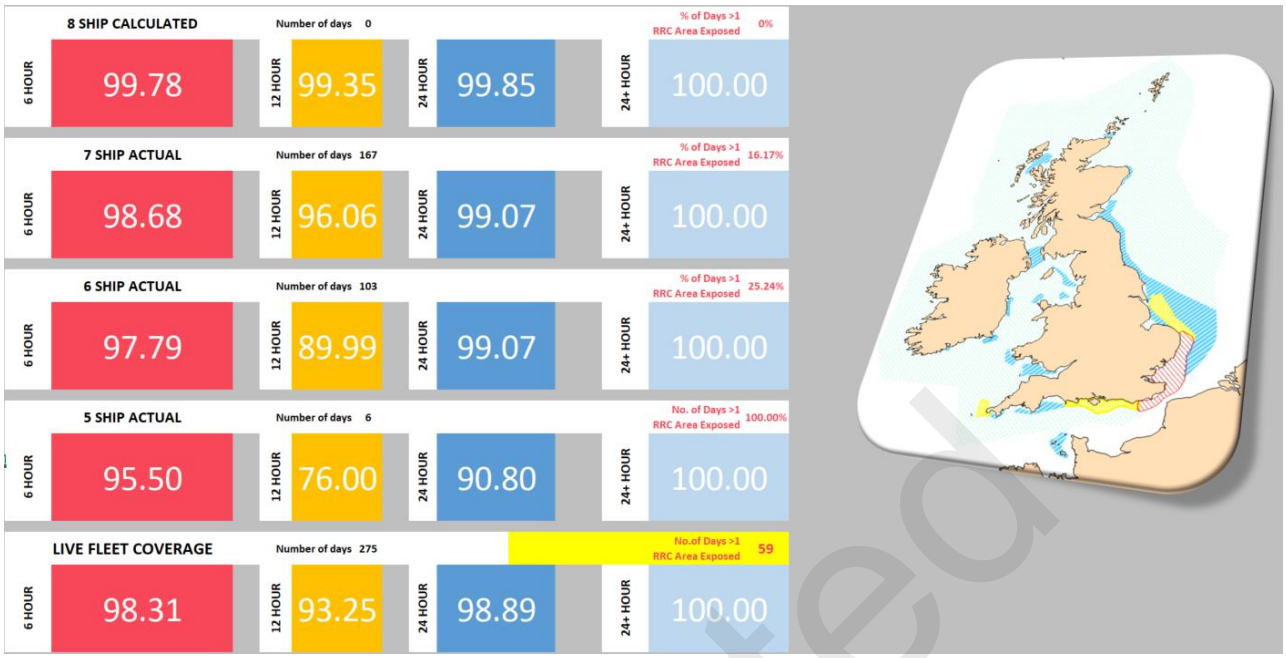
This Dashboard is a live document and is updated every day recording all RAAC data.

Also the document is still developed where feedback and comment from PMWG ensures the GLA Planners are capturing the data that is required.

Recommend that the Fleet Review Dashboard is reviewed on completion of the Project to ensure any new requirements are identified for future KPI data gathering & analysis.

Data Results:

Risk Response Coverage



The above figures show the level of RRC for each Risk Threshold and for the GLA Fleet from 1st January to 31st December 2017 the figures were:

- 6 Hours RRC 98.31 %: above the 95% threshold
- 12 hours RRC 93.25: above the 90% threshold
- 24 hours RRC 98.89: above the 85% threshold.

However, it should be noted that for those occasions where there were only 6 vessels in operation, the 12 Hours RRC falls just below the threshold at 89.99%

Total No. of Days >1 RRC Area Exposed	No of Days when RRC below Threshold	No of Days where both RRC apply	No of Days when RRC 0%
59	105	132	36

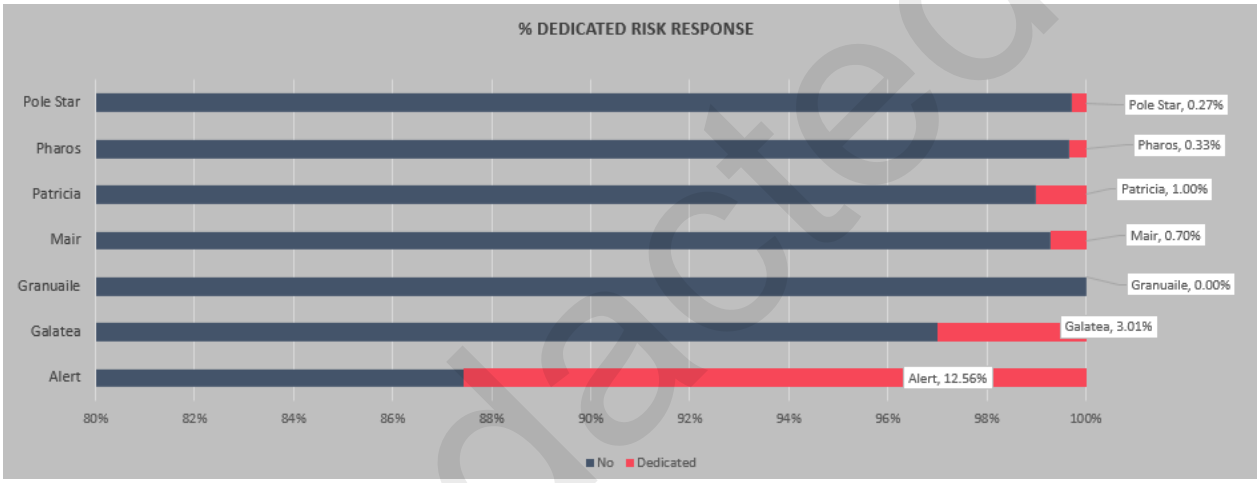
The number of occasions where the risk response thresholds were compromised during the period 1st April to 31st December 2017 are shown in the table above.

GLA Co-ordinated Planning – Improved Performance

The table below illustrates the improvement in GLA Fleet Co-ordinated Planning since the start of the project when compared to figures collated in 2016/17. The greatest improvement being in the 12 Hrs RRC area.

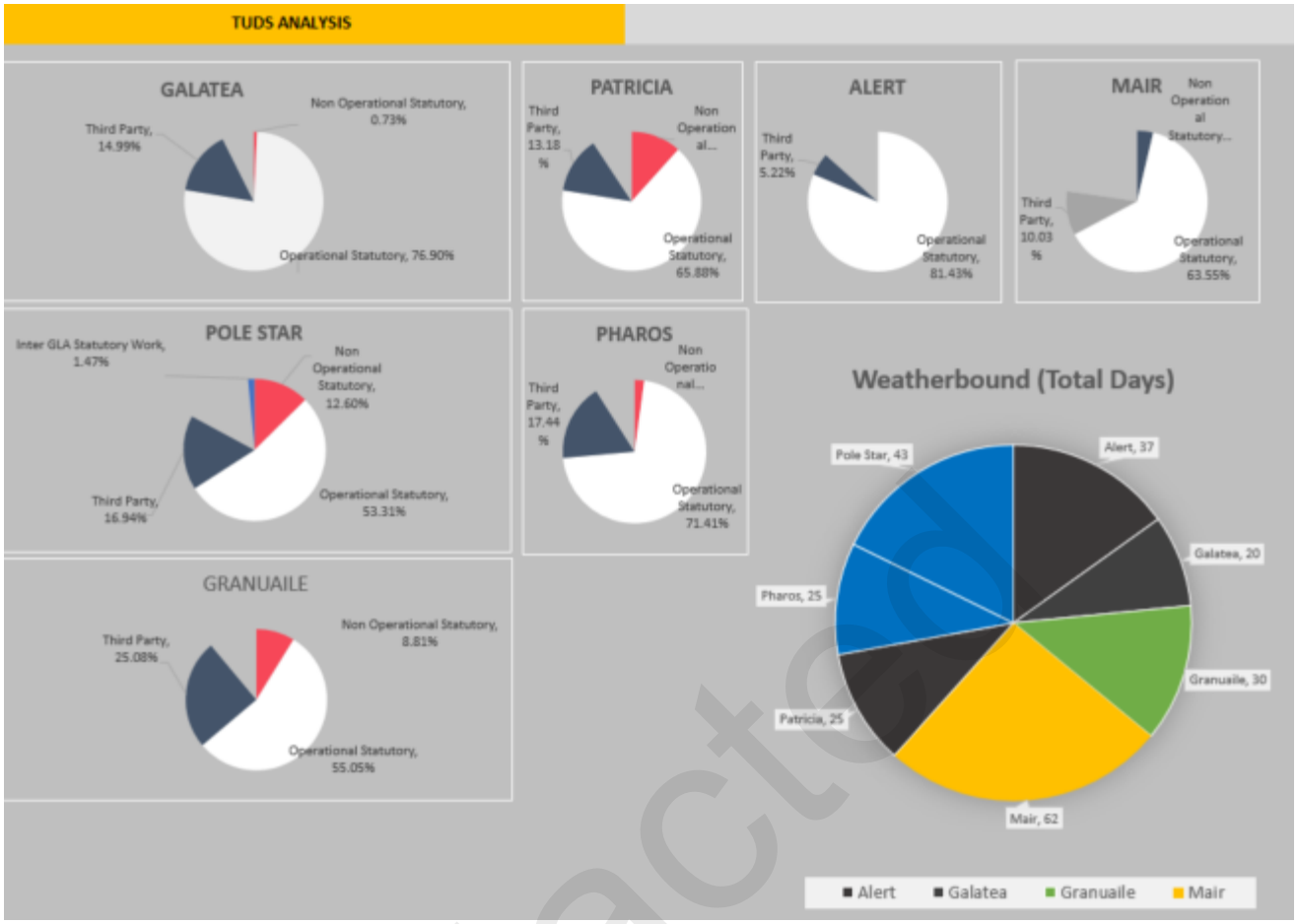
Pre Project Figures	*94.41%*	*17.76%*	*80.92%*
Thresholds	**95%**	**90%**	**85%**
1st Apr to 31st Dec 2017	6 Hrs KPI	12 Hrs KPI	24 Hrs KPI
	98.31	93.25	98.89

Dedicated Risk Cover



The figures for Dedicated Risk Cover for the GLA Fleet are shown in the bar chart above. As to be expected, THV Alert, acting as the RIV in the Dover Straits 6 hours RRC area has the highest level of dedicated RRC during the reporting period.

Tasking



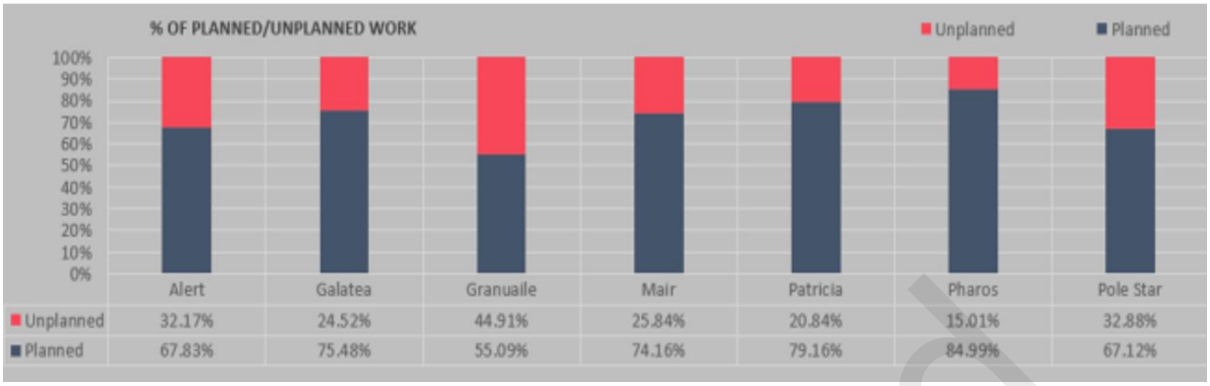
The pie charts illustrated show the breakdown of tasking in the Workshop Categories as previously reported:

- Operational Statutory
- Non Operational
- Third Party
- Weatherbound

In addition, NLV Pharos spent 1.5% on Inter-GLA (Statutory) work in the TH area; otherwise all GLA Fleet were tasked/covering their individual GLA areas. More Inter-GLA work was included in the baseline plan but this was re-programmed due to unplanned work and attendance at incidents that occurred during the reporting period.

Planned V Unplanned

At the start of the planning year, all the plans were baselined on 23rd March. Any new tasking whether a new danger, a change to AtoN requirements, new contract work or any other reason was treated as unplanned and therefore required the vessel work programmes to be adjusted to accommodate these changes.



Altogether, when looking at the fleet as a whole, the baseline plan had changed by just over 60 % in the period 1st April to 31st Dec 2017, however, the number of resources available allows for some flexibility in responding to changes to the plan while still maintaining adequate RRC. The table below also shows the calculated impact of losing resource given the same number of changes to the baseline plan. With only 5 resources there is an under-capacity for the amount of work required during 2017/18; effectively the GLA Fleet would be 'firefighting'.

Baseline Plan Comparisons	GLA(7)	GLA(6)	GLA(5)
Level of Location Changes	**61.04%**	**87.88%**	106.55%
Level of Work Changes	**61.25%**	**79.58%**	106.98%
Ave. Change	**61.14%**	**83.73%**	**106.76%**

The table below shows a breakdown of the reasons for the unplanned work. The last line of the table can be thought of as an 'indirect' impact to the plan; tasks that have had to be reprogrammed because a vessel has had to be diverted.

Baseline change description	% Change
Weather-bound	7.48%
Vessel Repairs	3.95%
Wreck	0.94%
AtoN Casualties/Outages	4.05%
Reactive Risk Response	3.58%
Rescheduled Heli-Ops	0.78%
Emergent Contract Work	6.75%

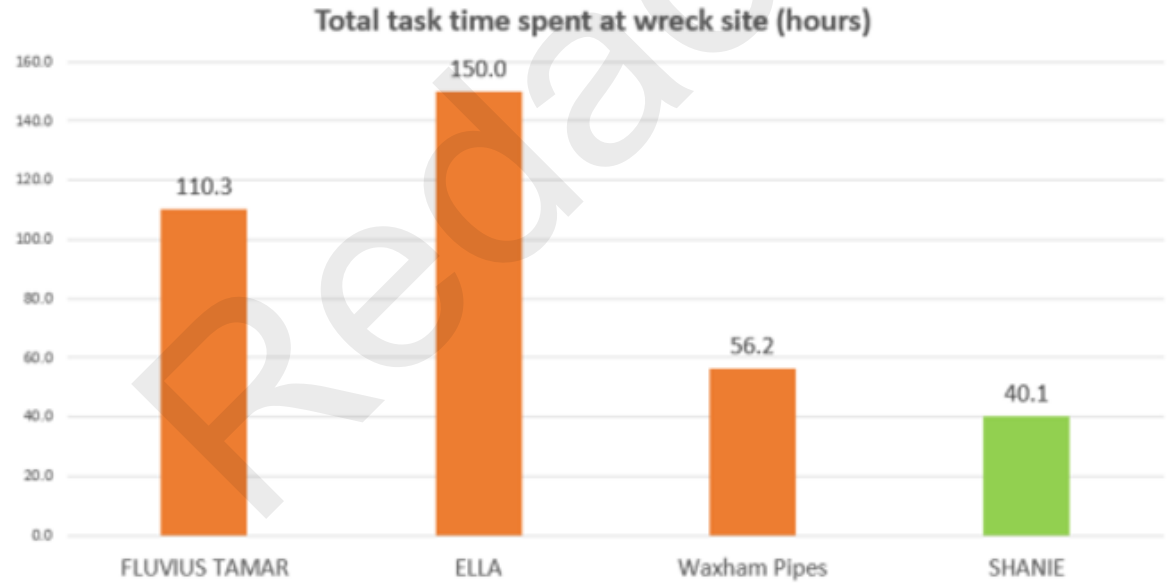
Baseline change description	% Change
Urgent Hydro Survey	0.52%
Buoy moves/THNM's	0.10%
Consequential rescheduled Work	32.99%

The above figures should not be taken in isolation; the levels of resource are indicative with regards to the GLA Fleet ability to adapt to unplanned changes to the baseline plan.

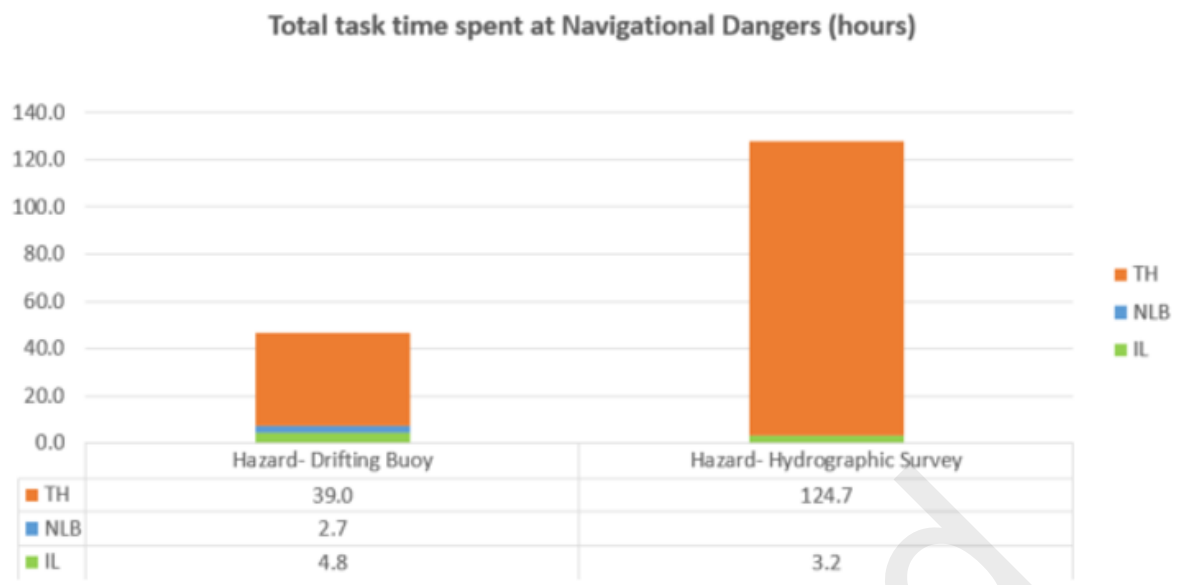
Ultimately, in addition to the adherence to the Risk Response Criteria, and adhering to Wreck/New Danger and Casualty/Outage responses all Statutory and existing Commercial Planned Maintenance and Inspection Tasking must be completed by 31st March 2018. This will give an indication as to the amount of future resource required.

Wrecks & New Dangers

The bar chart below show the attendance at Wrecks in the period 1st April to 31st December 2017. In all cases the GLA response adhered to the RRC required.

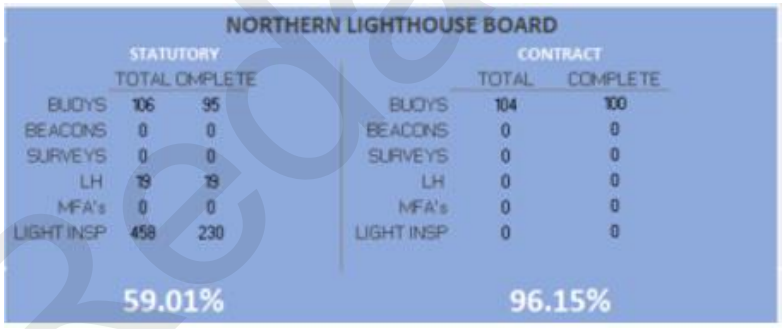


Similarly the following bar chart shows time spent in attending other new dangers.

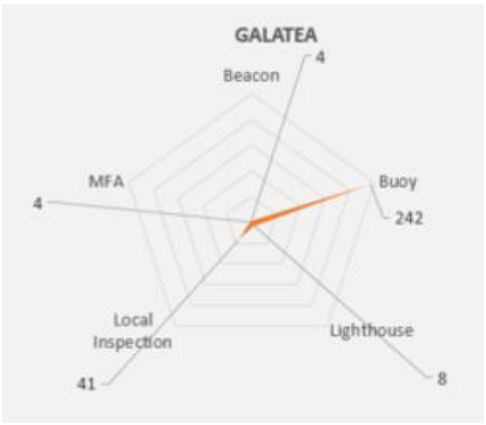


Statutory & Commercial (existing) Maintenance Progress

The figures for maintenance progress can be seen on the Dashboard – illustrations are shown below of what is visible on the Dashboard- as indicated earlier this is a live document and hence the current figures will not reflect what is shown. The table below shows the completion of both Statutory and Commercial Tasking which is updated to monitor progress.



The spider diagram below shows the type of tasking each fleet vessel has been undertaking during the reporting period.



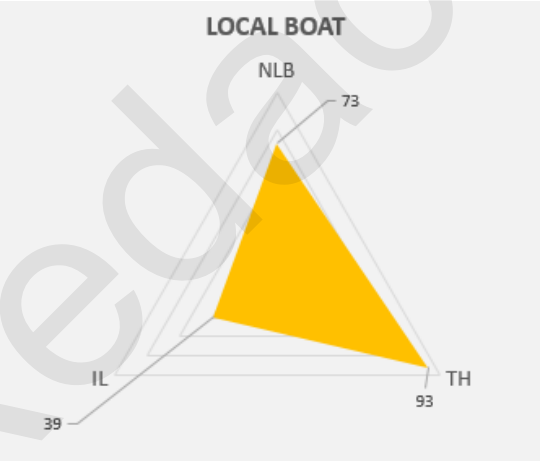
The target is for all Statutory and Commercial tasking to be completed by 31st March 2018.

On 31st December 2017, the level of completed tasking looked to be slightly behind schedule; there are three potential reasons for this:

- RRC is given primacy; the GLA Fleet must be geographically positioned ensure RRC requirements are met in all areas.
- The period of time attending a number of Wrecks and New Dangers has been significant.
- In addition to normal Non-Statutory time, there have been some breakdowns to cranes hampering buoy operations
- There has been an unsettled period of weather (5 storm events) during the third quarter of the year which has disrupted programmed work.

Layered Fleet Approach

Within the Houlder report, recommendations were made with regards to a layered fleet approach: the use of other vessels in addition to the GLA Gleet.



During the reporting period, in addition to GLA Fleet vessels and launches, Zone boats (Local Boats) have been used to attend maintenance tasks and casualties / outages.

By 31st December 2017 over 200 Zone boats had been utilised.

Summary

During the project period; the introduction of enhanced GLA Co-ordinated Planning processes as recommended by Houlder has proved to be successful; at the same time opportunities to make further improvements will be progressed through the CFMG after the project has closed. In the reporting period 1st April to 31st December 2017:

- The RRC measures in the 6 Hrs, 12 Hrs & 24 Hrs areas are all above the Risk Thresholds.
- The enhancements made to the GLA Fleet Management approach as recommended by Houlder have improved levels of co-ordination as measured against the RRC. The most marked improvement is in the 12 Hrs RRC from 17.71% to 93.25 %.
- All responses to wrecks and new dangers have adhered to the RRC.
- Since the Plan was baselined in March 2017, overall changes to the plan, total 61.34%.
- A final completion figure for the Annual Statutory & Commercial maintenance programme cannot be determined until 31st March 2018
- Through the future CFMG forum, there will be the opportunity to make continuous improvements to the GLA Co-ordinated Planning process once the project is closed; in particular the potential for further enhancements to the Daily Dashboard which has already become essential KPI data to measure the performance of GLA Co-ordinated Planning.

Recommendations:

The organisational structure of the Coordinated Planning Group and reporting lines with IGC5 are now well established and should continue after the project has closed.

The process for compiling GLA Fleet Plans should continue unchanged for future years on completion of the project.

The introduction of Outlook Calendars incorporating ‘live’ access for the GLA Fleet and shore Operations for maintaining up to date GLA Fleet Plans has been successful and it is recommended that these are continued after the conclusion of the project.

IGC5 to review the processes for ‘Managing changes to the GLA Fleet Plan’ and incorporate into the Terms of Reference of the CFMG.

A review of data collection to be carried out on completion of the project to remove any data duplication and to identify core data inputs that will remain relevant for future KPI's.

Recommended that a review of TUDS is carried out on completion of the project by CFMG to validate the data to be collected and facilitate the ships meeting future data requirements directly.

On completion of the project, it is recommended that an Incident Register is maintained and the Incident Report format is retained to report as follows:

- Where the GLA Planning Co-ordinator or member of the CFMG wishes to advise IGC of a potential issue arising
- Where IGC5 require a more detailed investigation (RCA) regarding a specific incident

Recommend that the Fleet Review Dashboard is reviewed on completion of the Project to ensure any new requirements are identified for future KPI data gathering & analysis.

CFMG to carry out Lessons Learned process on completion of the project to identify improvements in operational management for IGC approval; to be put in place and monitored.

Work Package 2 – Coordinated Planning

Phase 3 – Evaluate, refine centralise planning model and build coordinated plan

GLA Fleet Eighteen Scenarios

GLA Fleet Scenarios 2017-18

Two dates (shown below) taken from each month in the period 1st April 2017 to 31st December 2017: where the RRC were below the agreed Project Thresholds.

7th & 13th April: 8th & 13th May: 11th & 19th June: 6th & 21st July: 5th & 19th August: 12th & 25th September: 1st & 22nd October: 7th & 27th November: 10th & 14th December

RRC Risk carried:

Taking into account the level of risk acceptance identified above the 6, 12 and 24 areas have differing minimum acceptable coverage requirements.

These are defined as :

Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24 hrs	1@ 15%	2 hrs

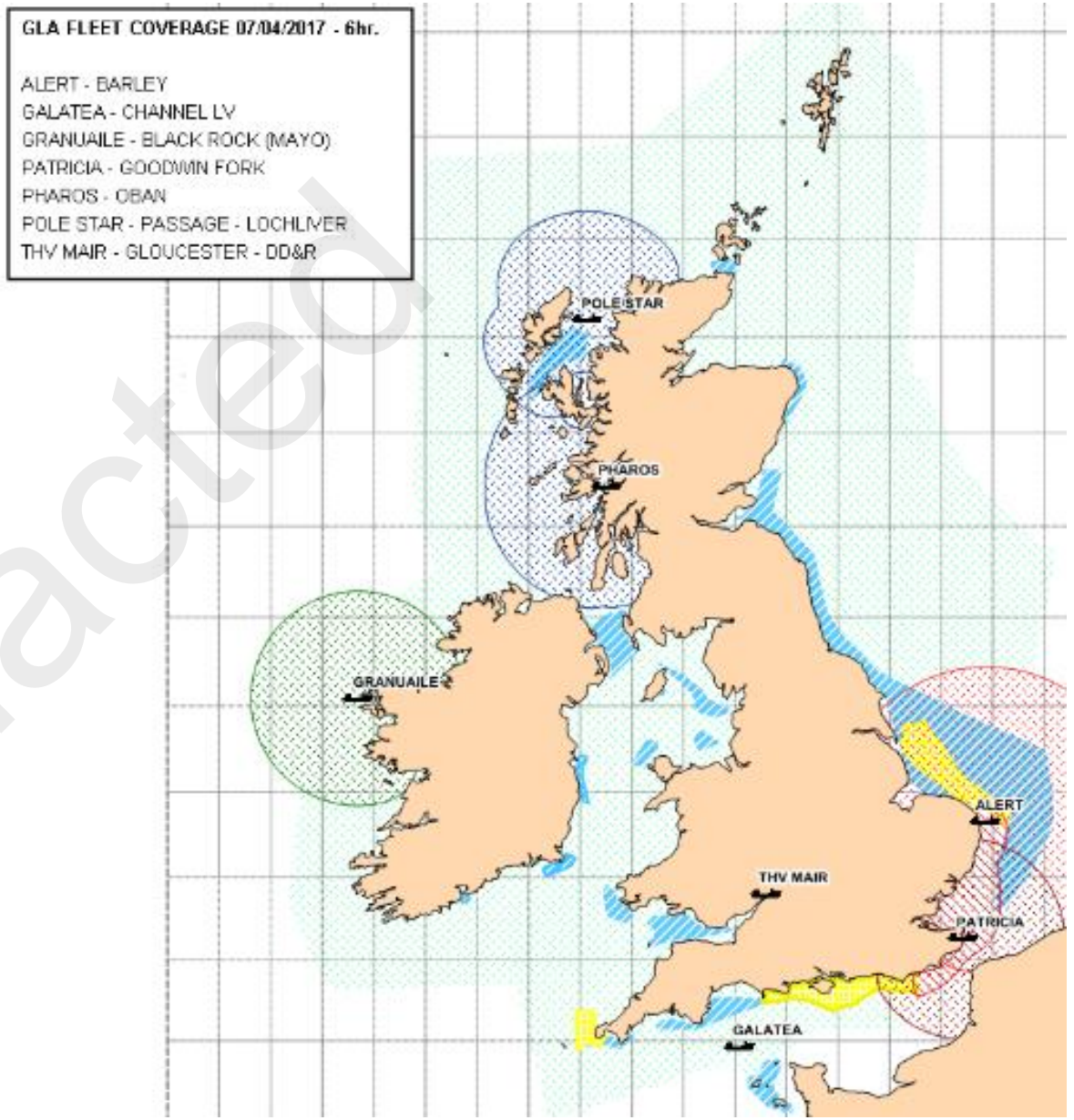
Hence if any area falls below the thresholds of 6 Hrs = 95% ; 12 Hrs = 90% ; 24 Hrs = 85%

and or

More than one RRC area falls below 100% then the scenario has failed the acceptable level of RRC Risk

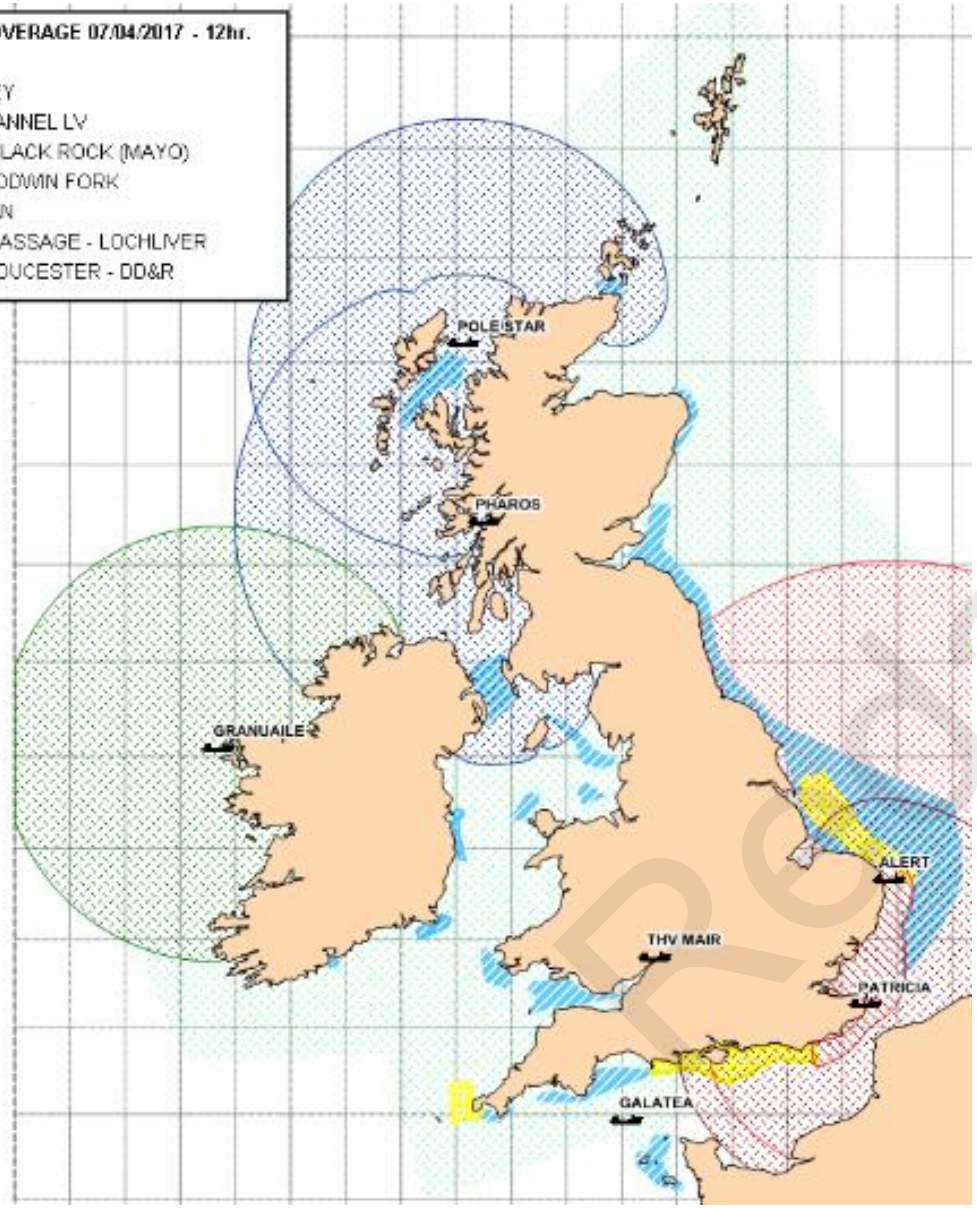
7th Apr 2017	7 Vessel Scenario- FAILED
THV Patricia	*Dover area buoy work; disembark OP57 audit team*
THV Galatea	*Channel LV ; cablework (foul cable) with Met Office in attendance; passage to Penzance Bay*
THV Alert	*East Cross Sands survey*
MV Mair	*Gloucester DD&R*
NLV Pharos	*Oban loading & discharging*
NLV Pole Star	*Departed Stornaway , Buoy work then passage to Lochinver*
ILV Granuaile	*Blacksod Bay; vessel diverted- engaged in SAR Operations of Rescue 116 Helicopter. Incident report raised.*

Wreck, AtoN Casualty, RRC Incidents	
Blacksod Bay	*SAR; Incident Report No.1*
Land's End 12 Hrs RRC	*0% coverage*
Bristol Channel & Cork 24 Hrs RRC	*65% & 0% coverage*
Channel LV Fouled cable	*Incident Report No.14*



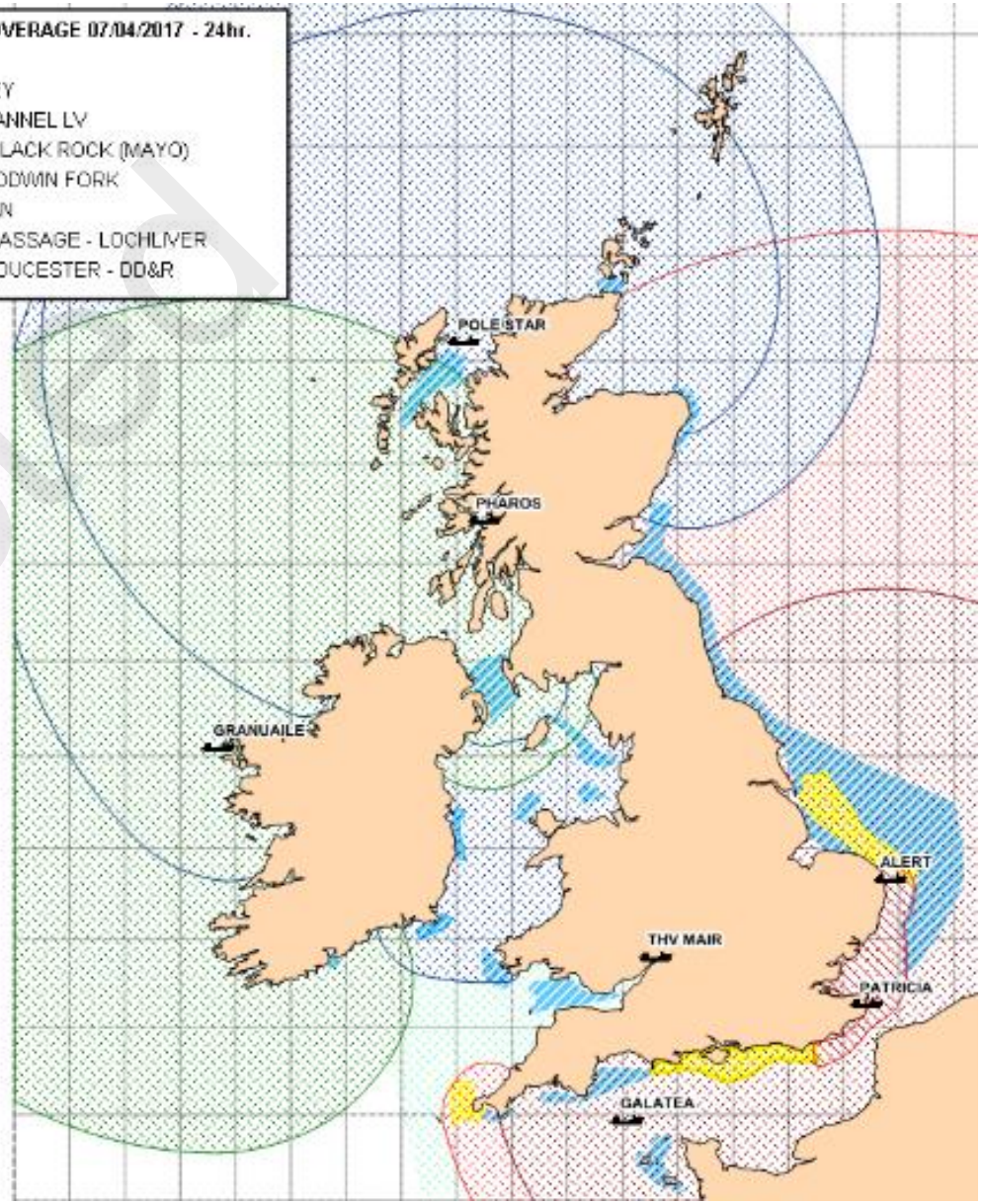
GLA FLEET COVERAGE 07/04/2017 - 12hr.

ALERT - BARLEY
GALATEA - CHANNEL LV
GRANUAILE - BLACK ROCK (MAYO)
PATRICIA - GOODWIN FORK
PHAROS - OBAN
POLE STAR - PASSAGE - LOCHLIVER
THV MAIR - GLOUCESTER - DD&R



GLA FLEET COVERAGE 07/04/2017 - 24hr.

ALERT - BARLEY
GALATEA - CHANNEL LV
GRANUAILE - BLACK ROCK (MAYO)
PATRICIA - GOODWIN FORK
PHAROS - OBAN
POLE STAR - PASSAGE - LOCHLIVER
THV MAIR - GLOUCESTER - DD&R

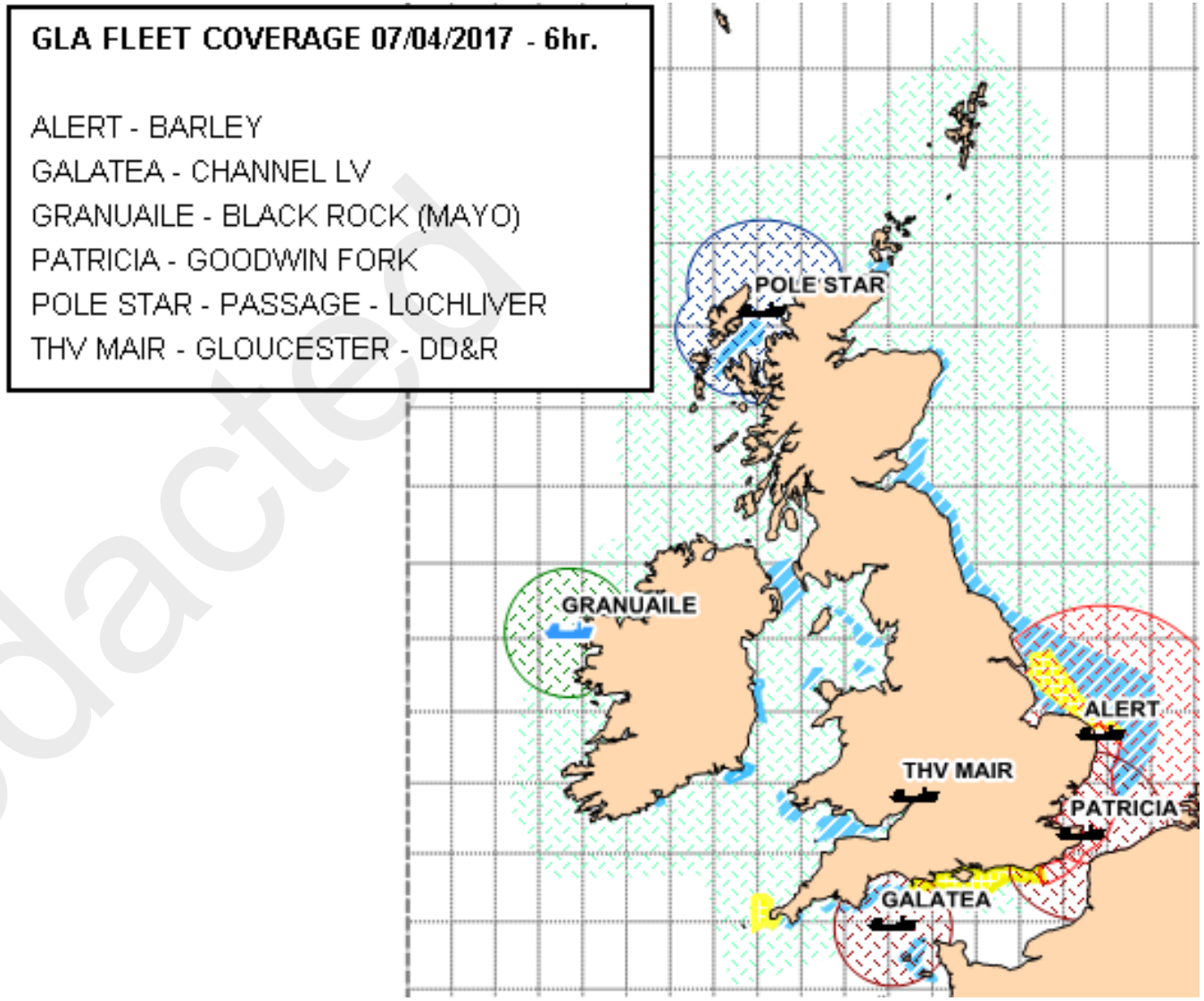


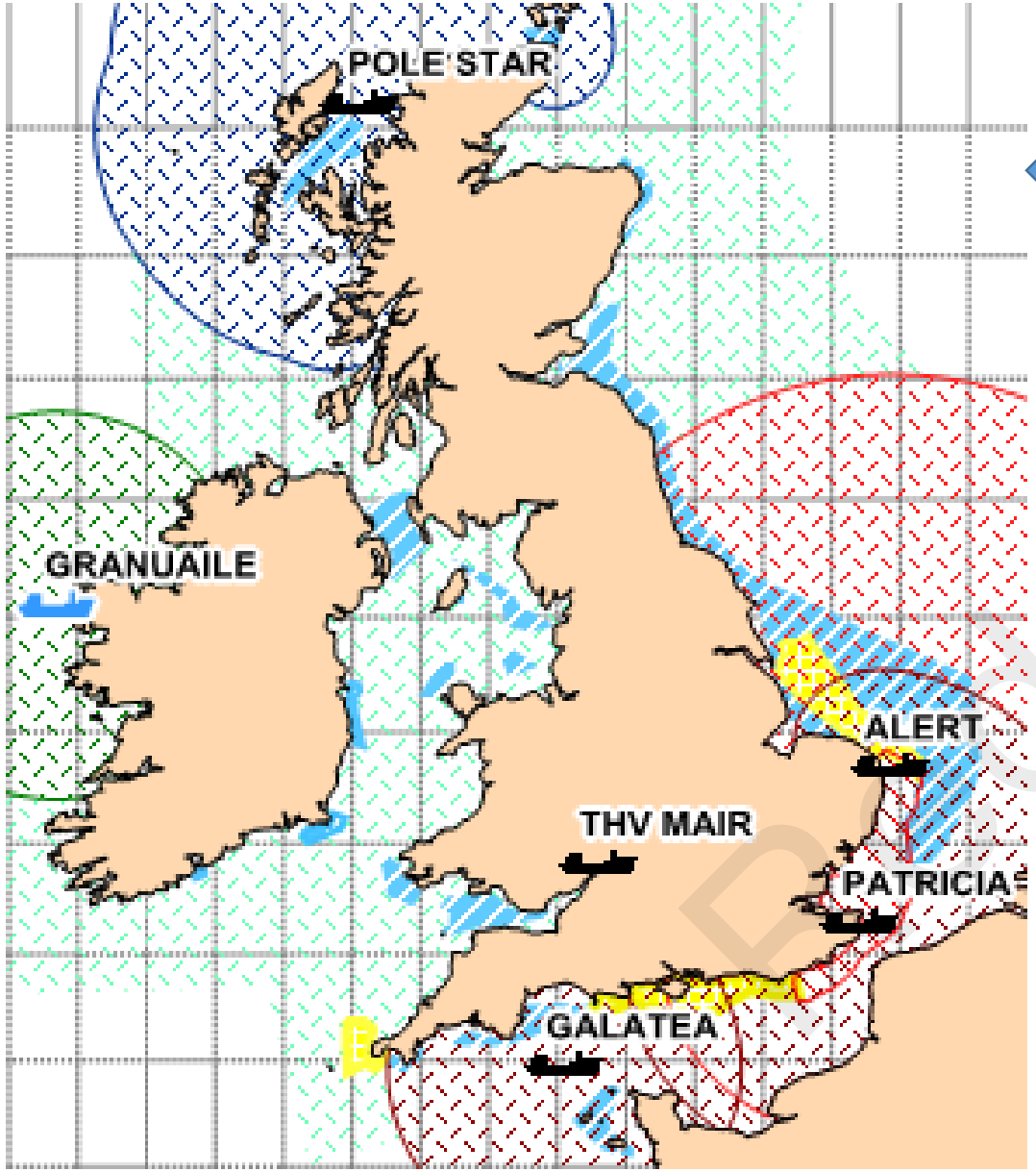
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	91%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	ALERT, PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS
12	MILFORD HAVEN APPROACHES	24	No	88%	PHAROS
13	BRISTOL CHANNEL	24	No	0%	
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA
20	SE IRISH COAST	24	Yes	100%	PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR

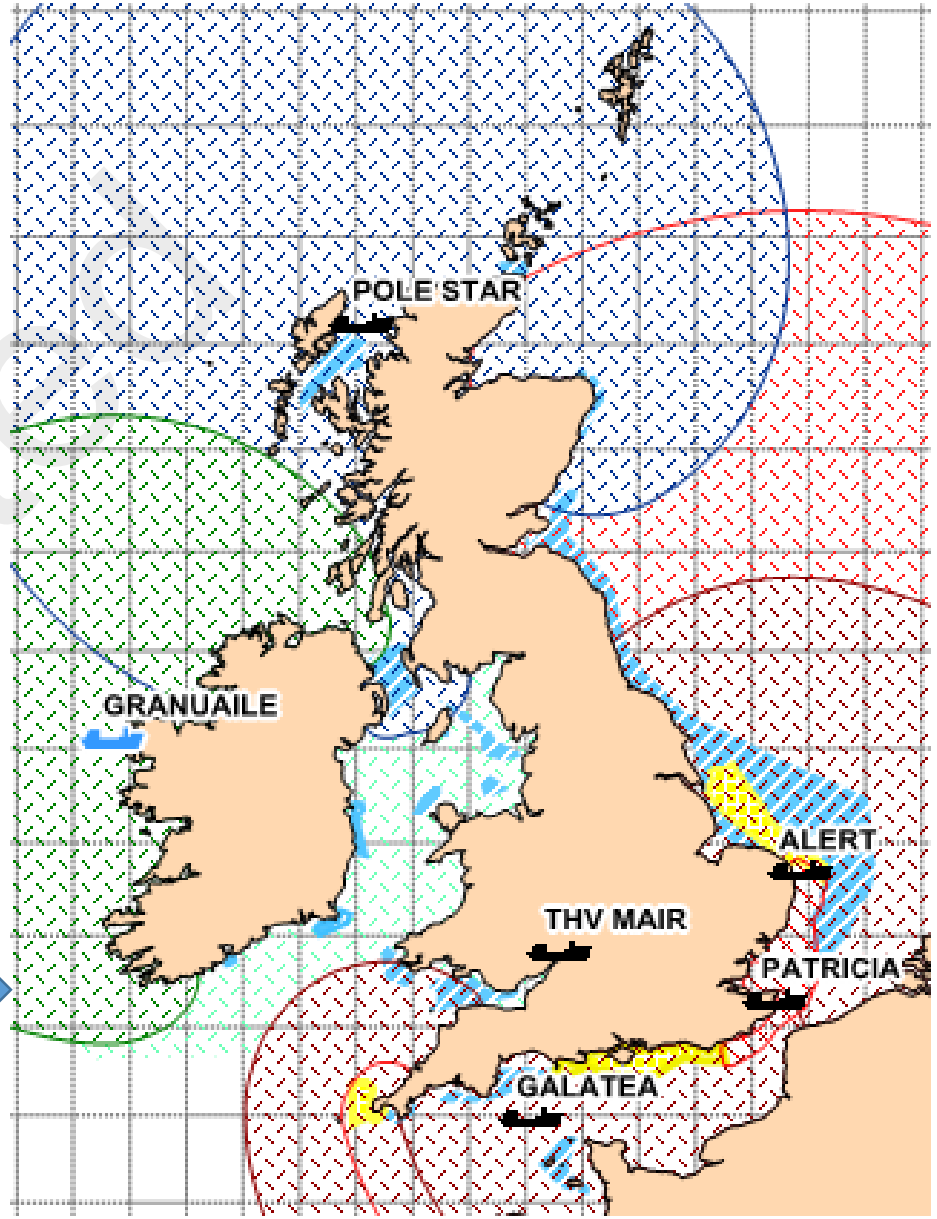
7th Apr 2017	6 Vessel Scenario- FAILED
THV Patricia	*Dover area buoy work; disembark OP57 audit team*
THV Galatea	*Channel LV ; cablework (foul cable) with Met Office in attendance; passage to Penzance Bay*
THV Alert	*East Cross Sands survey*
MV Mair	*Gloucester DD&R*
NLV Pharos	***REMOVED***
NLV Pole Star	*Departed Stornaway , Buoy work then passage to Lochinver*
ILV Granuaile	*Blacksod Bay; vessel diverted- engaged in SAR Operations of Rescue 116 Helicopter. Incident report raised.*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

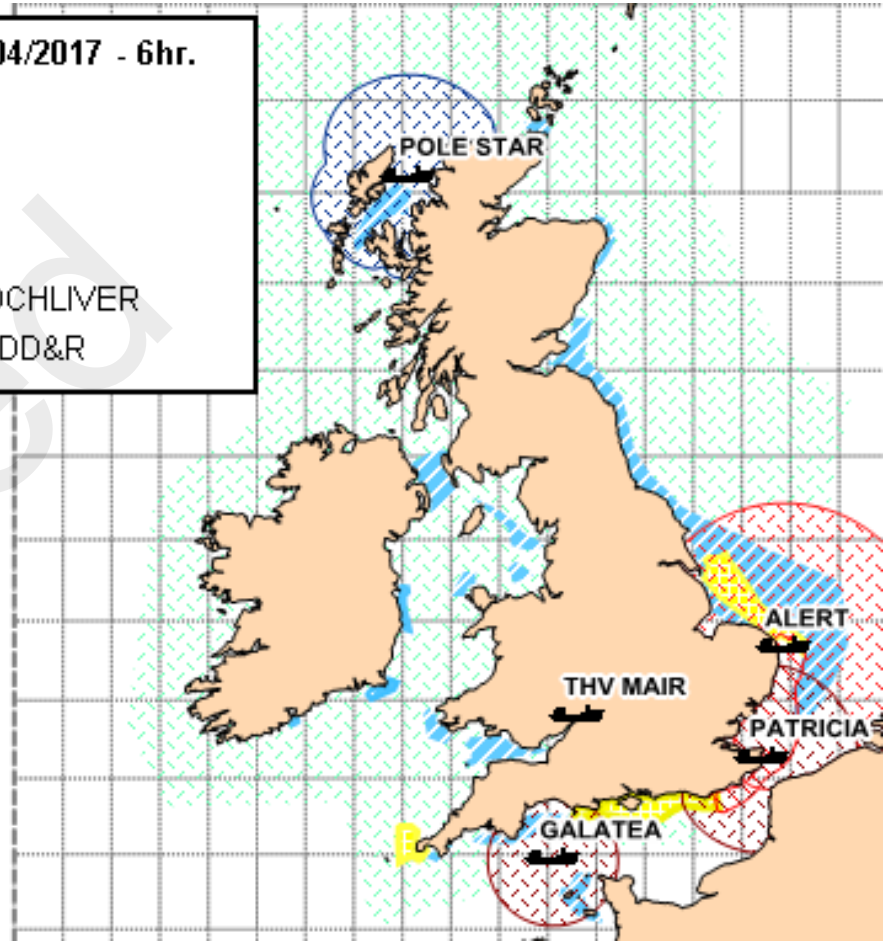
File Edit

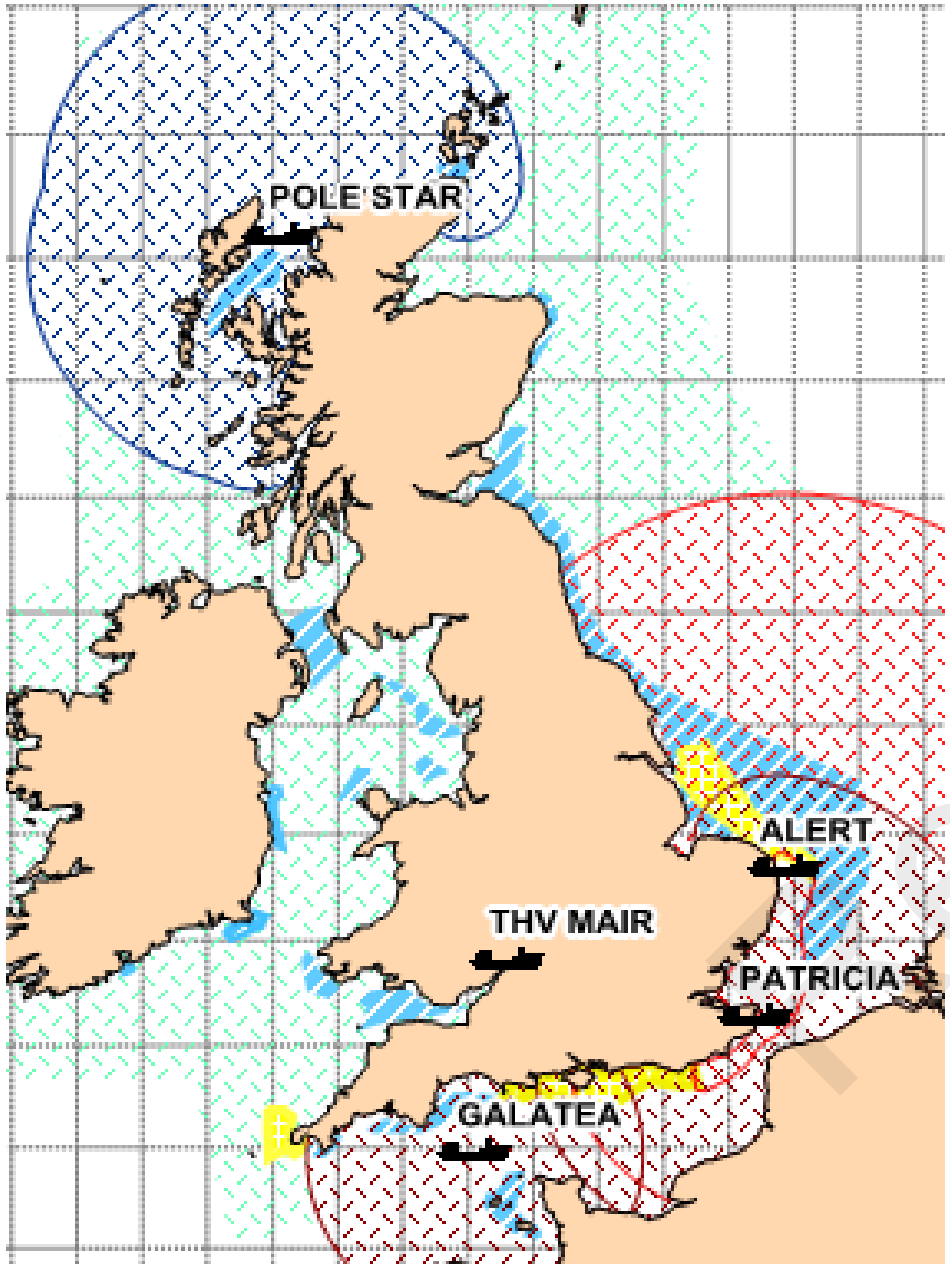
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	ALERT, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	No	74%	GALATEA
13	BRISTOL CHANNEL	24	No	65%	GALATEA
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	No	7%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	No	0%	
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA
20	SE IRISH COAST	24	No	0%	
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, POLE STAR

7th Apr 2017	5 Vessel Scenario- FAILED
THV Patricia	*Dover area buoy work; disembark OP57 audit team*
THV Galatea	*Channel LV ; cablework (foul cable) with Met Office in attendance; passage to Penzance Bay*
THV Alert	*East Cross Sands survey*
MV Mair	*Gloucester DD&R*
NLV Pharos	***REMOVED***
NLV Pole Star	*Departed Stornaway , Buoy work then passage to Lochinver*
ILV Granuaile	***REMOVED***

GLA FLEET COVERAGE 07/04/2017 - 6hr.

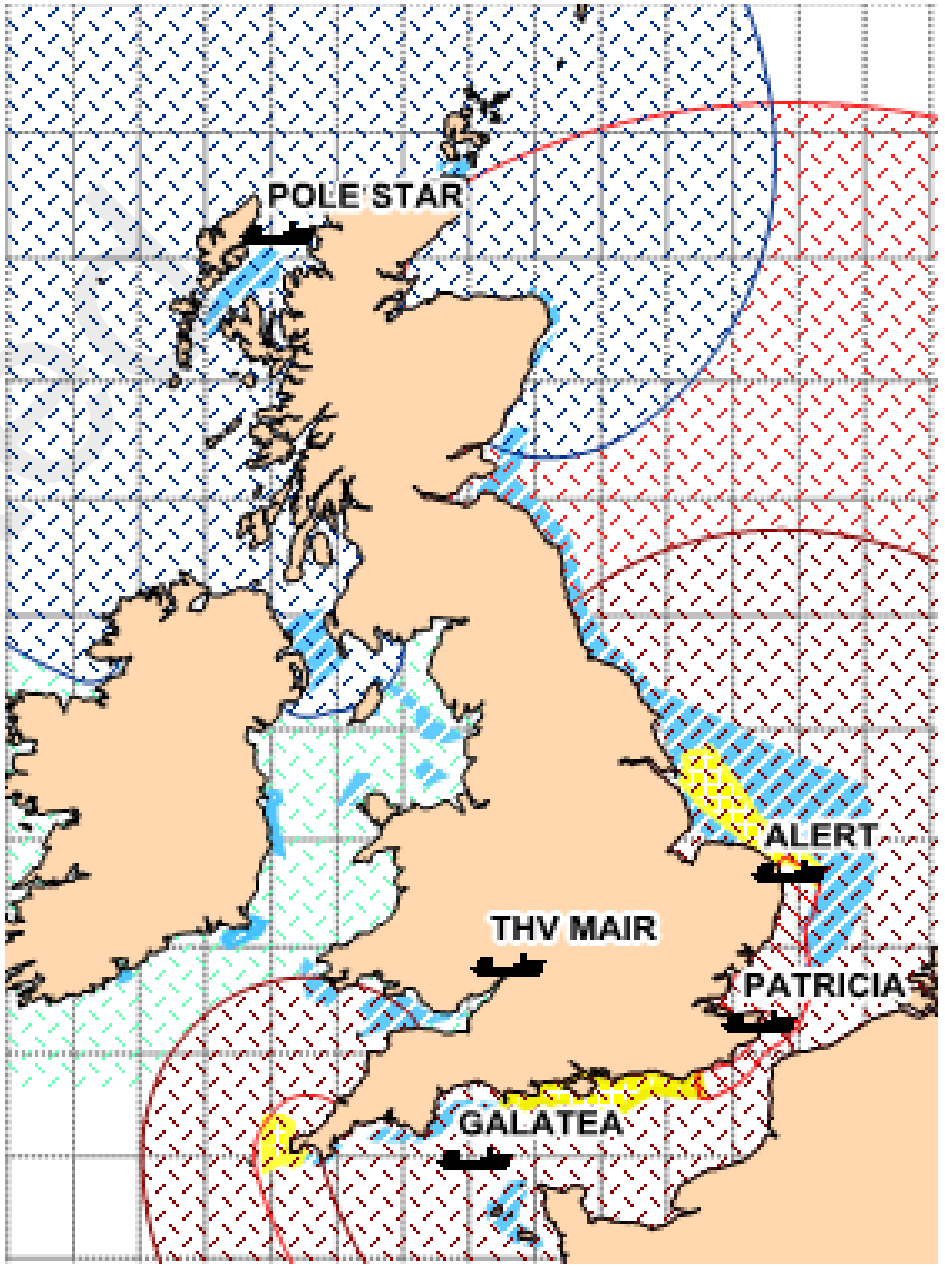
ALERT - BARLEY
GALATEA - CHANNEL LV
PATRICIA - GOODWIN FORK
POLE STAR - PASSAGE - LOCHLIVER
THV MAIR - GLOUCESTER - DD&R





12 Hrs RRC

24 Hrs RRC

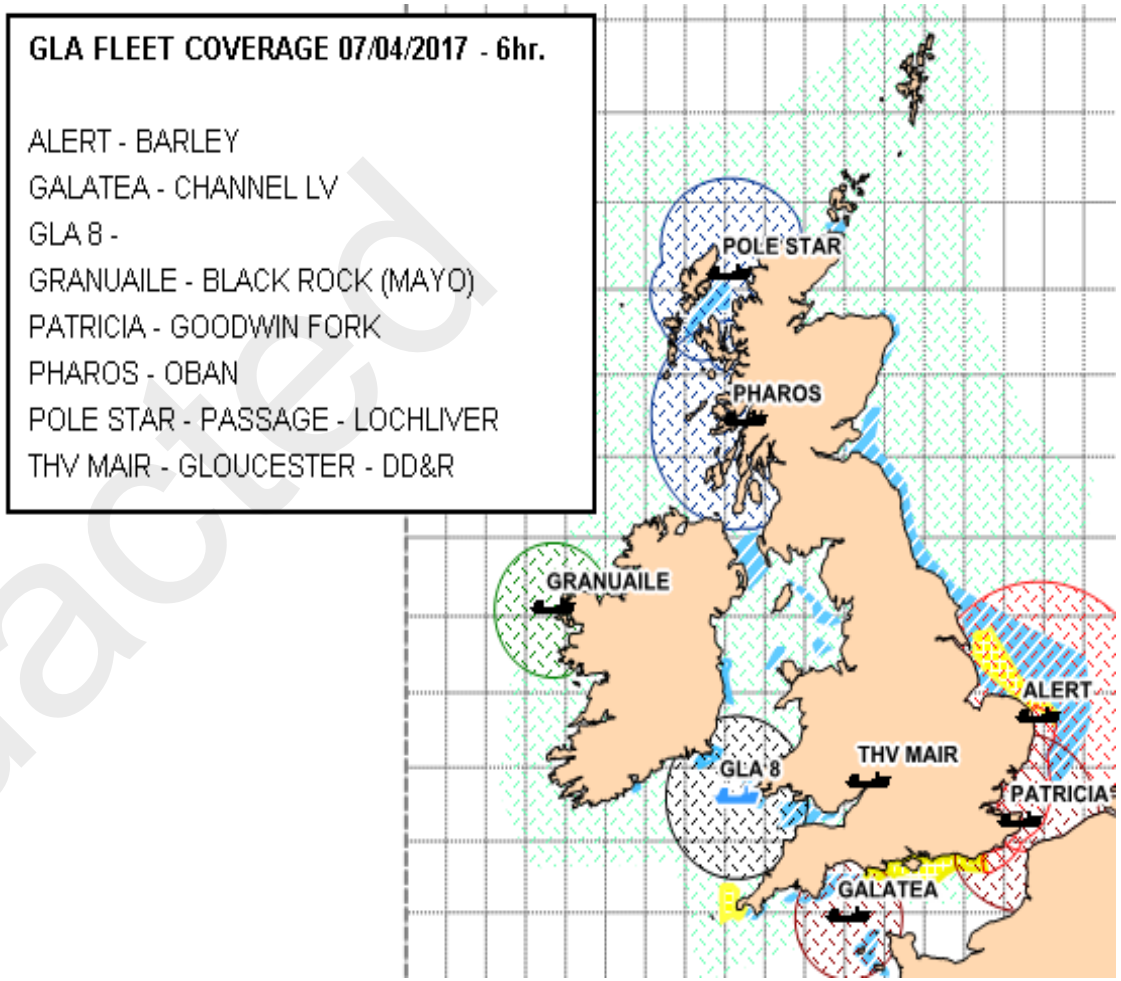


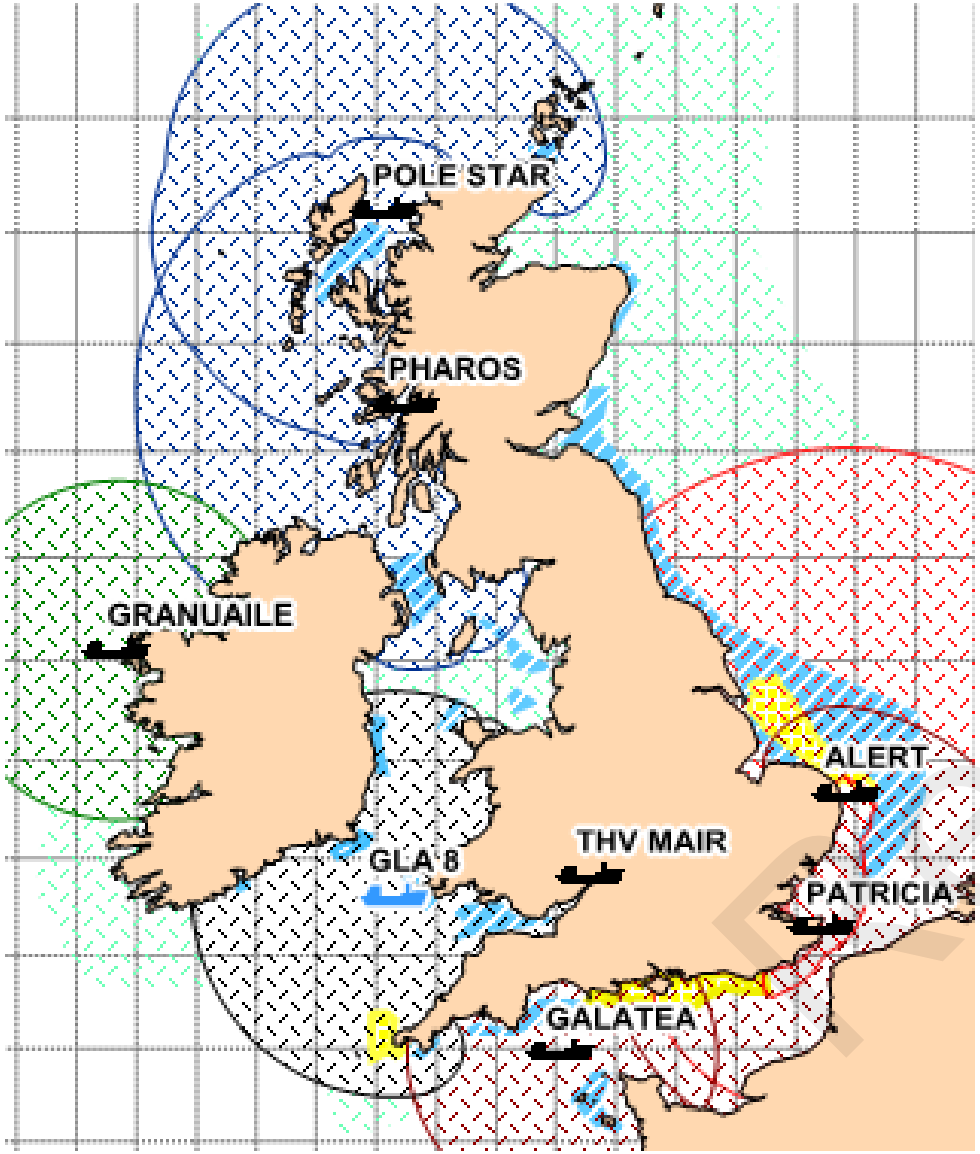
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	ALERT, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	POLE STAR
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	No	74%	GALATEA
13	BRISTOL CHANNEL	24	No	65%	GALATEA
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	No	7%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	No	0%	
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA
20	SE IRISH COAST	24	No	0%	
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, POLE STAR

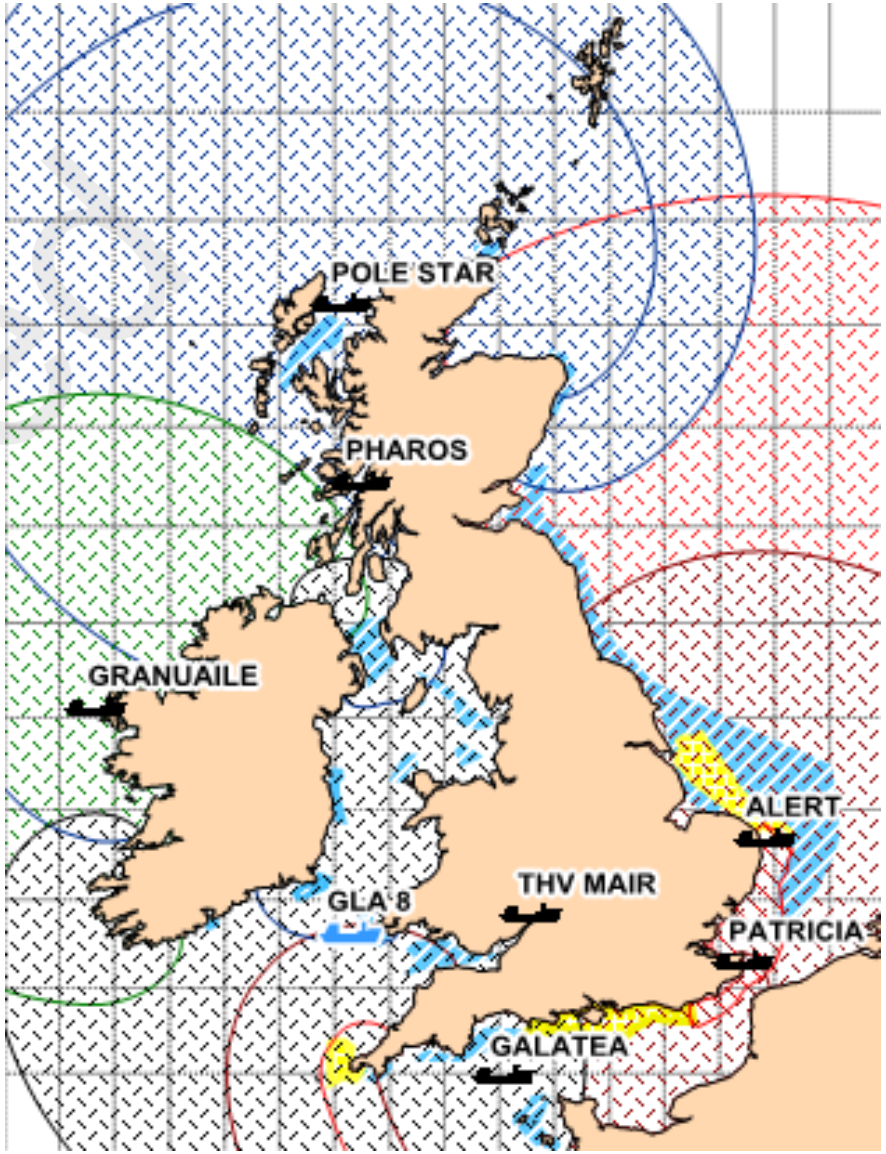
7th Apr 2017	8 Vessel Scenario- PASS
GLA 8	*Milford Haven*
THV Patricia	*Dover area buoy work; disembark OP57 audit team*
THV Galatea	*Channel LV ; cablework (foul cable) with Met Office in attendance; passage to Penzance Bay*
THV Alert	*East Cross Sands survey*
MV Mair	*Gloucester DD&R*
NLV Pharos	*Oban loading & discharging*
NLV Pole Star	*Departed Stornaway , Buoy work then passage to Lochinver*
ILV Granuaile	*Blacksod Bay; vessel diverted- engaged in SAR Operations of Rescue 116 Helicopter. Incident report raised.*





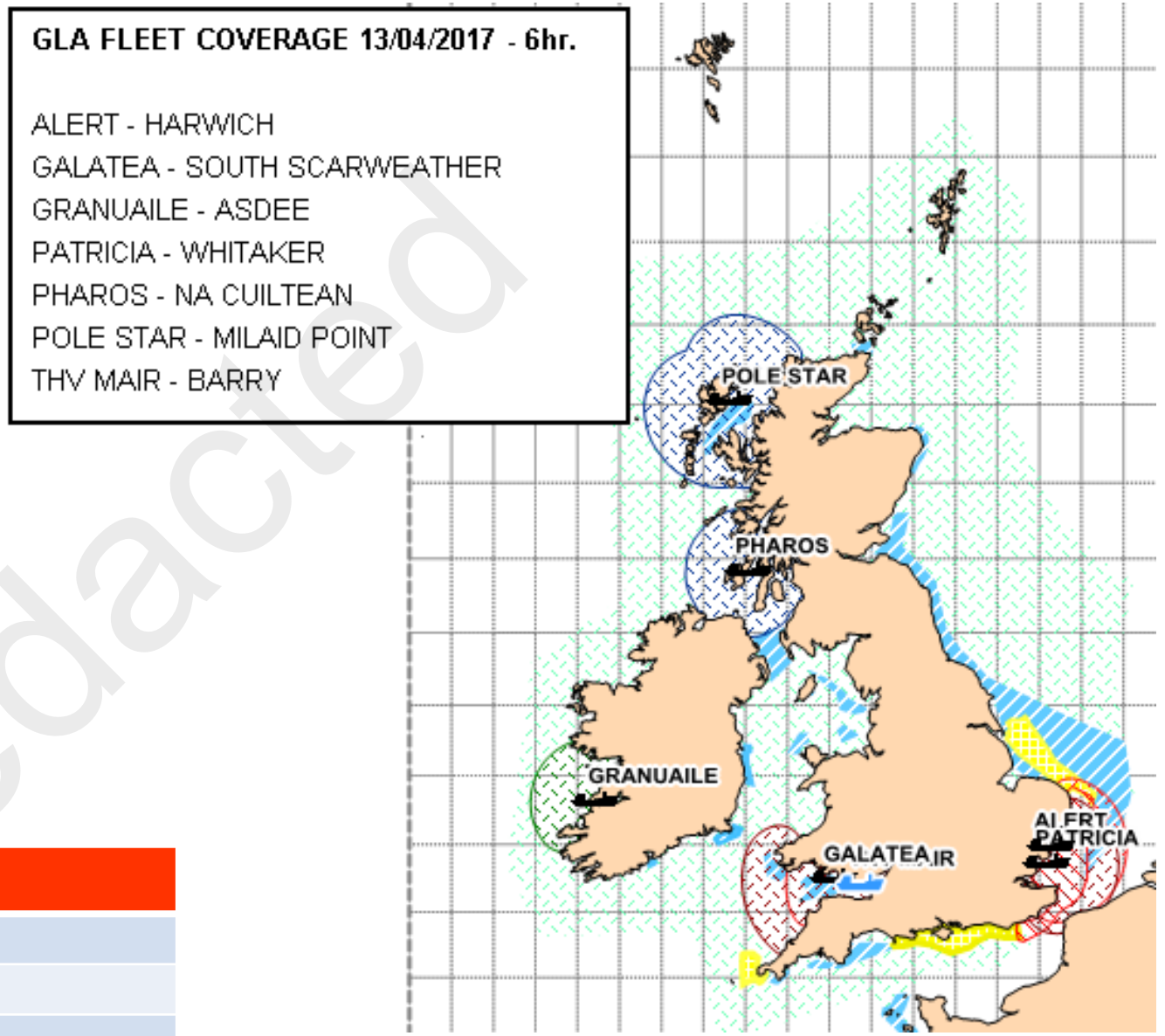
12 Hrs RRC

24 Hrs RRC

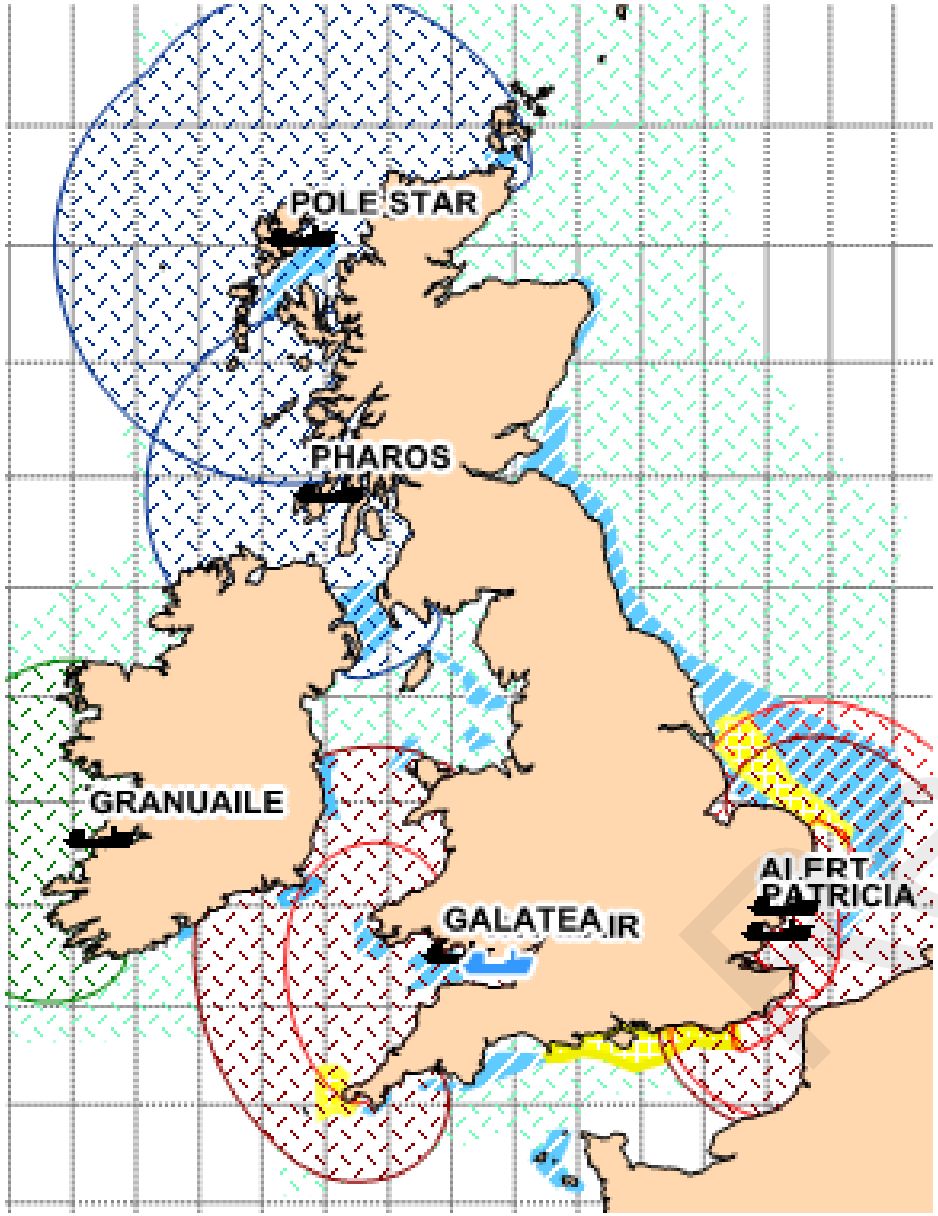


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GLA 8
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	ALERT, PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GLA 8, PHAROS
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA 8
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GLA 8, PHAROS, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GLA 8, PHAROS
17	ISLE OF MAN	24	Yes	100%	GLA 8, PHAROS
18	CORK APPROACHES	24	Yes	100%	GLA 8
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
20	SE IRISH COAST	24	Yes	100%	GLA 8, PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

13th Apr 2017	7 Vessel Scenario - FAILED
THV Patricia	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea	*Bristol Channel Buoywork*
THV Alert	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair	*Made passage to Barry*
NLV Pharos	*McArthur's Head Helicopter Operations*
NLV Pole Star	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*

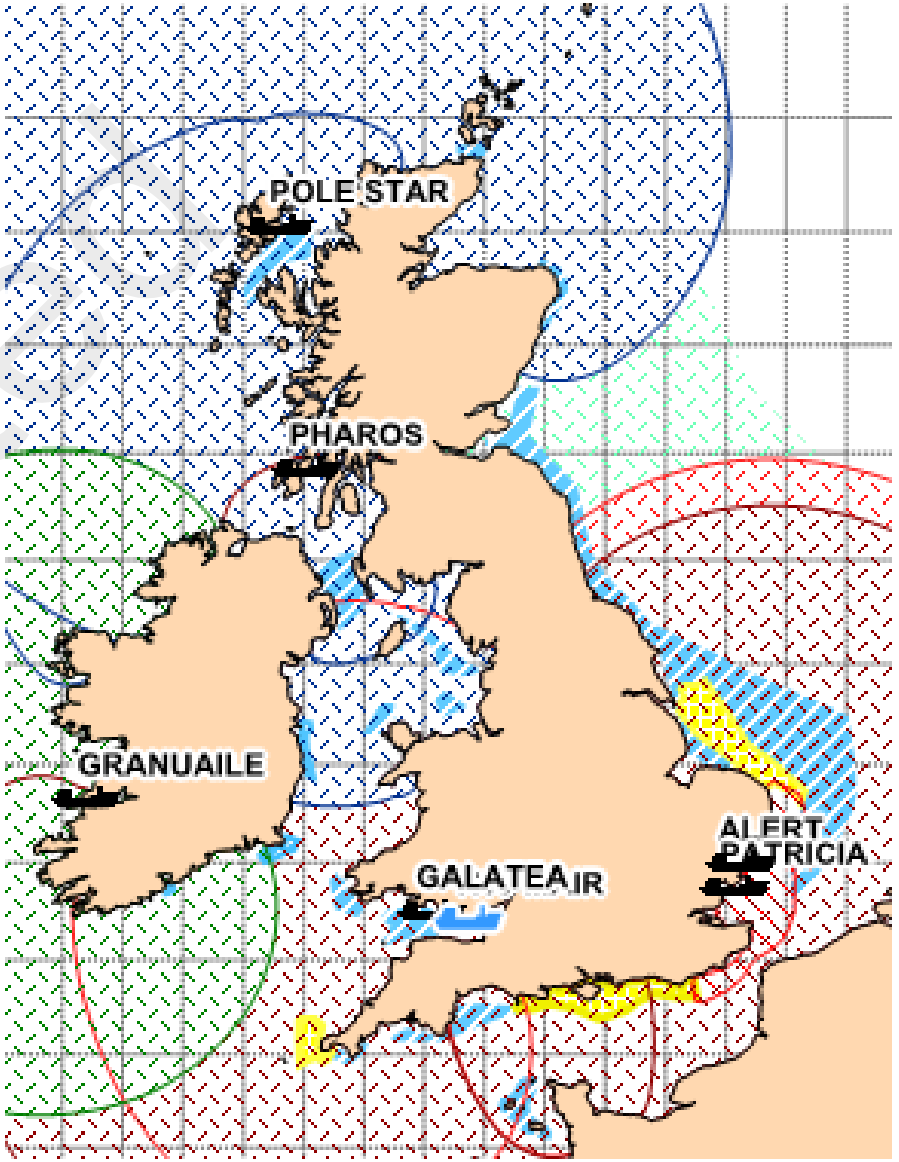


Wreck, AtoN Casualty, RRC Incidents	
Patricia Buoy moves following shoaling	
Alert generator repairs	*Incident Report No.17*
Portland to Beachy Head 12 Hrs RRC	*36% coverage*
Cromer to Dover 6 Hrs RRC	*92% coverage*



12 Hrs
RRC

24 Hrs
RRC

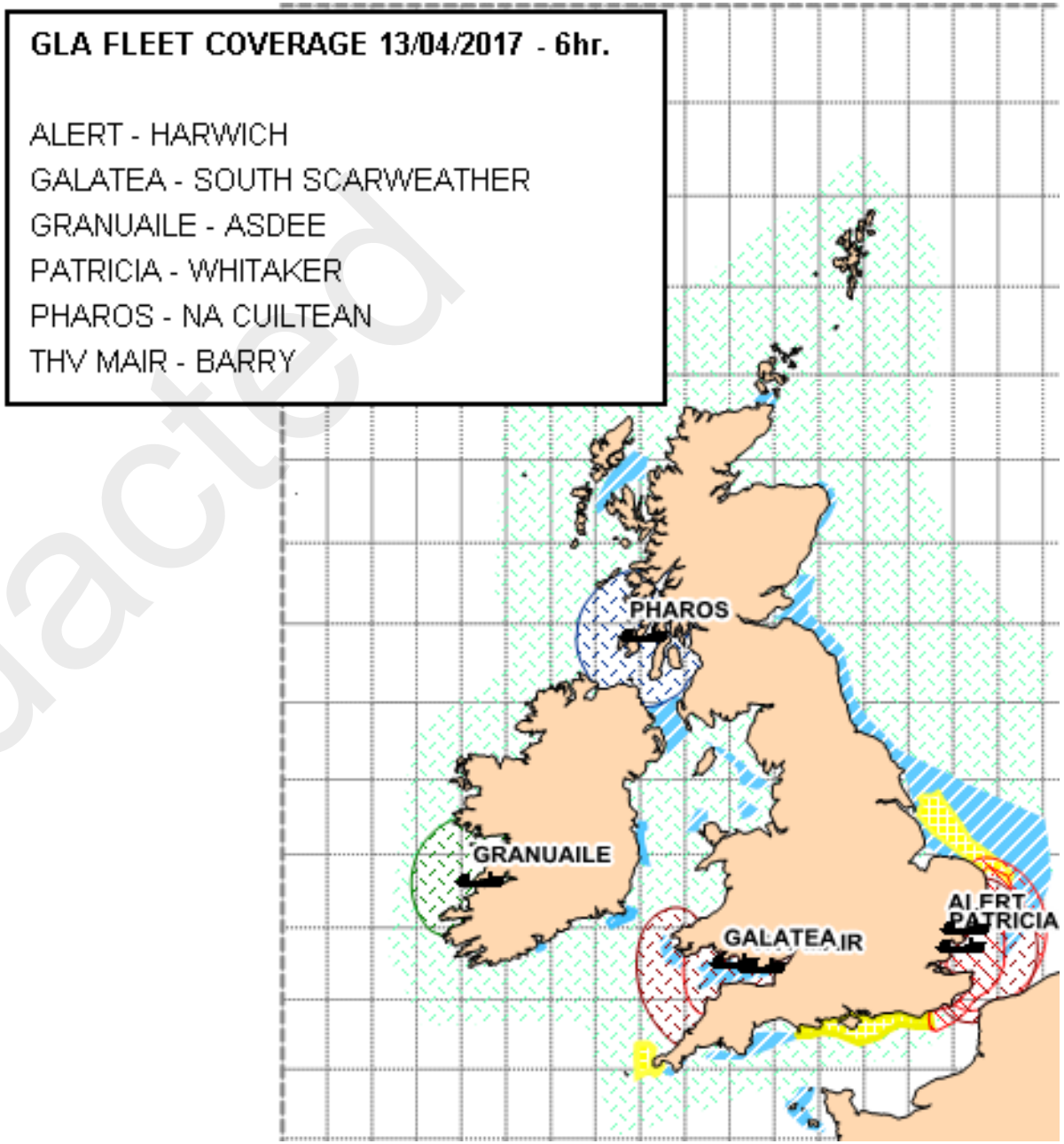


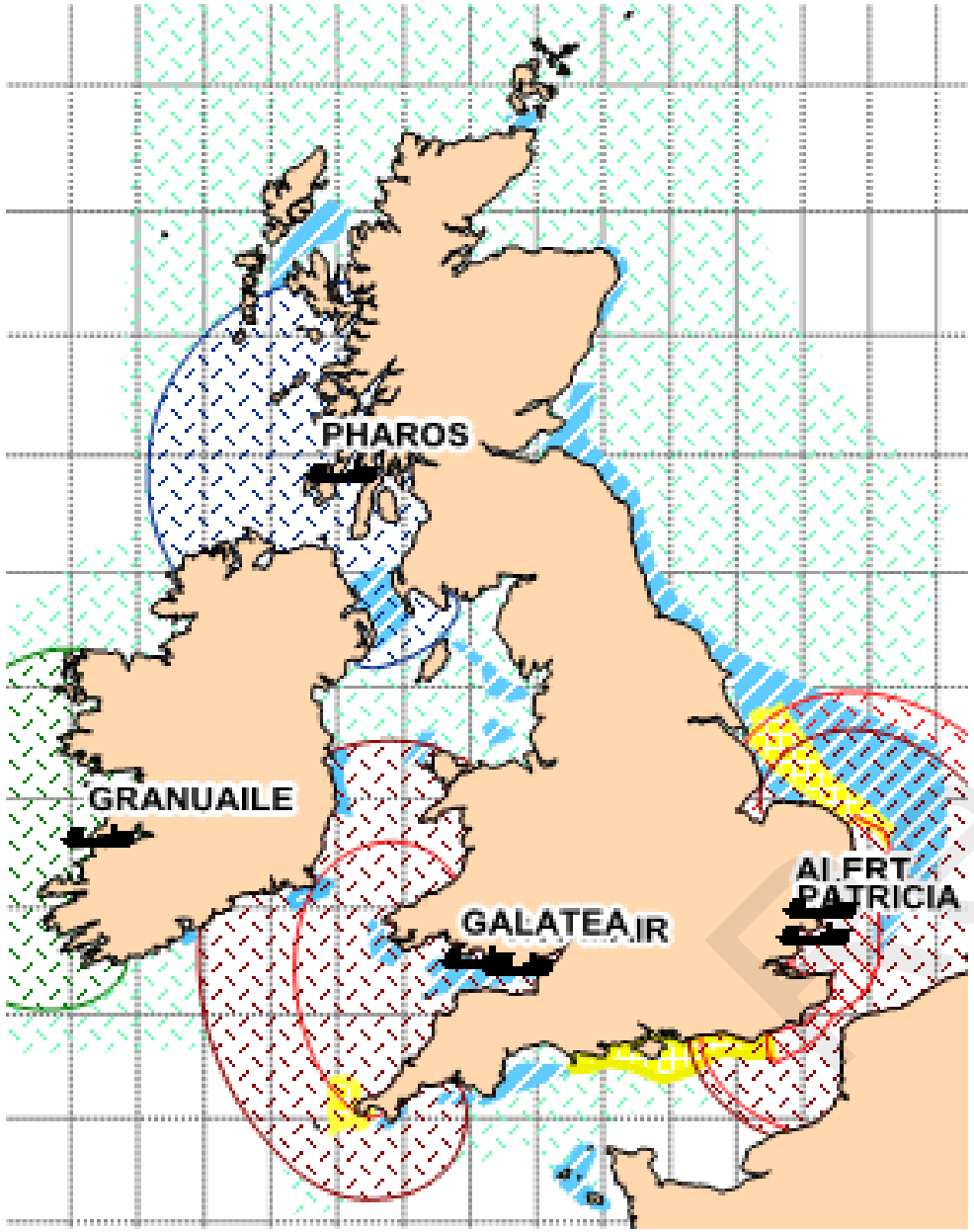
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	92%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	36%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	No	95%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	89%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ...

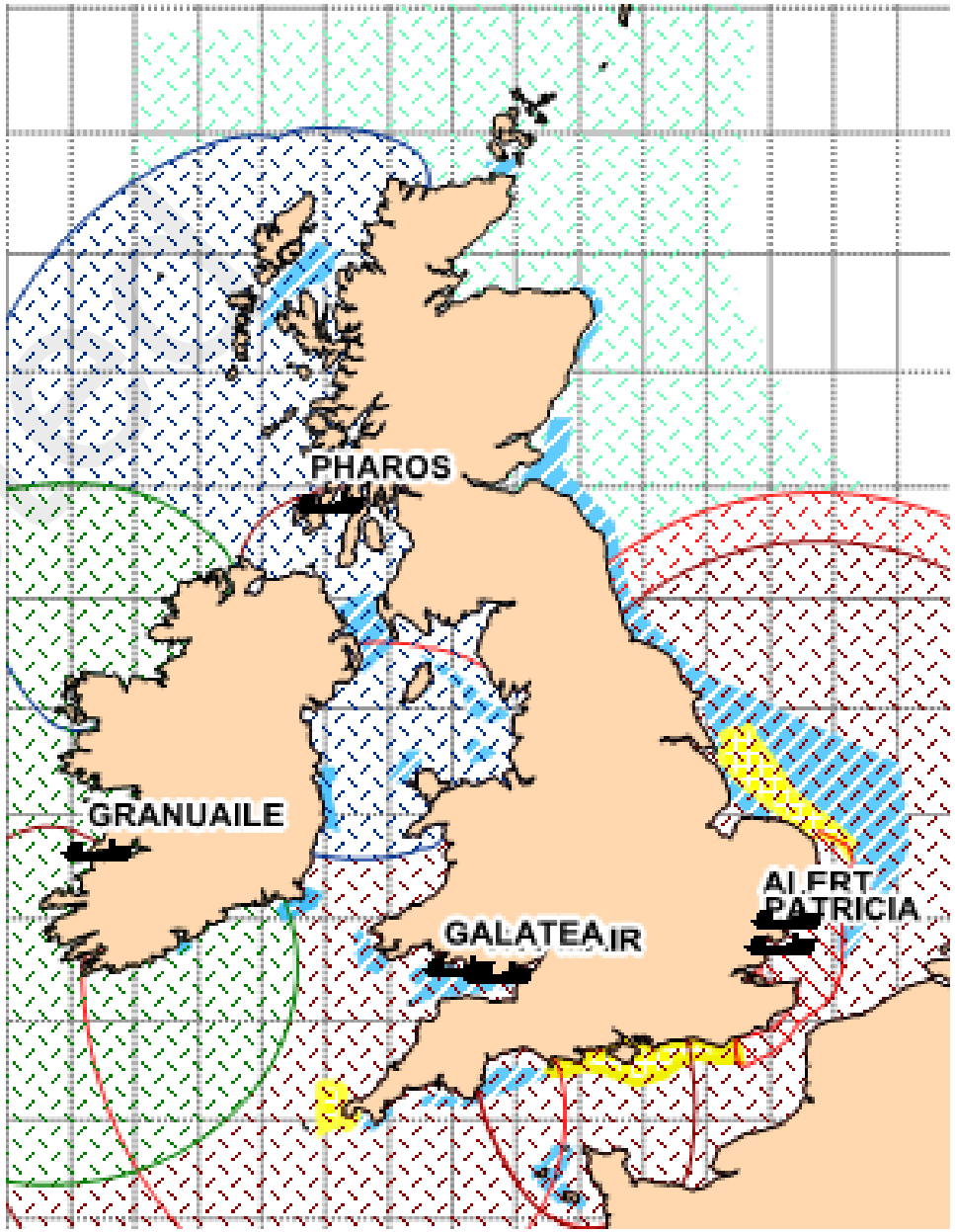
13th Apr 2017	6 Vessel Scenario - FAILED
THV Patricia	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea	*Bristol Channel Buoywork*
THV Alert	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair	*Made passage to Barry*
NLV Pharos	*McArthur's Head Helicopter Operations*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*





12 Hrs
RRC

24 Hrs
RRC

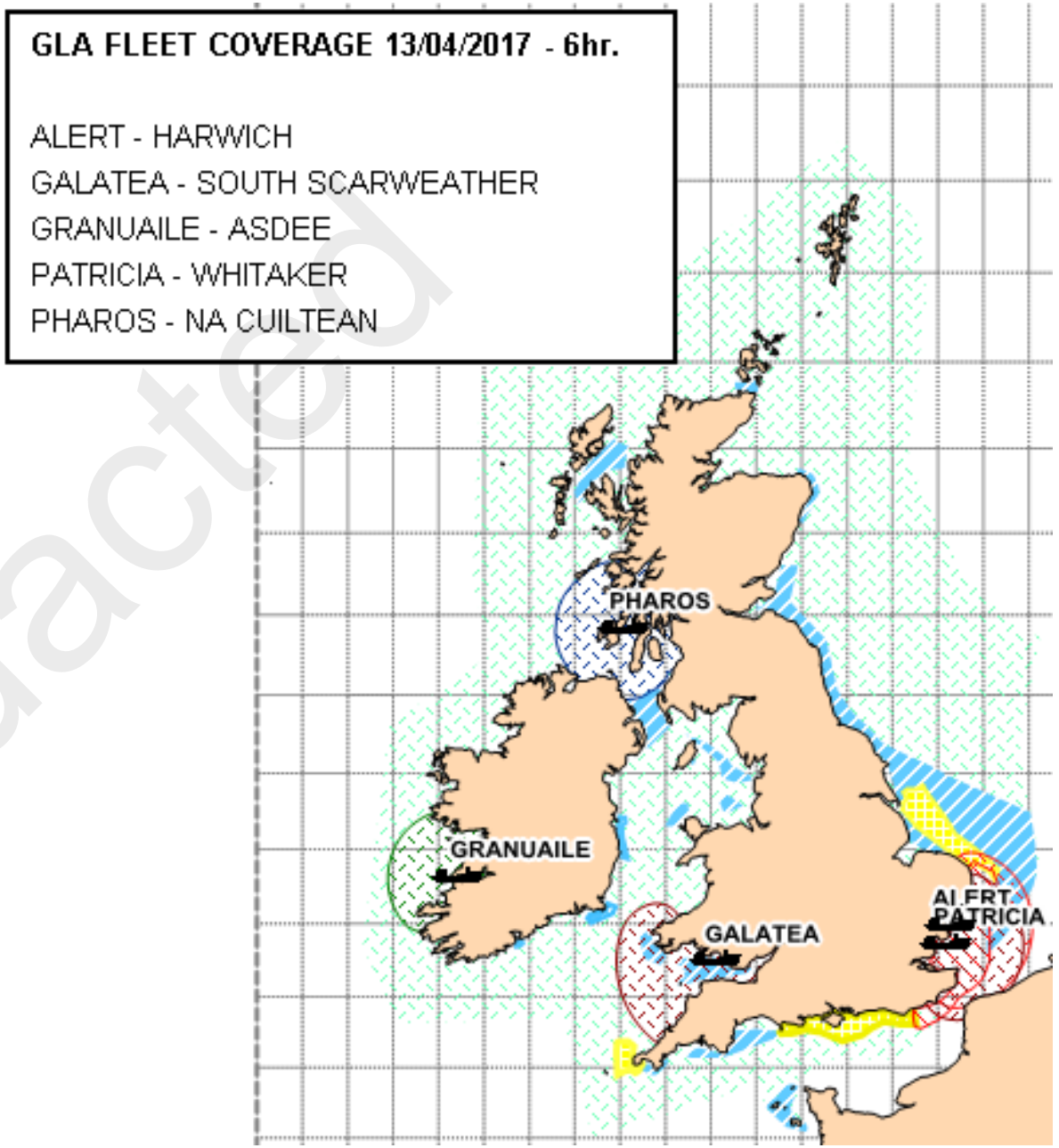


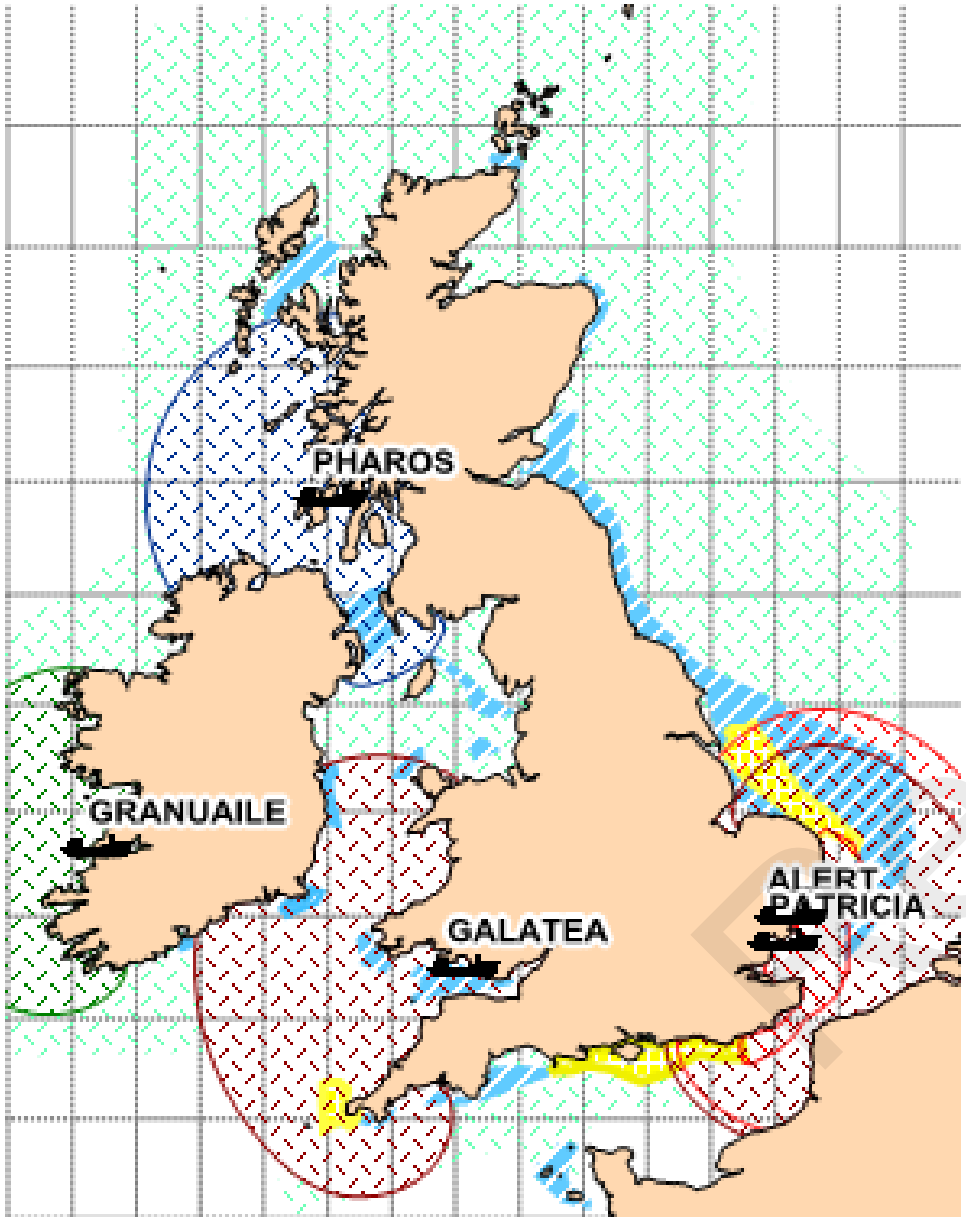
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	92%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	36%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	No	95%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	89%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	No	0%	
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV M...

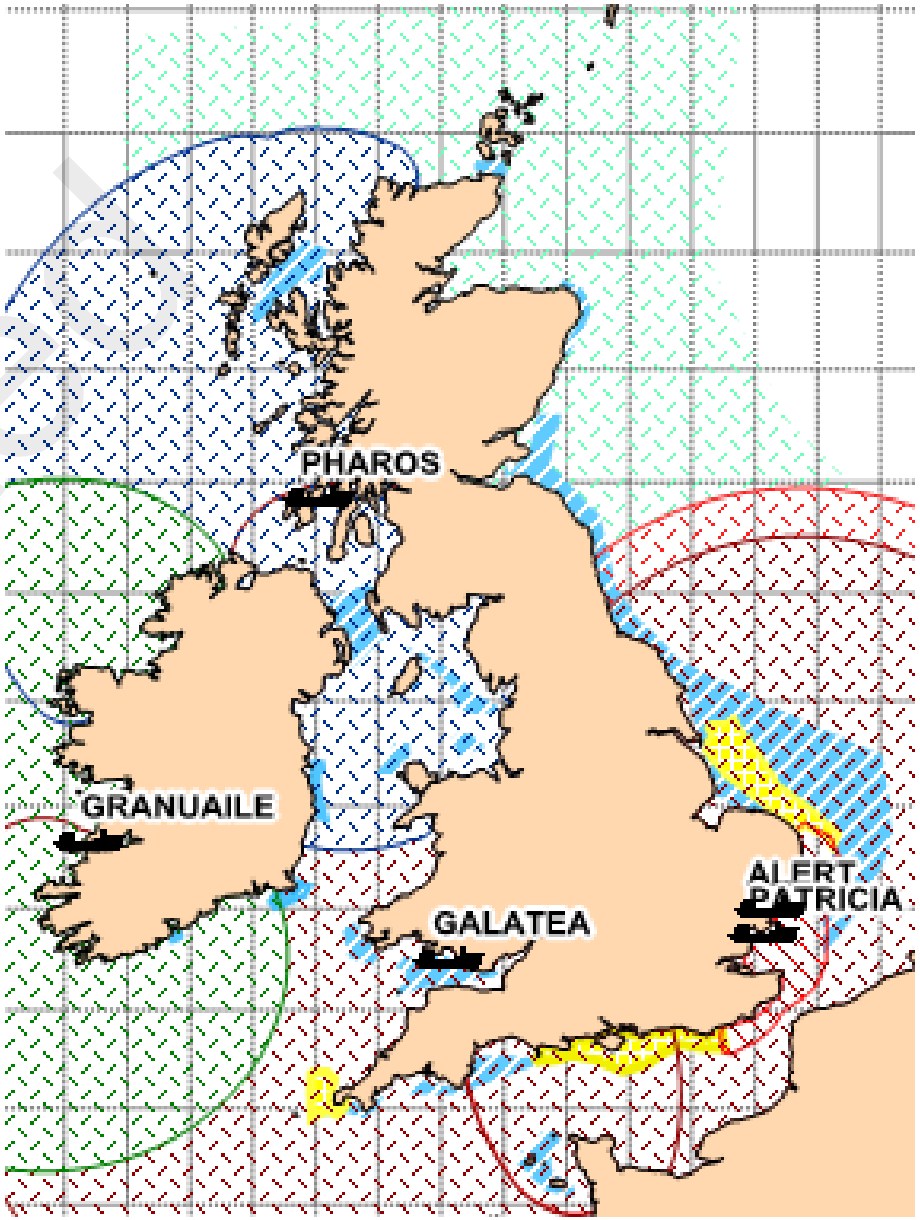
13th Apr 2017	5 Vessel Scenario - FAILED
THV Patricia	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea	*Bristol Channel Buoywork*
THV Alert	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair	***REMOVED***
NLV Pharos	*McArthur's Head Helicopter Operations*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*





12 Hrs RRC

24 Hrs RRC

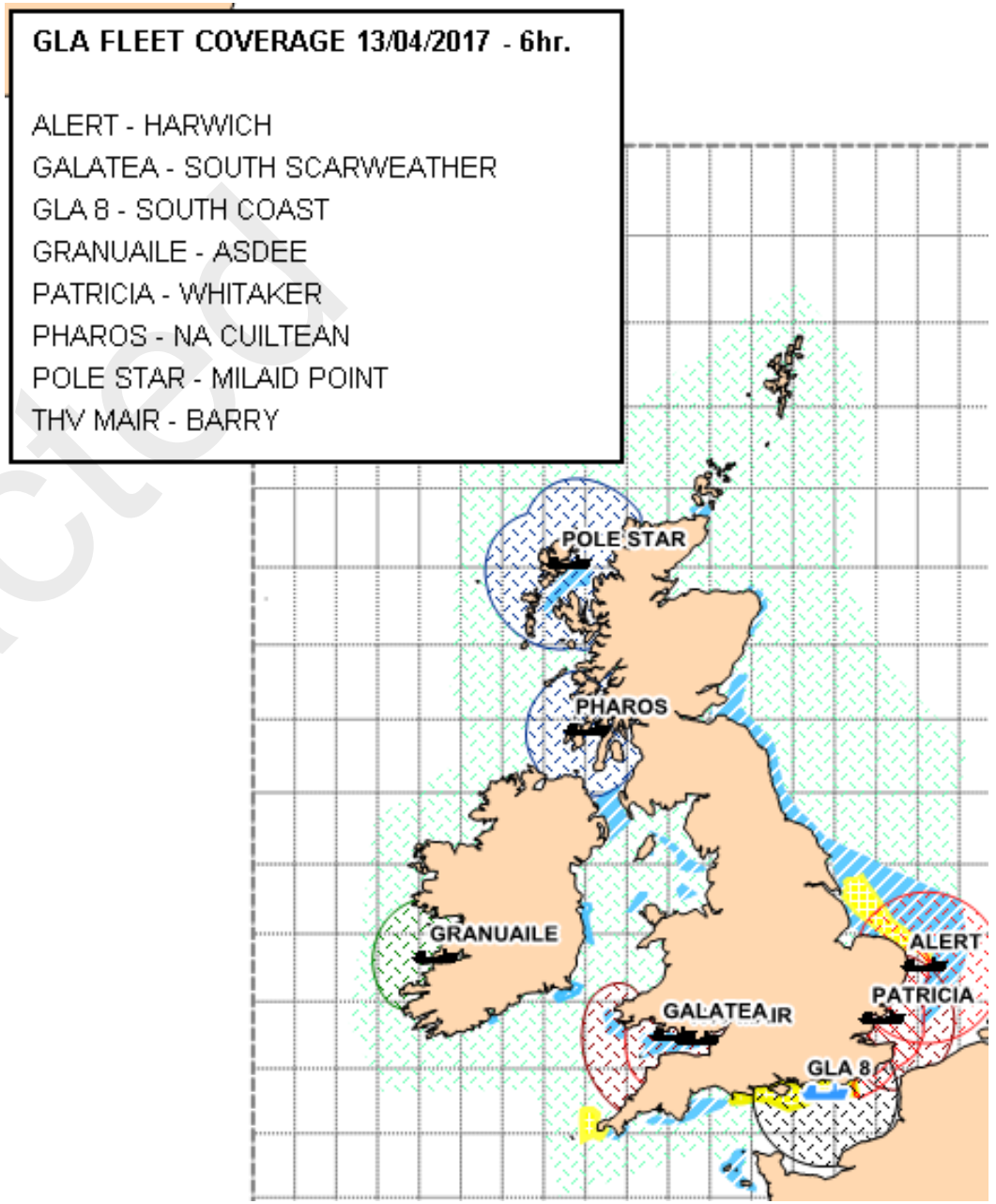


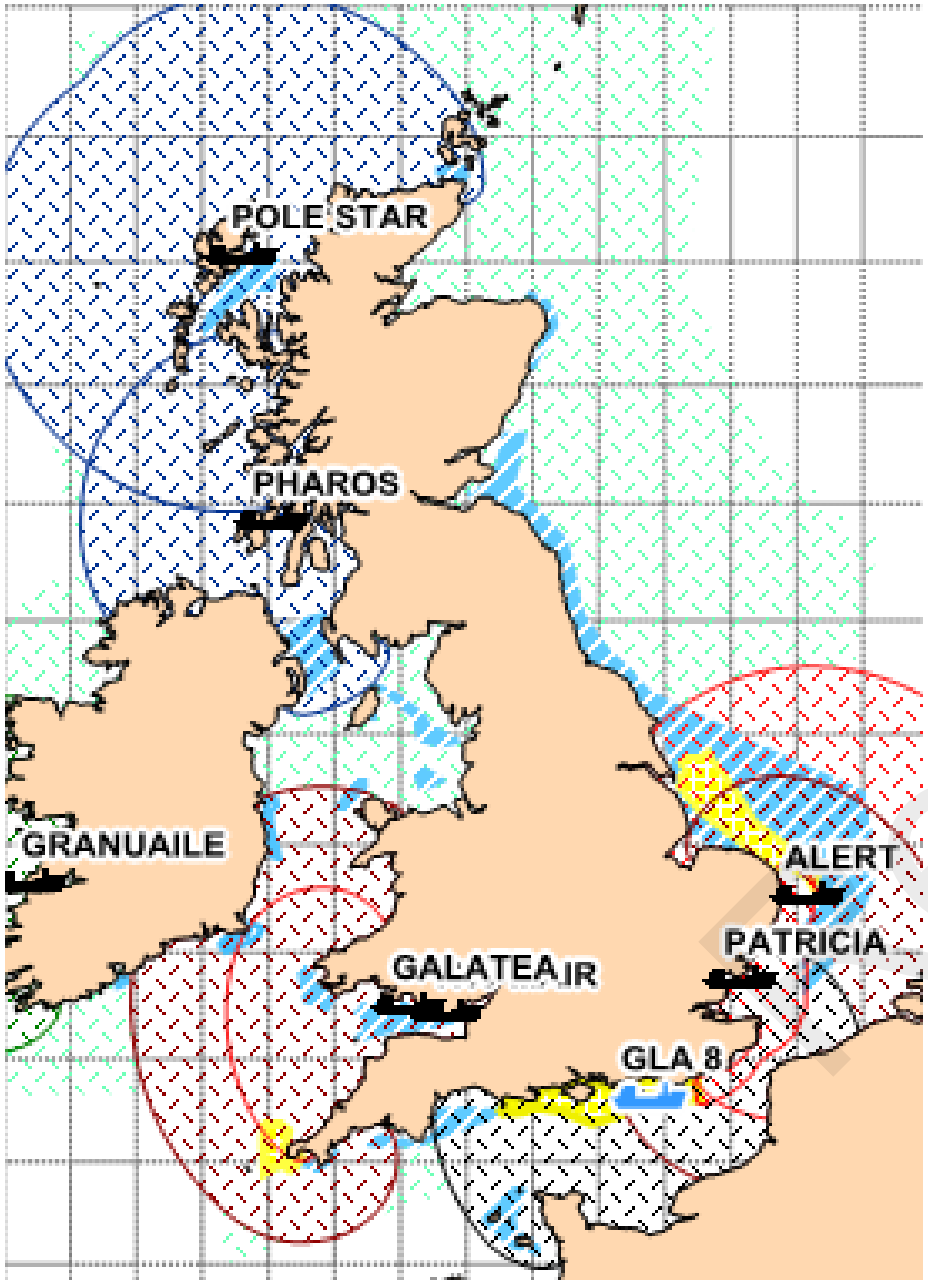
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	92%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	36%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	No	95%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	89%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	No	0%	
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS

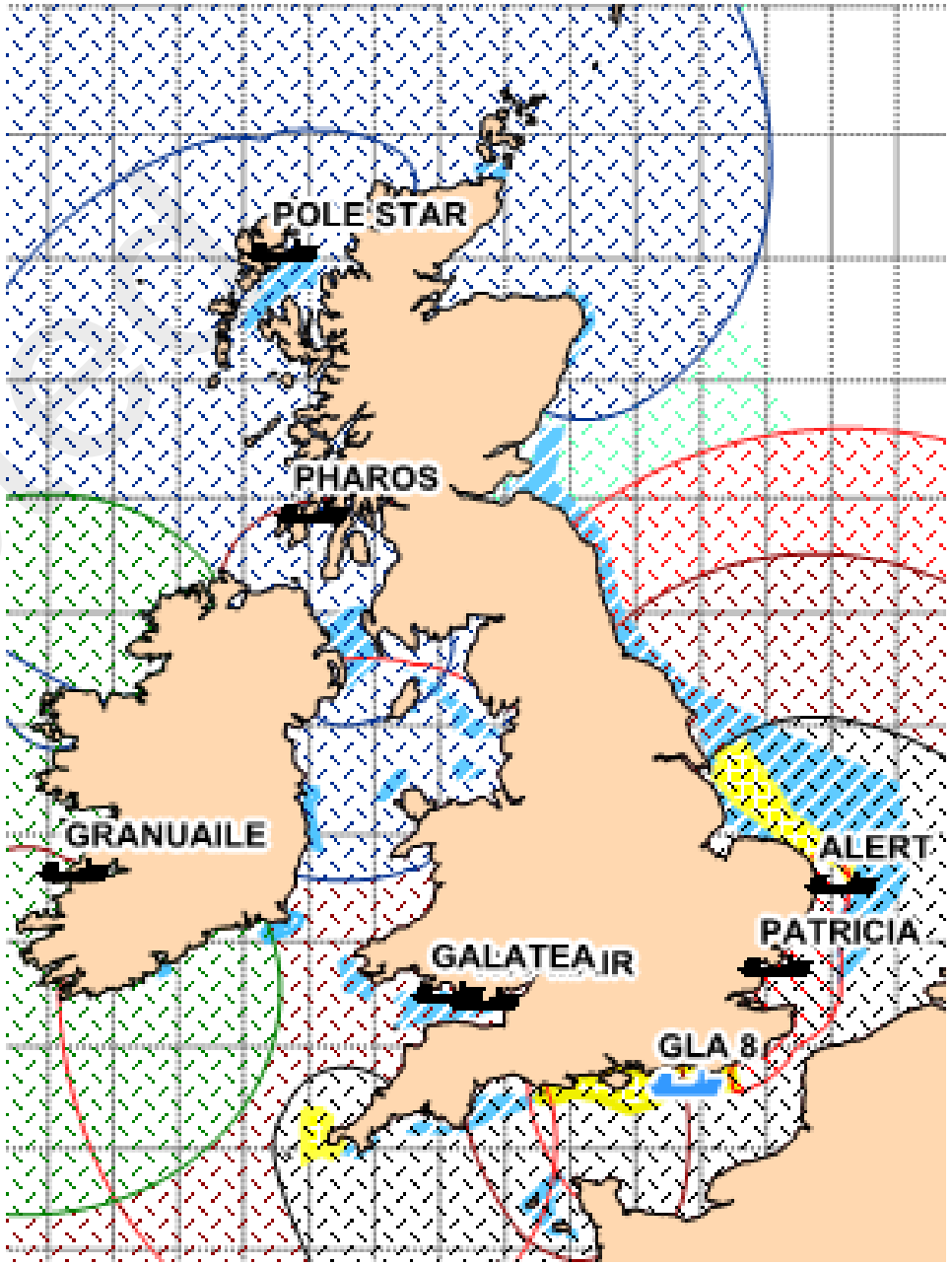
13th Apr 2017	8 Vessel Scenario - PASS
GLA 8	South Coast
THV Patricia	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea	*Bristol Channel Buoywork*
THV Alert	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair	*Made passage to Barry*
NLV Pharos	*McArthur's Head Helicopter Operations*
NLV Pole Star	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

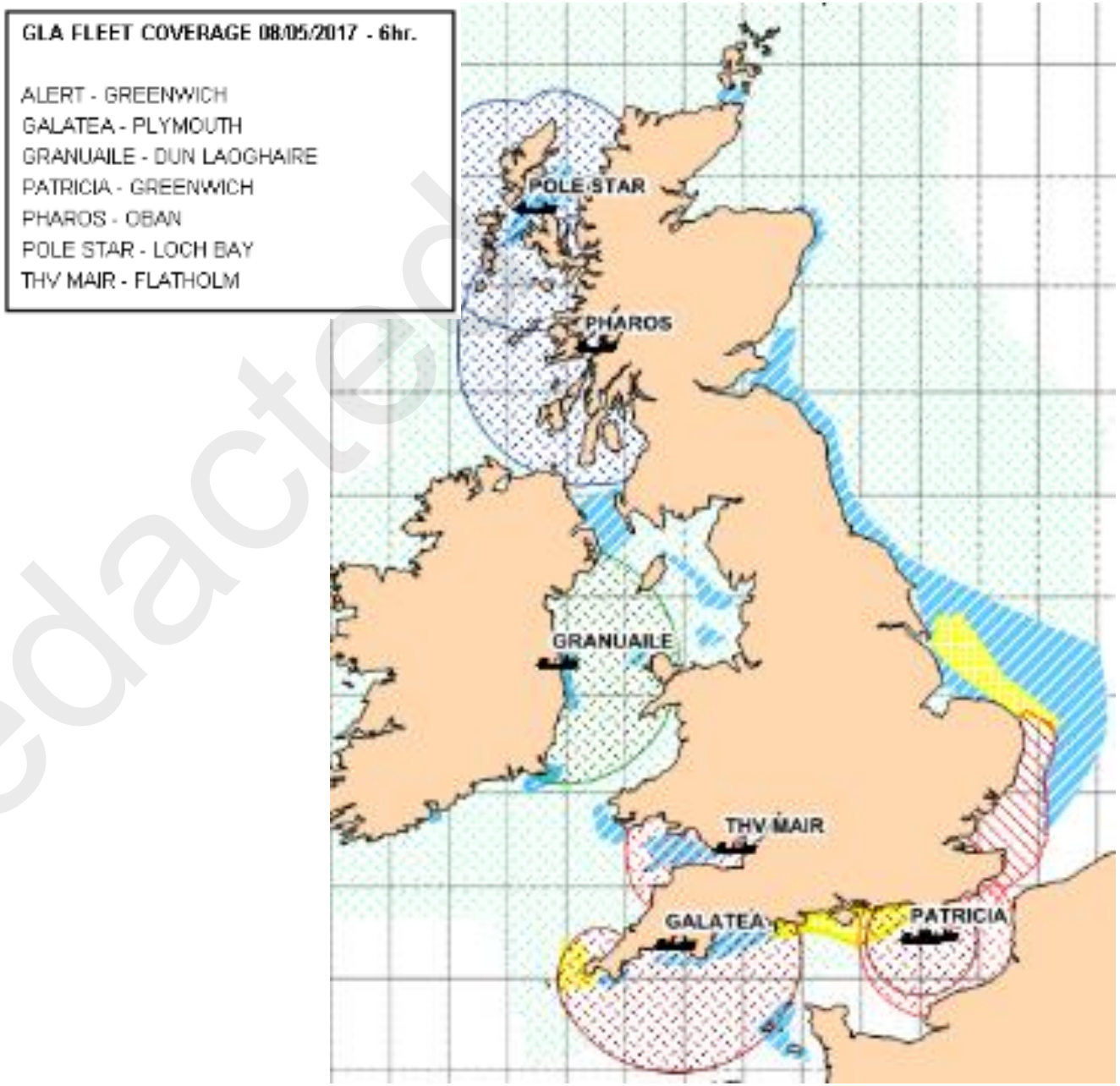
File Edit

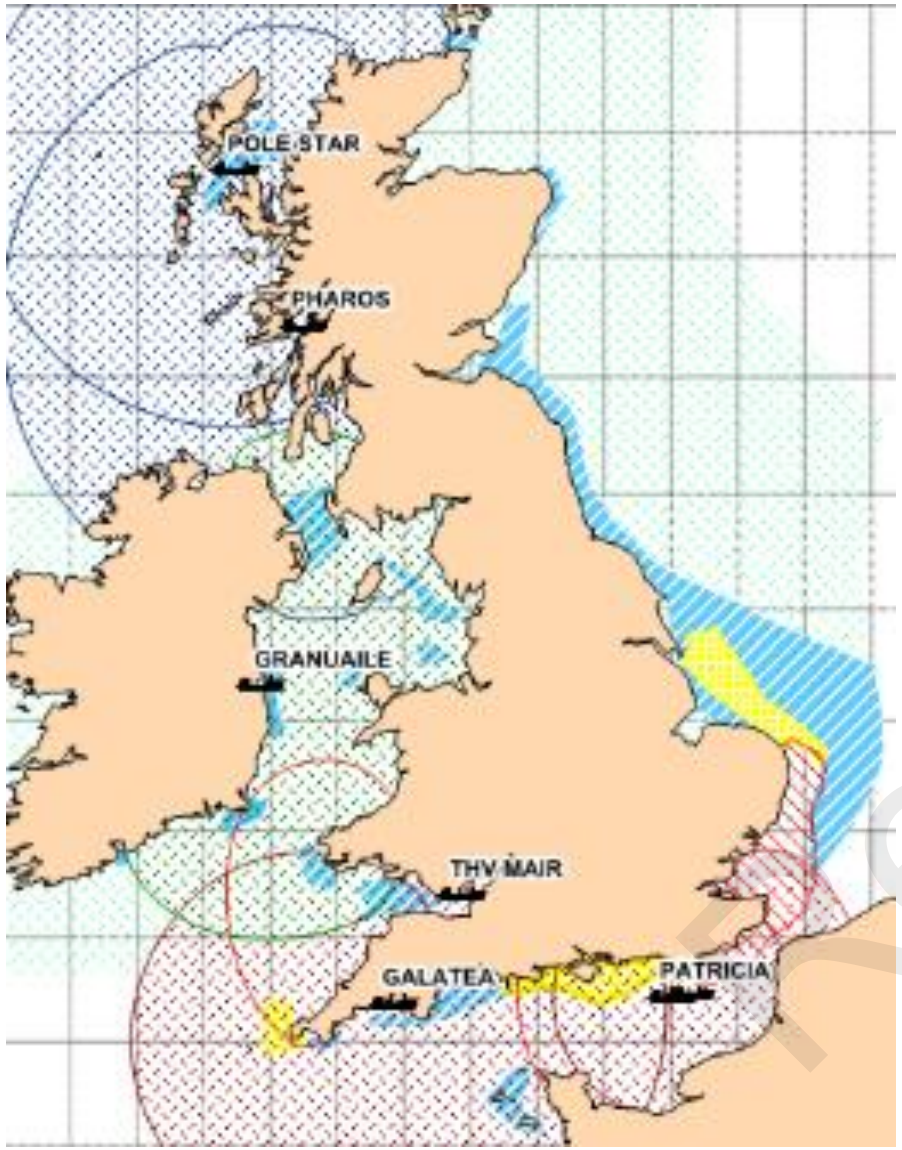
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GLA 8, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	92%	ALERT, GLA 8, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GLA 8, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

8th May 2017	7 Vessel Scenario -FAILED
THV Patricia	*Greenwich LV removed from station and tow commenced back to Harwich*
THV Galatea	*VC1; Plymouth disembark VC and alongside to load FW*
THV Alert	*Greenwich; establish LV07 on station; passage to Dover on completion.*
MV Mair	*Barry; Visit to Flatholm with Contractors*
NLV Pharos	*Alongside Oban loading & discharging*
NLV Pole Star	*Passage to Raasay for buoy work; then passage to Outer Hebrides*
ILV Granuaile	*Area 16; Dun Laoghaire; loading Maidens Lighthouse cargo*

Wreck, AtoN Casualty, RRC Incidents

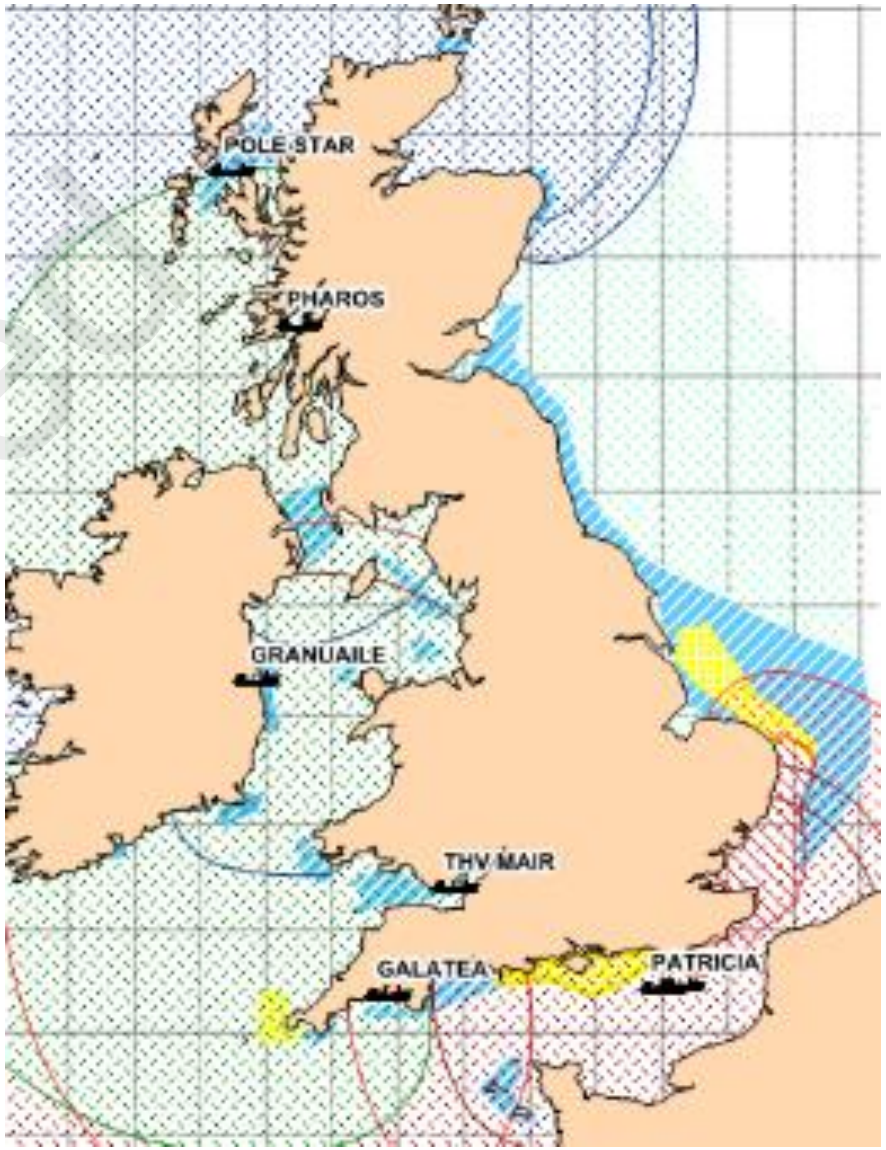
Greenwich LV changeover	*Incident Report No.35*
S North Sea to Tay 24 Hrs	*42% Coverage*
Cromer to Dover 6 Hrs RRC	*15% Coverage*
Humber to Cromer 12 Hrs RRC	*0% Coverage*





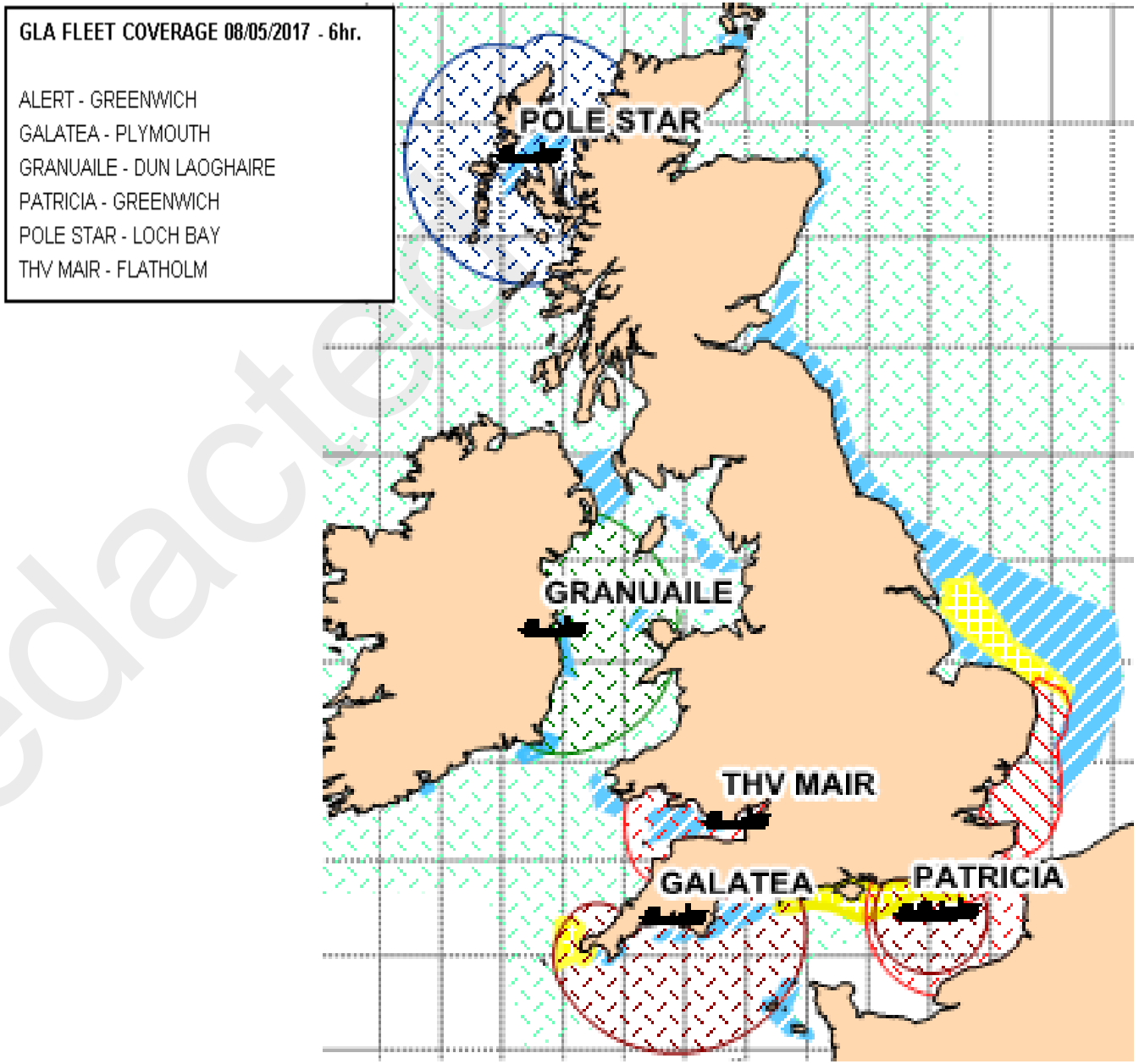
12 Hrs RRC

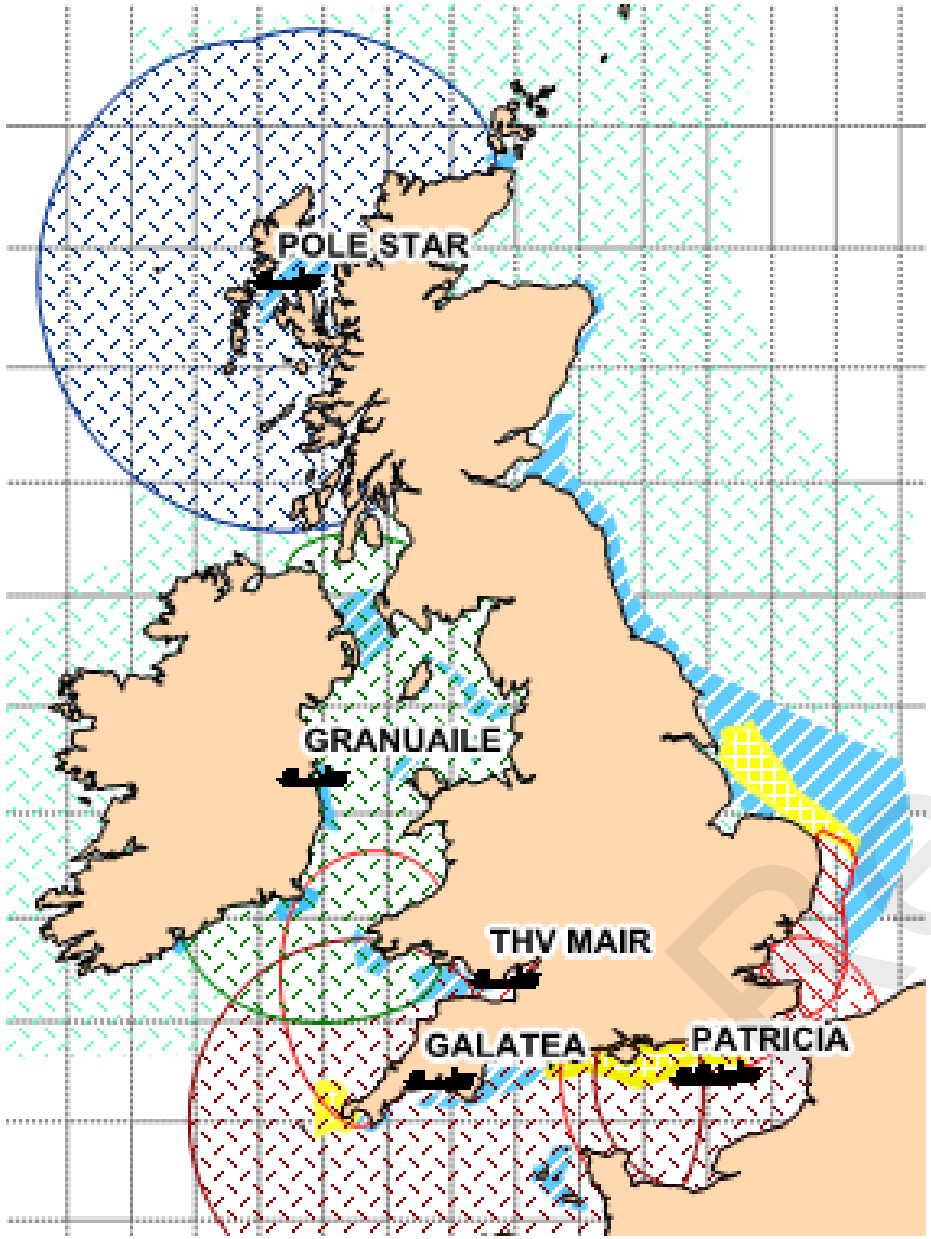
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	15%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	42%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV MAIR

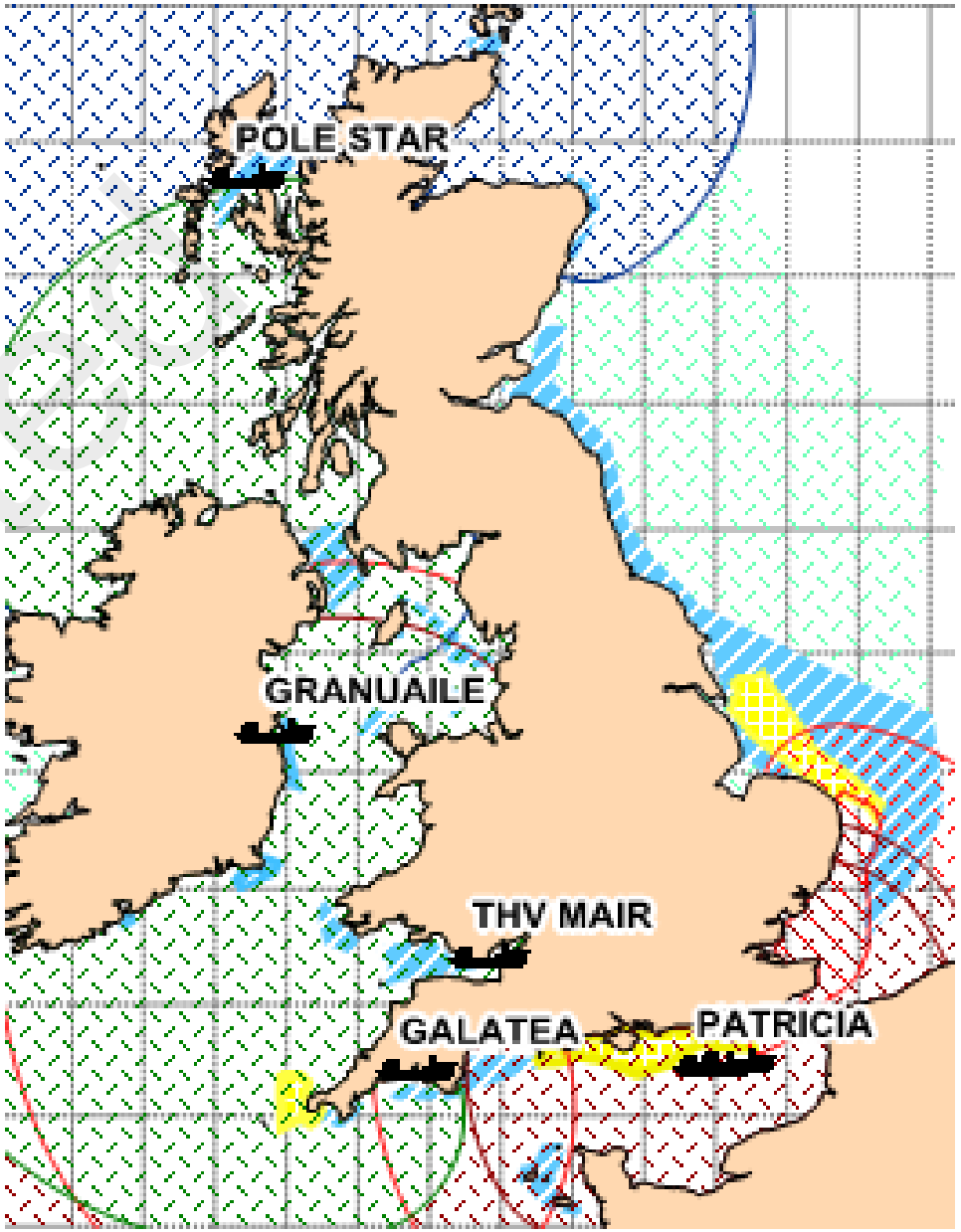
8th May 2017	6 Vessel Scenario -FAILED
THV Patricia	*Greenwich LV removed from station and tow commenced back to Harwich*
THV Galatea	*VC1; Plymouth disembark VC and alongside to load FW*
THV Alert	*Greenwich; establish LV07 on station; passage to Dover on completion.*
MV Mair	*Barry; Visit to Flatholm with Contractors*
NLV Pharos	***REMOVED***
NLV Pole Star	*Passage to Raasay for buoy work; then passage to Outer Hebrides*
ILV Granuaile	*Area 16; Dun Laoghaire; loading Maidens Lighthouse cargo*





12 Hrs
RRC

24 Hrs
RRC

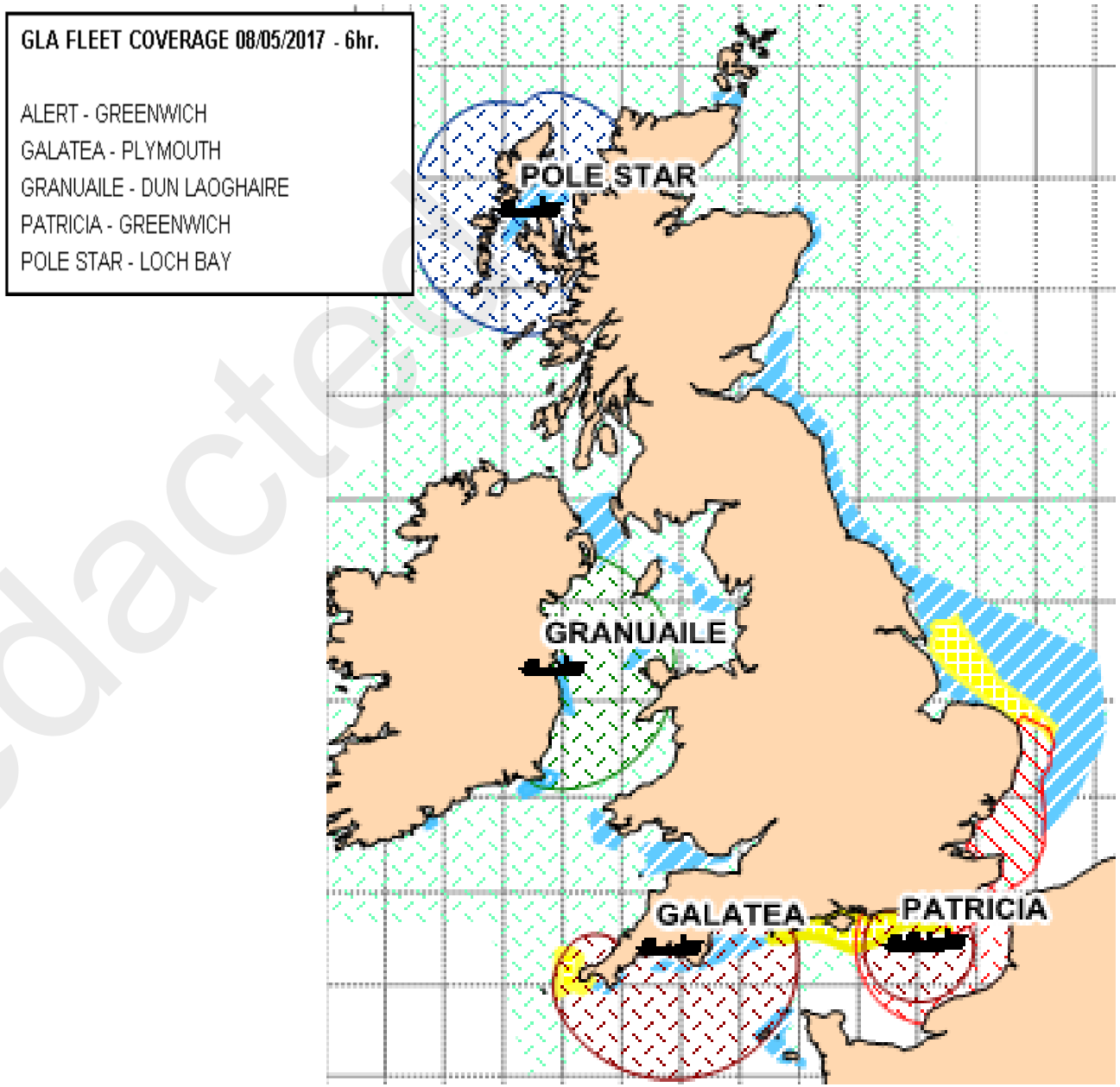


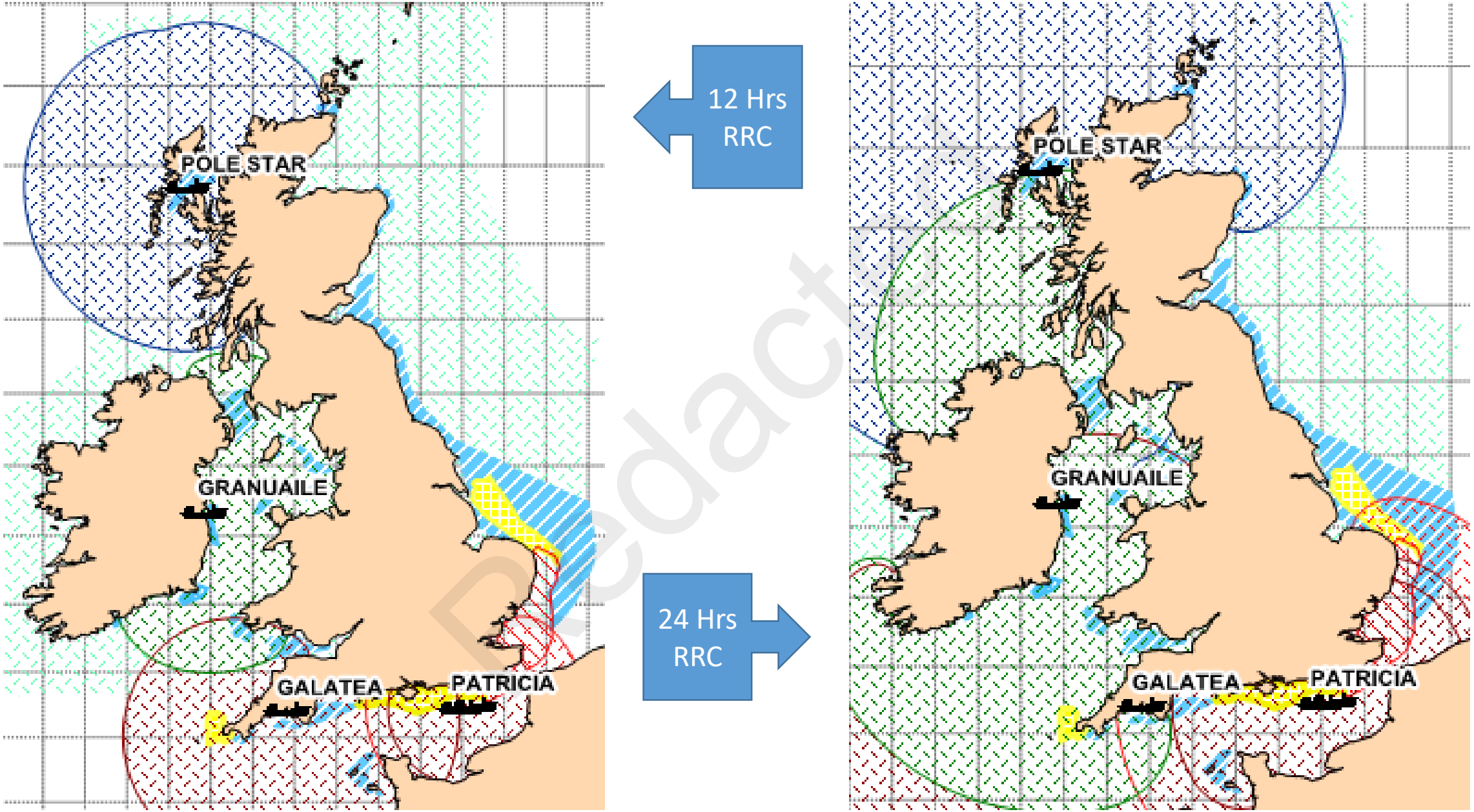
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	15%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	42%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, POLE STAR, THV ...

8th May 2017	5 Vessel Scenario -FAILED
THV Patricia	*Greenwich LV removed from station and tow commenced back to Harwich*
THV Galatea	*VC1; Plymouth disembark VC and alongside to load FW*
THV Alert	*Greenwich; establish LV07 on station; passage to Dover on completion.*
MV Mair	***REMOVED***
NLV Pharos	***REMOVED***
NLV Pole Star	*Passage to Raasay for buoy work; then passage to Outer Hebrides*
ILV Granuaile	*Area 16; Dun Laoghaire; loading Maidens Lighthouse cargo*



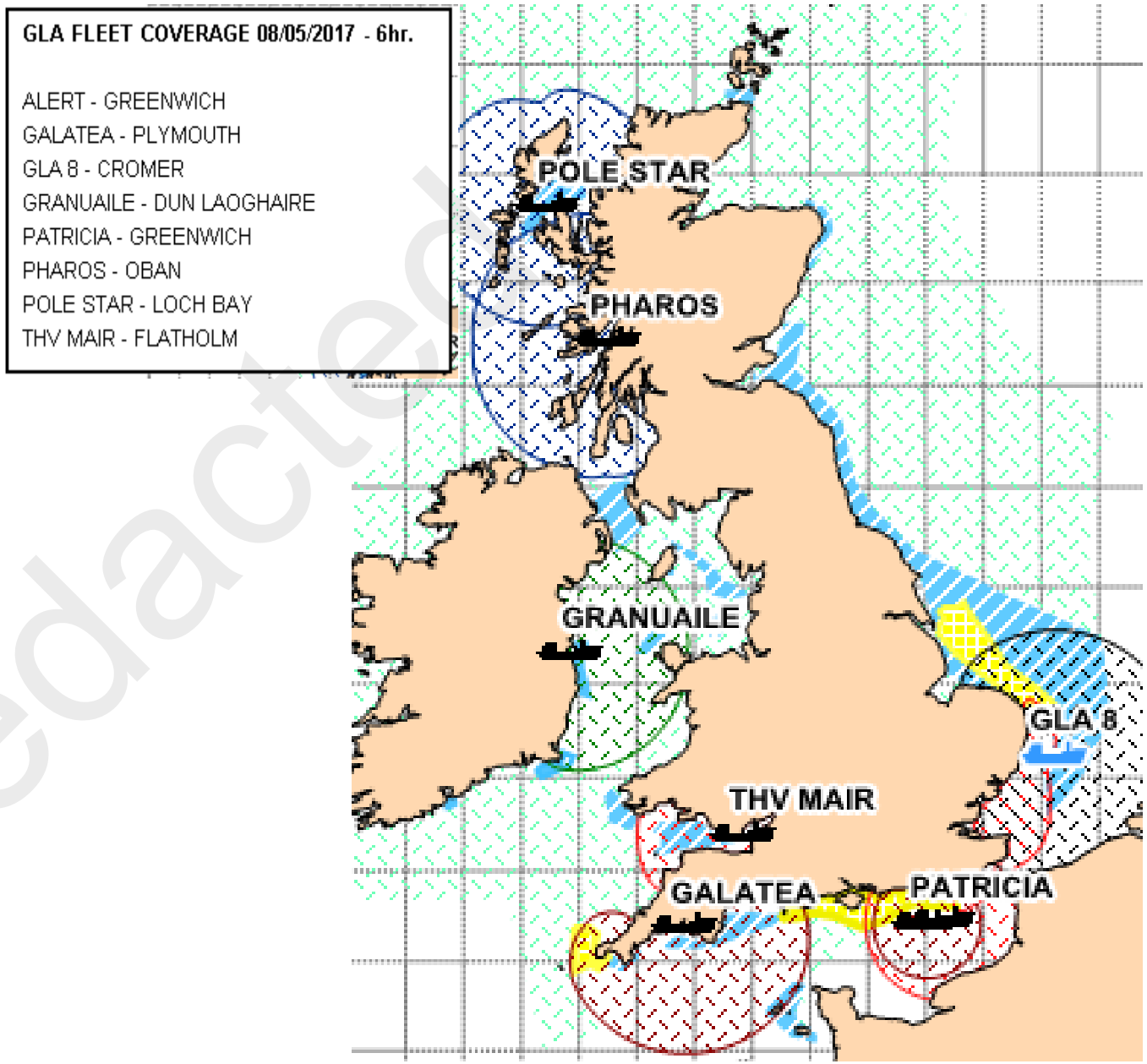

12 Hrs
RRC
POLE STAR
GRANUAILE
GALATEA
PATRICIA
24 Hrs
RRC
POLE STAR
GRANUAILE
GALATEA
PATRICIA

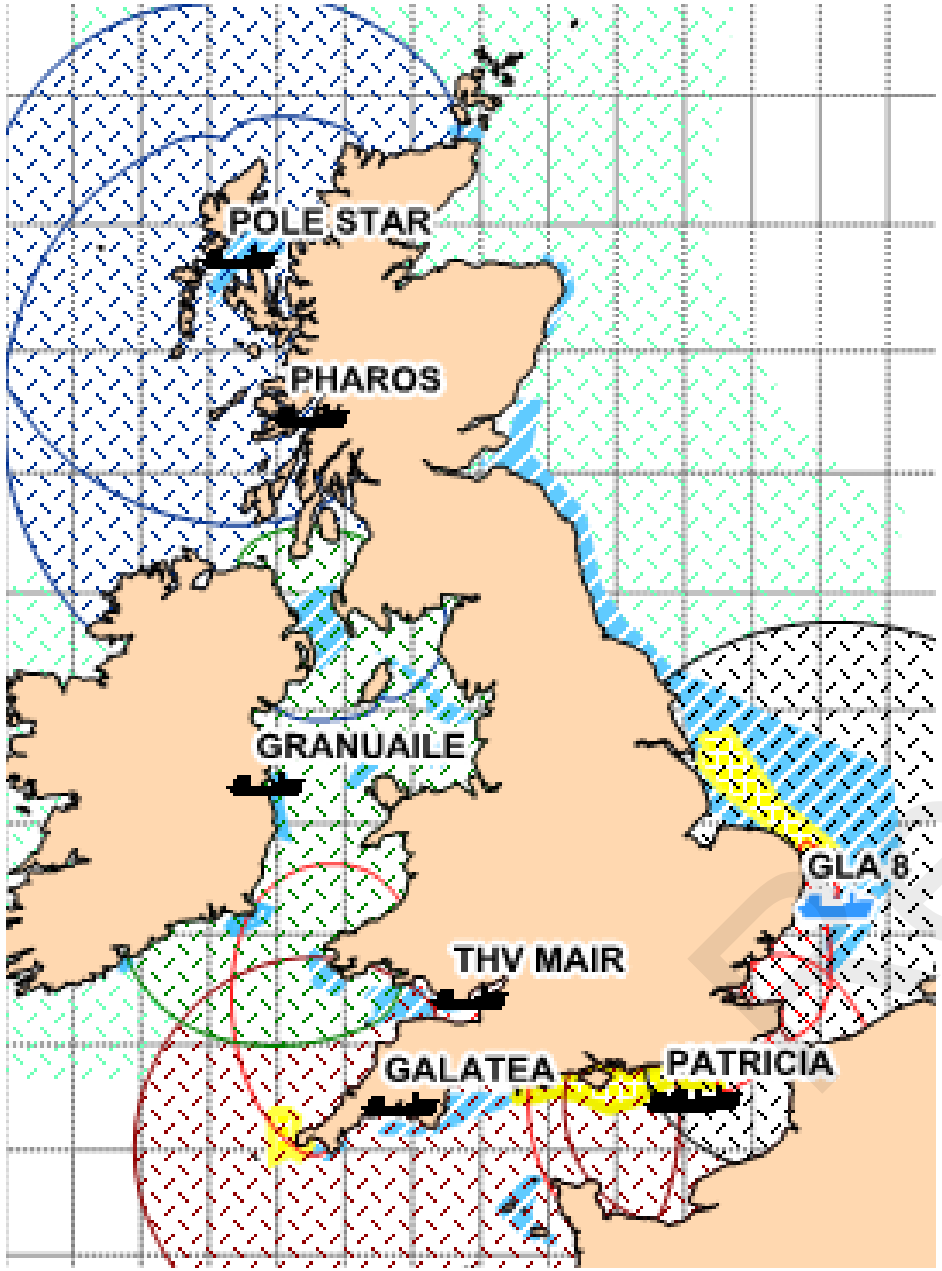
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	15%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	42%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, POLE STAR, THV ...

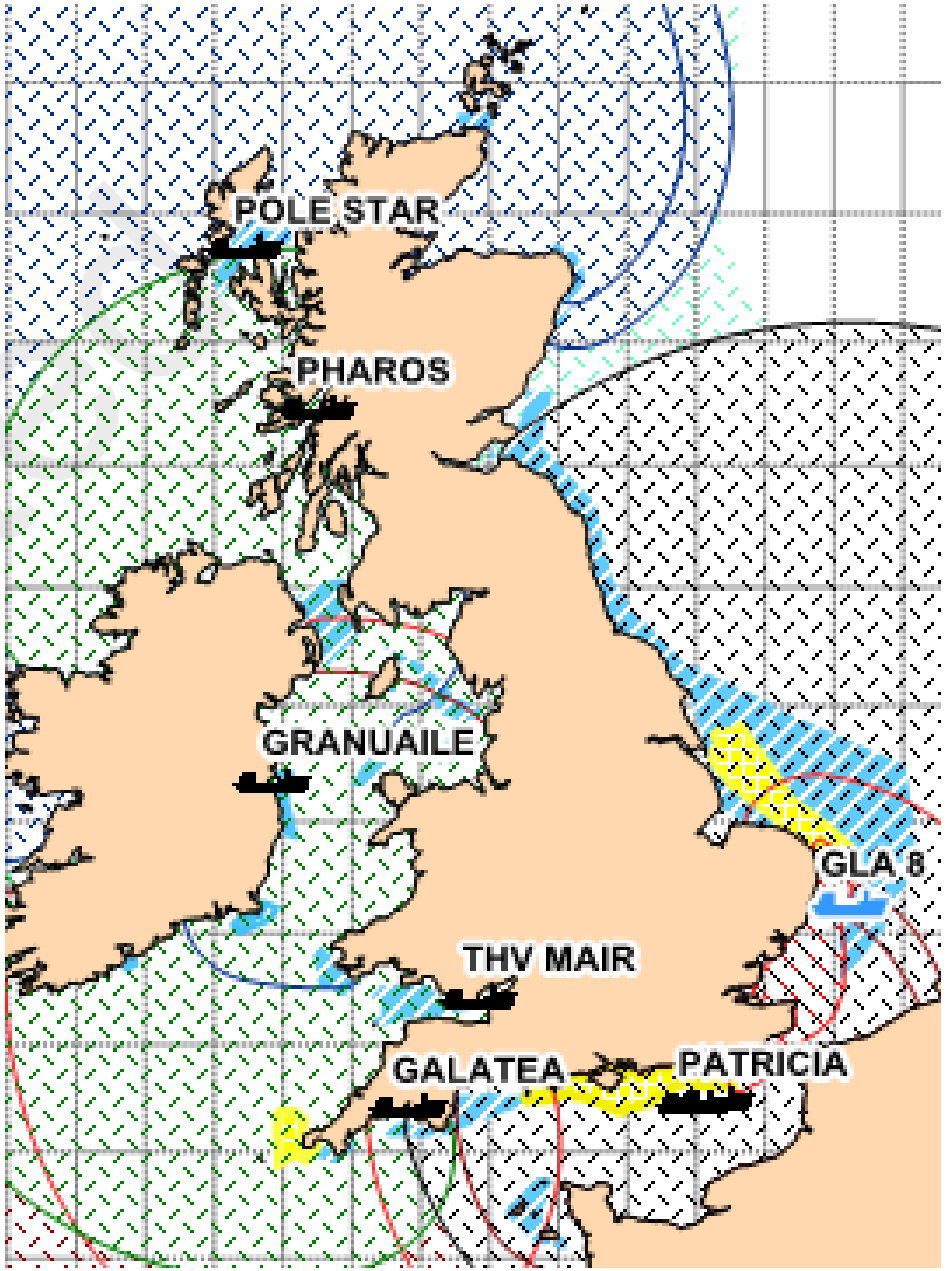
8th May 2017	8 Vessel Scenario - PASS
GLA 8	*Cromer Area*
THV Patricia	*Greenwich LV removed from station and tow commenced back to Harwich*
THV Galatea	*VC1; Plymouth disembark VC and alongside to load FW*
THV Alert	*Greenwich; establish LV07 on station; passage to Dover on completion.*
MV Mair	*Barry; Visit to Flatholm with Contractors*
NLV Pharos	*Alongside Oban loading & discharging*
NLV Pole Star	*Passage to Raasay for buoy work; then passage to Outer Hebrides*
ILV Granuaile	*Area 16; Dun Laoghaire; loading Maidens Lighthouse cargo*





12 Hrs RRC

24 Hrs RRC



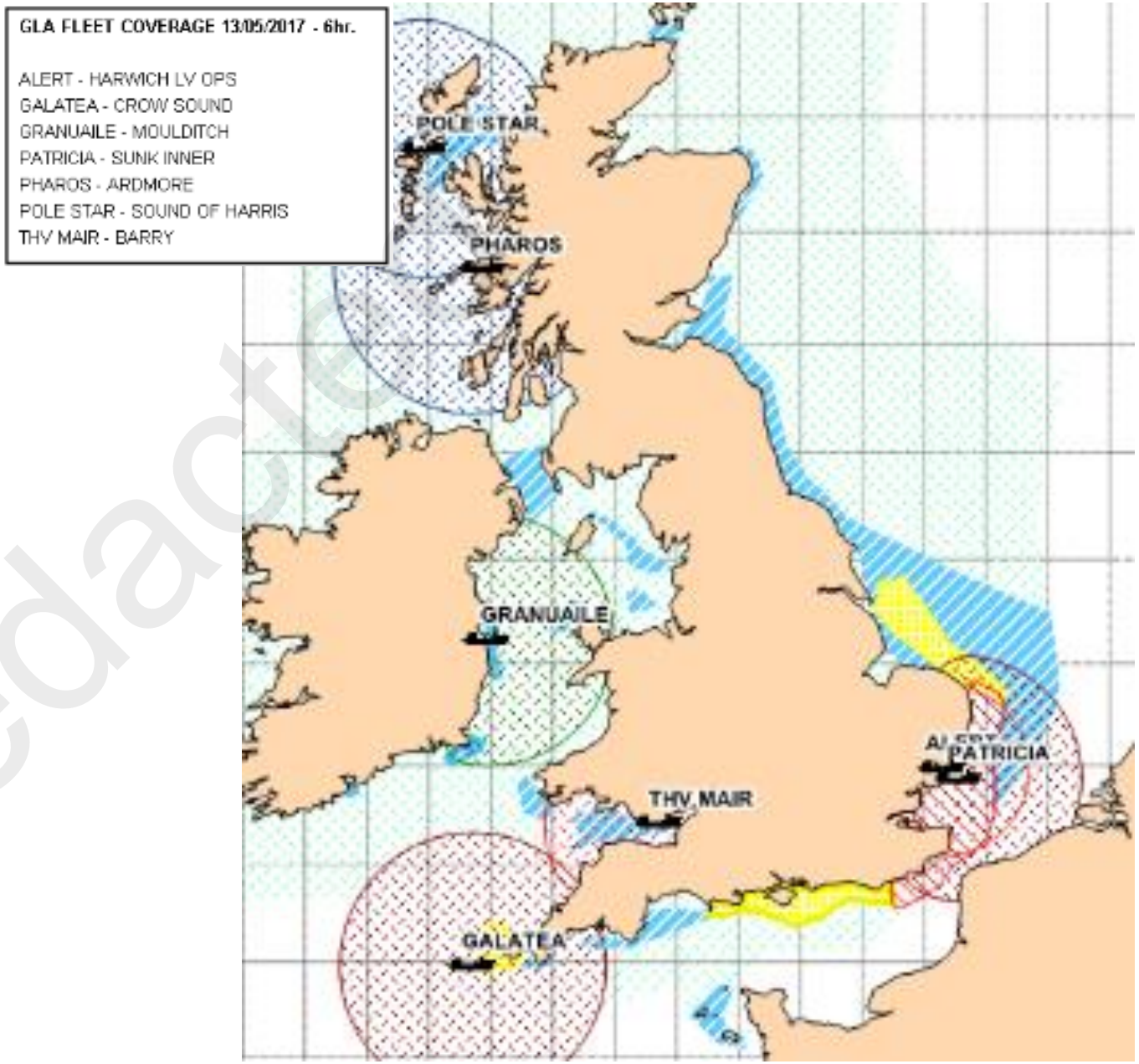
Response Region Coverage

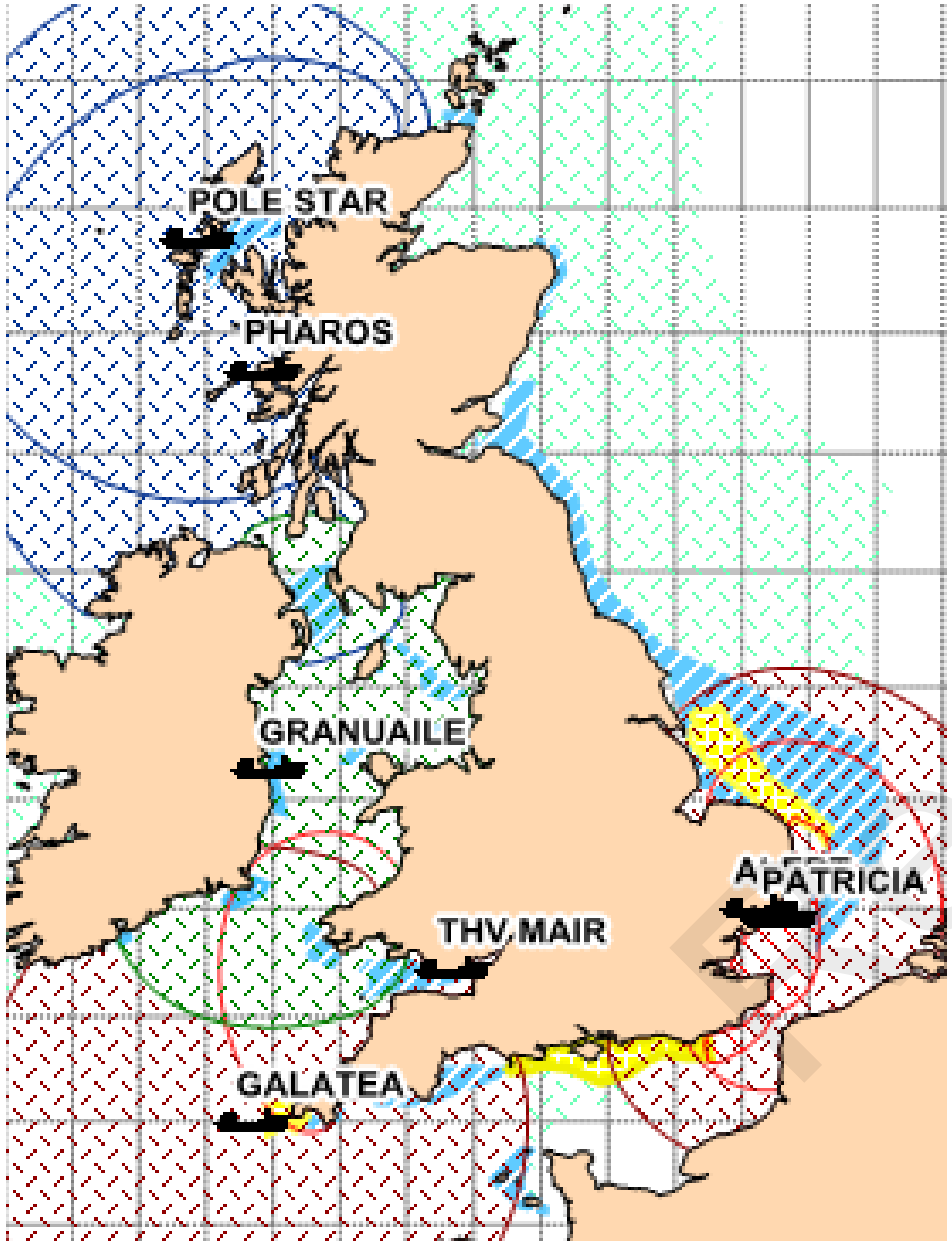
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	100%	ALERT, GLA 8, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	GLA 8
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	98%	ALERT, GALATEA, GLA 8, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

13th May 2017	7 Vessel Scenario - FAILED
THV Patricia	*Tow LF 03 from Inner Sunk and secure on Stream Mooring Harwich*
THV Galatea	*SW Approaches MOD Charter*
THV Alert	*Tow LV22 from Harwich to Inner Sunk and establish on station*
MV Mair	*Barry ; risk response coverage*
NLV Pharos	*Passage to Hyskier for helicopter operations*
NLV Pole Star	*Lochmaddy buoy work; continues passage to Sound of Harris*
ILV Granuaile	*Area 16 Attended Moulditch buoy for AIS repairs*

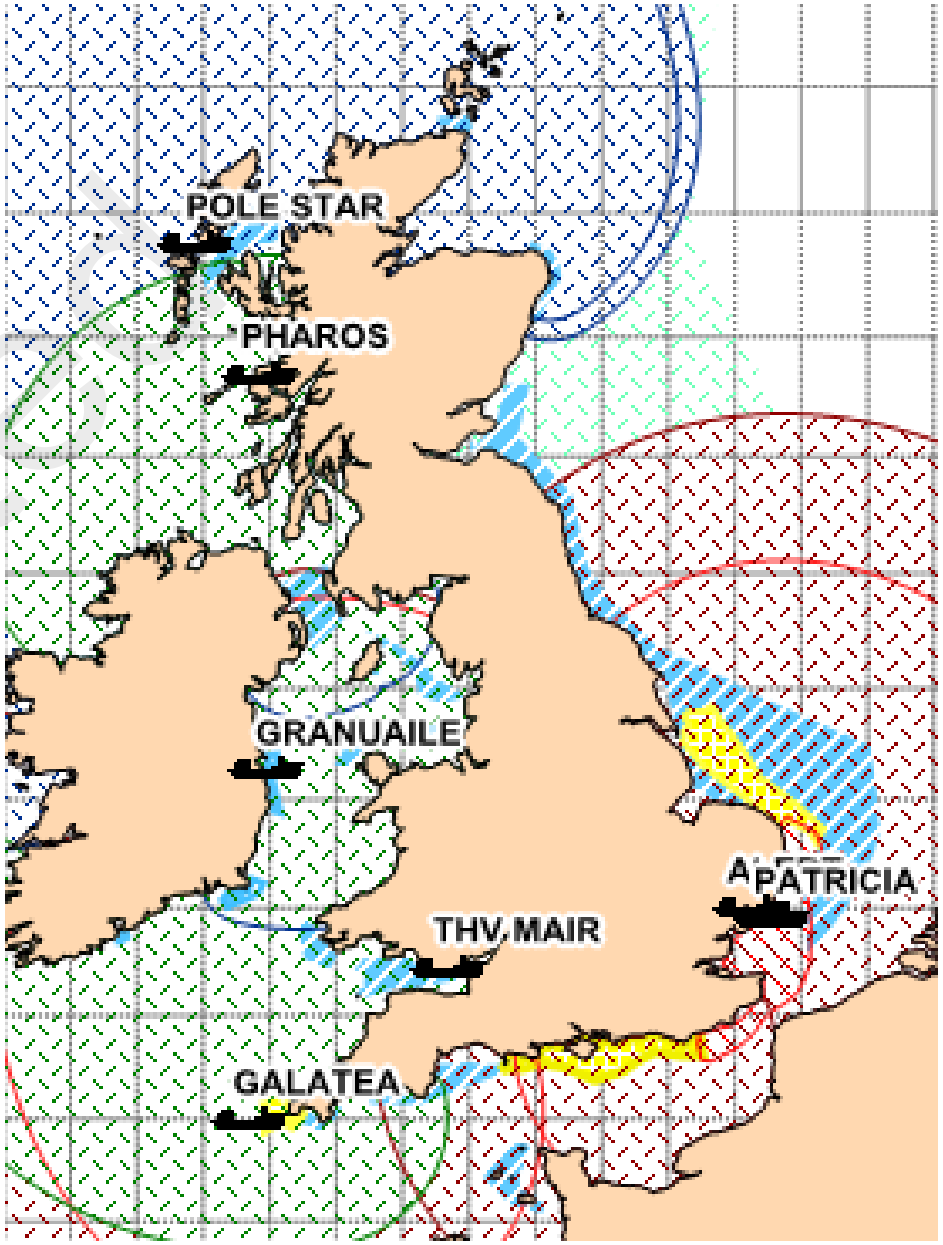
Wreck, AtoN Casualty, RRC Incidents	
Sunk Inner LF Changeover	*Report No.37*
Dover to Cromer 6 Hrs RRC	*93%*
Portland Bill to Beachy Hd 12s RRC	*54%*
Moulditch L/B AIS casualty	*Report No.38*





12 Hrs RRC

24 Hrs RRC

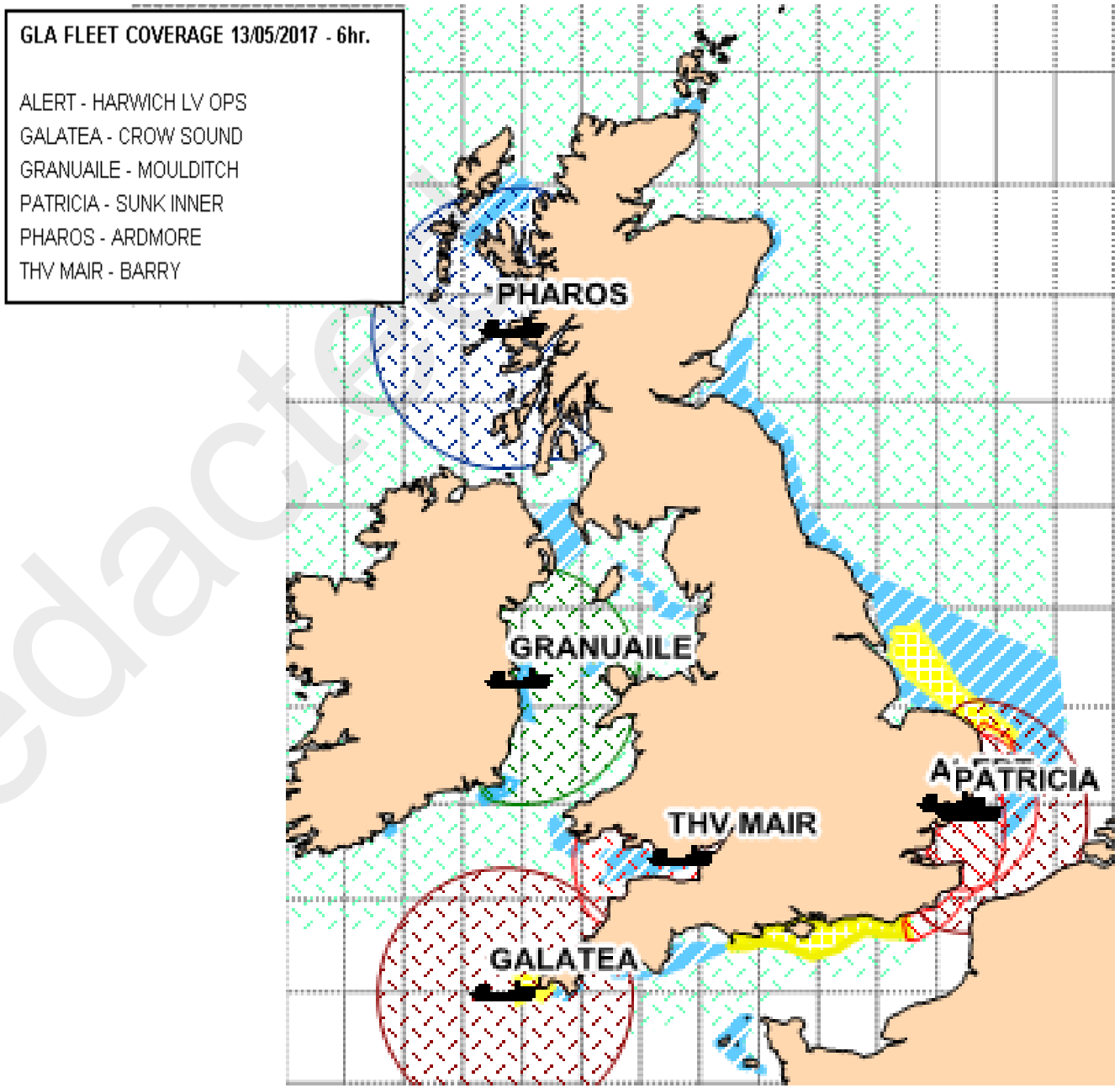


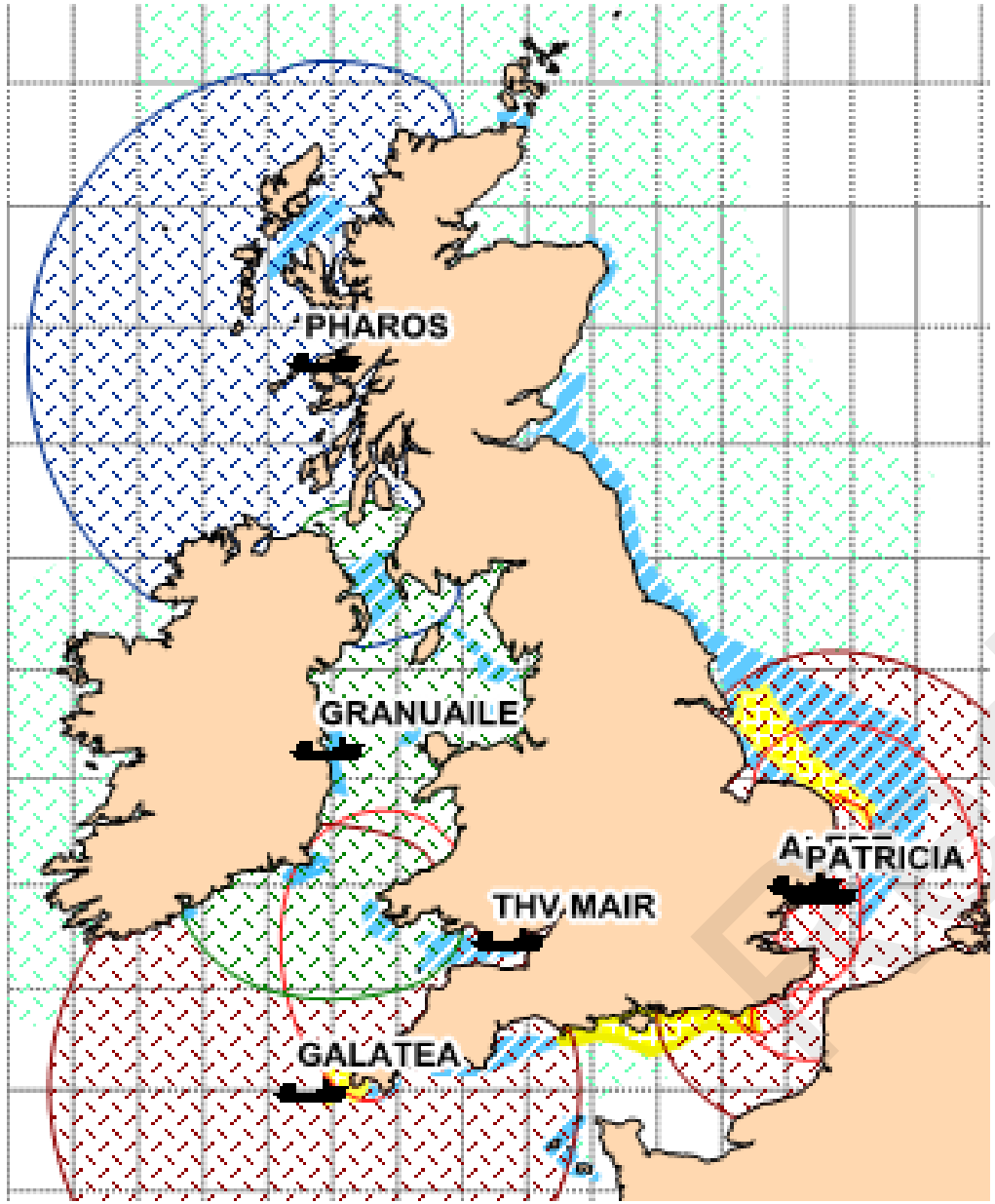
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	54%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	92%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

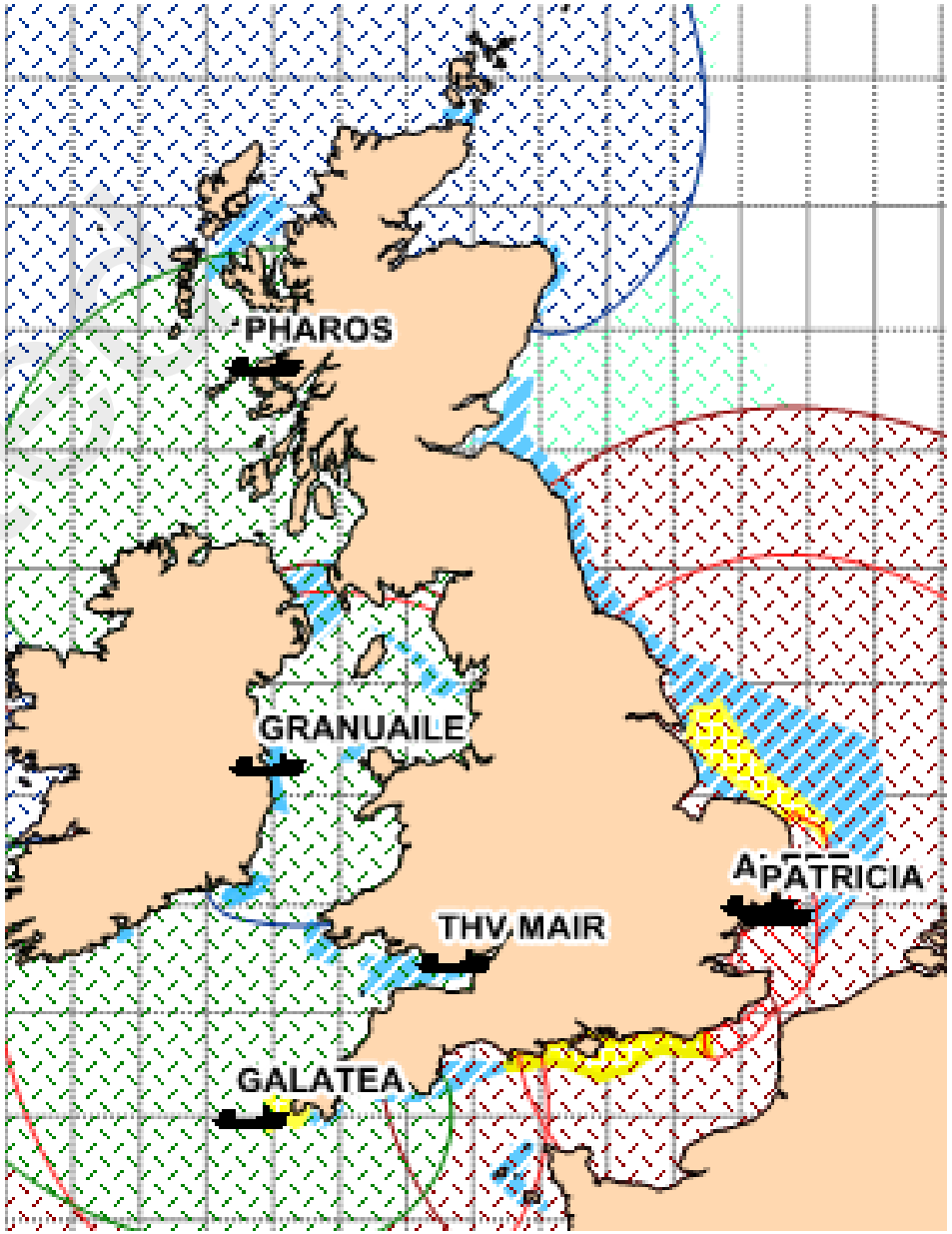
13th May 2017	6 Vessel Scenario - FAILED
THV Patricia	*Tow LF 03 from Inner Sunk and secure on Stream Mooring Harwich*
THV Galatea	*SW Approaches MOD Charter*
THV Alert	*Tow LV22 from Harwich to Inner Sunk and establish on station*
MV Mair	*Barry ; risk response coverage*
NLV Pharos	*Passage to Hyskier for helicopter operations*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Area 16 Attended Moulditch buoy for AIS repairs*





12 Hrs RRC

24 Hrs RRC

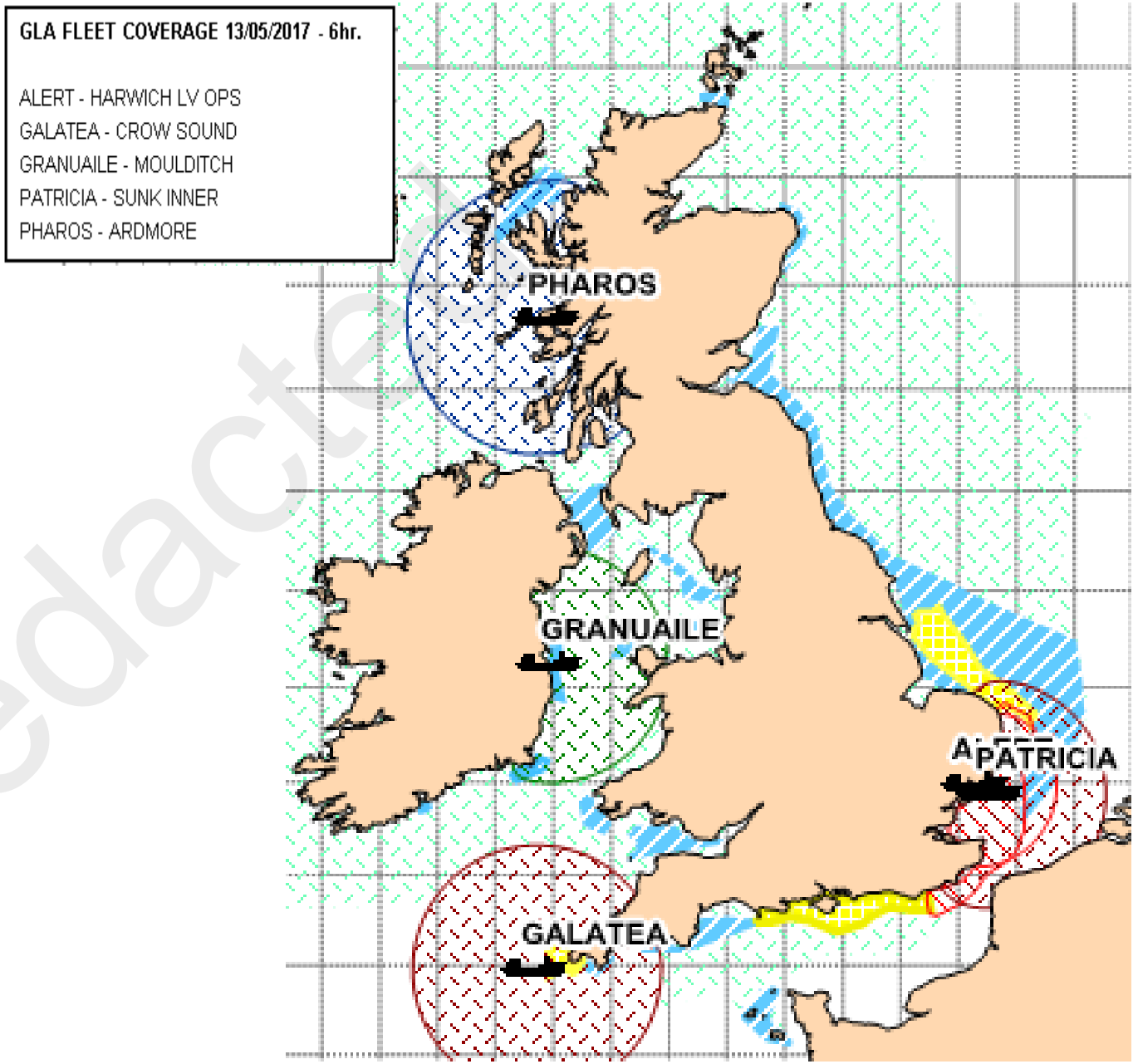


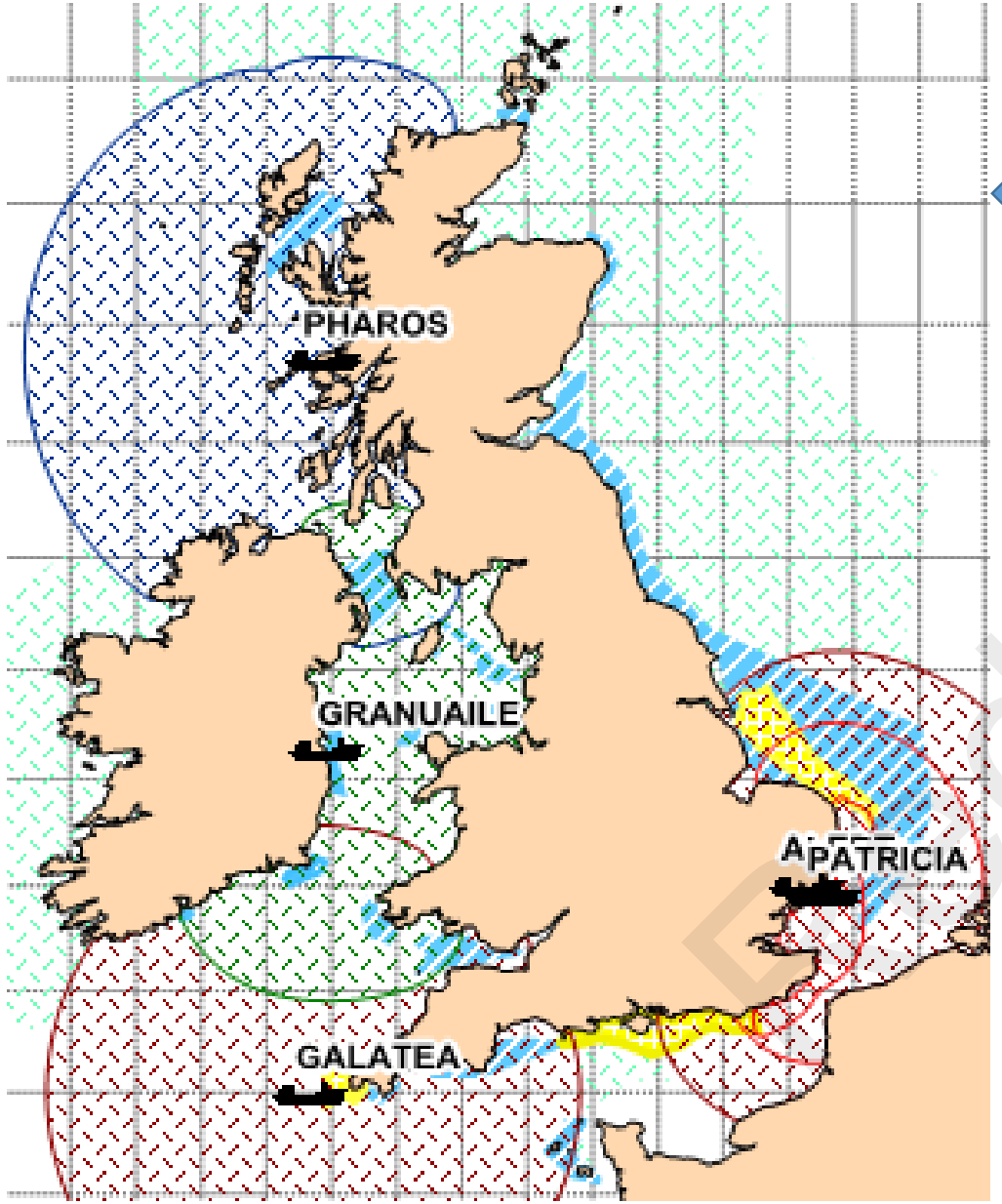
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	54%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	92%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

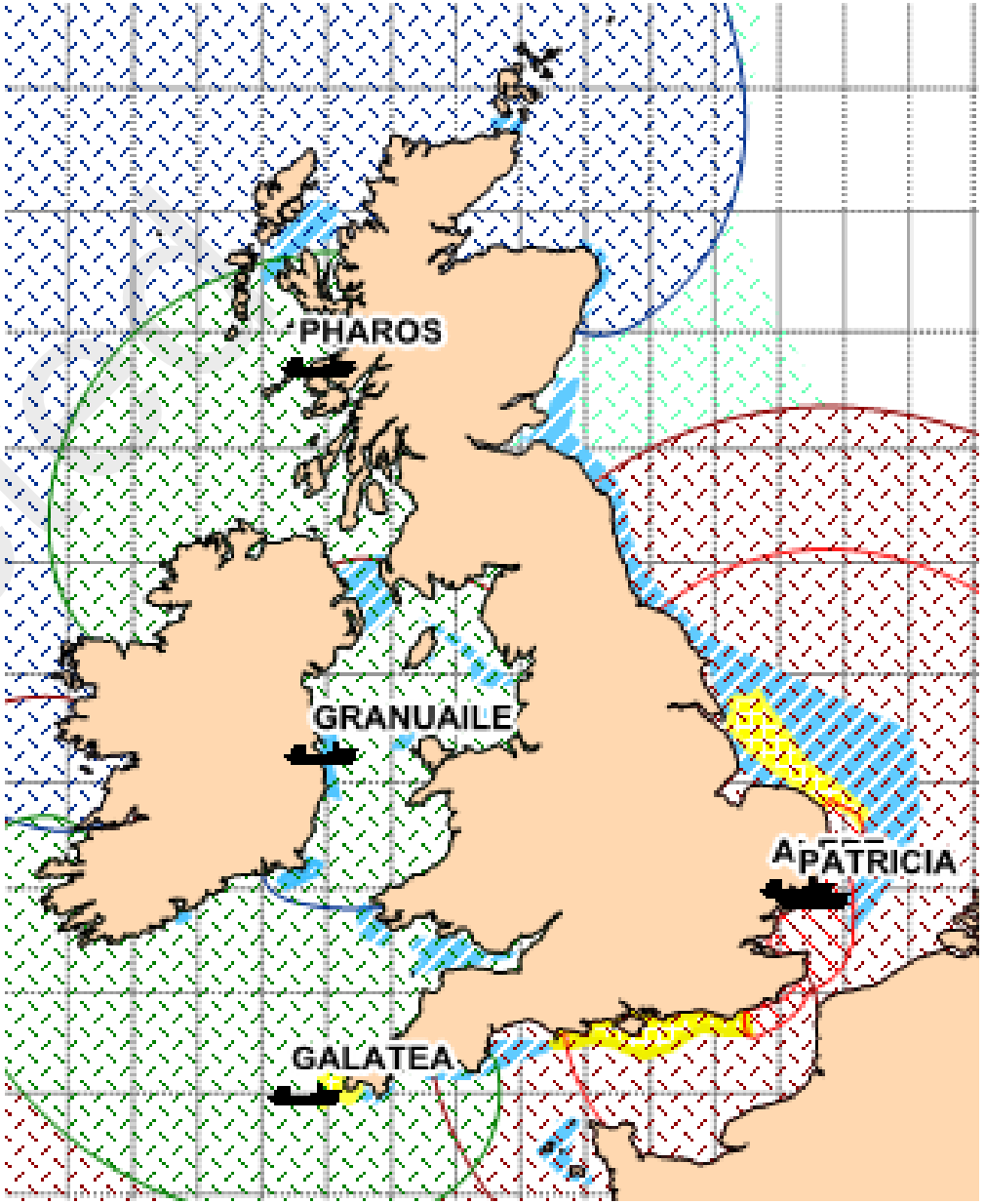
13th May 2017	5 Vessel Scenario - FAILED
THV Patricia	*Tow LF 03 from Inner Sunk and secure on Stream Mooring Harwich*
THV Galatea	*SW Approaches MOD Charter*
THV Alert	*Tow LV22 from Harwich to Inner Sunk and establish on station*
MV Mair	***REMOVED***
NLV Pharos	*Passage to Hyskier for helicopter operations*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Area 16 Attended Moulditch buoy for AIS repairs*





12 Hrs RRC

24 Hrs RRC

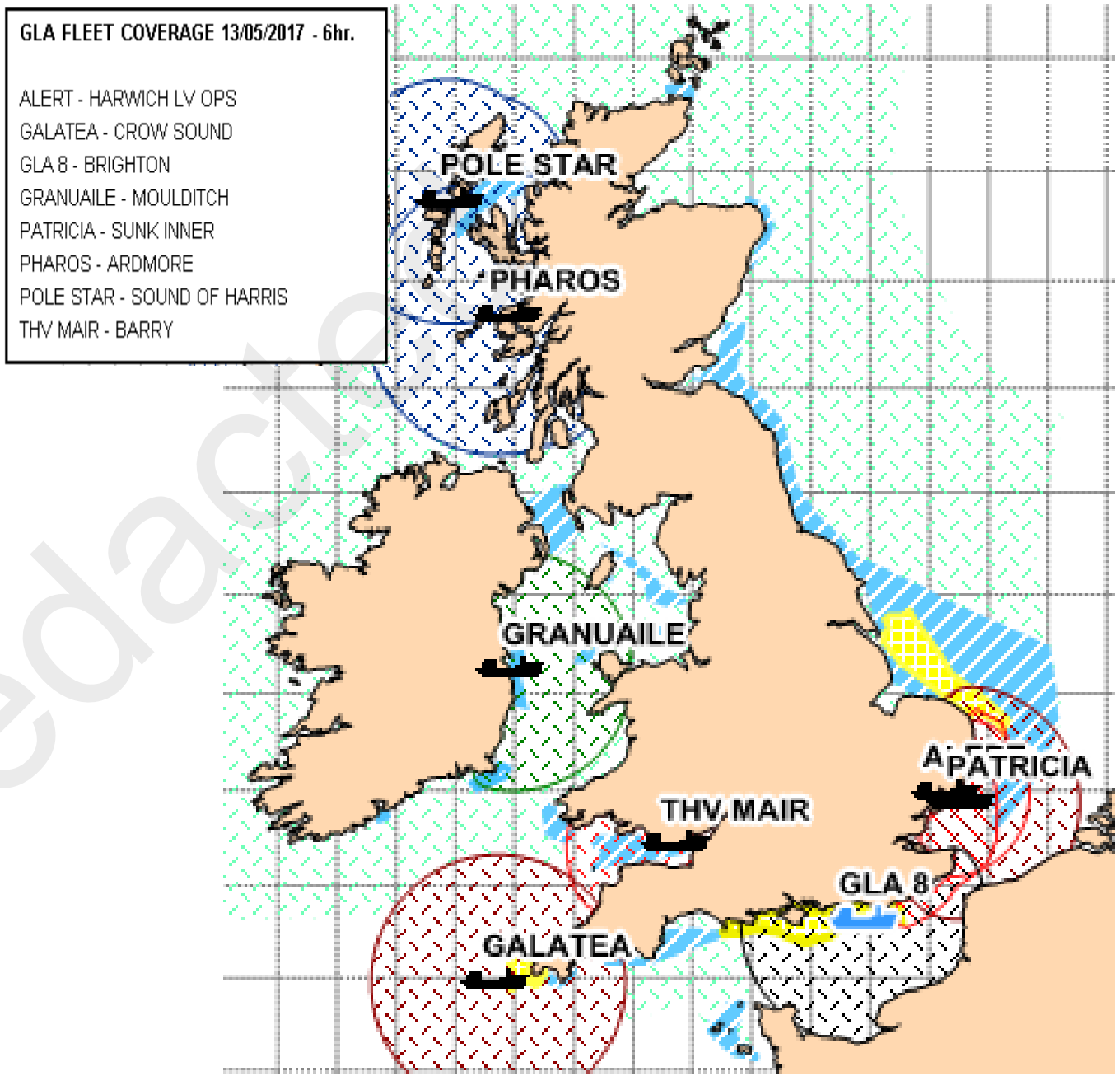


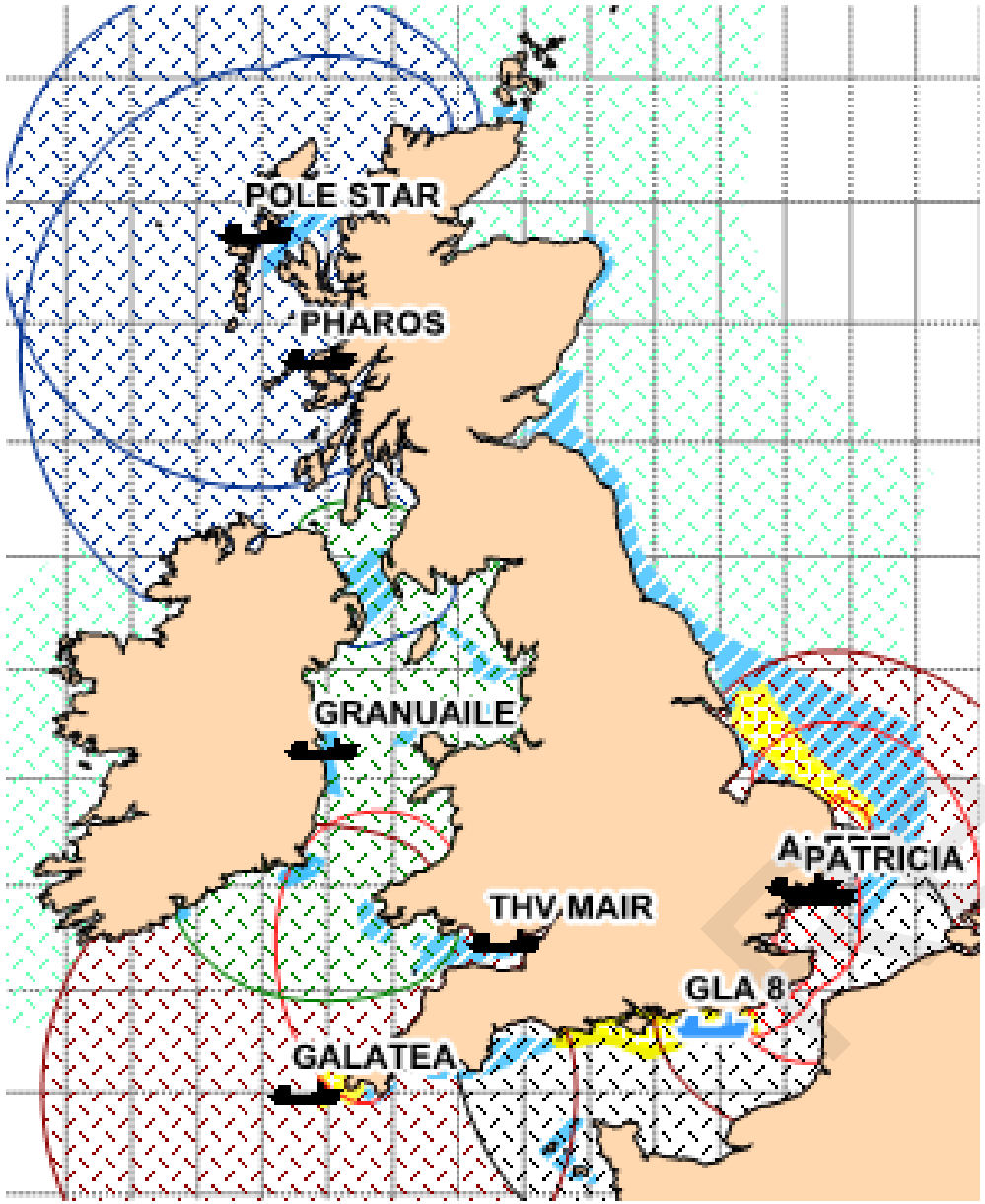
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	54%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	92%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS

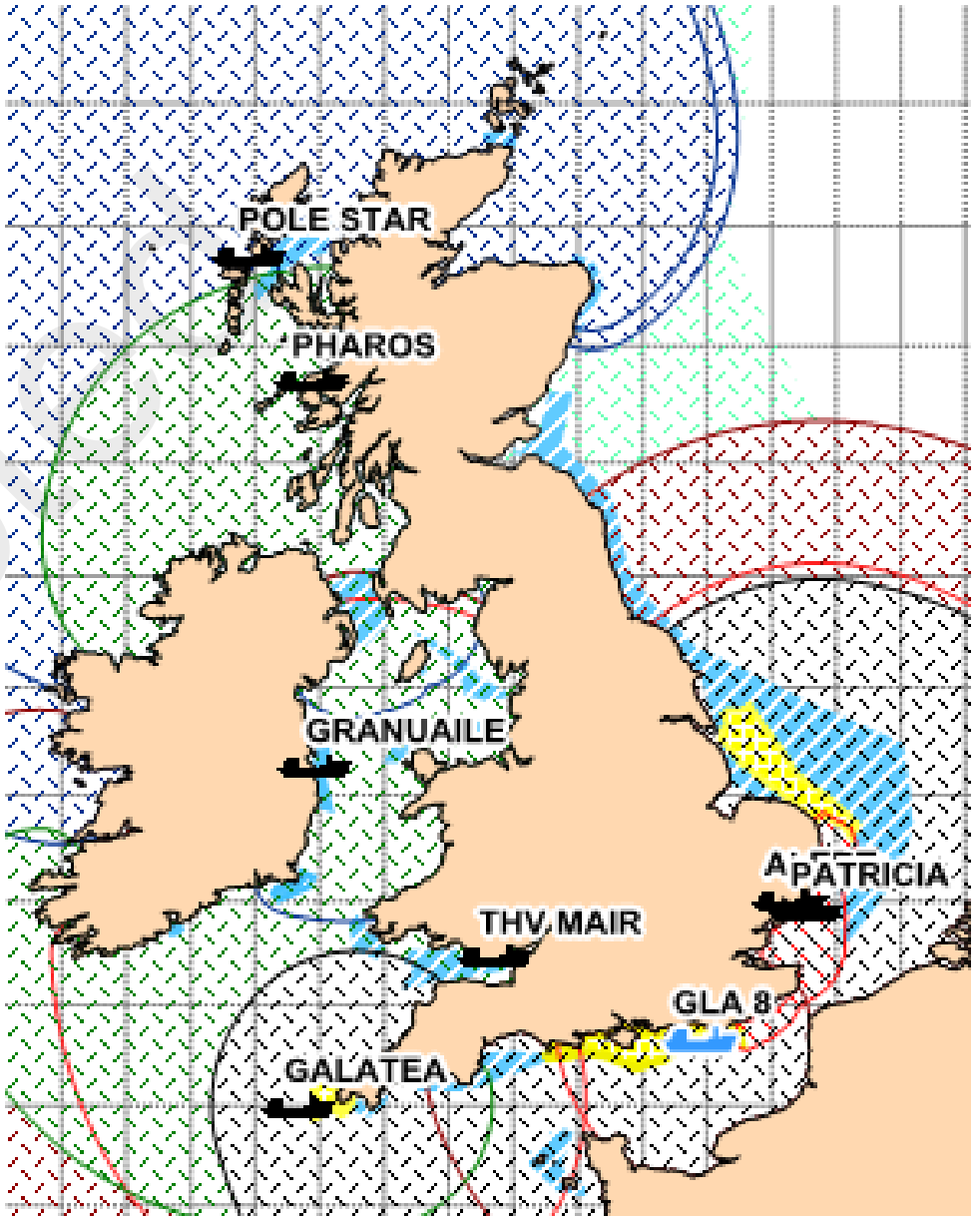
13th May 2017	8 Vessel Scenario - PASS
GLA 8	*Brighton*
THV Patricia	*Tow LF 03 from Inner Sunk and secure on Stream Mooring Harwich*
THV Galatea	*SW Approaches MOD Charter*
THV Alert	*Tow LV22 from Harwich to Inner Sunk and establish on station*
MV Mair	*Barry ; risk response coverage*
NLV Pharos	*Passage to Hyskier for helicopter operations*
NLV Pole Star	*Lochmaddy buoy work; continues passage to Sound of Harris*
ILV Granuaile	*Area 16 Attended Moulditch buoy for AIS repairs*





12 Hrs RRC

24 Hrs RRC



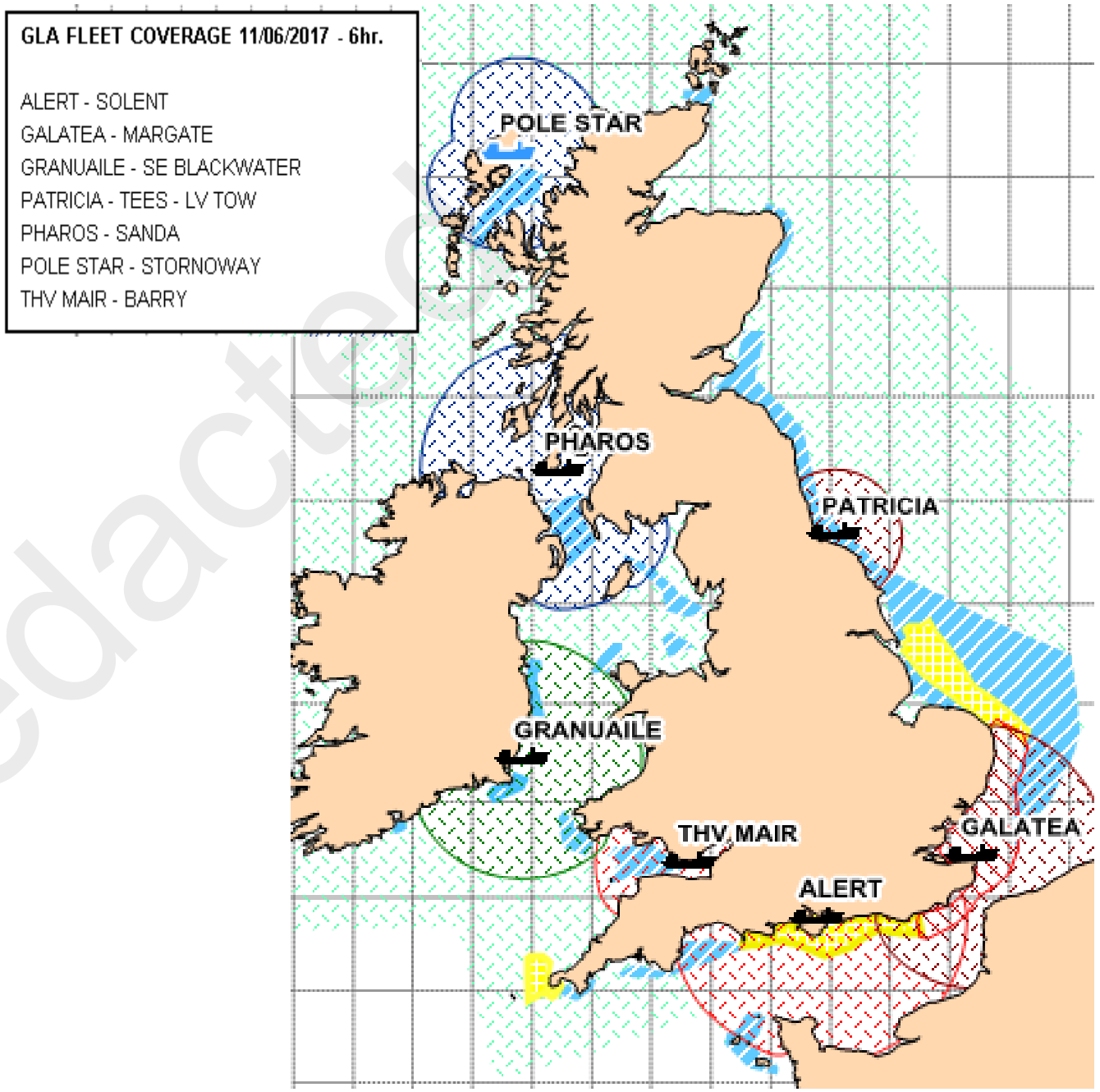
Response Region Coverage

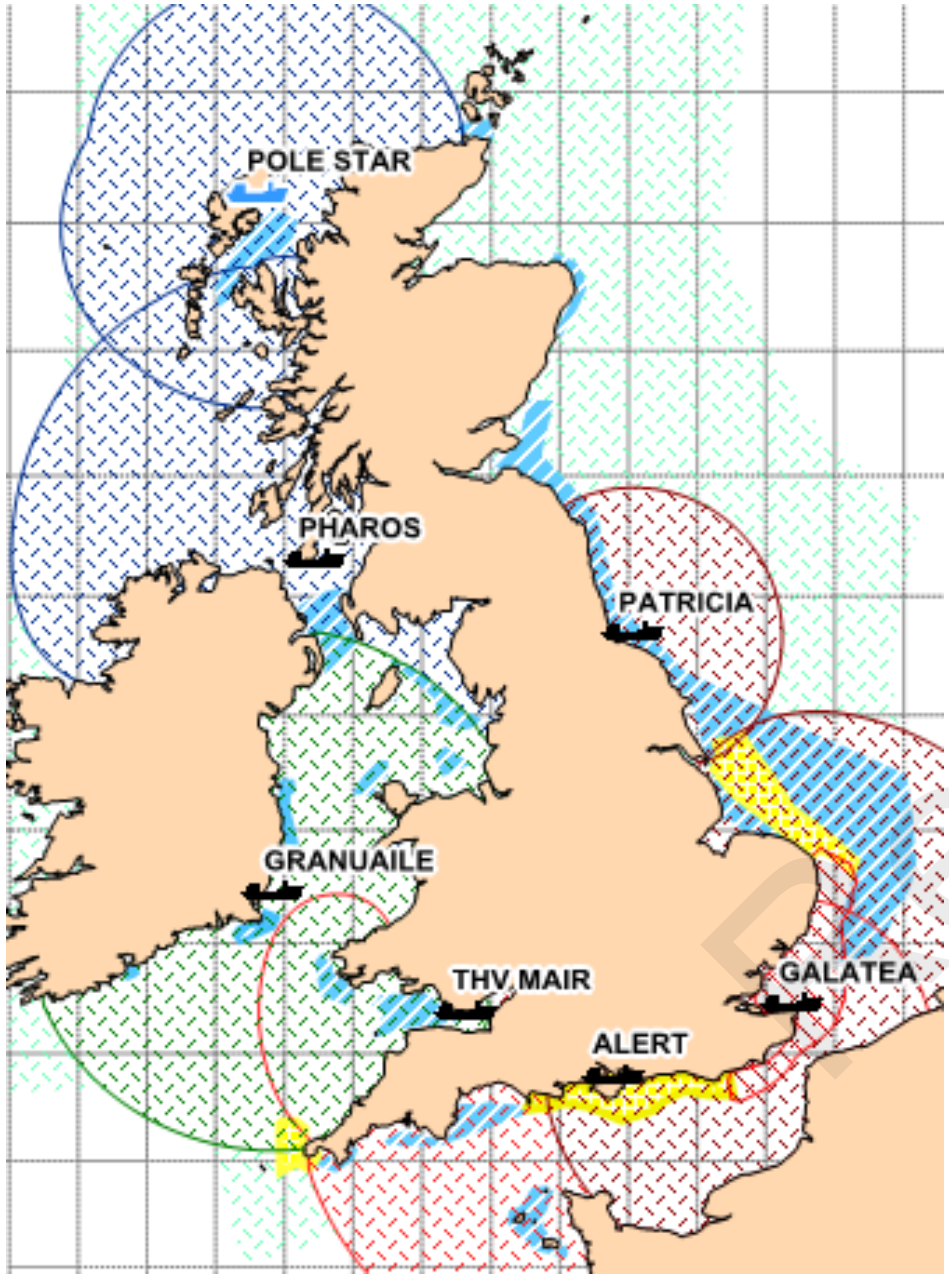
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GLA 8, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	92%	ALERT, GLA 8, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GLA 8, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA 8, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GLA 8, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, GLA 8, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

11th Jun 2017	7 Vessel Scenario - FAIL
THV Patricia	*Tees Bay, LV05 handed over to tugs for DD&R, made passage to Whitby*
THV Galatea	*Transferred Reculver buoy to THV Alert; continued passage to Swansea*
THV Alert	*Rendezvoused with THV Galatea; loaded Reculver buoy; continued passage to Dover*
MV Mair	*Barry risk response cover*
NLV Pharos	*Completed heli-Ops Sanda- passage to Davaar pm*
NLV Pole Star	*Stornoway weather bound*
ILV Granuaile	*SE Blackwater casualty- weather bound*

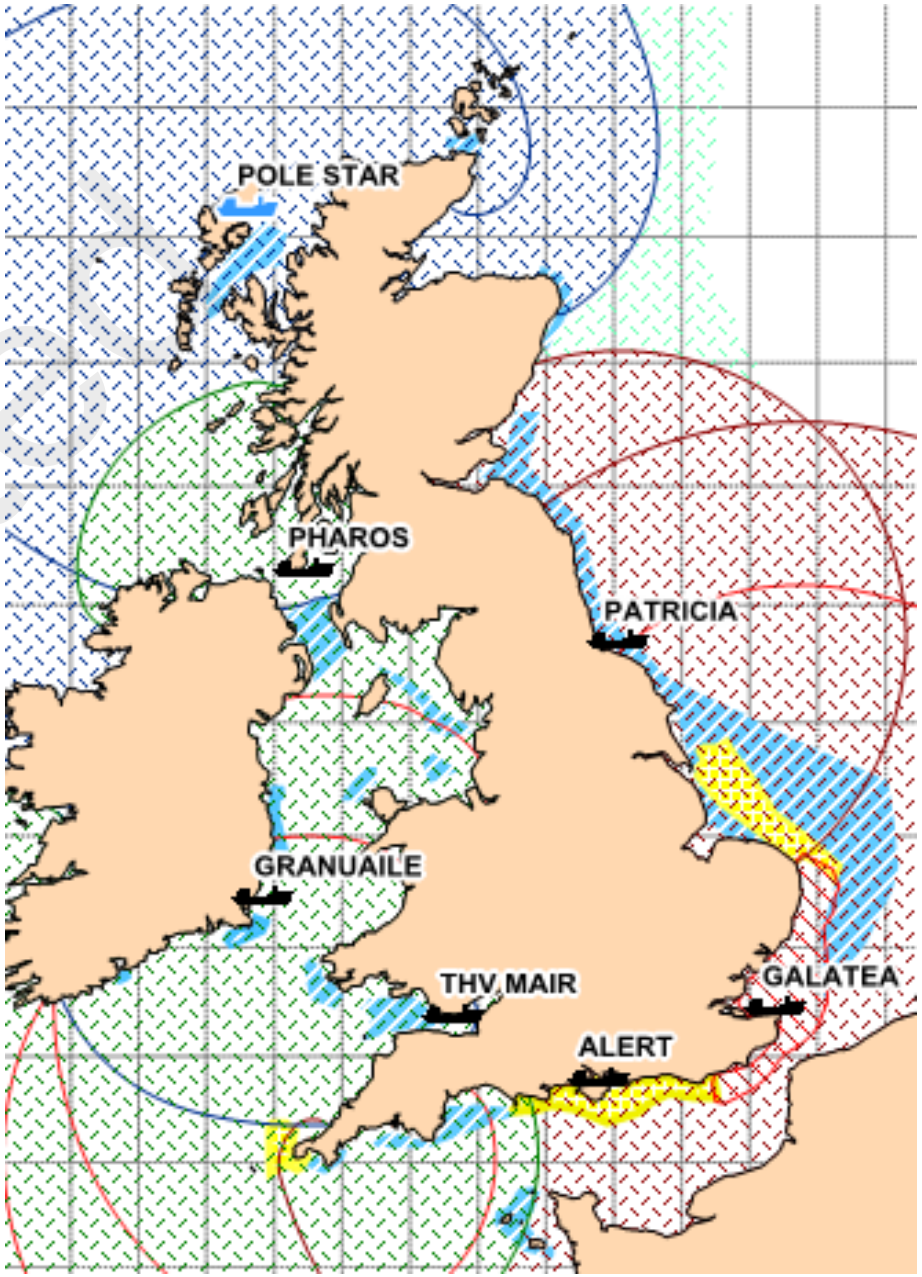
Wreck, AtoN Casualty, RRC Incidents	
SE Blackwater Racon casualty	*Report No.50*
Reculver L/B Adrift	*Report No.51*
Land's End 12 Hrs RRC	*63% coverage*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	GALATEA, PATRICIA
4	LAND'S END	12	No	63%	ALERT, GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	No	66%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
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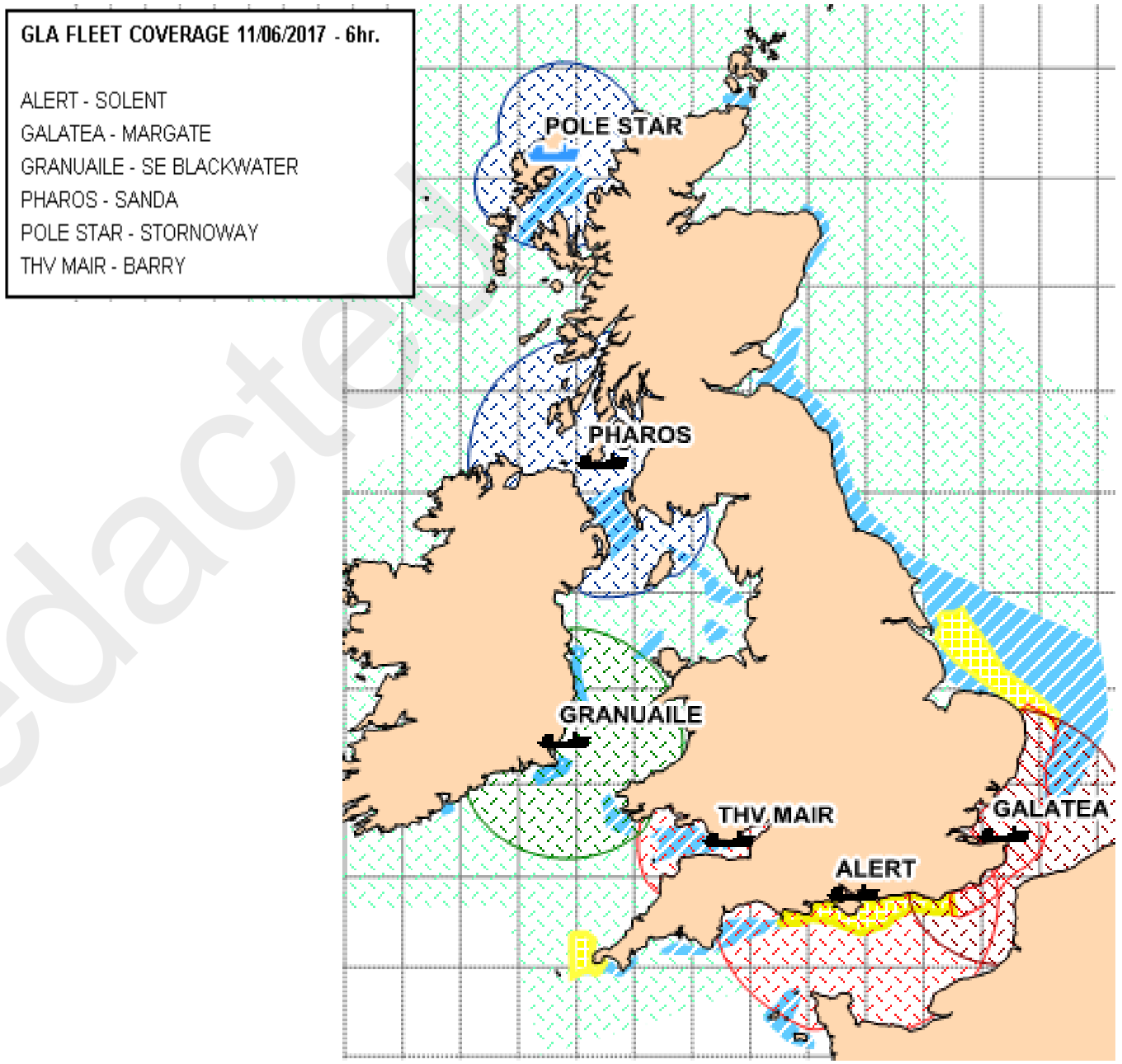
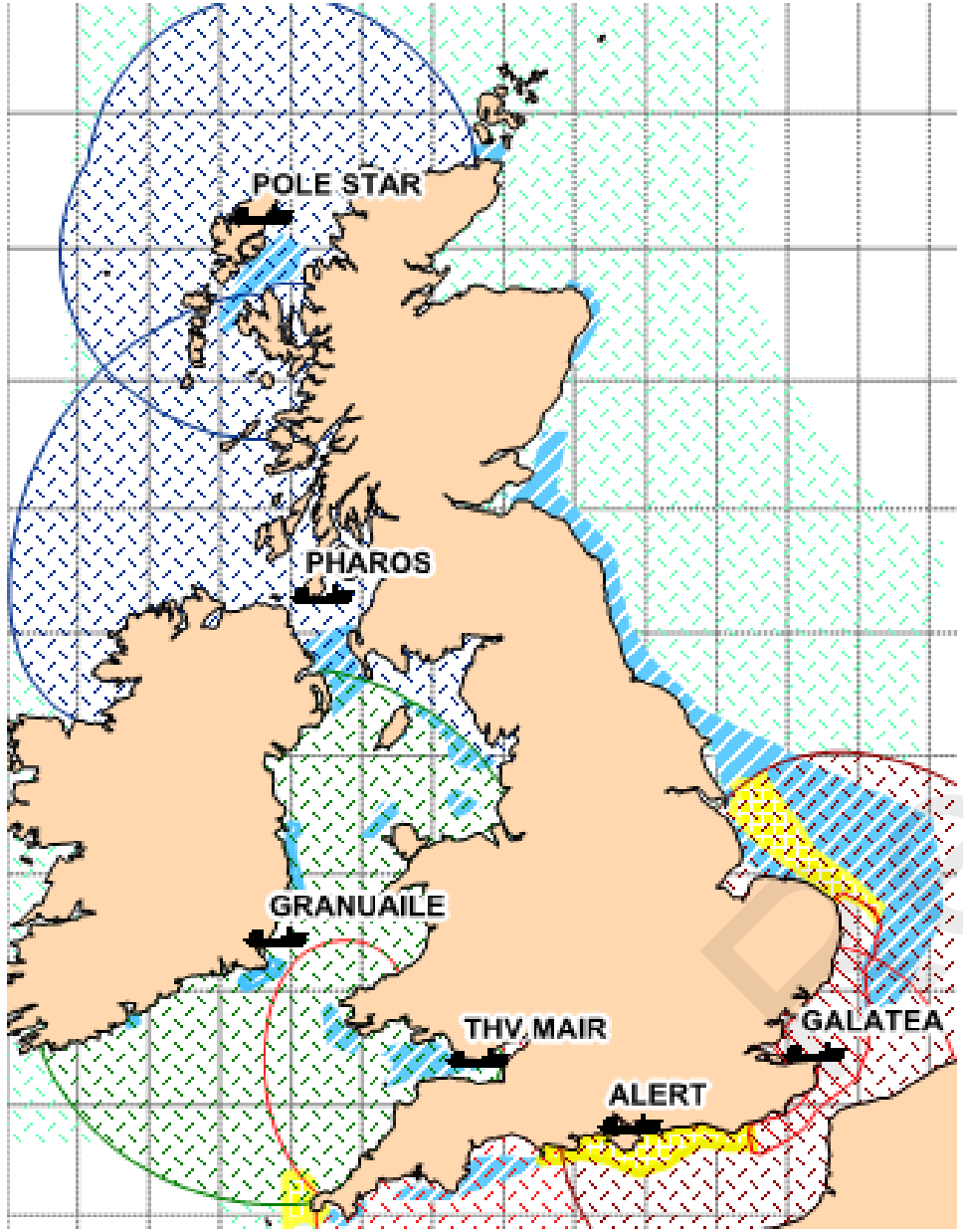
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

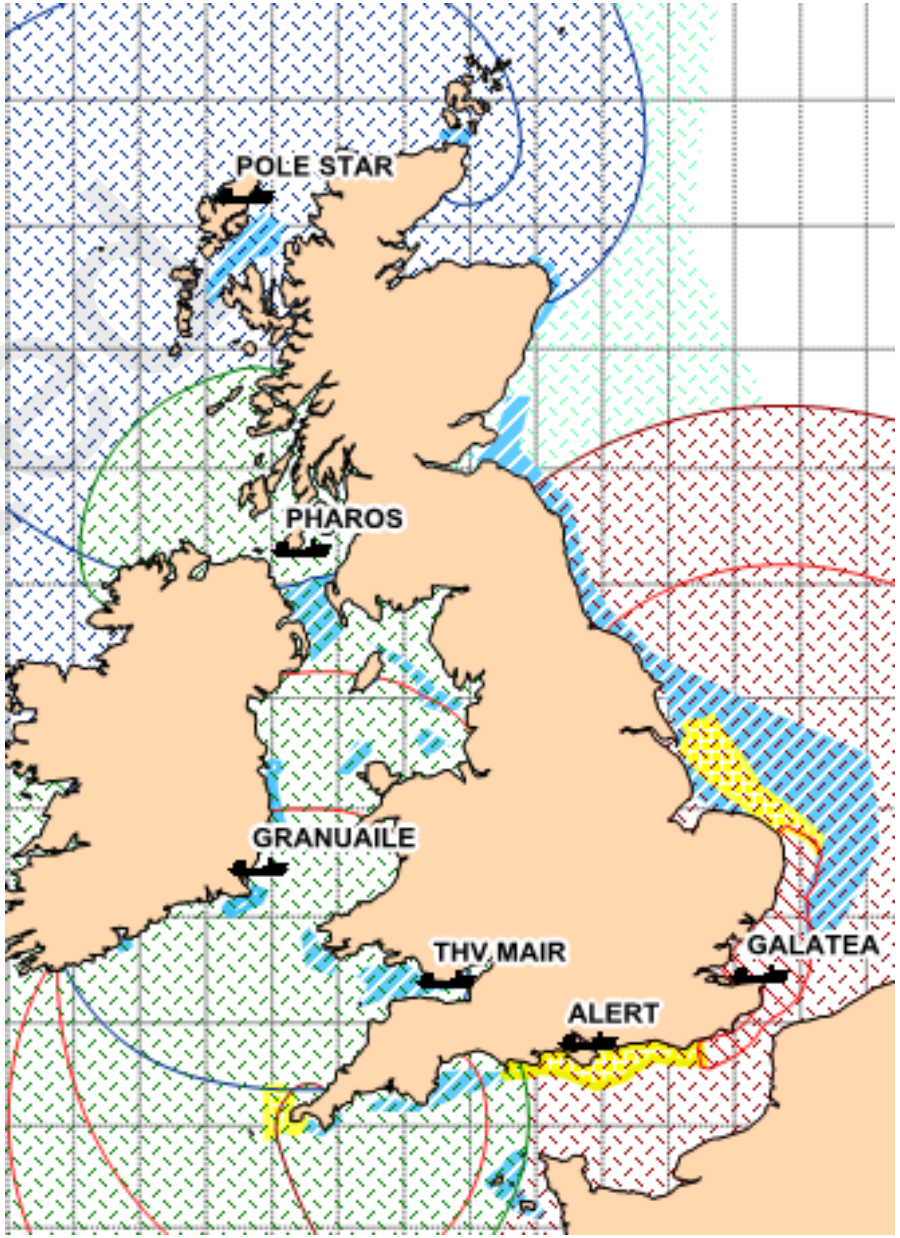
11th Jun 2017	6 Vessel Scenario - FAIL
THV Patricia	***REMOVED***
THV Galatea	*Transferred Reculver buoy to THV Alert; continued passage to Swansea*
THV Alert	*Rendezvoused with THV Galatea; loaded Reculver buoy; continued passage to Dover*
MV Mair	*Barry risk response cover*
NLV Pharos	*Completed heli-Ops Sanda- passage to Davaar pm*
NLV Pole Star	*Stornoway weather bound*
ILV Granuaile	*SE Blackwater casualty- weather bound*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

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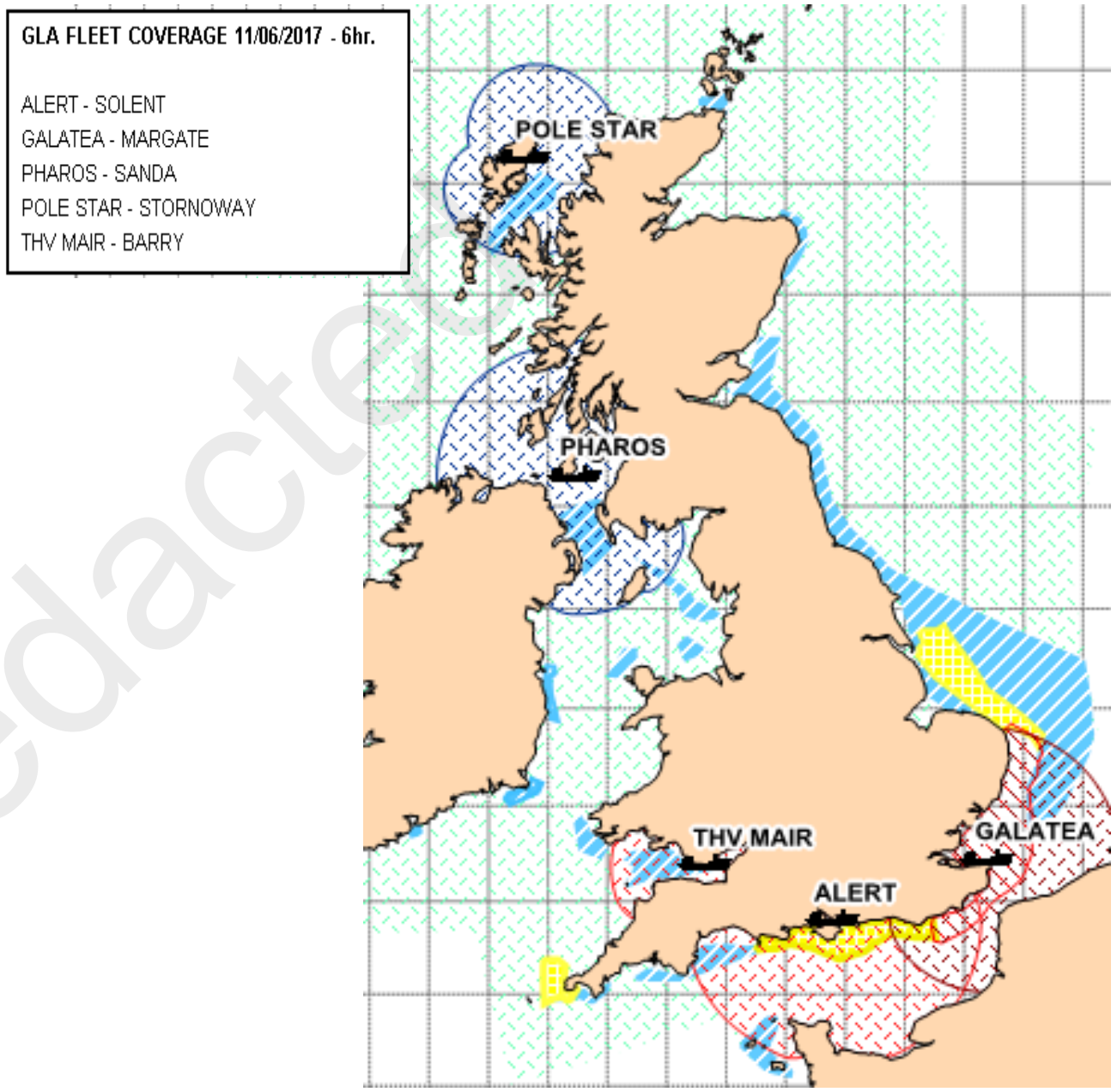
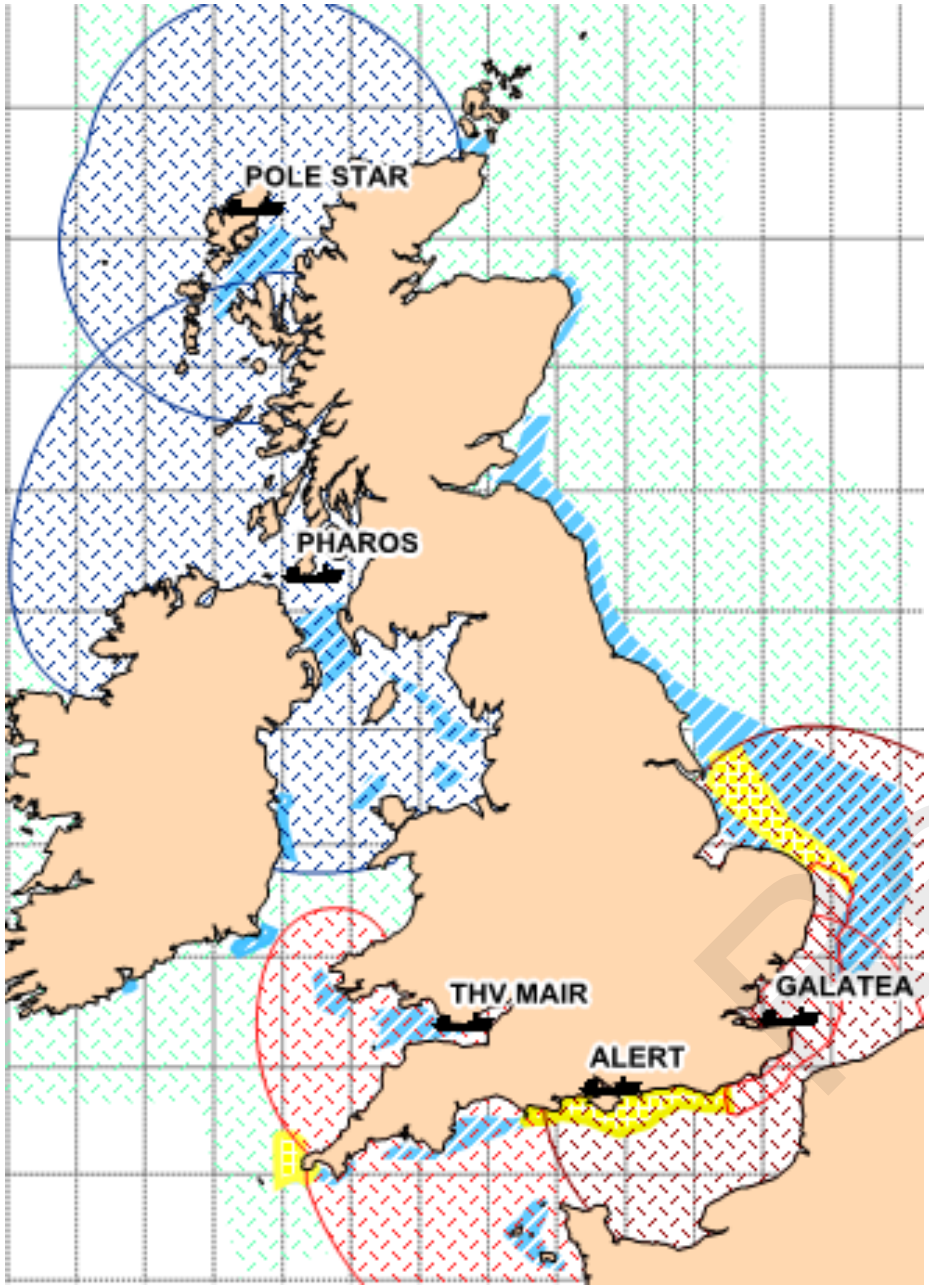
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, POLE STAR, THV M...

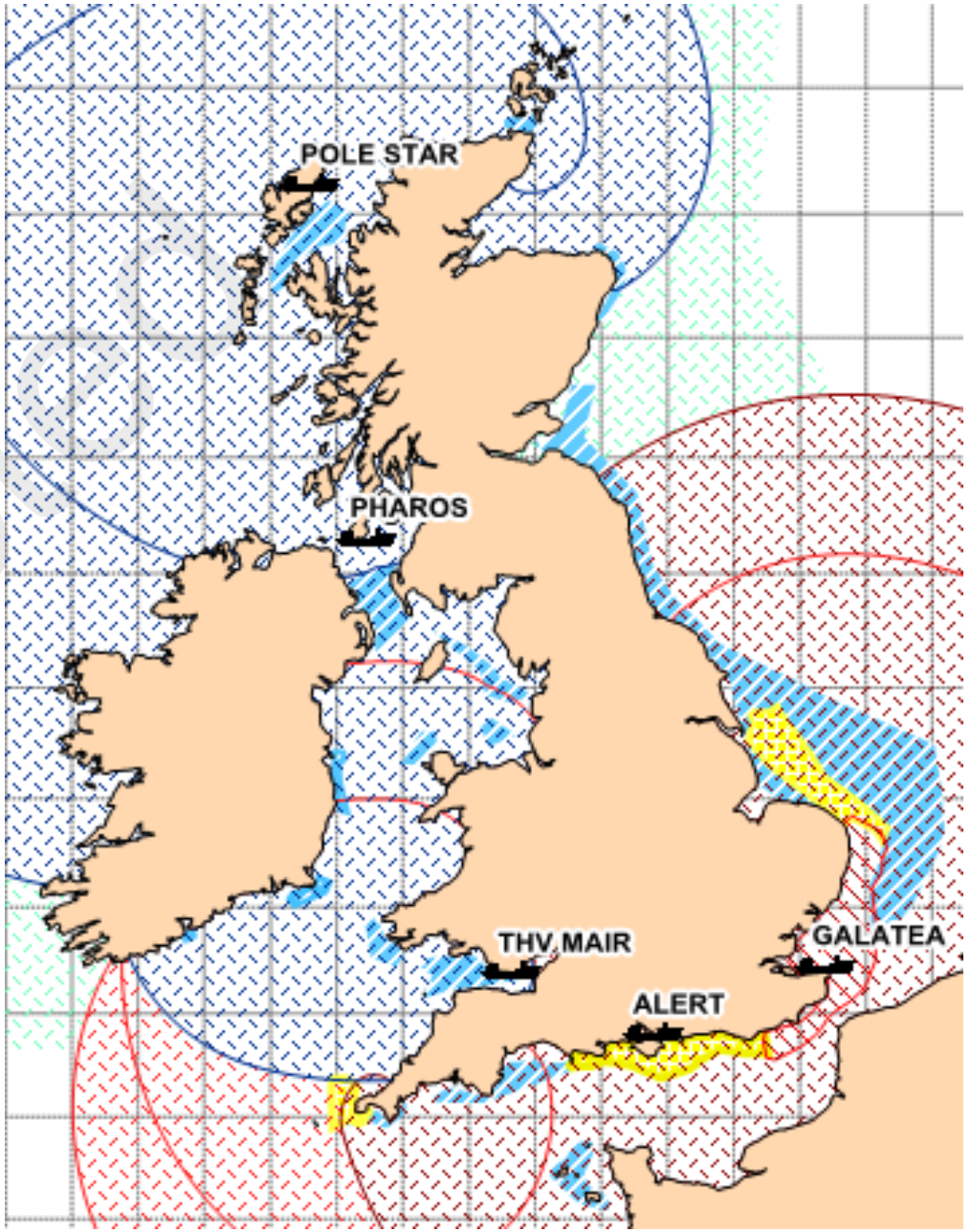
11th Jun 2017	5 Vessel Scenario - FAIL
THV Patricia	*REMOVED*
THV Galatea	*Transferred Reculver buoy to THV Alert; continued passage to Swansea*
THV Alert	*Rendezvoused with THV Galatea; loaded Reculver buoy; continued passage to Dover*
MV Mair	*Barry risk response cover*
NLV Pharos	*Completed heli-Ops Sanda- passage to Davaar pm*
NLV Pole Star	*Stornoway weather bound*
ILV Granuaile	*REMOVED*





12 Hrs RRC

24 Hrs RRC

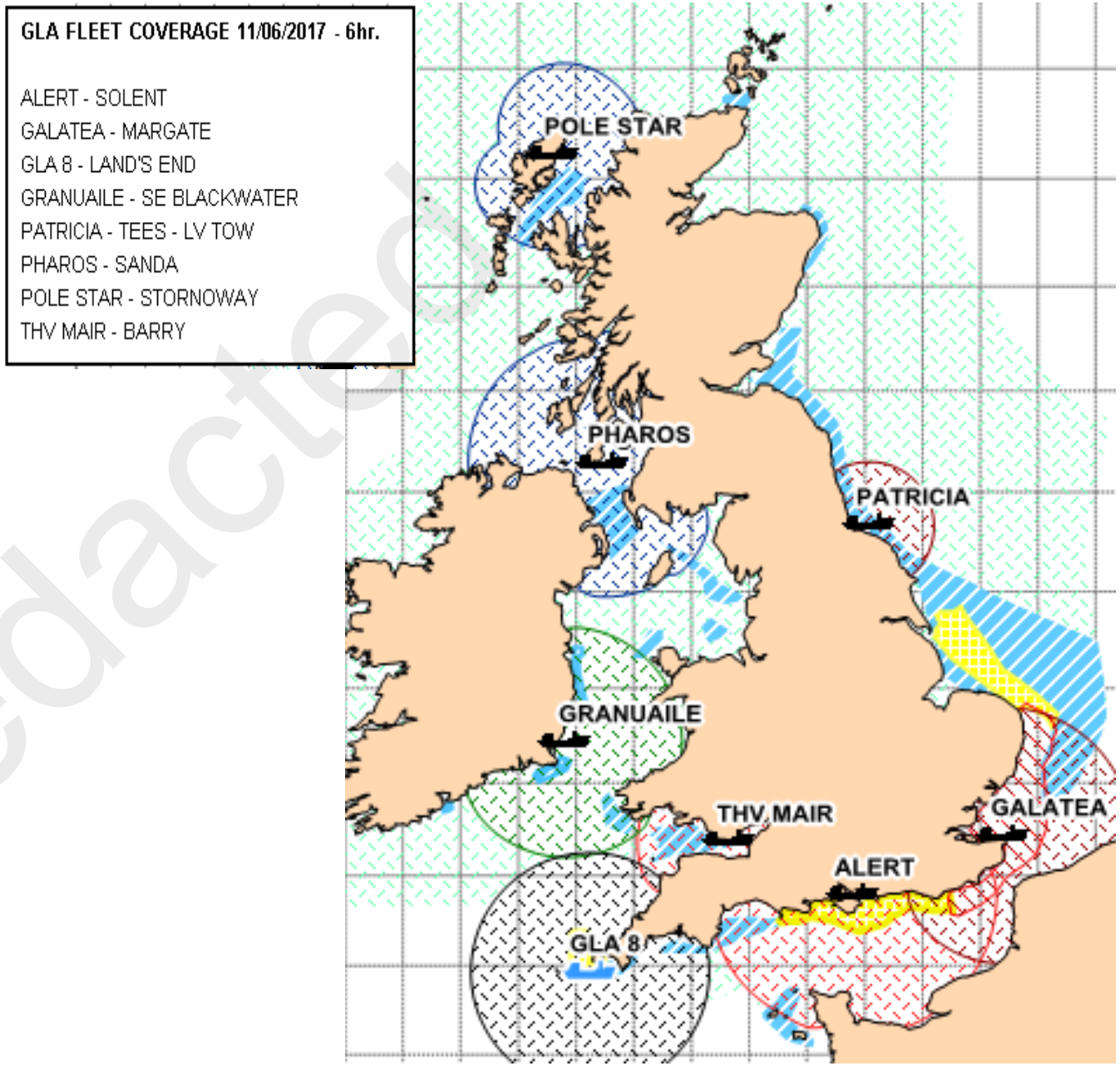


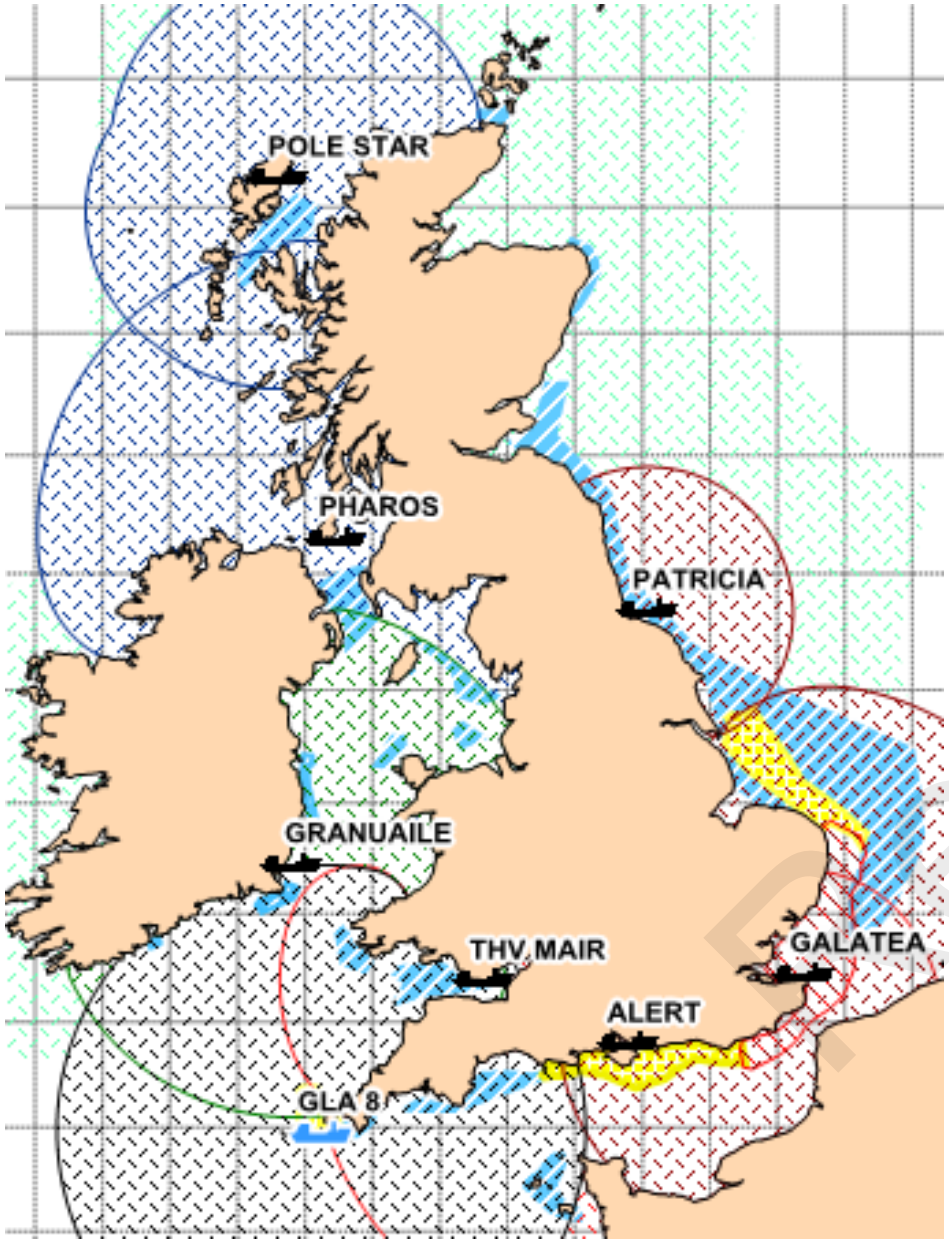
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	No	99%	GALATEA
4	LAND'S END	12	No	10%	ALERT, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	93%	ALERT, GALATEA
7	ABERDEEN AND NE COAST	24	No	66%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	ALERT, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	ALERT, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	ALERT, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PHAROS, POLE STAR, THV MAIR

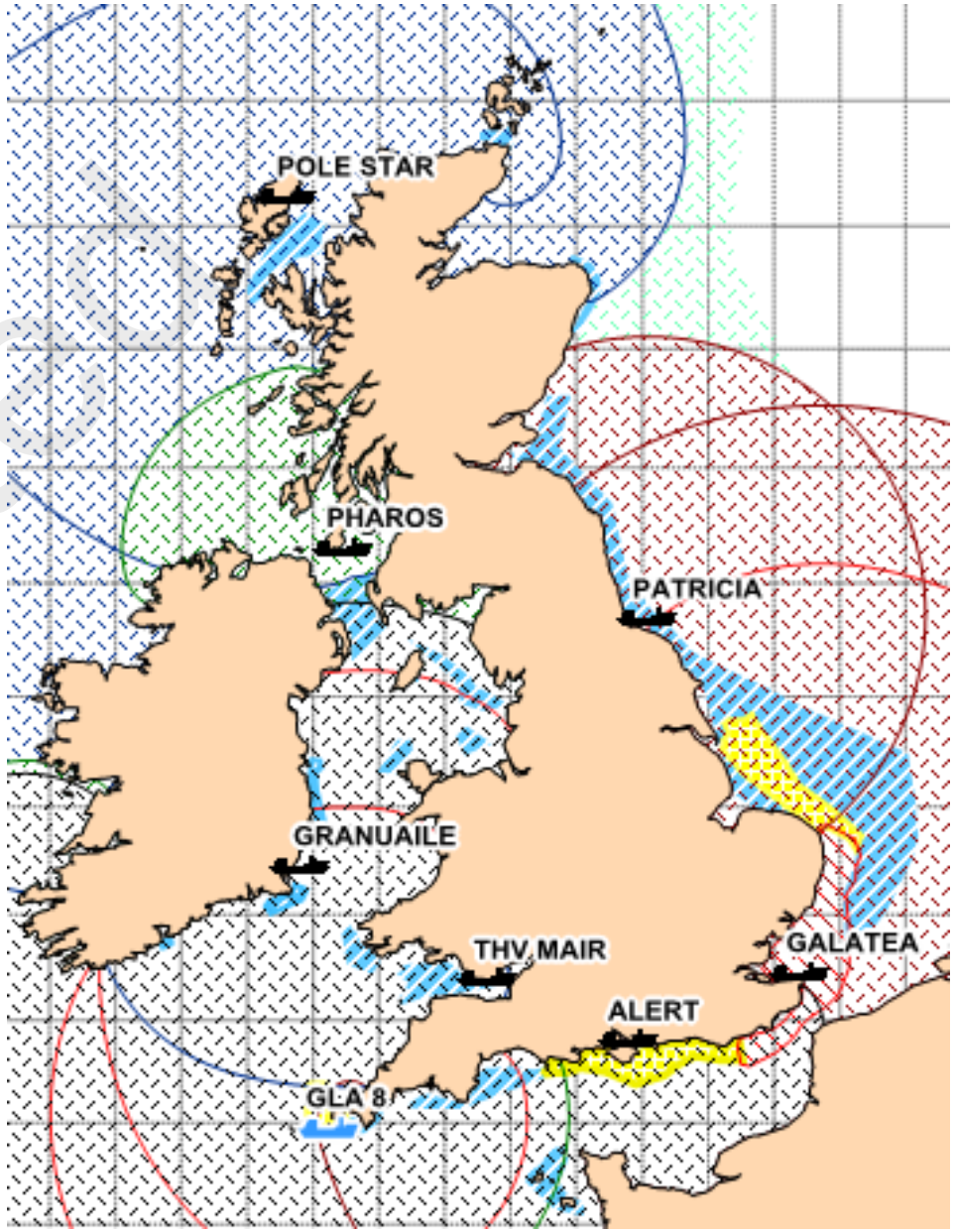
11th Jun 2017	8 Vessel Scenario - FAIL
GLA 8	*Land's End Area*
THV Patricia	*Tees Bay, LV05 handed over to tugs for DD&R, made passage to Whitby*
THV Galatea	*Transferred Reculver buoy to THV Alert; continued passage to Swansea*
THV Alert	*Rendezvoused with THV Galatea; loaded Reculver buoy; continued passage to Dover*
MV Mair	*Barry risk response cover*
NLV Pharos	*Completed heli-Ops Sanda- passage to Davaar pm*
NLV Pole Star	*Stornoway weather bound*
ILV Granuaile	*SE Blackwater casualty- weather bound*





12 Hrs RRC

24 Hrs RRC



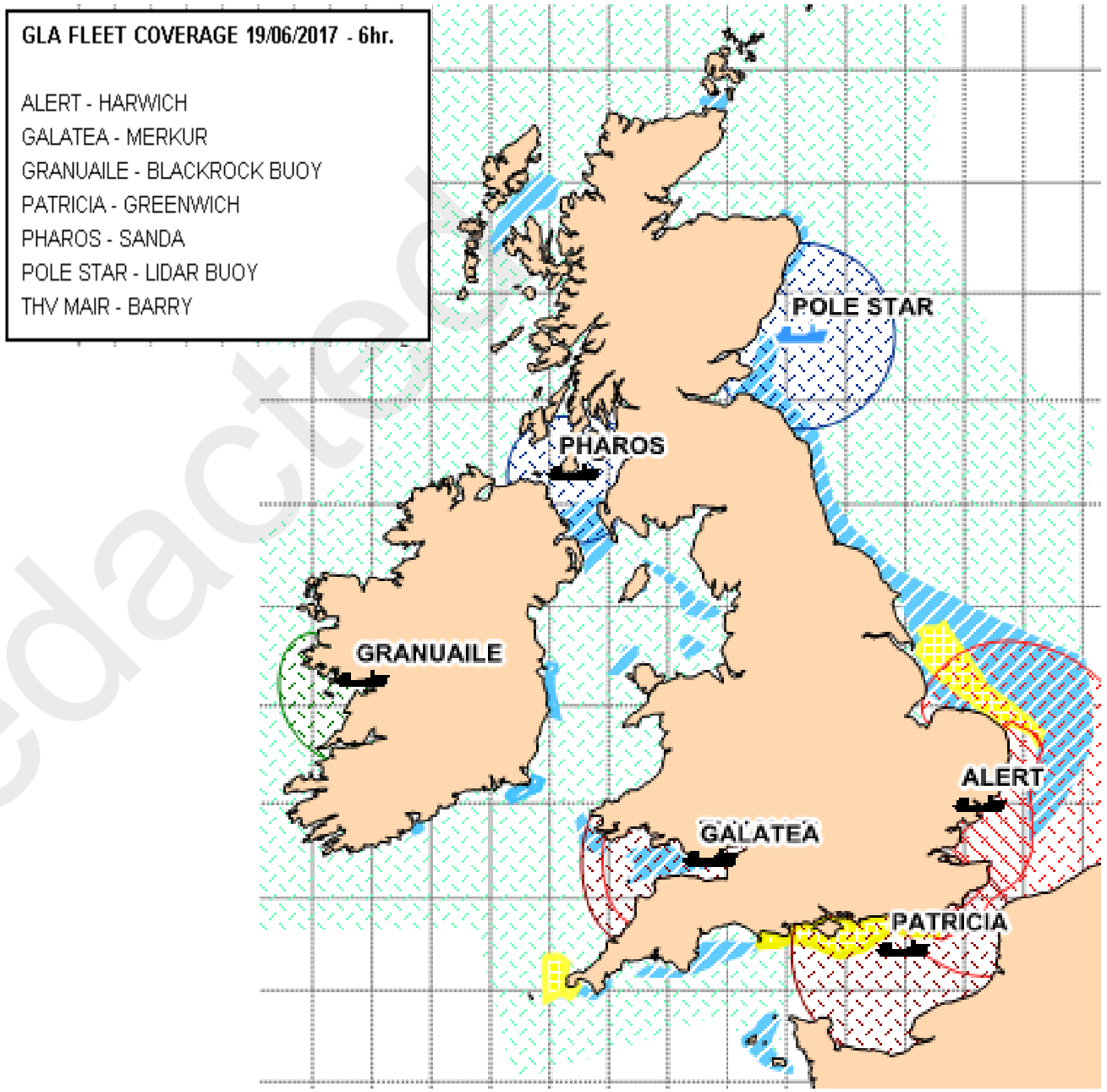
Response Region Coverage

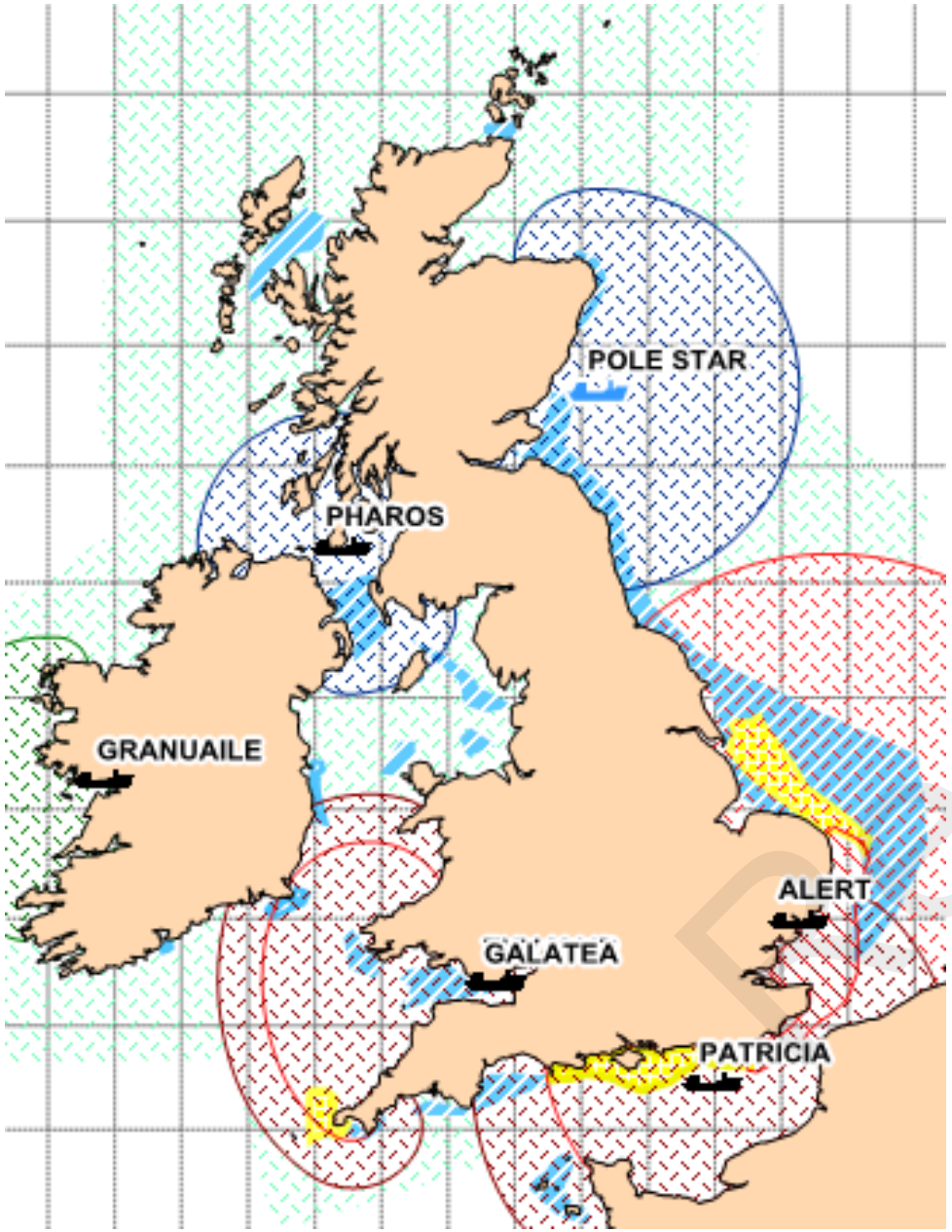
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8
3	HUMBER TO CROMER	12	Yes	100%	GALATEA, PATRICIA
4	LAND'S END	12	Yes	100%	ALERT, GLA 8, GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	No	66%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

19th Jun 2017	7 Vessel Scenario - FAILED
THV Patricia- no crane	*Solent area buoy inspections*
THV Galatea	*Bristol Channel contract buoy work*
THV Alert	*Harwich; Holm Channel survey processing Moved LF03 on TH Pier; conducted radar reflector trials with R&R Nav*
MV Mair	*Barry; passage to Flatholm to remove contractors; passage to Mumbles anchorage*
NLV Pharos	*Passage to Sanda; commenced heli-ops at Sanda*
NLV Pole Star	*Contractors on board for return visit to Lidar buoy to carry out repairs*
ILV Granuaile	*On passage to West Coast Ireland;* [redacted] *Contract work*

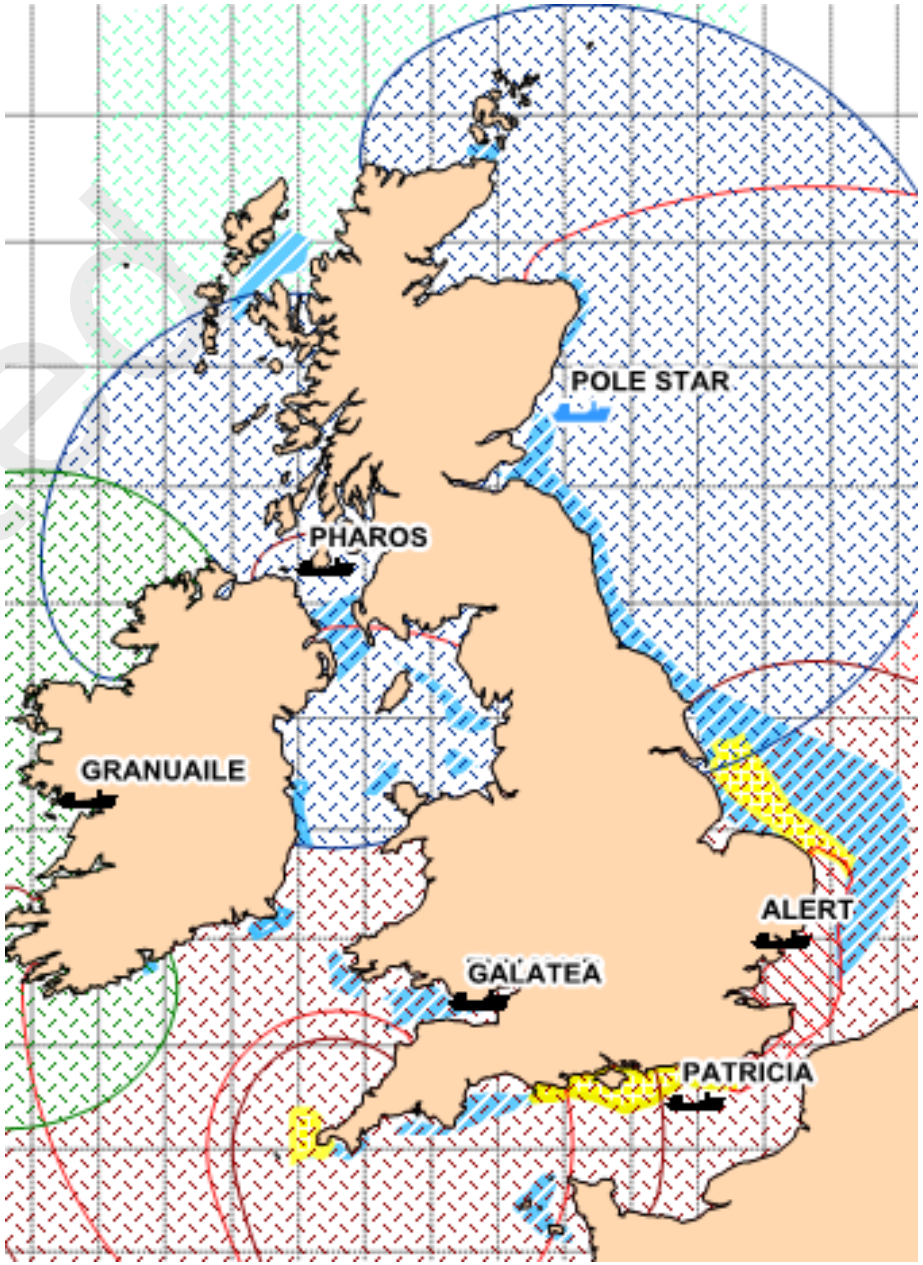
Wreck, AtoN Casualty, RRC Incidents	
LIDAR buoy repairs	*Report No.60*
The Minch 24 Hrs RRC	*14 % coverage*

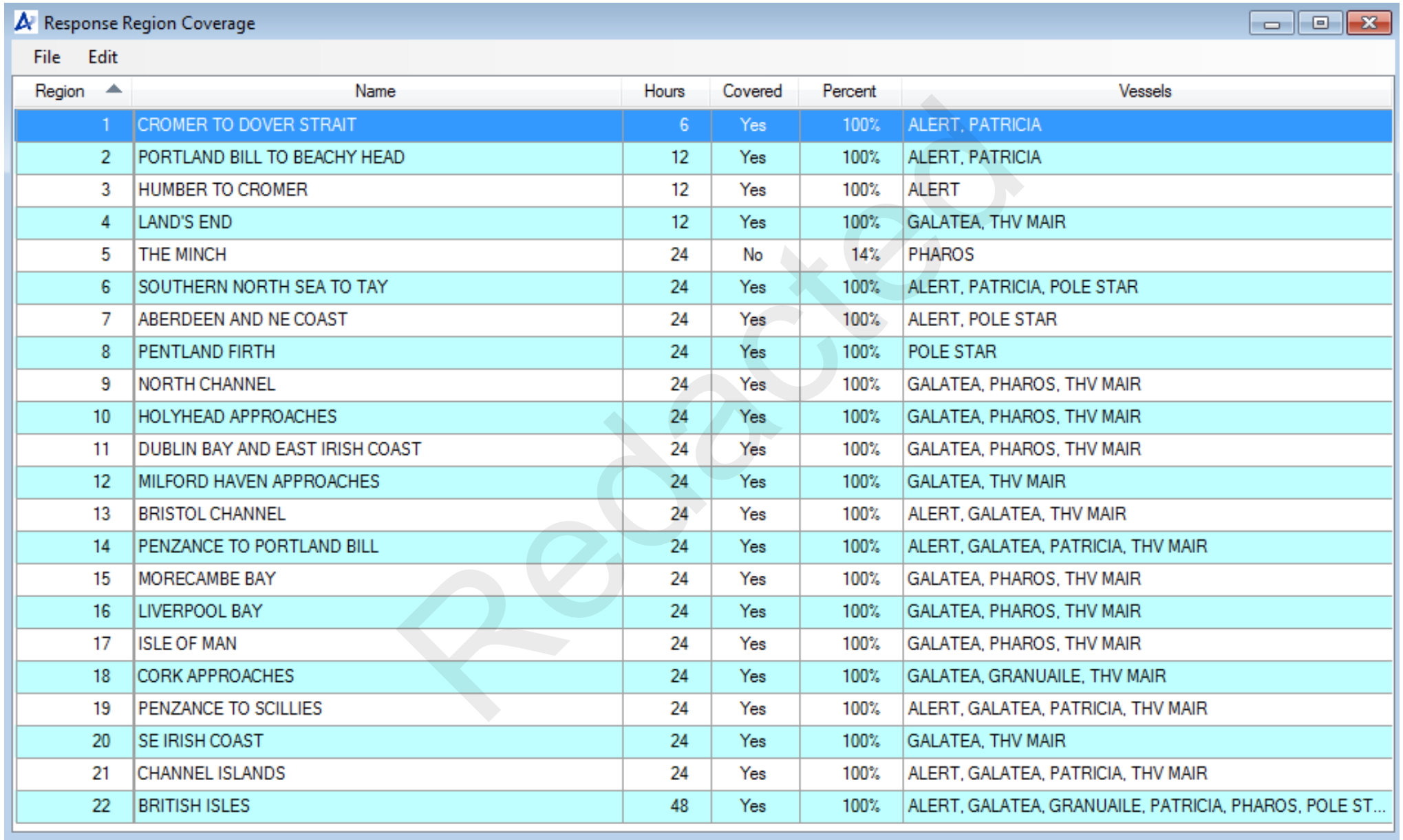




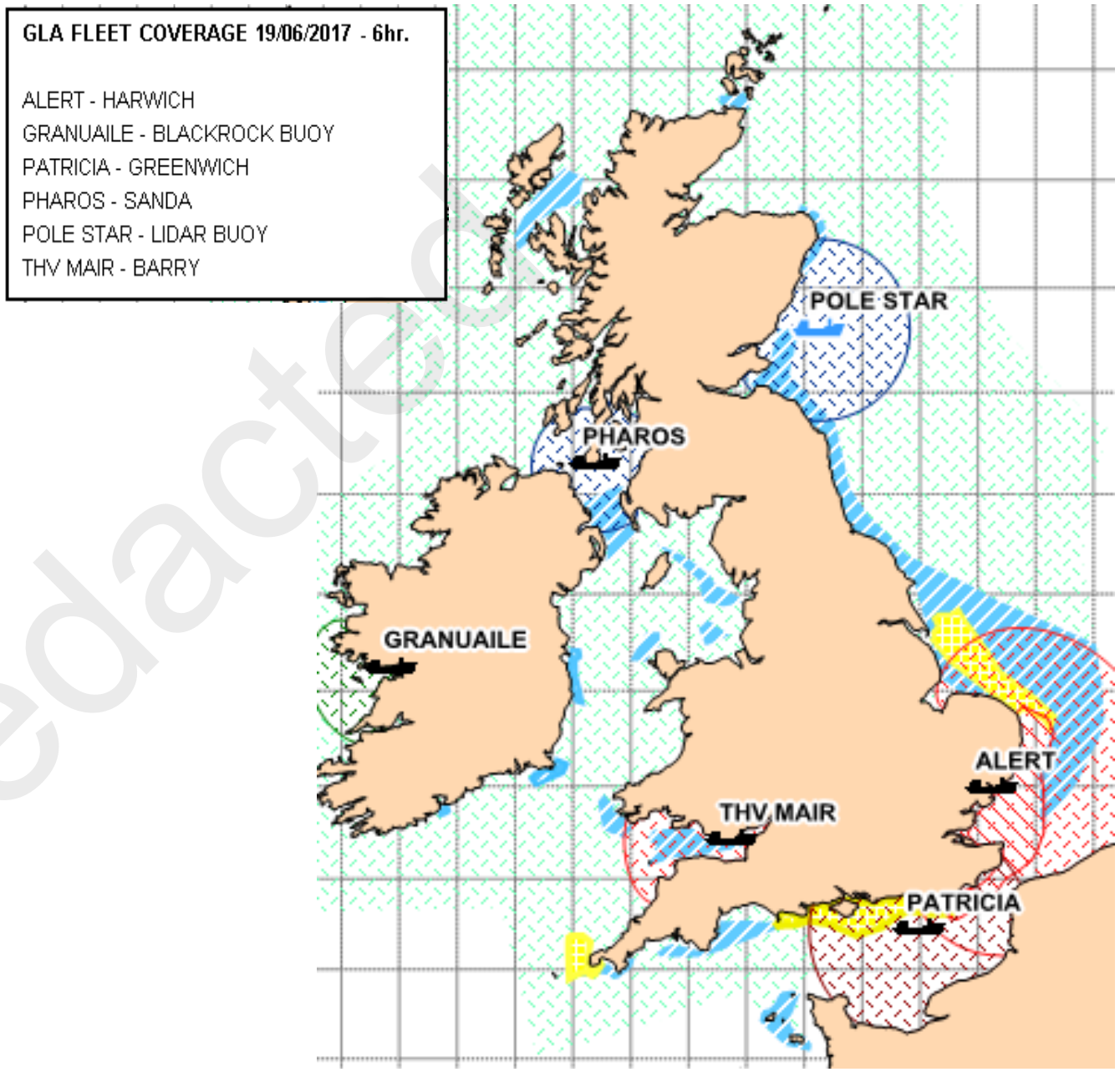
12 Hrs RRC

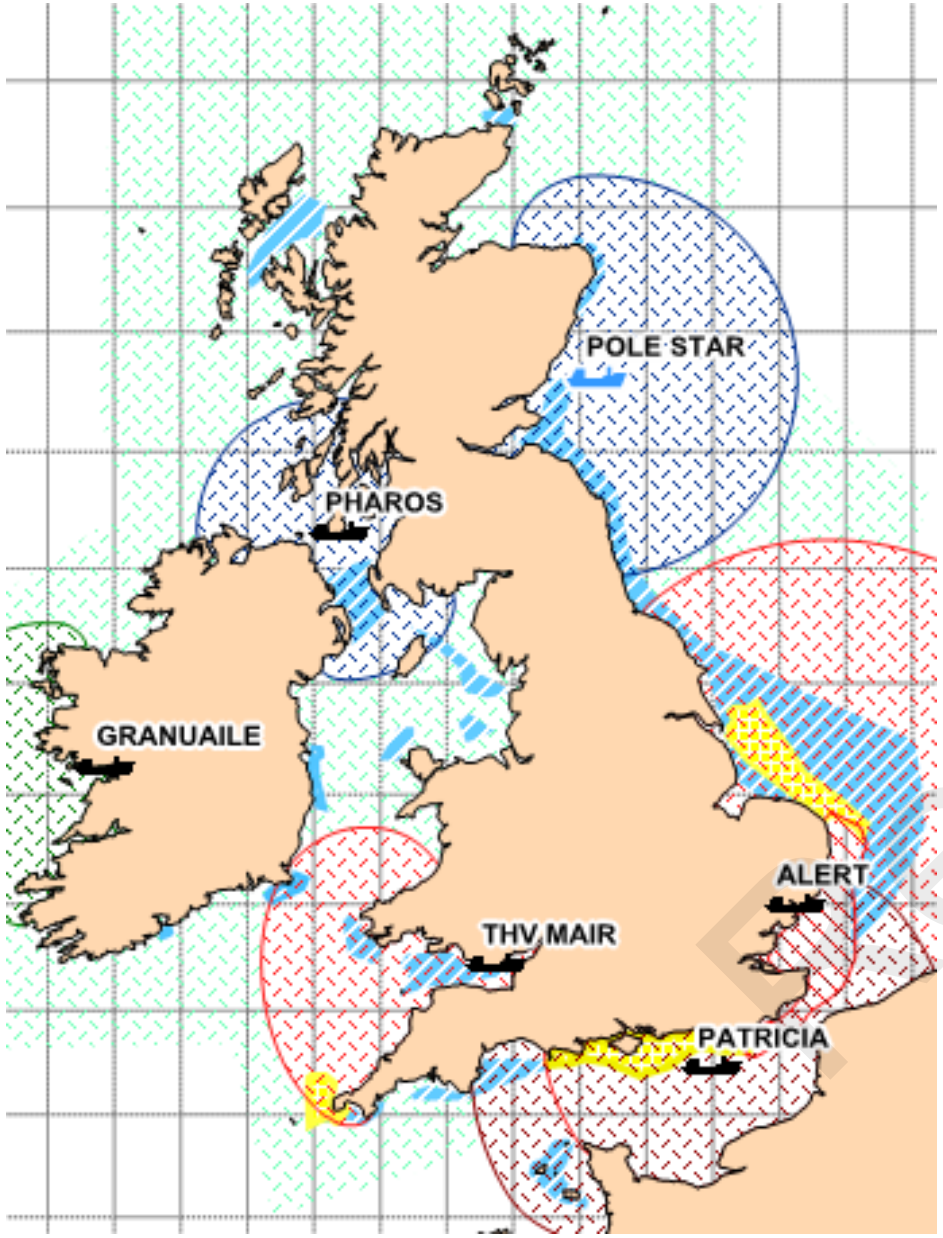
24 Hrs RRC




Response Region Coverage
File
Edit
Region
Name
Hours
Covered
Percent
Vessels
1 CROMER TO DOVER STRAIT 6 Yes 100% ALERT, PATRICIA
2 PORTLAND BILL TO BEACHY HEAD 12 Yes 100% ALERT, PATRICIA
3 HUMBER TO CROMER 12 Yes 100% ALERT
4 LAND'S END 12 Yes 100% GALATEA, THV MAIR
5 THE MINCH 24 No 14% PHAROS
6 SOUTHERN NORTH SEA TO TAY 24 Yes 100% ALERT, PATRICIA, POLE STAR
7 ABERDEEN AND NE COAST 24 Yes 100% ALERT, POLE STAR
8 PENTLAND FIRTH 24 Yes 100% POLE STAR
9 NORTH CHANNEL 24 Yes 100% GALATEA, PHAROS, THV MAIR
10 HOLYHEAD APPROACHES 24 Yes 100% GALATEA, PHAROS, THV MAIR
11 DUBLIN BAY AND EAST IRISH COAST 24 Yes 100% GALATEA, PHAROS, THV MAIR
12 MILFORD HAVEN APPROACHES 24 Yes 100% GALATEA, THV MAIR
13 BRISTOL CHANNEL 24 Yes 100% ALERT, GALATEA, THV MAIR
14 PENZANCE TO PORTLAND BILL 24 Yes 100% ALERT, GALATEA, PATRICIA, THV MAIR
15 MORECAMBE BAY 24 Yes 100% GALATEA, PHAROS, THV MAIR
16 LIVERPOOL BAY 24 Yes 100% GALATEA, PHAROS, THV MAIR
17 ISLE OF MAN 24 Yes 100% GALATEA, PHAROS, THV MAIR
18 CORK APPROACHES 24 Yes 100% GALATEA, GRANUAILE, THV MAIR
19 PENZANCE TO SCILLIES 24 Yes 100% ALERT, GALATEA, PATRICIA, THV MAIR
20 SE IRISH COAST 24 Yes 100% GALATEA, THV MAIR
21 CHANNEL ISLANDS 24 Yes 100% ALERT, GALATEA, PATRICIA, THV MAIR
22 BRITISH ISLES 48 Yes 100% ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...
Redacted

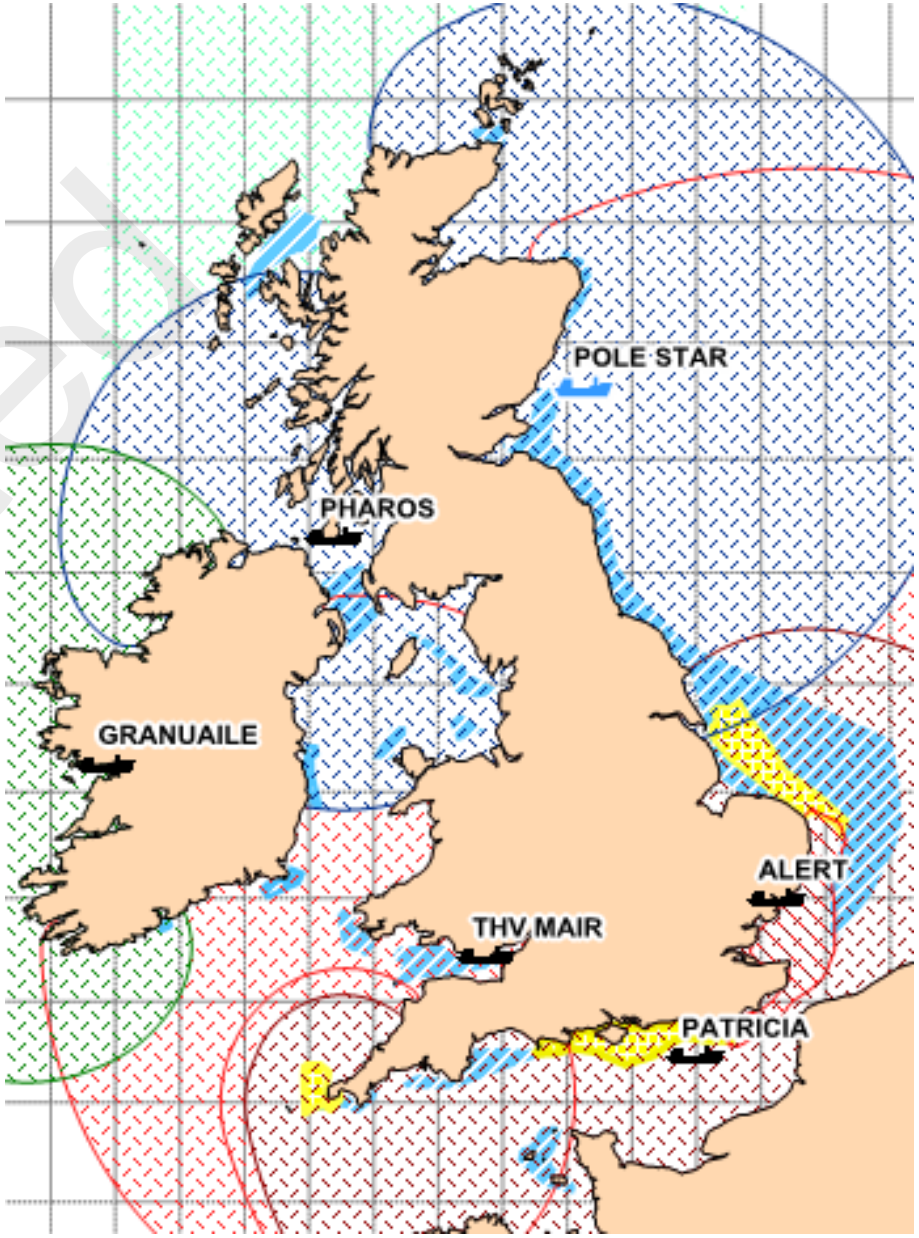
19th Jun 2017	6 Vessel Scenario - FAILED
THV Patricia- no crane	*Solent area buoy inspections*
THV Galatea	***REMOVED***
THV Alert	*Harwich; Holm Channel survey processing Moved LF03 on TH Pier; conducted radar reflector trials with R&R Nav*
MV Mair	*Barry; passage to Flatholm to remove contractors; passage to Mumbles anchorage*
NLV Pharos	*Passage to Sanda; commenced heli-ops at Sanda*
NLV Pole Star	*Contractors on board for return visit to Lidar buoy to carry out repairs*
ILV Granuaile	*On passage to West Coast Ireland;* [redacted] *Contract work*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

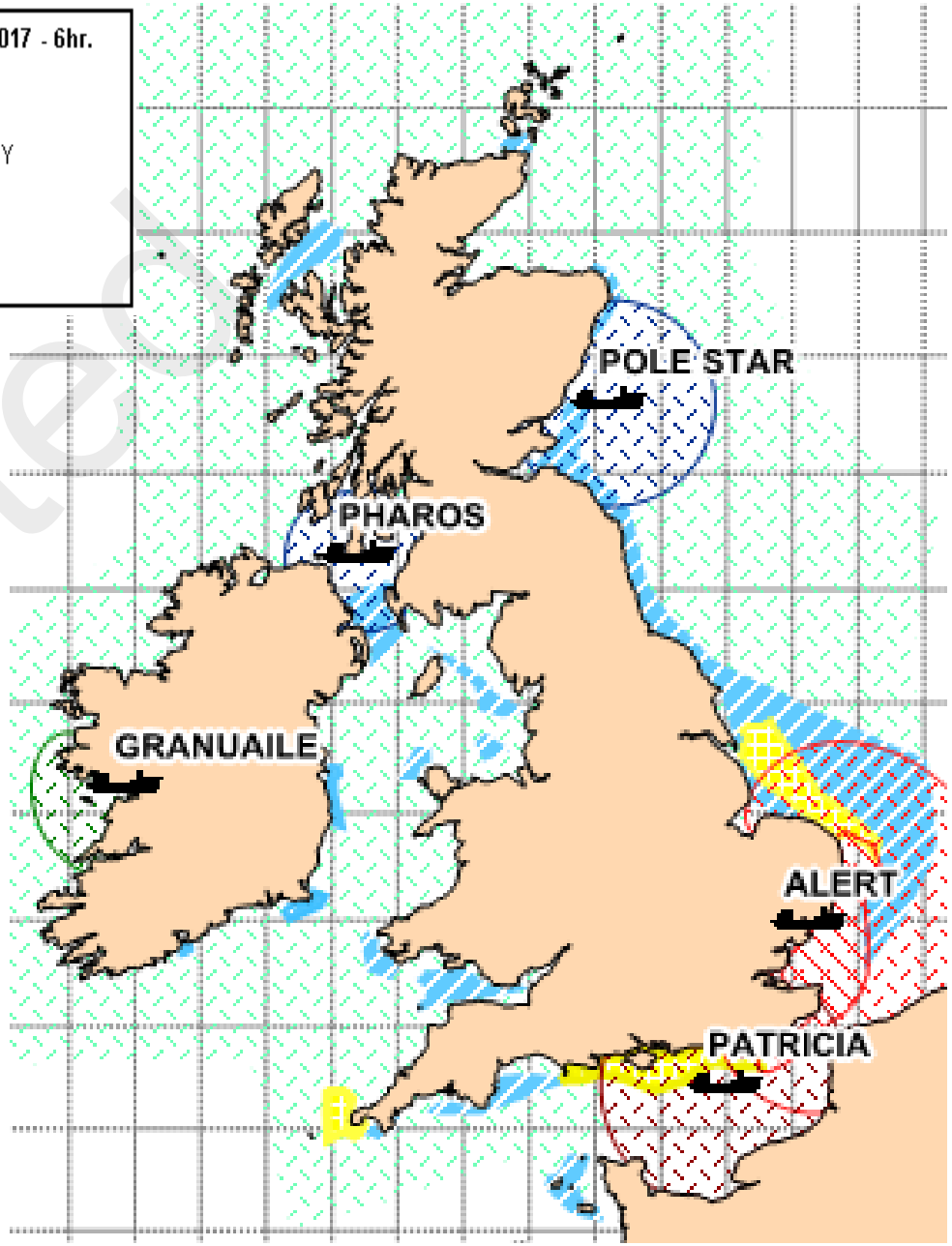
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	82%	THV MAIR
5	THE MINCH	24	No	14%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV M...

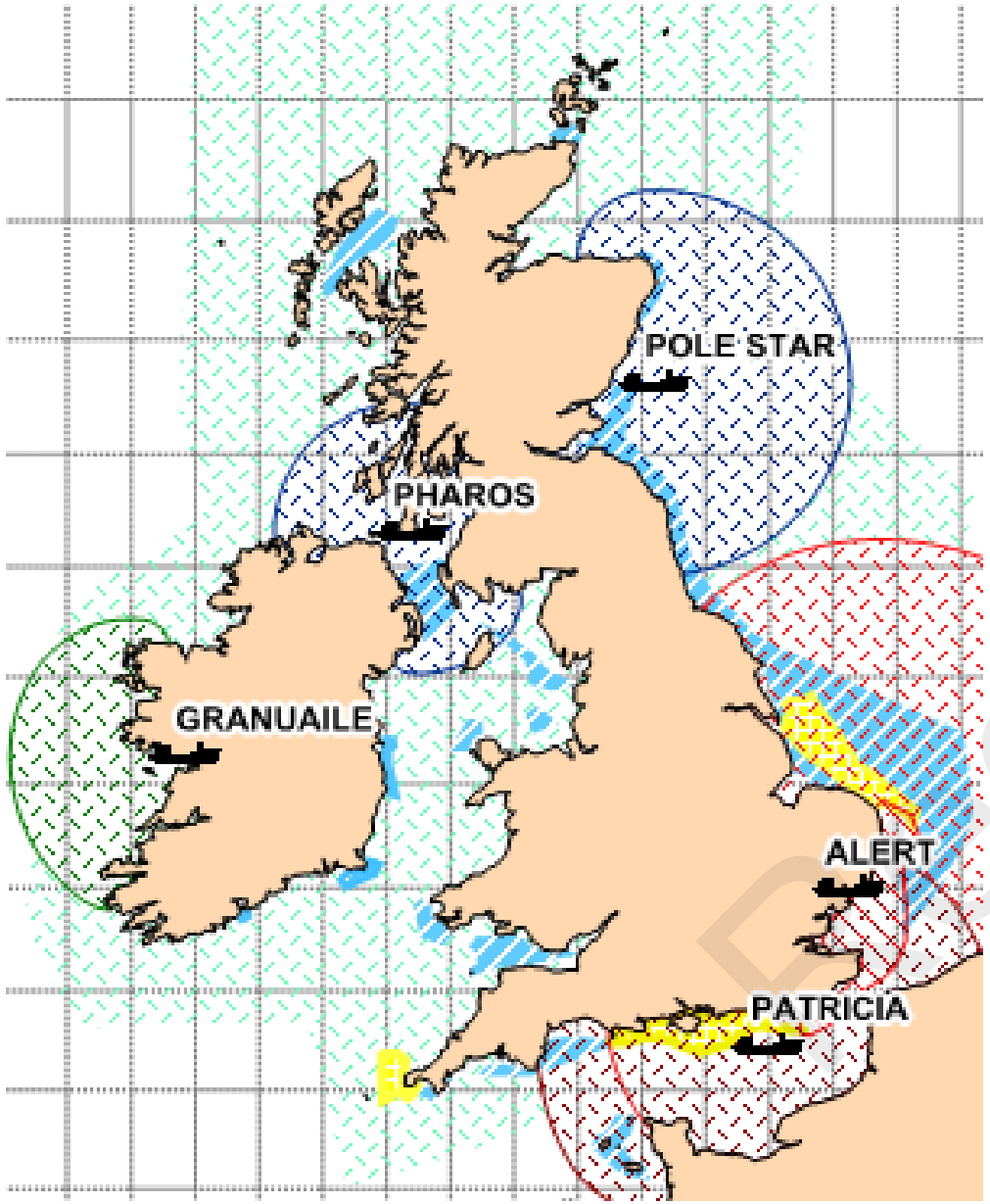
19th Jun 2017	5 Vessel Scenario - FAILED
THV Patricia- no crane	*Solent area buoy inspections*
THV Galatea	***REMOVED***
THV Alert	*Harwich; Holm Channel survey processing Moved LF03 on TH Pier; conducted radar reflector trials with R&R Nav*
MV Mair	***REMOVED***
NLV Pharos	*Passage to Sanda; commenced heli-ops at Sanda*
NLV Pole Star	*Contractors on board for return visit to Lidar buoy to carry out repairs*
ILV Granuaile	*On passage to West Coast Ireland;* [redacted] *Contract work*

Wreck, AtoN Casualty, RRC Incidents	
LIDAR buoy repairs	*Report No.60*
The Minch 24 Hrs RRC	*14 % coverage*

GLA FLEET COVERAGE 19/06/2017 - 6hr.

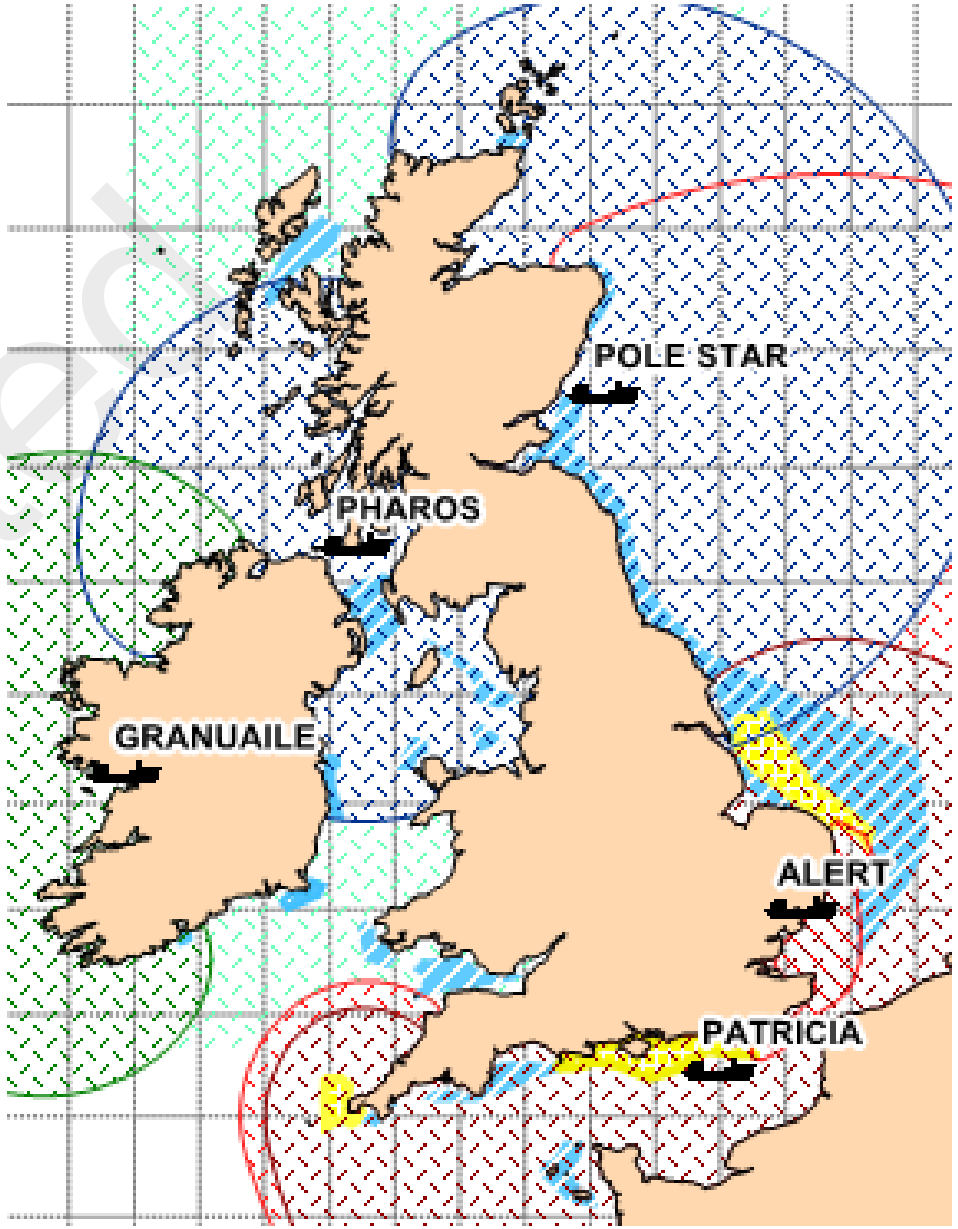
ALERT - HARWICH
GRANUAILE - BLACKROCK BUOY
PATRICIA - GREENWICH
PHAROS - SANDA
POLE STAR - LIDAR BUOY





12 Hrs RRC

24 Hrs RRC

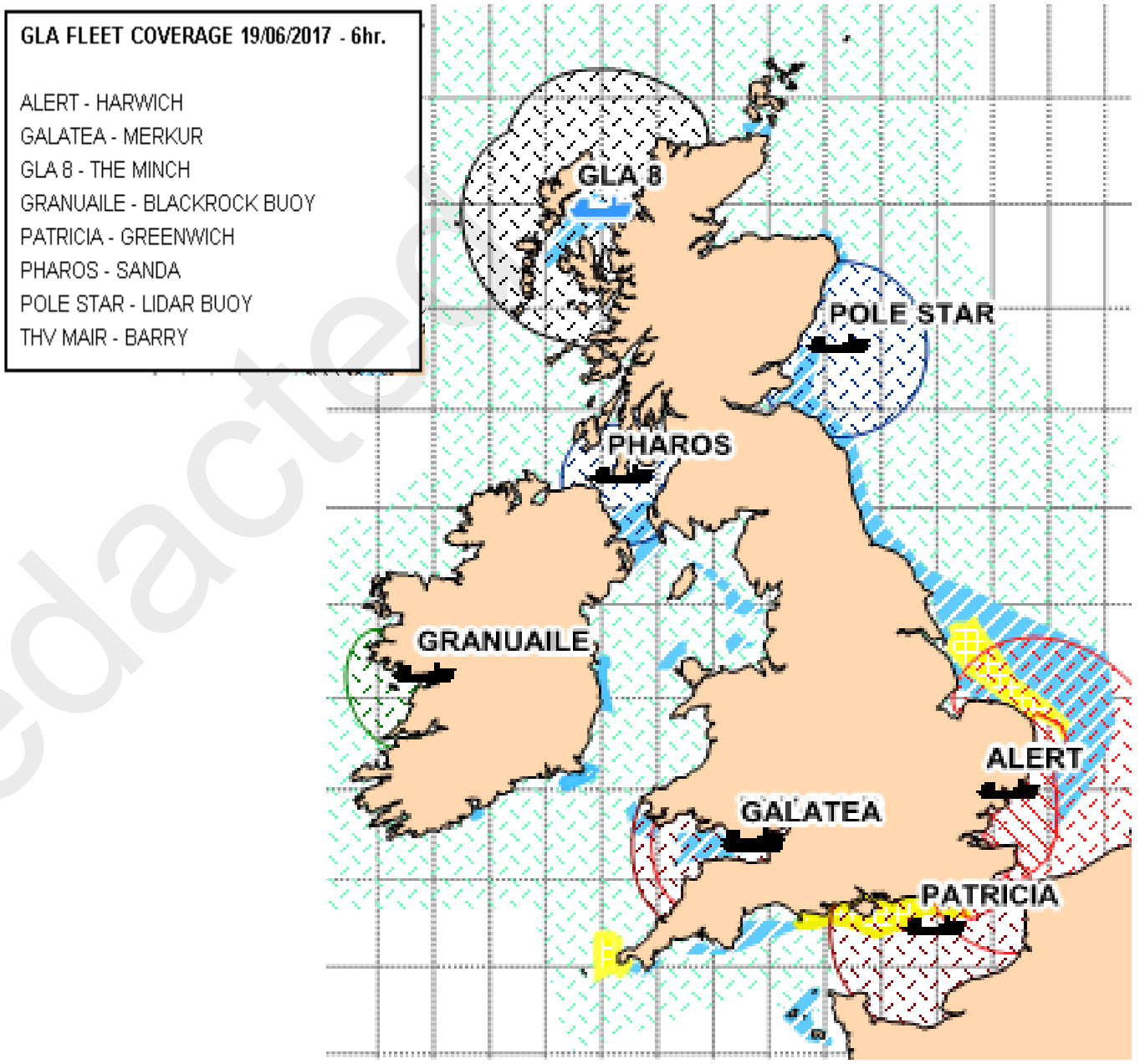


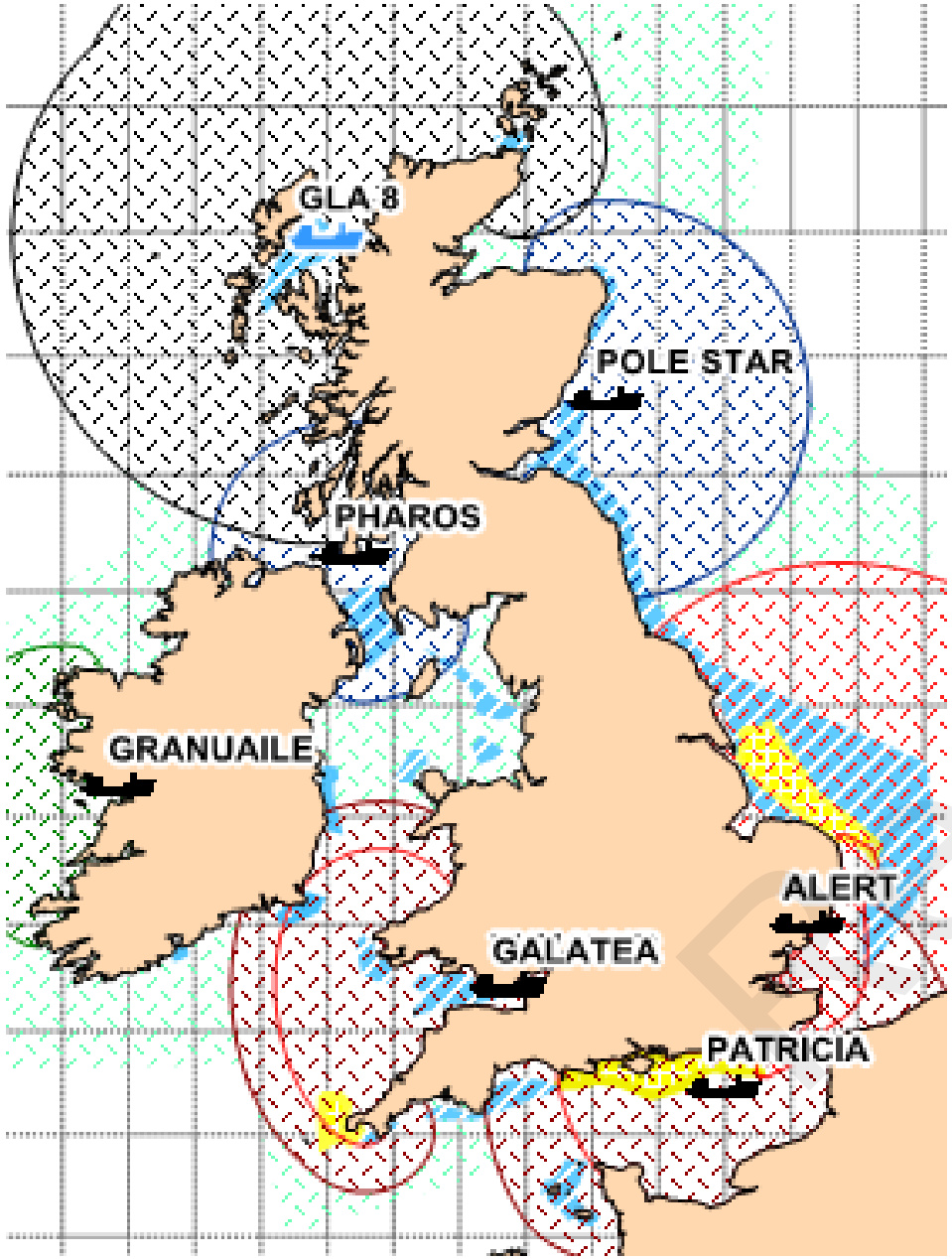
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	No	14%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS
12	MILFORD HAVEN APPROACHES	24	No	0%	
13	BRISTOL CHANNEL	24	No	2%	ALERT
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	PHAROS
16	LIVERPOOL BAY	24	Yes	100%	PHAROS
17	ISLE OF MAN	24	Yes	100%	PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA
20	SE IRISH COAST	24	No	0%	
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR

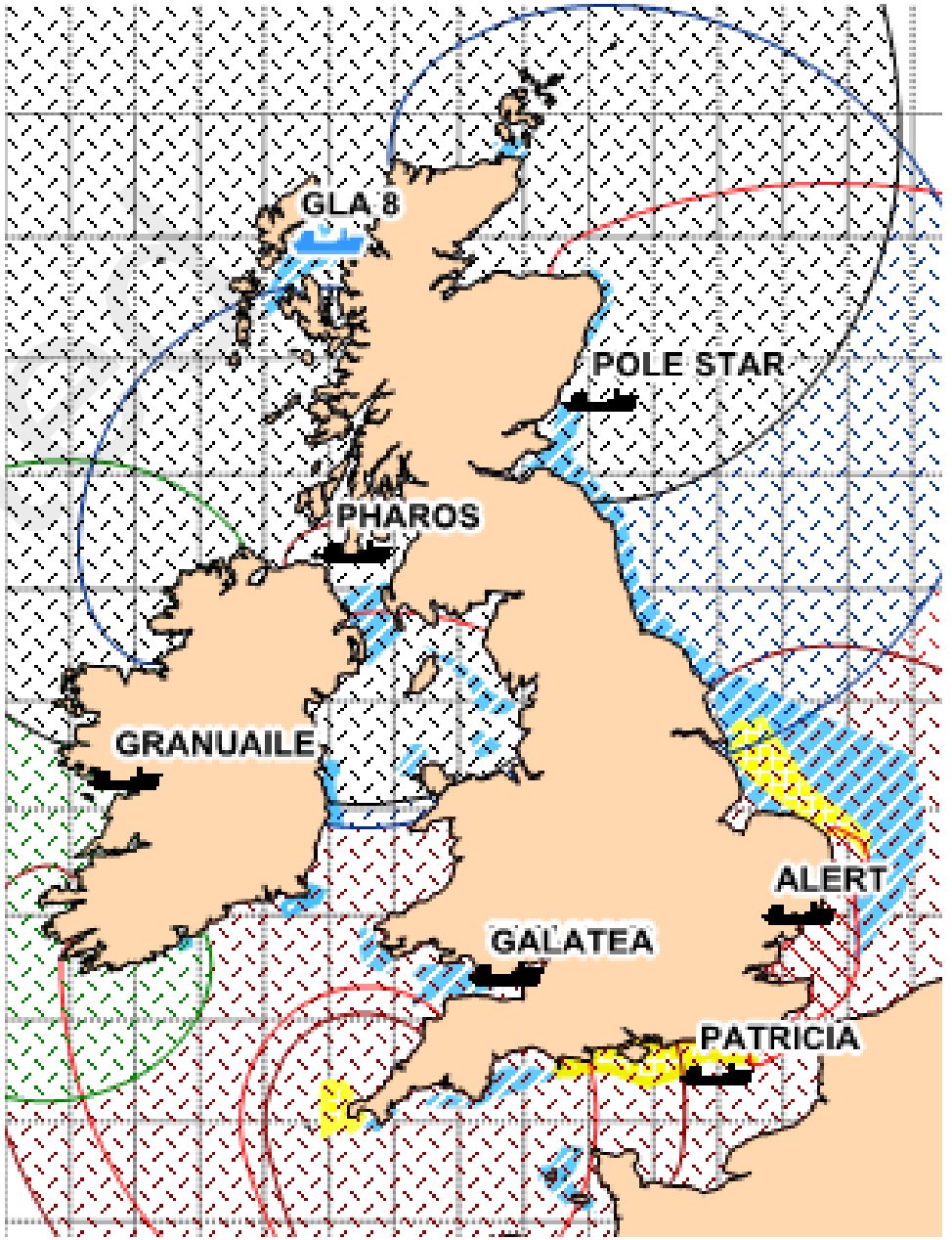
19th Jun 2017	8 Vessel Scenario - PASS
GLA 8	*The Minch*
THV Patricia- no crane	*Solent area buoy inspections*
THV Galatea	*Bristol Channel contract buoy work*
THV Alert	*Harwich; Holm Channel survey processing Moved LF03 on TH Pier; conducted radar reflector trials with R&R Nav*
MV Mair	*Barry; passage to Flatholm to remove contractors; passage to Mumbles anchorage*
NLV Pharos	*Passage to Sanda; commenced heli-ops at Sanda*
NLV Pole Star	*Contractors on board for return visit to Lidar buoy to carry out repairs*
ILV Granuaile	*On passage to West Coast Ireland;* [redacted] *Contract work*





12 Hrs RRC

24 Hrs RRC



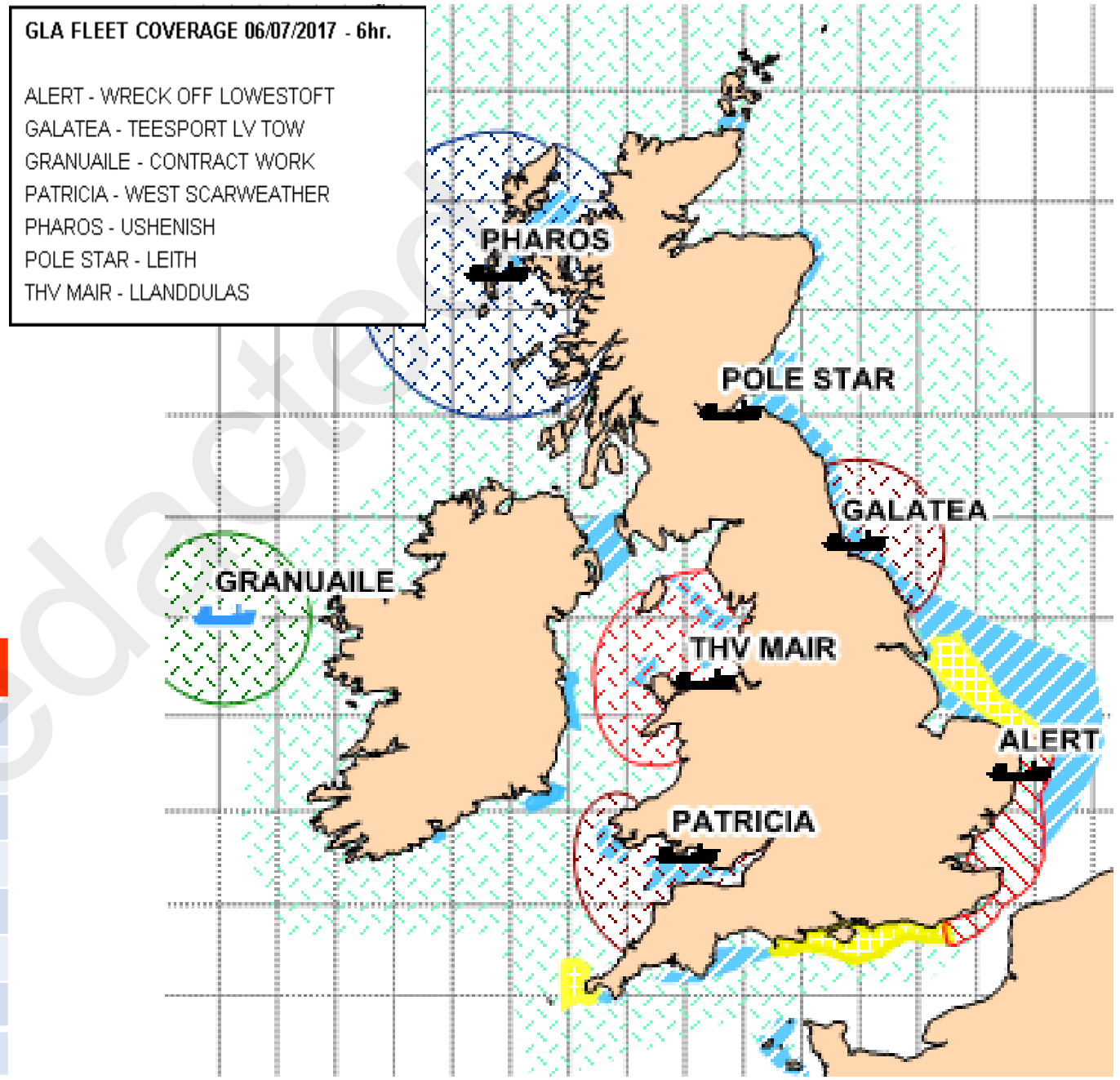
Response Region Coverage

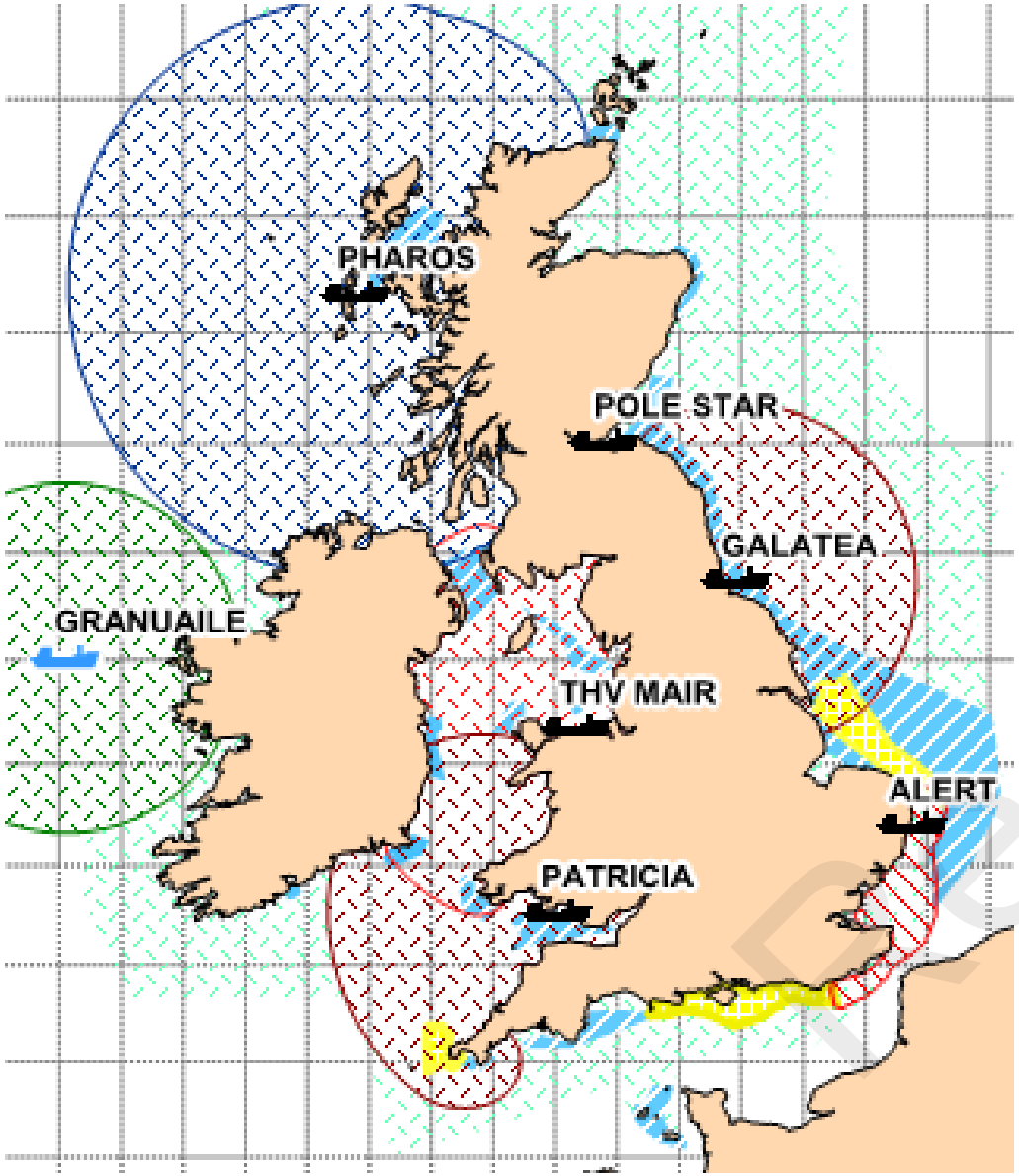
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GLA 8, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GLA 8, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, GLA 8, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	GLA 8, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GLA 8, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

6th Jul 2017	7 Vessel Scenario - FAILED
THV Patricia	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea	*Tees; commenced tow of LV05 towards Harwich*
THV Alert	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair	*N Wales;* [redacted] *contract work*
NLV Pharos	*Heli-Ops Ushenish LH*
NLV Pole Star	*Alongside Leith for UMS alarm works*
ILV Granuaile	[redacted] *Contract work*

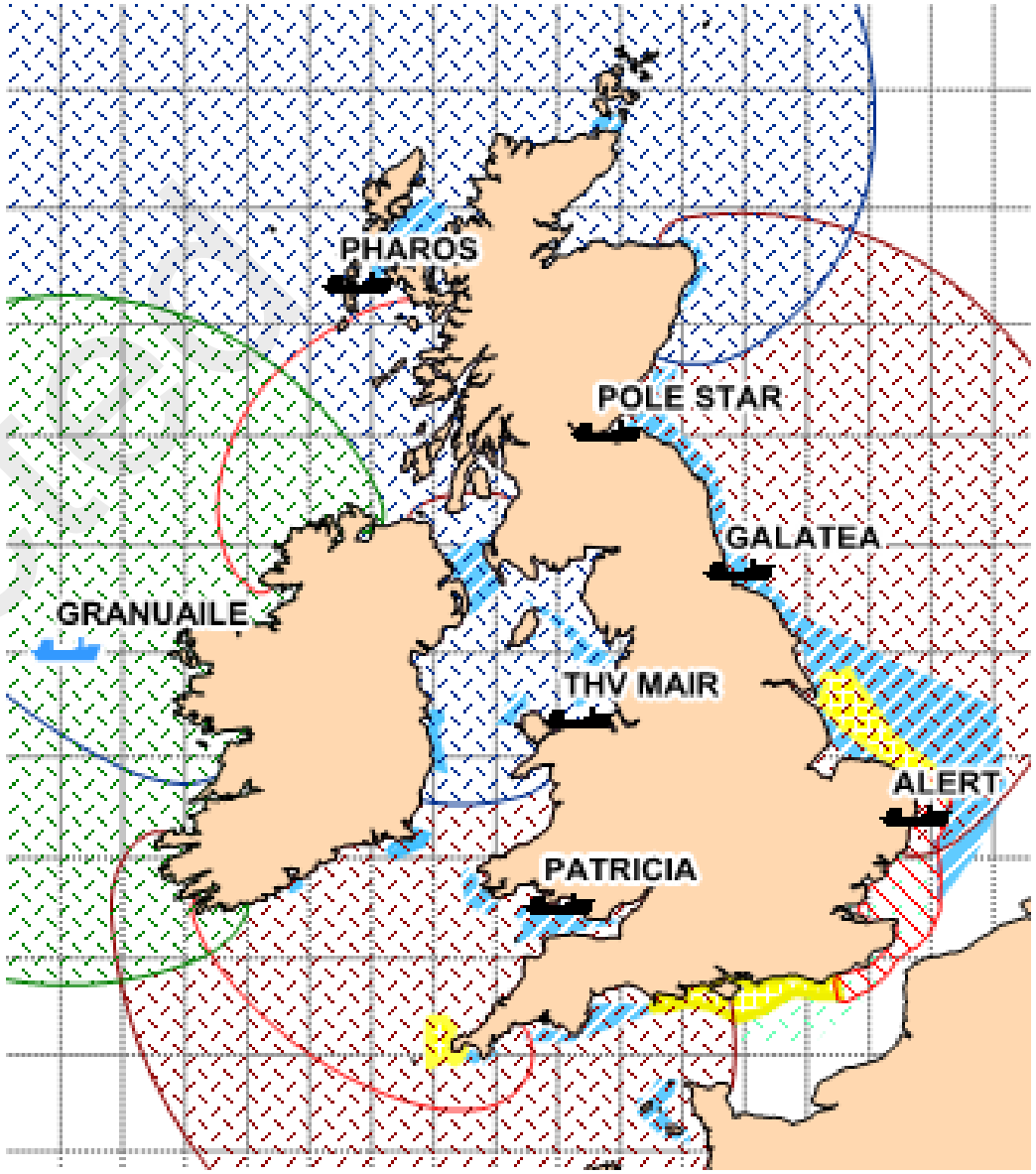
Wreck, AtoN Casualty, RRC Incidents	
Pole Star Praxis UMS change out	*Incident Report No.65*
Ella Wreck	*Incident Report No.69*
Cromer to Dover 6 Hrs RRC	*0% Coverage*
Portland to Beachy 12 Hrs RRC	*0% Coverage*
LV05 Tow	*Incident Report No.70*
Humber to Cromer 12 Hrs RRC	*0% Coverage*
Southern North Sea to Tay 24 Hrs RRC	*0% coverage*
Sevenstones AIS outage	Incident Report No.67





12 Hrs RRC

24 Hrs RRC

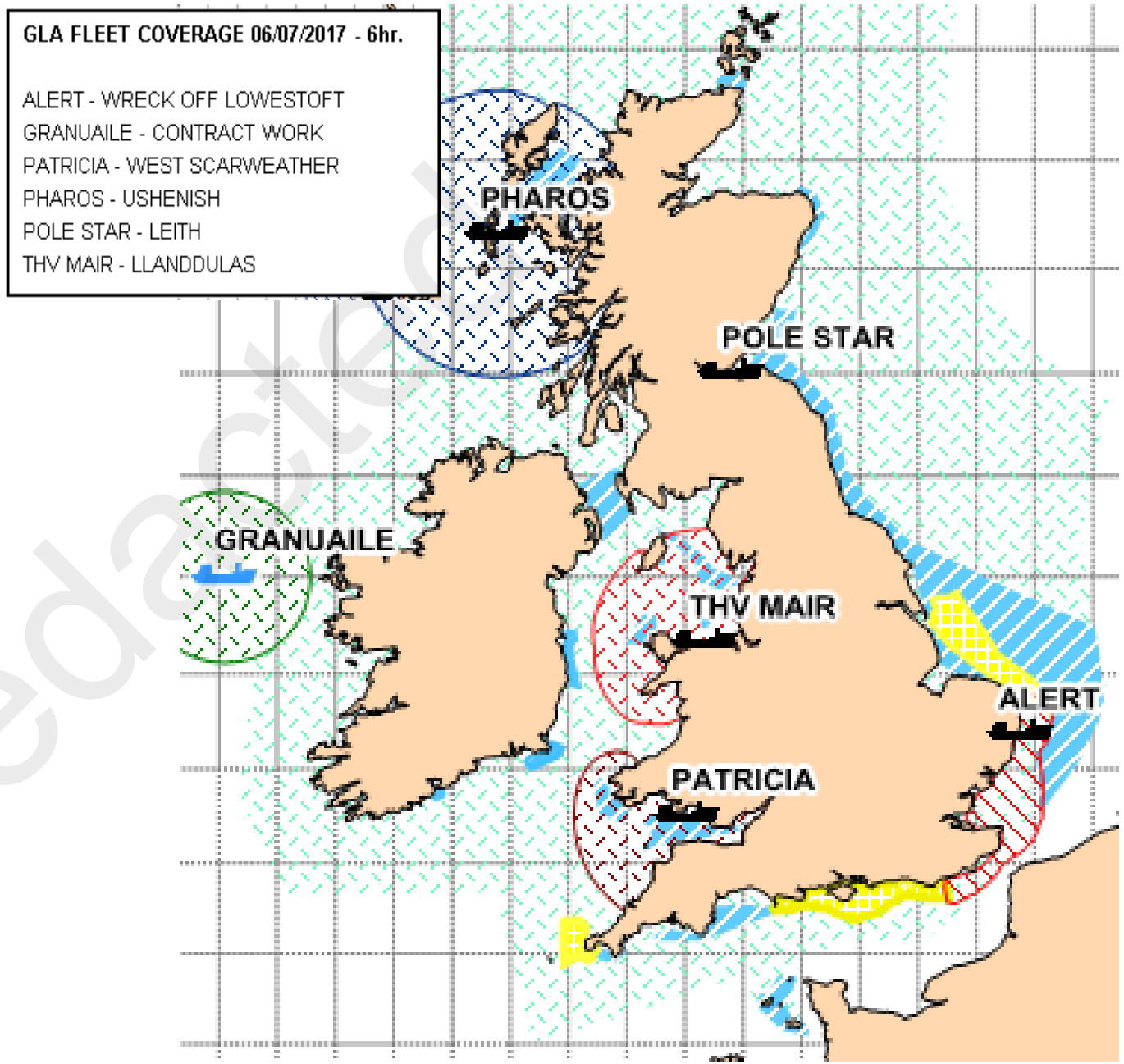


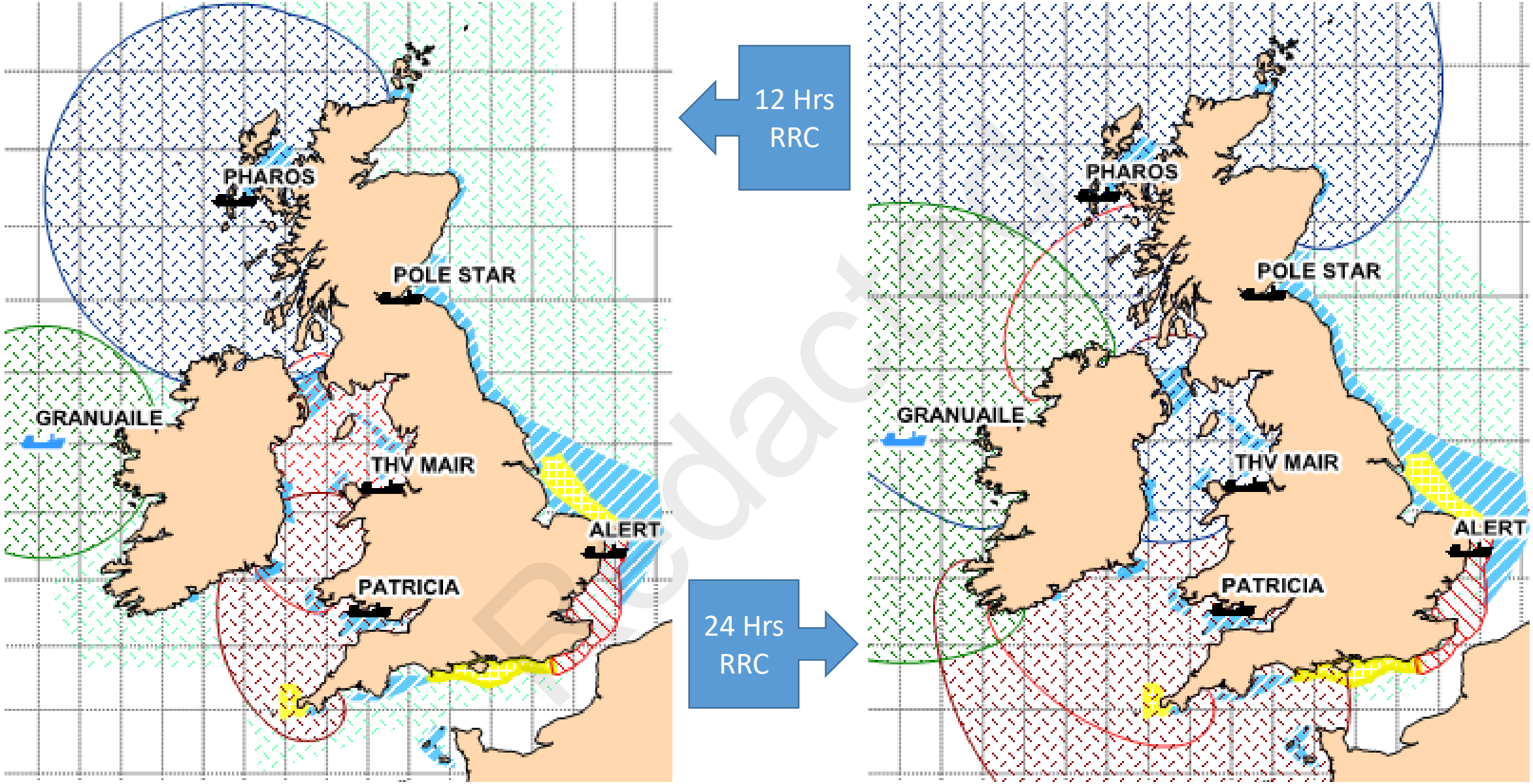
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	0%	
2	PORTLAND BILL TO BEACHY HEAD	12	No	0%	
3	HUMBER TO CROMER	12	No	34%	GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	93%	GALATEA
7	ABERDEEN AND NE COAST	24	Yes	100%	GALATEA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	PATRICIA
22	BRITISH ISLES	48	Yes	100%	GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

6th Jul 2017	6 Vessel Scenario - FAILED
THV Patricia	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea	***REMOVED***
THV Alert	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair	*N Wales;* [redacted] *contract work*
NLV Pharos	*Heli-Ops Ushenish LH*
NLV Pole Star	*Alongside Leith for UMS alarm works*
ILV Granuaile	[redacted] *Contract work*



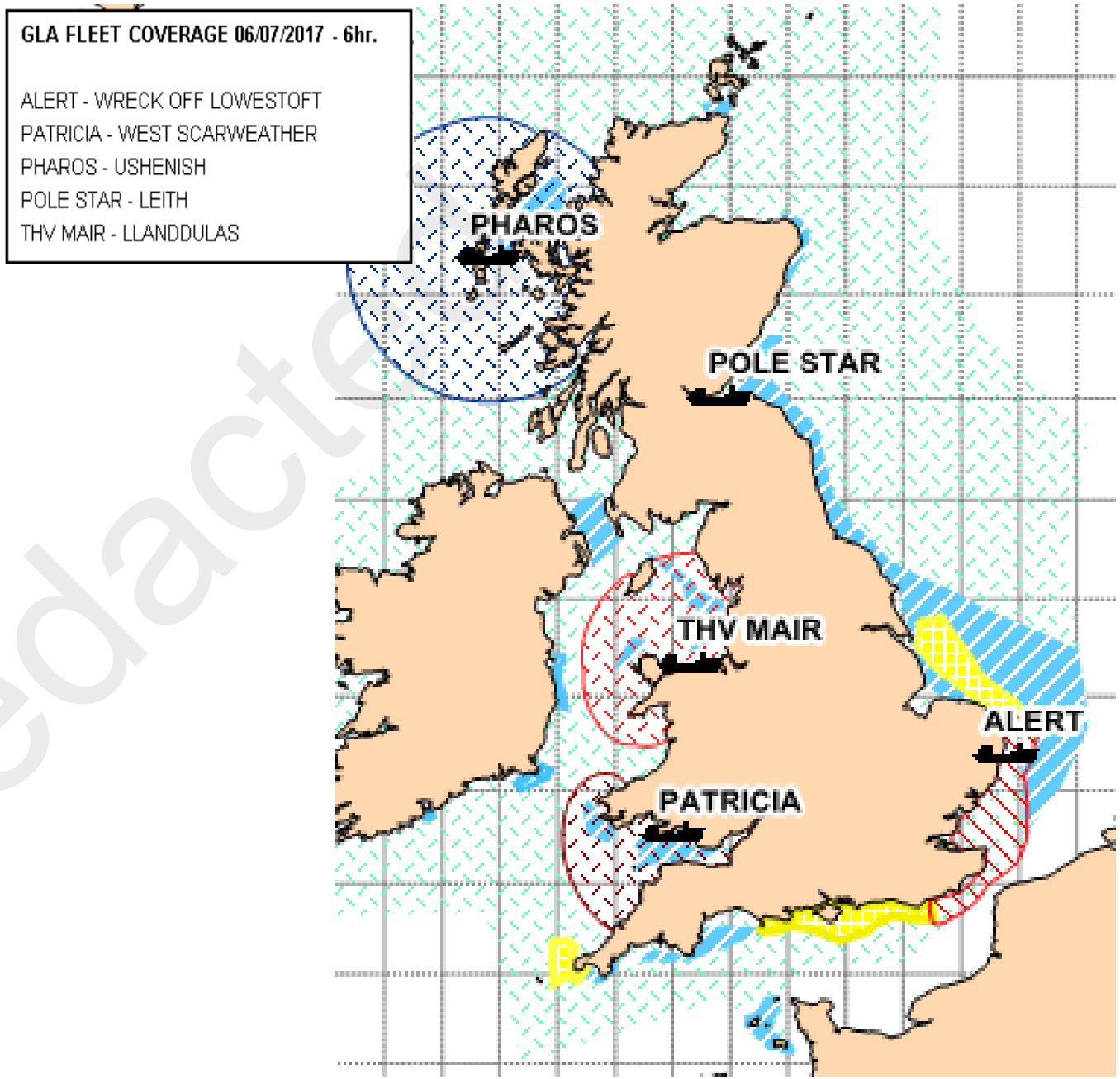

12 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA
24 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA

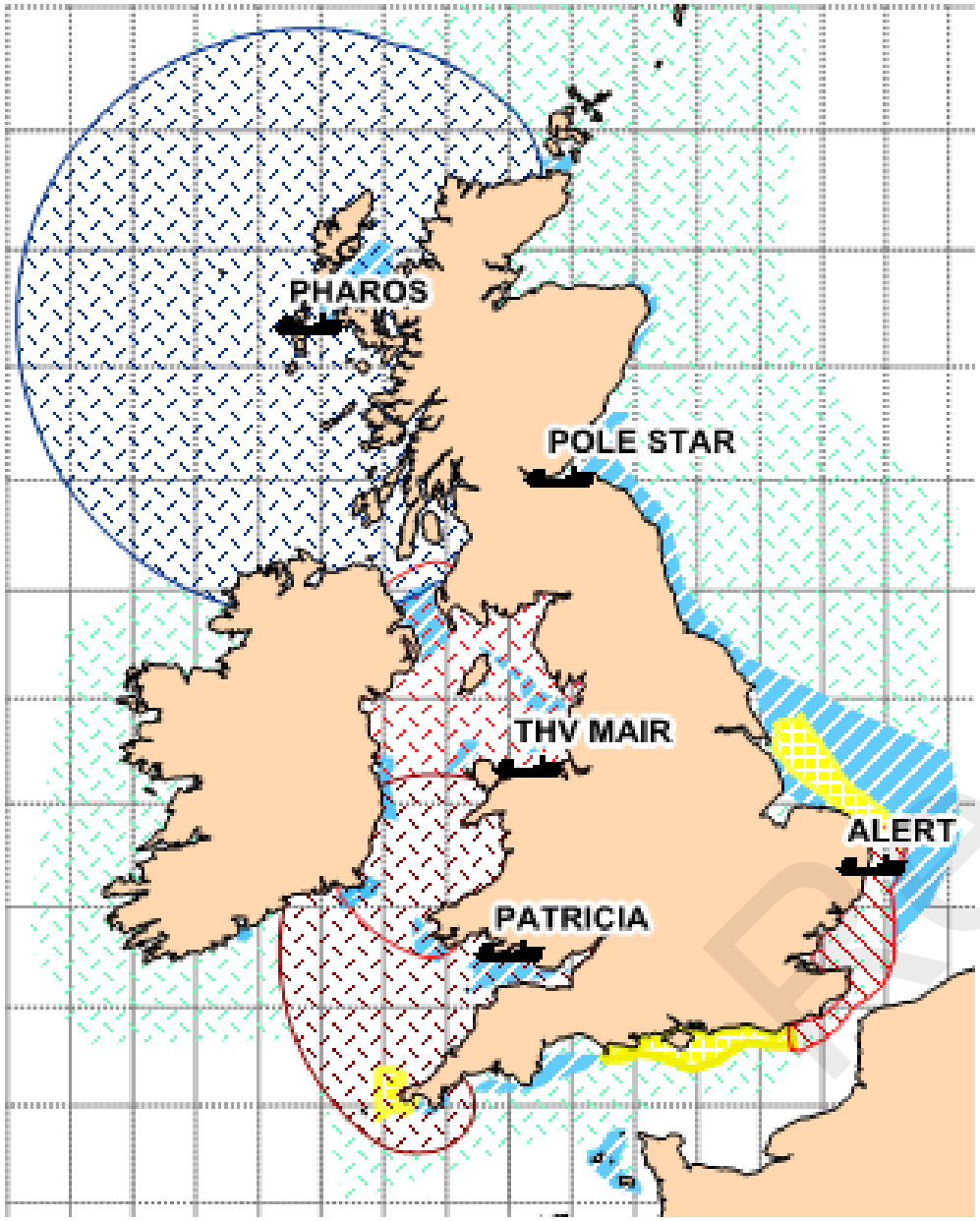
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	0%	
2	PORTLAND BILL TO BEACHY HEAD	12	No	0%	
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	0%	
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	PATRICIA
22	BRITISH ISLES	48	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR

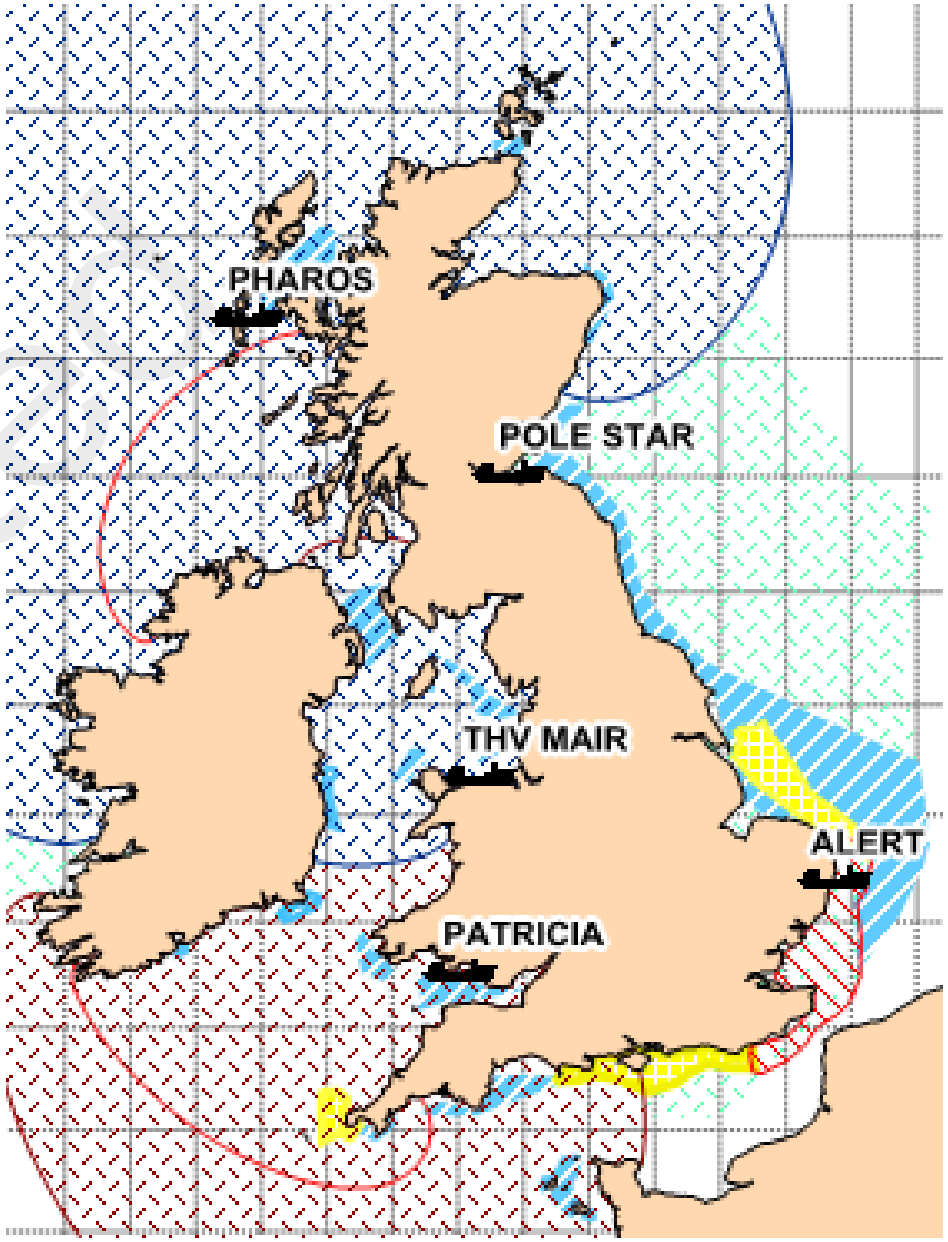
6th Jul 2017	5 Vessel Scenario - FAILED
THV Patricia	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea	***REMOVED***
THV Alert	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair	*N Wales;* [redacted] *contract work*
NLV Pharos	*Heli-Ops Ushenish LH*
NLV Pole Star	*Alongside Leith for UMS alarm works*
ILV Granuaile	***REMOVED***





12 Hrs RRC

24 Hrs RRC

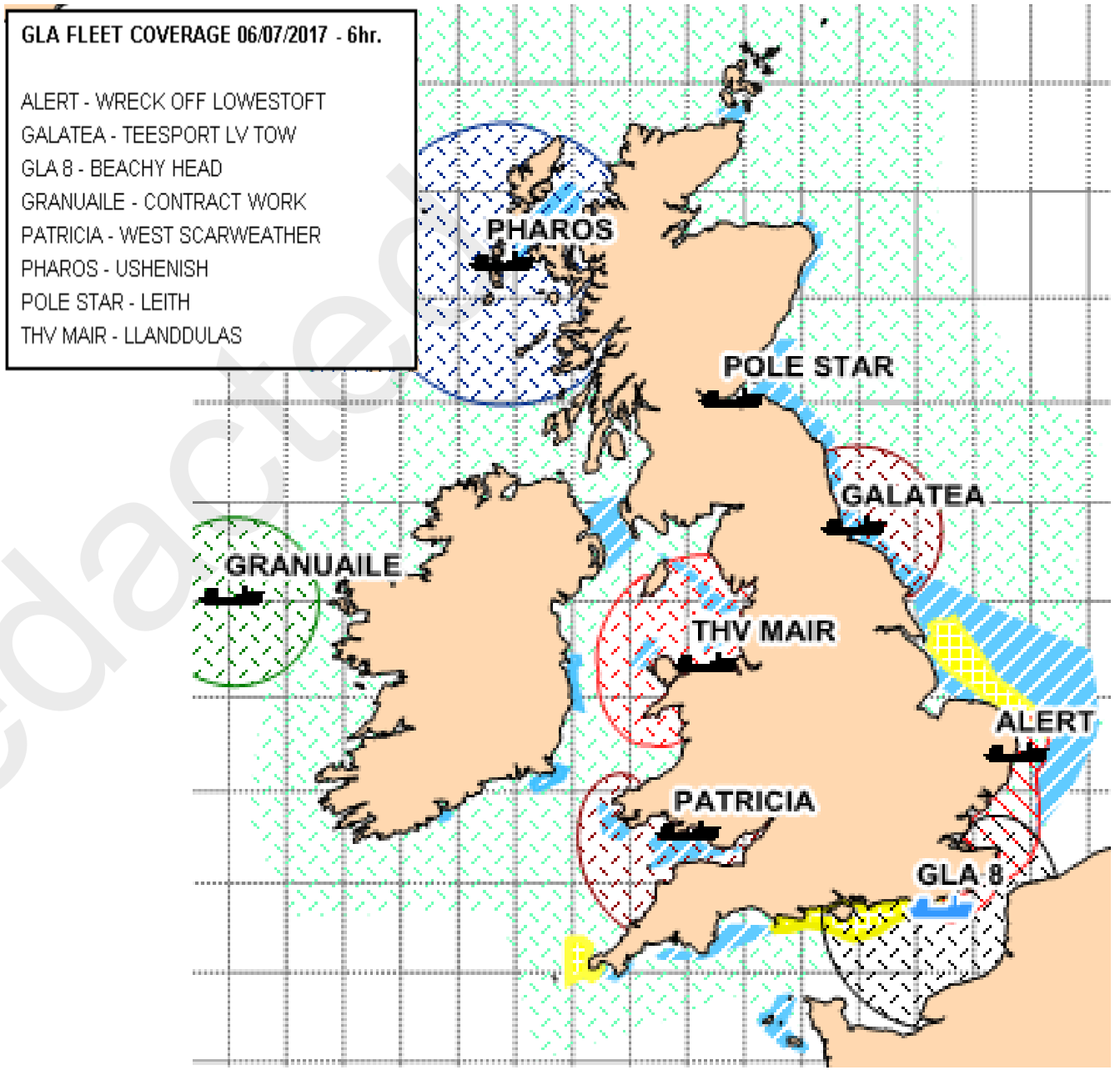


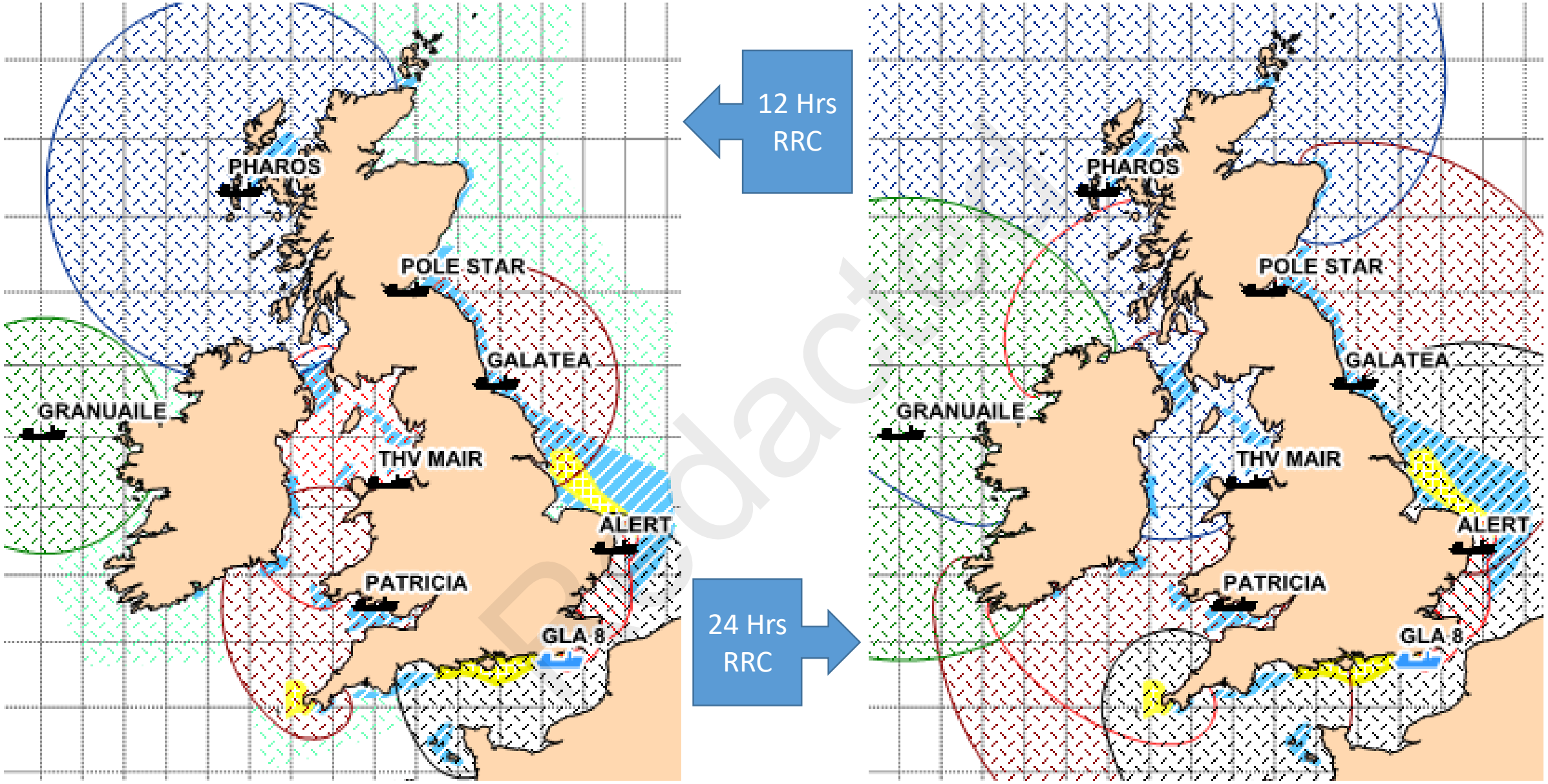
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	0%	
2	PORTLAND BILL TO BEACHY HEAD	12	No	0%	
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	0%	
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	PATRICIA
22	BRITISH ISLES	48	Yes	100%	PATRICIA, PHAROS, THV MAIR

6th Jul 2017	8 Vessel Scenario - FAILED
GLA 8	*Beachy Head*
THV Patricia	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea	*Tees; commenced tow of LV05 towards Harwich*
THV Alert	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair	*N Wales;* [redacted] *contract work*
NLV Pharos	*Heli-Ops Ushenish LH*
NLV Pole Star	*Alongside Leith for UMS alarm works*
ILV Granuaile	[redacted] *Contract work*




12 Hrs
RRC
24 Hrs
RRC
PHAROS
POLE STAR
GALATEA
GRANUAILE
THV MAIR
ALERT
PATRICIA
GLA 8
PHAROS
POLE STAR
GALATEA
GRANUAILE
THV MAIR
ALERT
PATRICIA
GLA 8

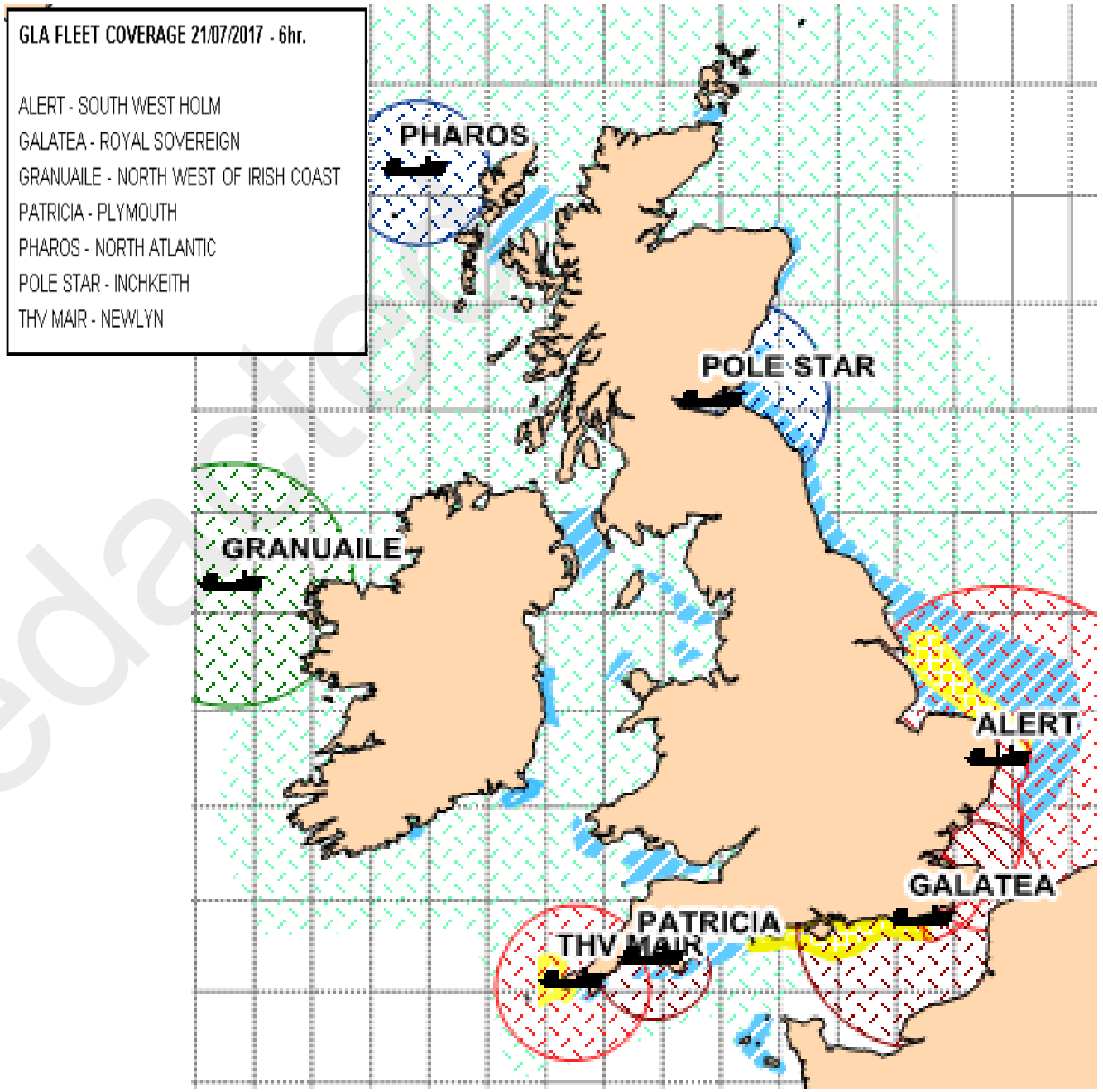
Response Region Coverage

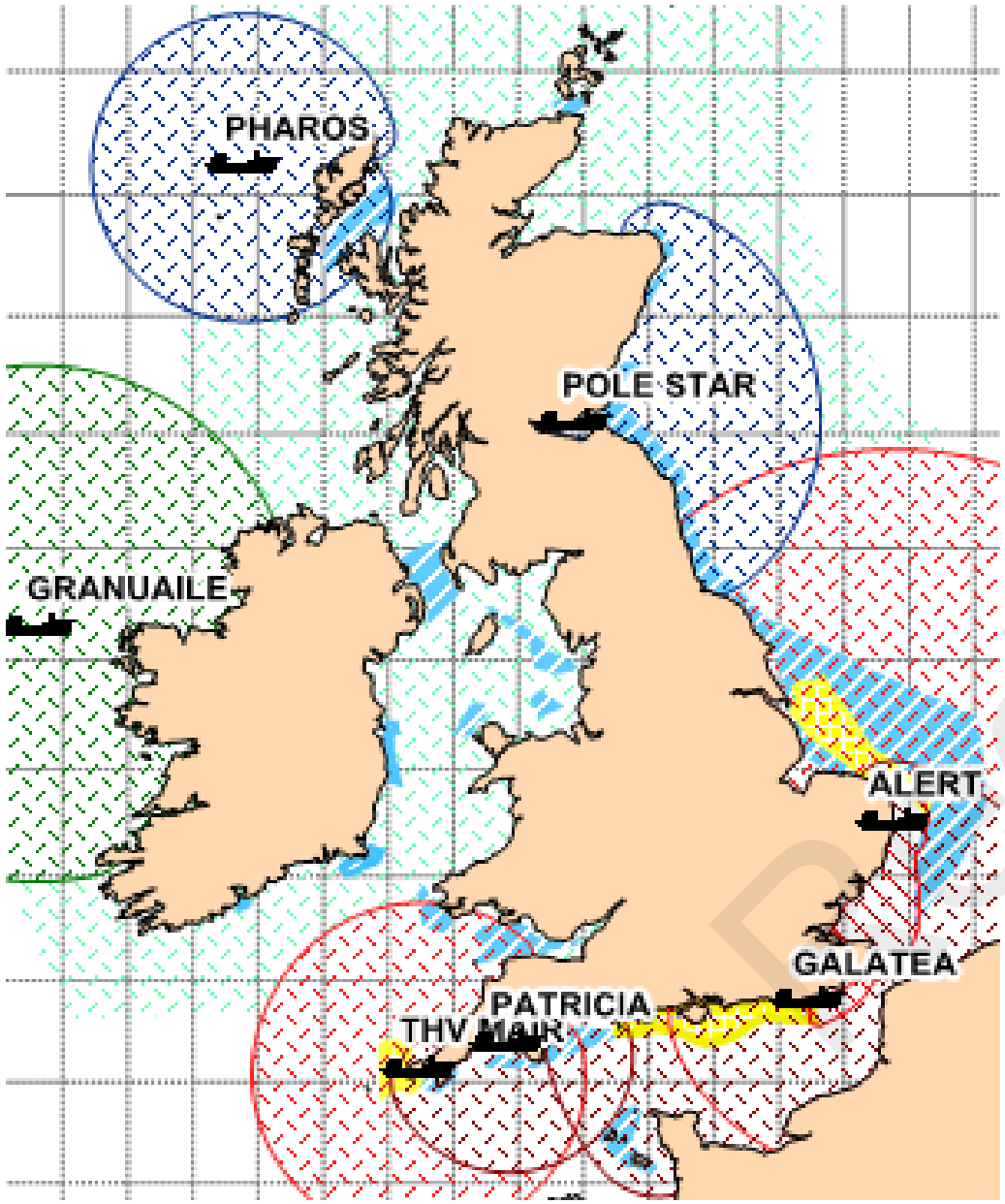
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	51%	GLA 8
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	GLA 8
3	HUMBER TO CROMER	12	No	48%	GALATEA, GLA 8
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	GALATEA, GLA 8
7	ABERDEEN AND NE COAST	24	Yes	100%	GALATEA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GLA 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, THV MAIR

21st Jul 2017	7 Vessel Scenario - FAILED
THV Patricia	*Local Light inspections Eddystone area*
THV Galatea	*Dover area buoy work*
THV Alert	*Stanford Channel Survey*
MV Mair	*Passage to Penzance to load Raymond Beacon parts; returned Newlyn*
NLV Pharos	*MOD Contract work*
NLV Pole Star	*Passage to Charles Town to service two contract buoys; passage to Aberdeen pm via Elie due to weather conditions*
ILV Granuaile	[redacted] *Contract work completed- made passage Blacksod Bay*

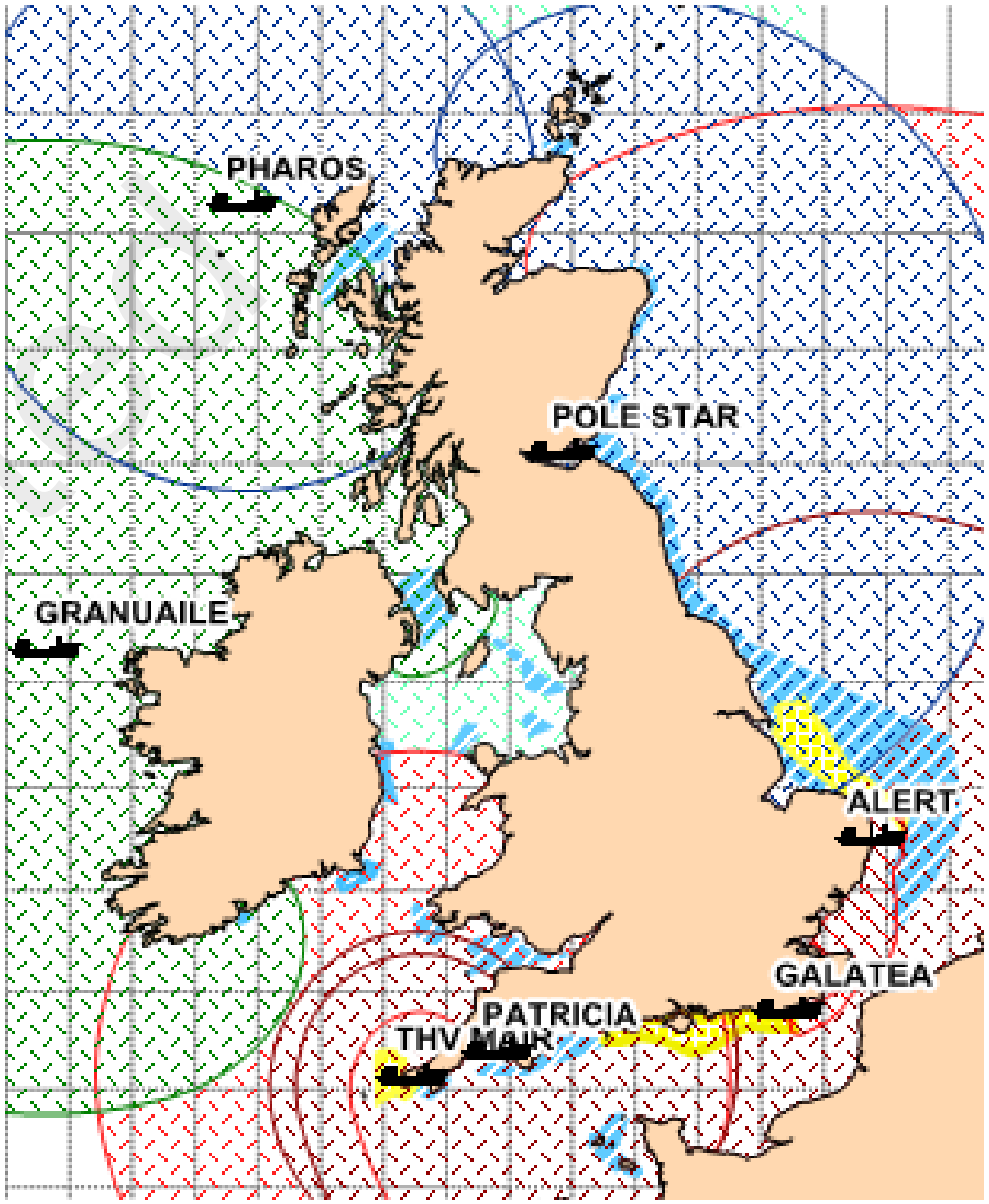
Wreck, AtoN Casualty, RRC Incidents	
Reduced Irish Sea Coverage due heavy Weather	*Incident Report No. 76*
Holyhead	*3%*
Dublin Bay	*75%*
Liverpool Bay	*0%*
Isle of Man	*0%*
Morecambe Bay	*2%*





12 Hrs RRC

24 Hrs RRC

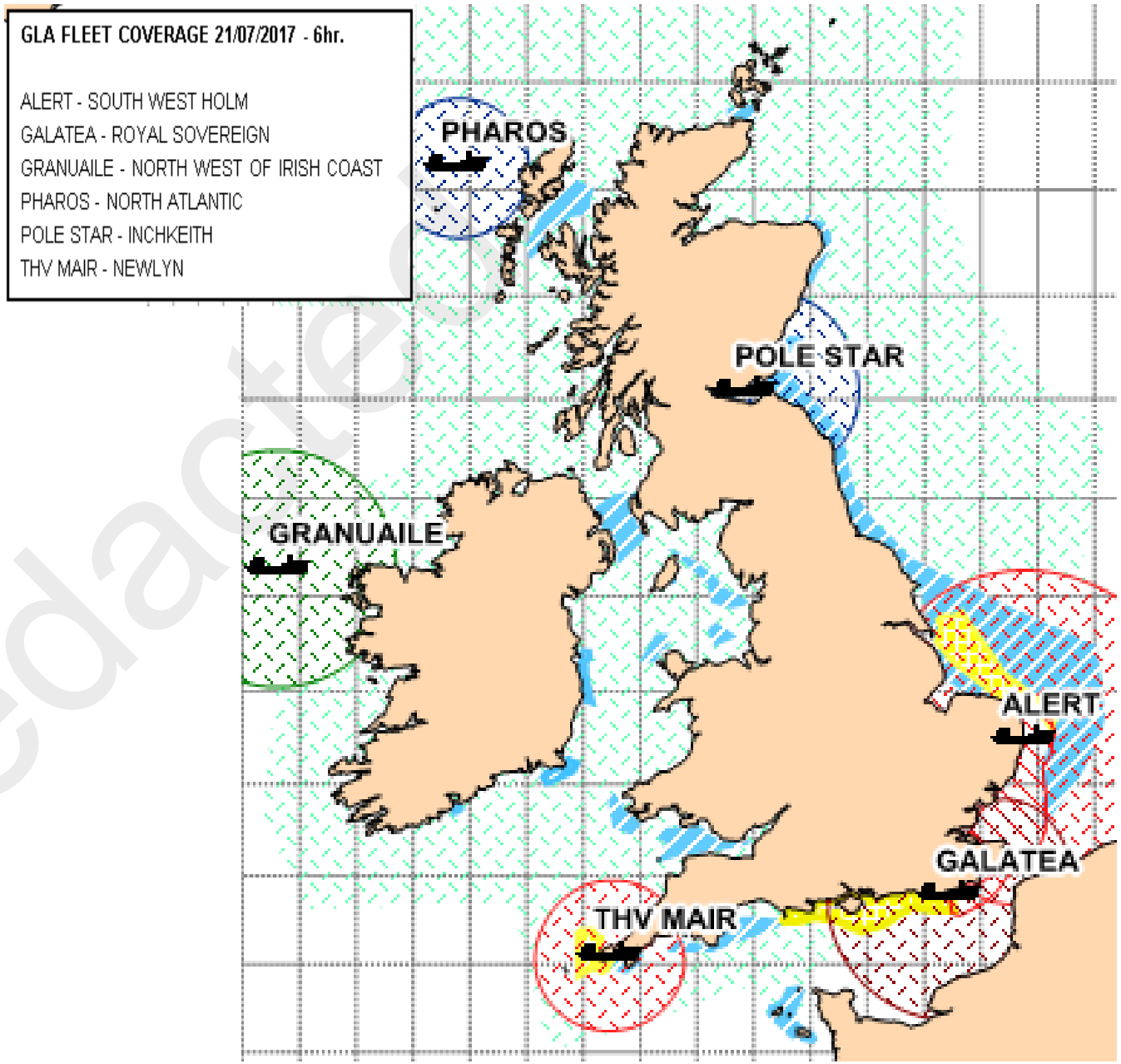


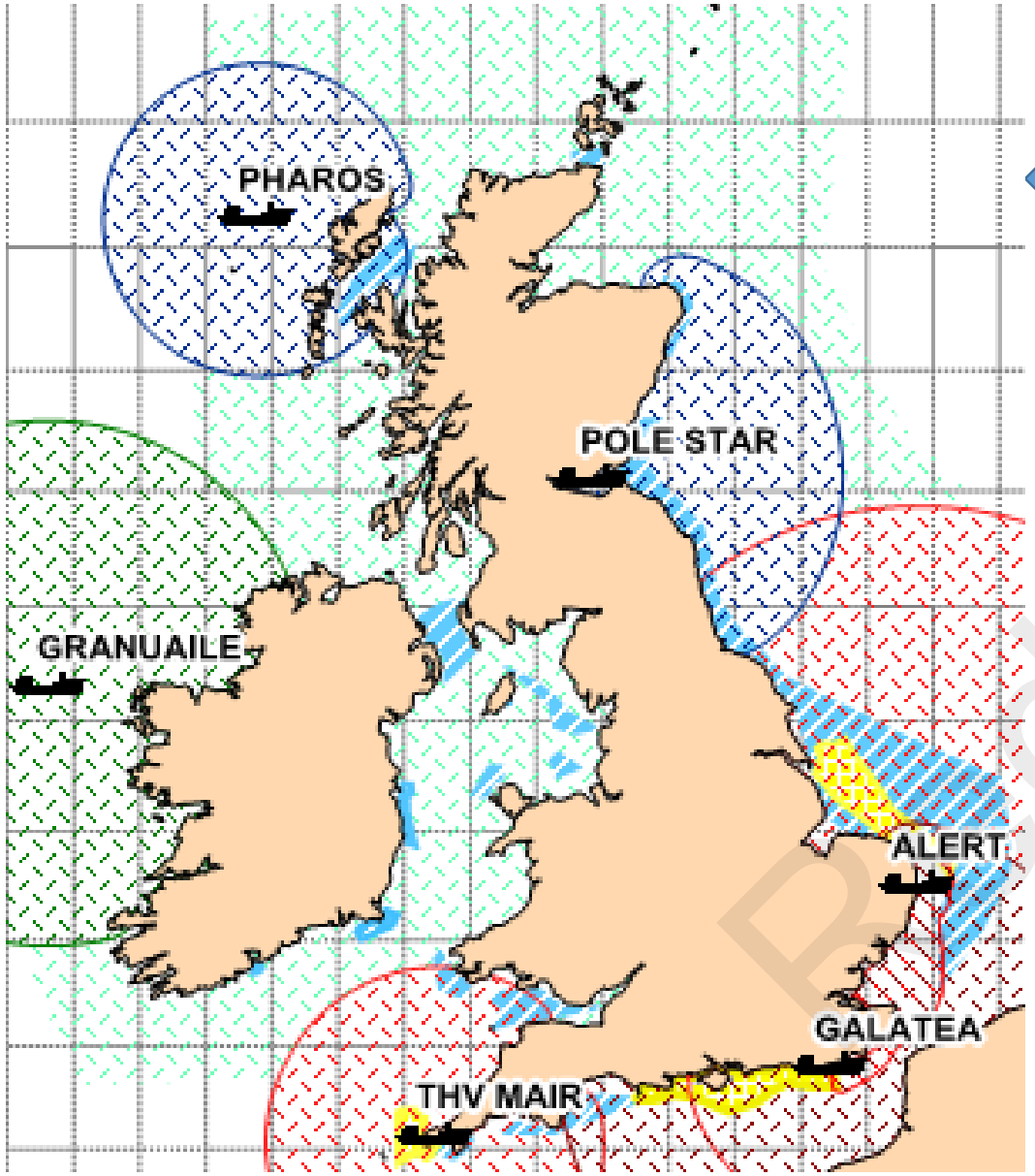
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	No	3%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	No	75%	THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	No	2%	GRANUAILE
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

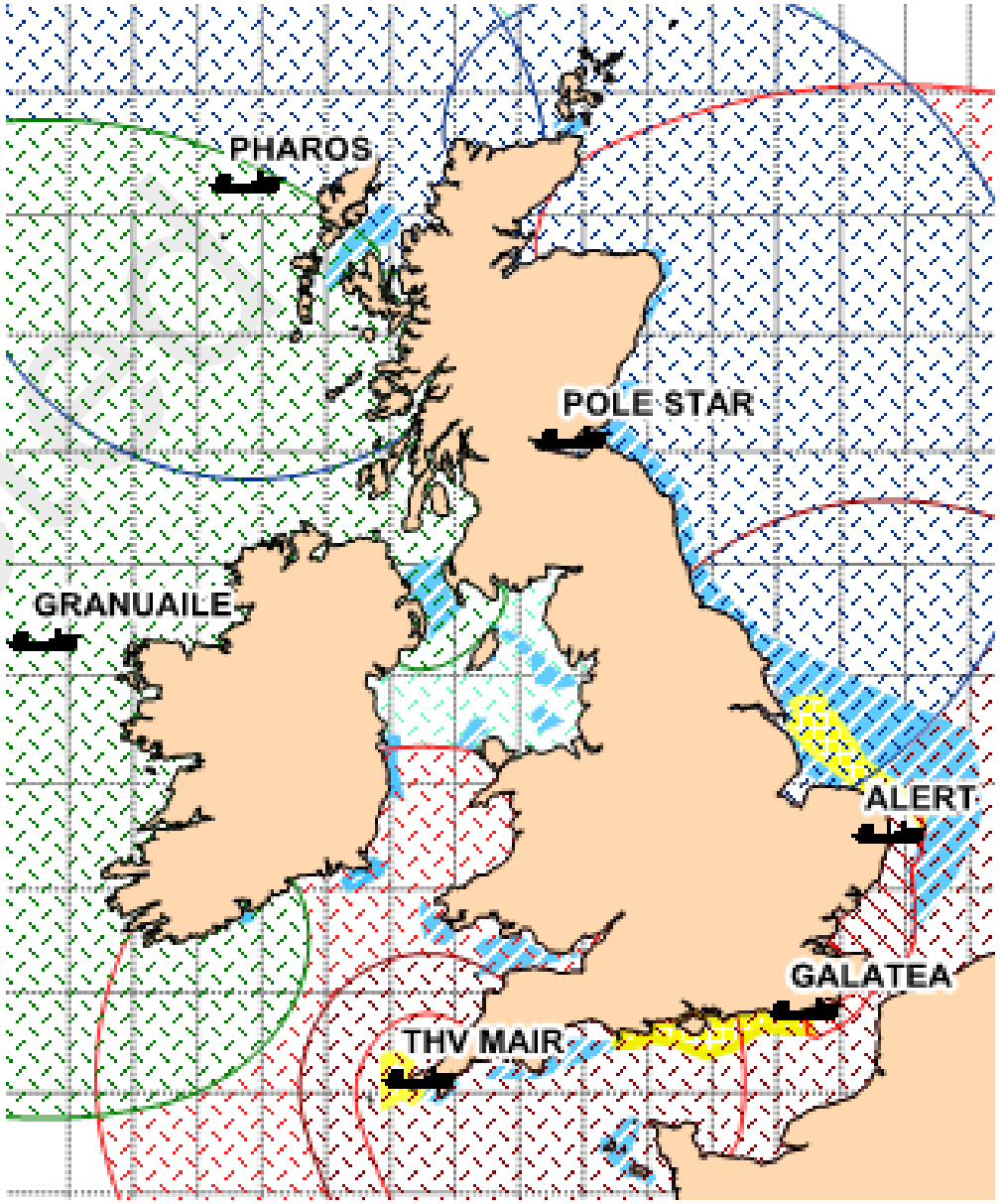
21st Jul 2017	6 Vessel Scenario - FAILED
THV Patricia	***REMOVED***
THV Galatea	*Dover area buoy work*
THV Alert	*Stanford Channel Survey*
MV Mair	*Passage to Penzance to load Raymond Beacon parts; returned Newlyn*
NLV Pharos	*MOD Contract work*
NLV Pole Star	*Passage to Charles Town to service two contract buoys; passage to Aberdeen pm via Elie due to weather conditions*
ILV Granuaile	[redacted] *Contract work completed- made passage Blacksod Bay*





12 Hrs RRC

24 Hrs RRC

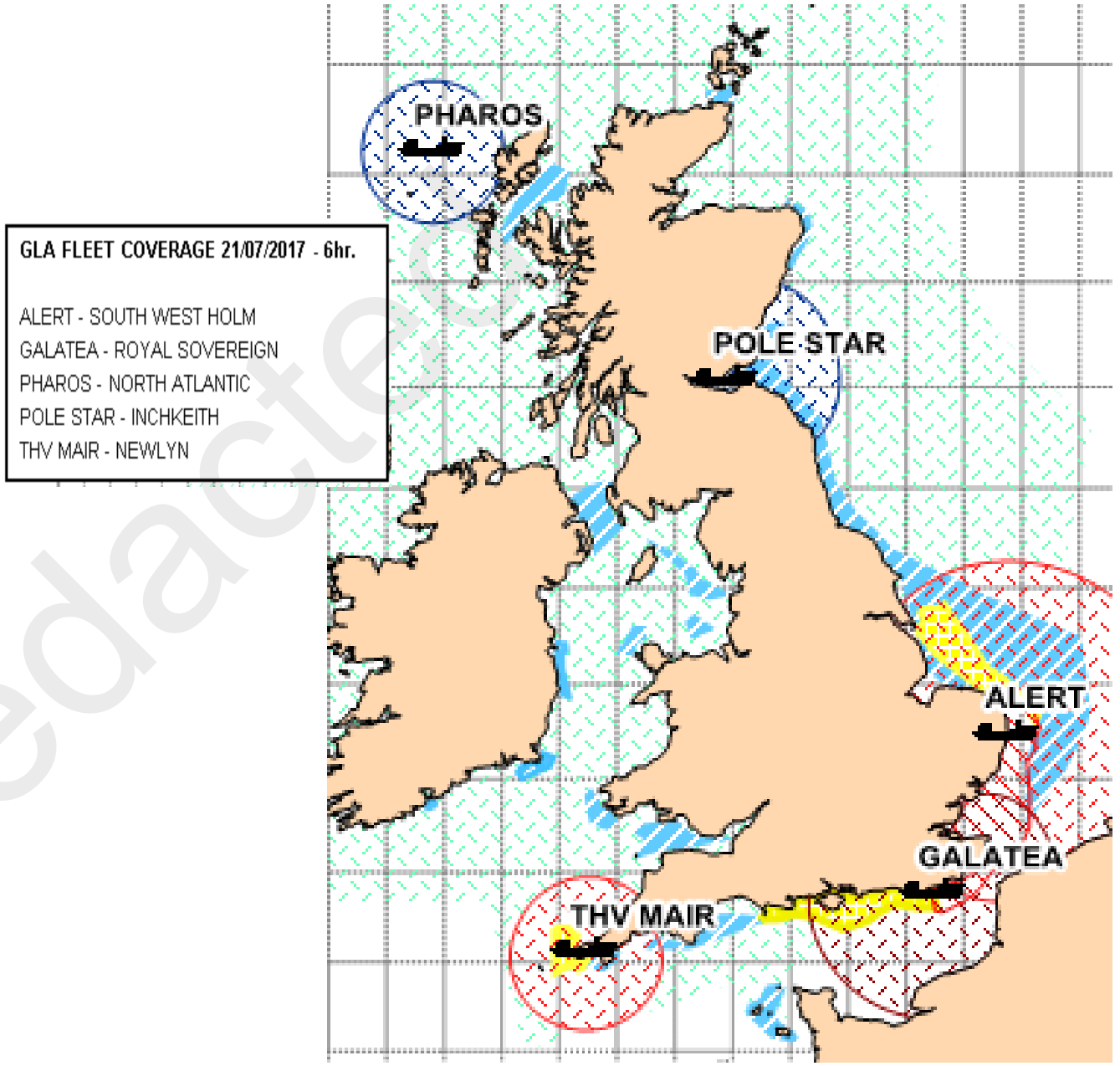


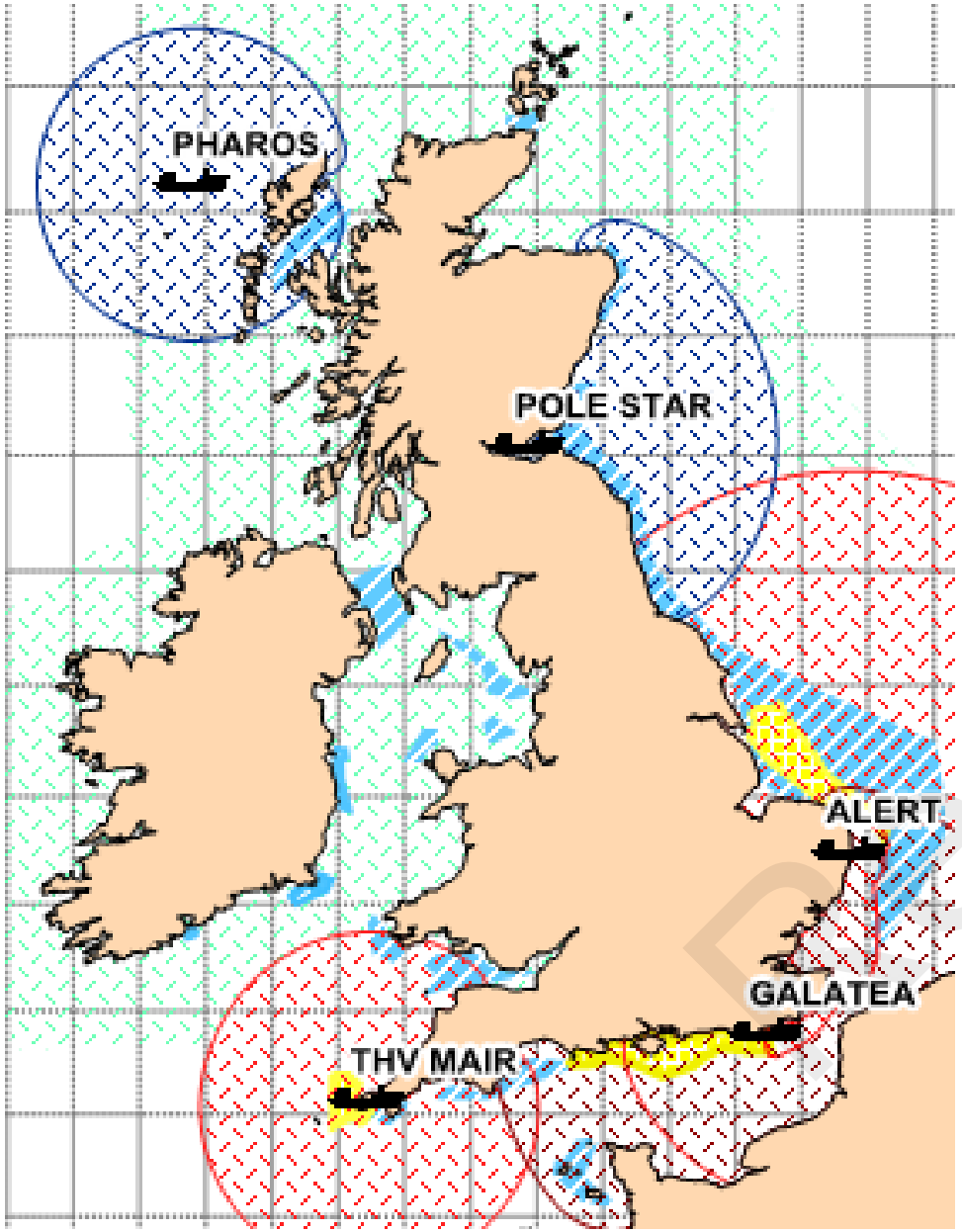
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	No	3%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	No	75%	THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	2%	GRANUAILE
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, POLE STAR, THV M...

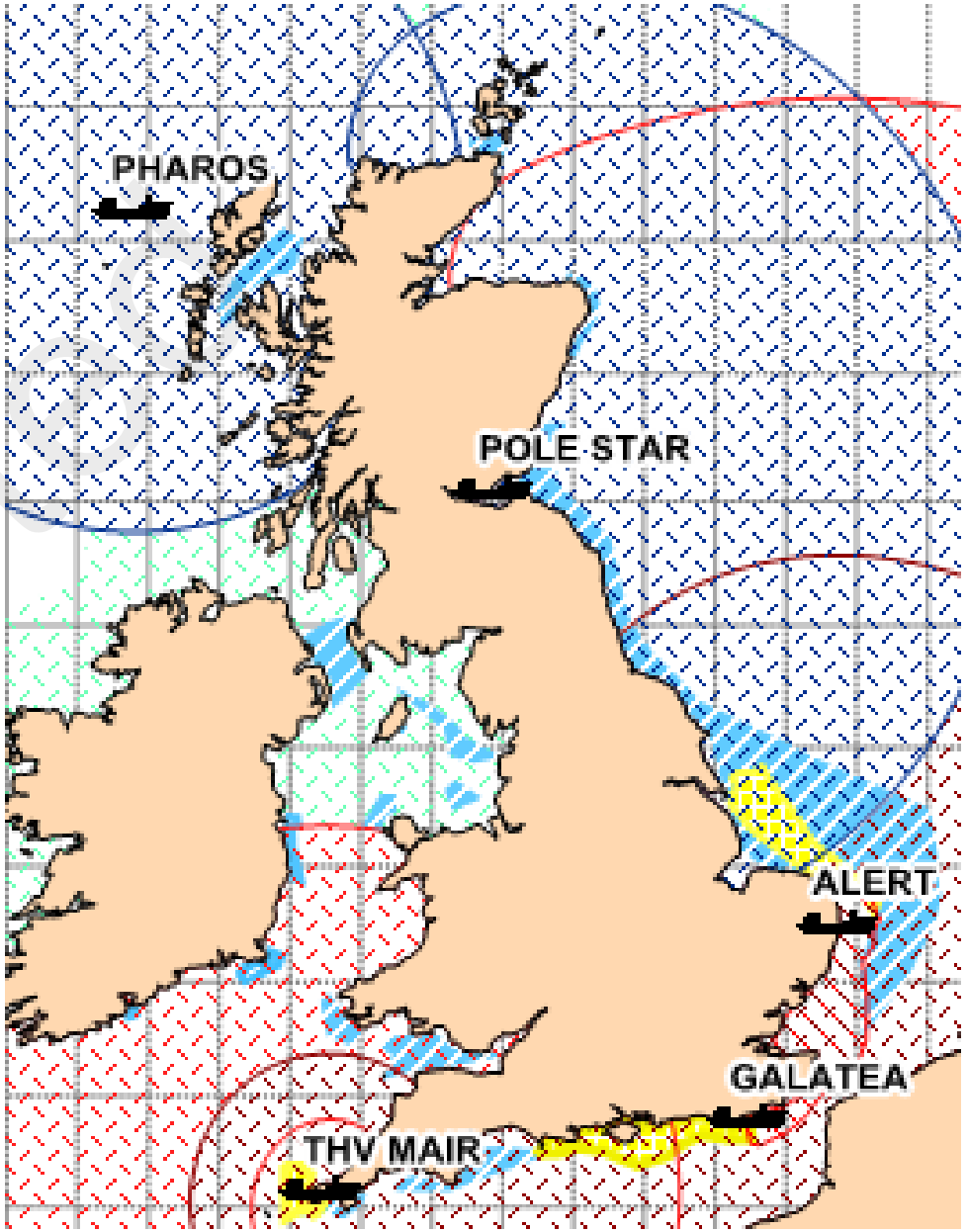
21st Jul 2017	5 Vessel Scenario - FAILED
THV Patricia	***REMOVED***
THV Galatea	*Dover area buoy work*
THV Alert	*Stanford Channel Survey*
MV Mair	*Passage to Penzance to load Raymond Beacon parts; returned Newlyn*
NLV Pharos	*MOD Contract work*
NLV Pole Star	*Passage to Charles Town to service two contract buoys; passage to Aberdeen pm via Elie due to weather conditions*
ILV Granuaile	***REMOVED***





12 Hrs RRC

24 Hrs RRC

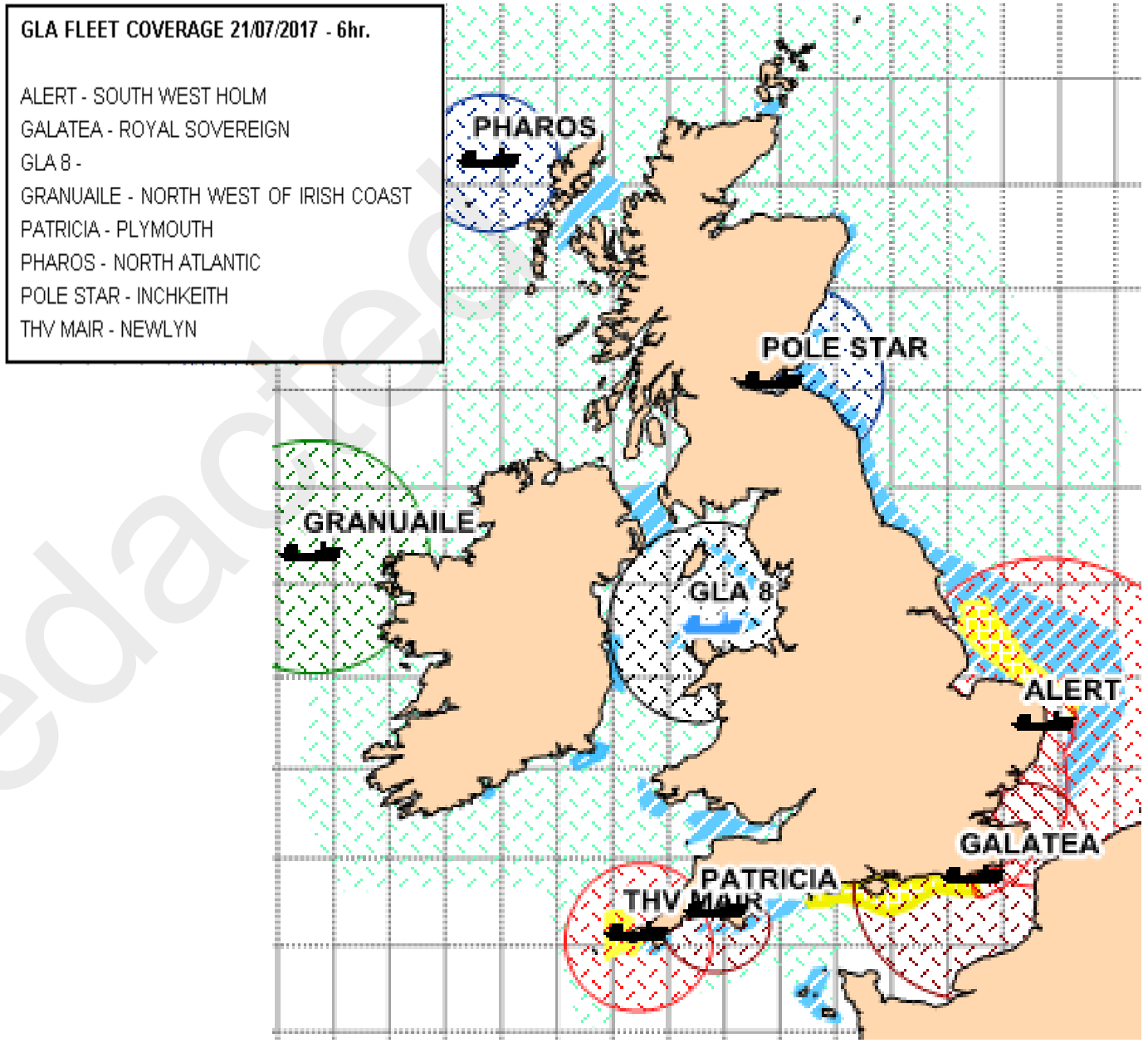


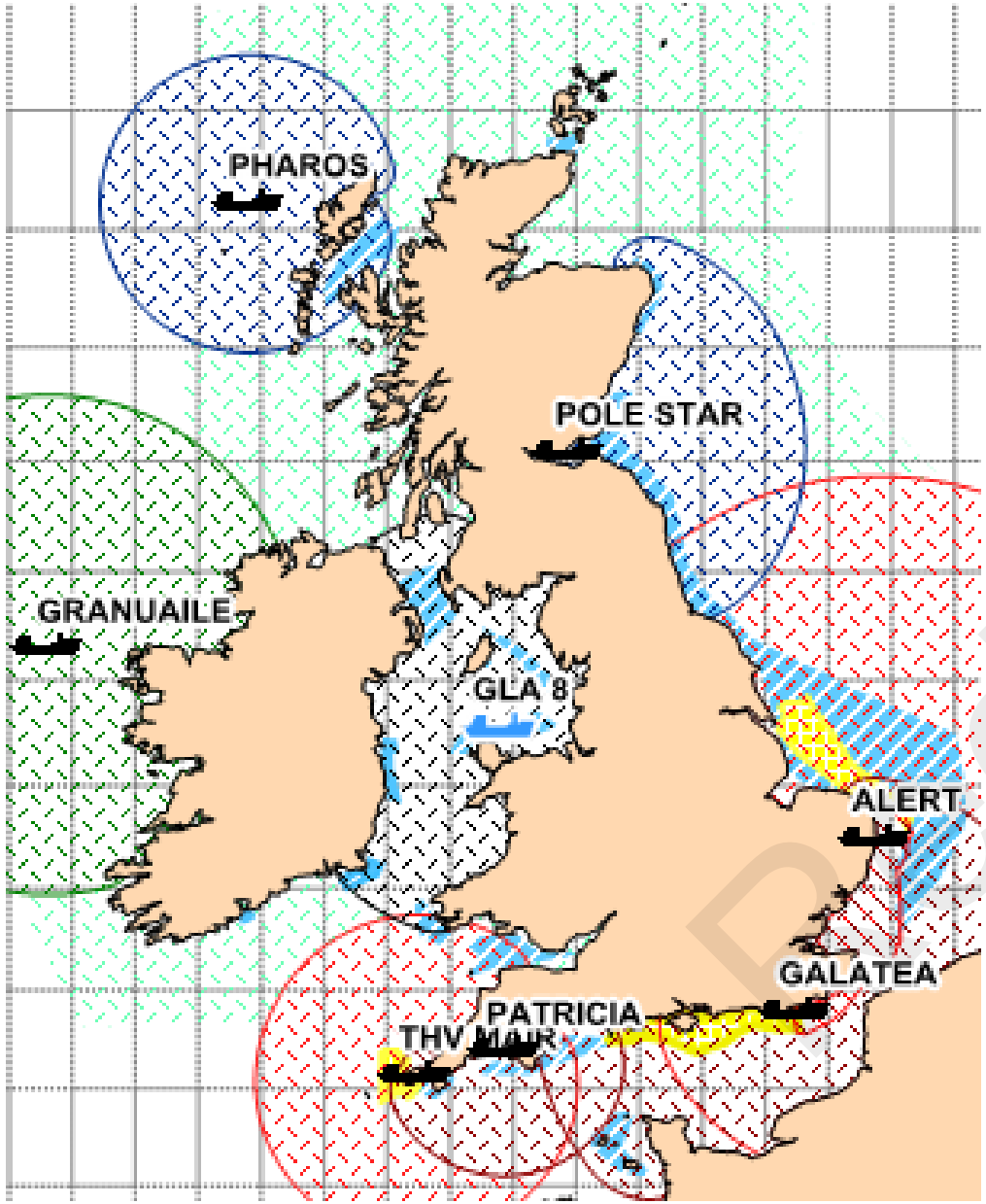
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	No	3%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	No	75%	THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PHAROS, POLE STAR, THV MAIR

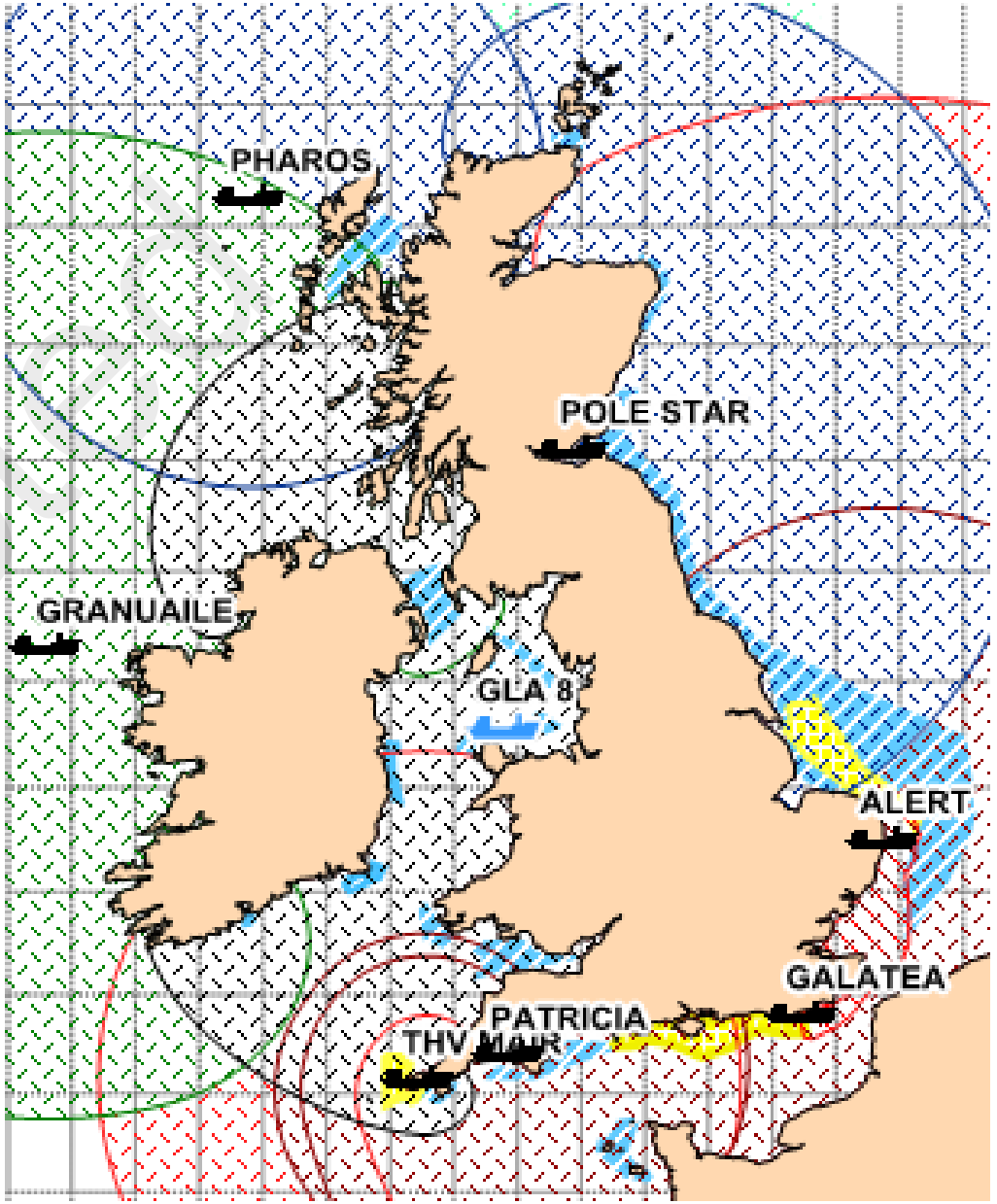
21st Jul 2017	8 Vessel Scenario - PASSED
GLA 8	*Holyhead*
THV Patricia	*Local Light inspections Eddystone area*
THV Galatea	*Dover area buoy work*
THV Alert	*Stanford Channel Survey*
MV Mair	*Passage to Penzance to load Raymond Beacon parts; returned Newlyn*
NLV Pharos	*MOD Contract work*
NLV Pole Star	*Passage to Charles Town to service two contract buoys; passage to Aberdeen pm via Elie due to weather conditions*
ILV Granuaile	[redacted] *Contract work completed- made passage Blacksod Bay*





12 Hrs RRC

24 Hrs RRC



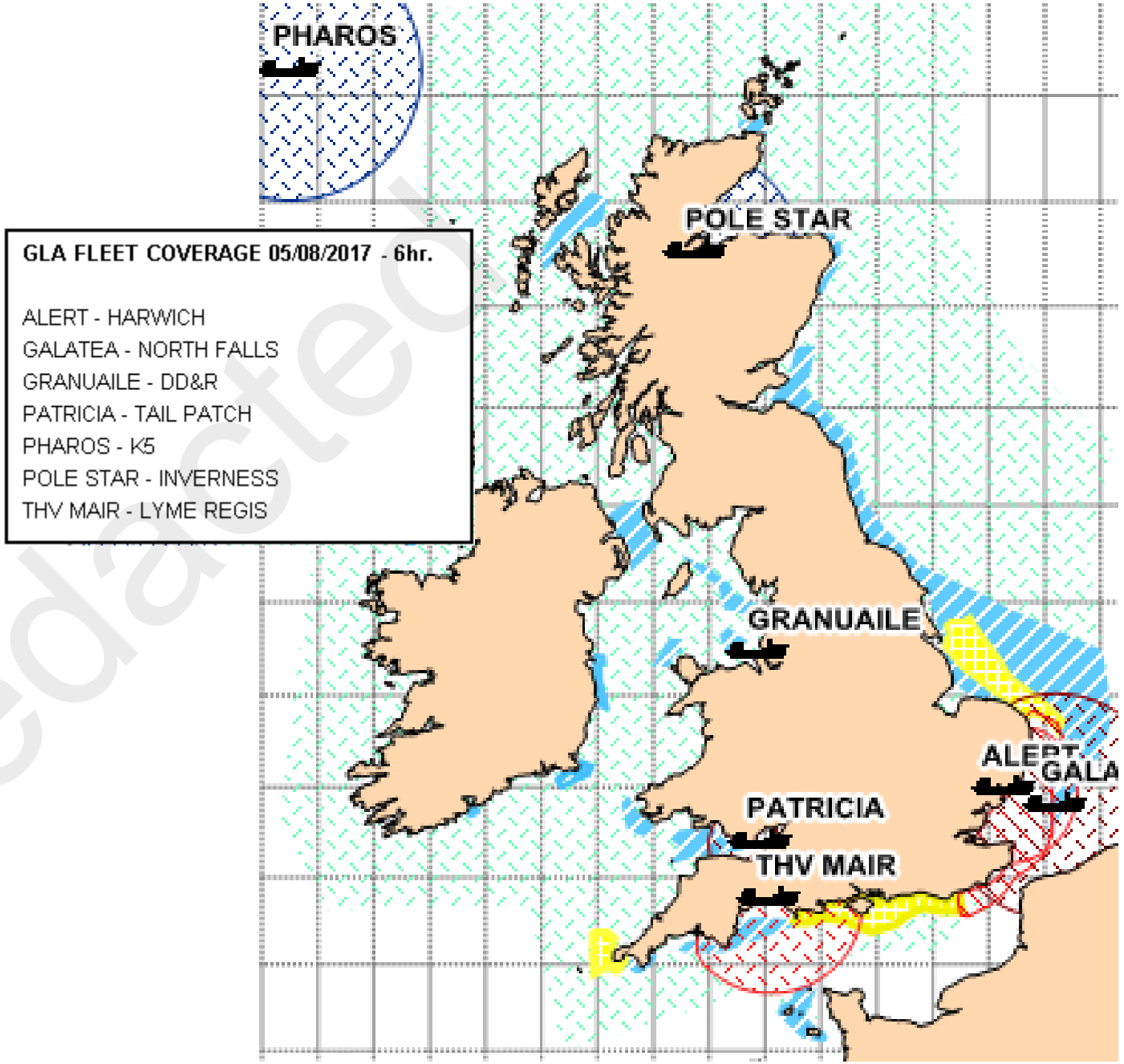
Response Region Coverage

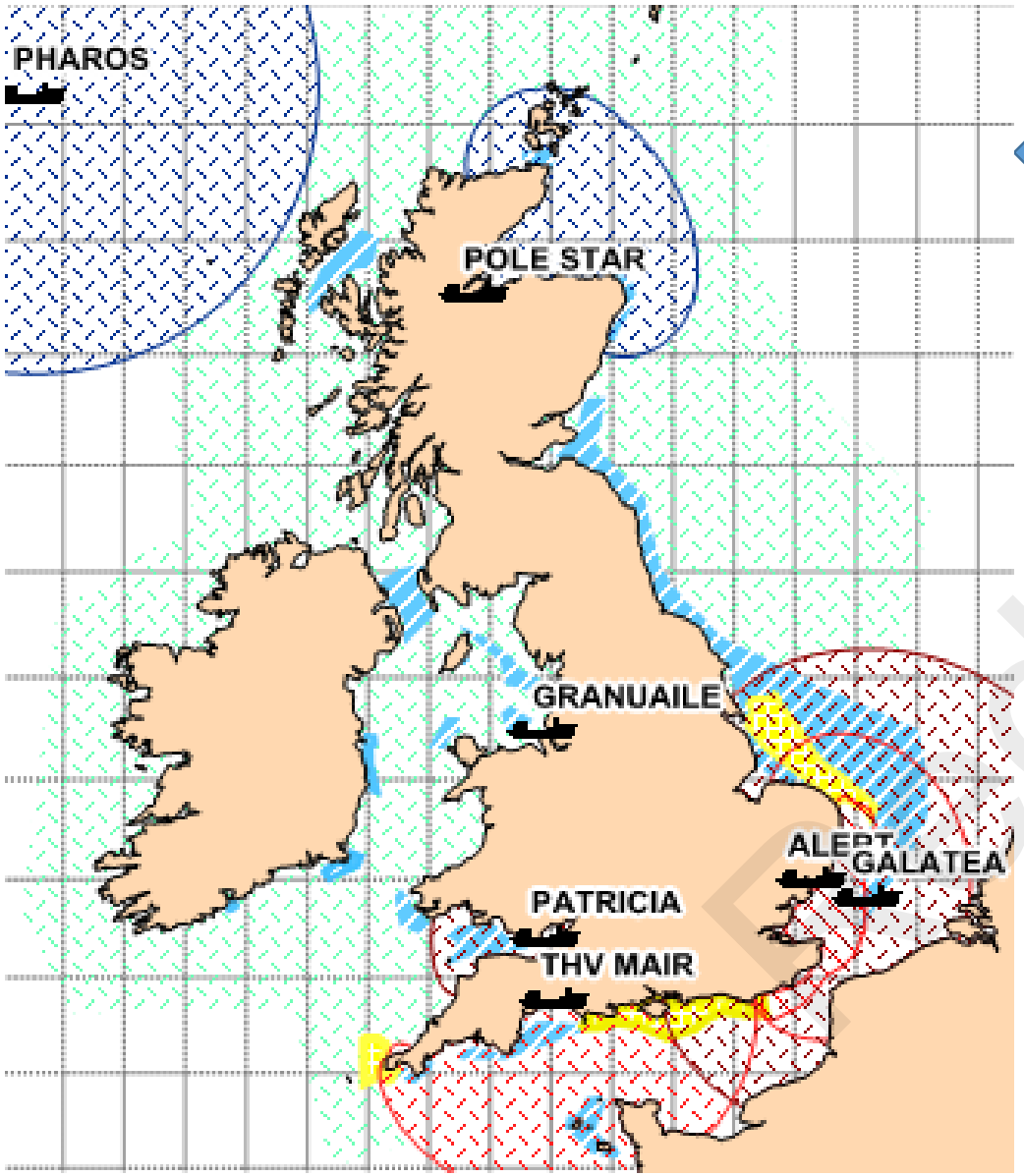
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GLA 8, GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA 8, PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8, GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GLA 8
17	ISLE OF MAN	24	Yes	100%	GLA 8
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

5th Aug 2017	7 Vessel Scenario- FAILED
THV Patricia	*Bristol Channel, Buoy work suspended due to Engine fault; investigated Drifting buoy report.*
THV Galatea	*Passage to Fluvius Tamar to discontinue EWMB's, transferred ETO to THV Alert, made passage to Gt Yarmouth pm*
THV Alert	*Harwich alongside; insufficient staff to sail.*
MV Mair	*Attended Charmouth Outfall buoy; unable to attend W Shambles topmark casualty due weather; passage to Poole*
NLV Pharos	*K5 buoy renewal then passage to K7 ODAS buoy with Met Office personnel*
NLV Pole Star	*Inverness alongside Training, Local Lights inspection pm*
ILV Granuaile	*Birkenhead DD&R*

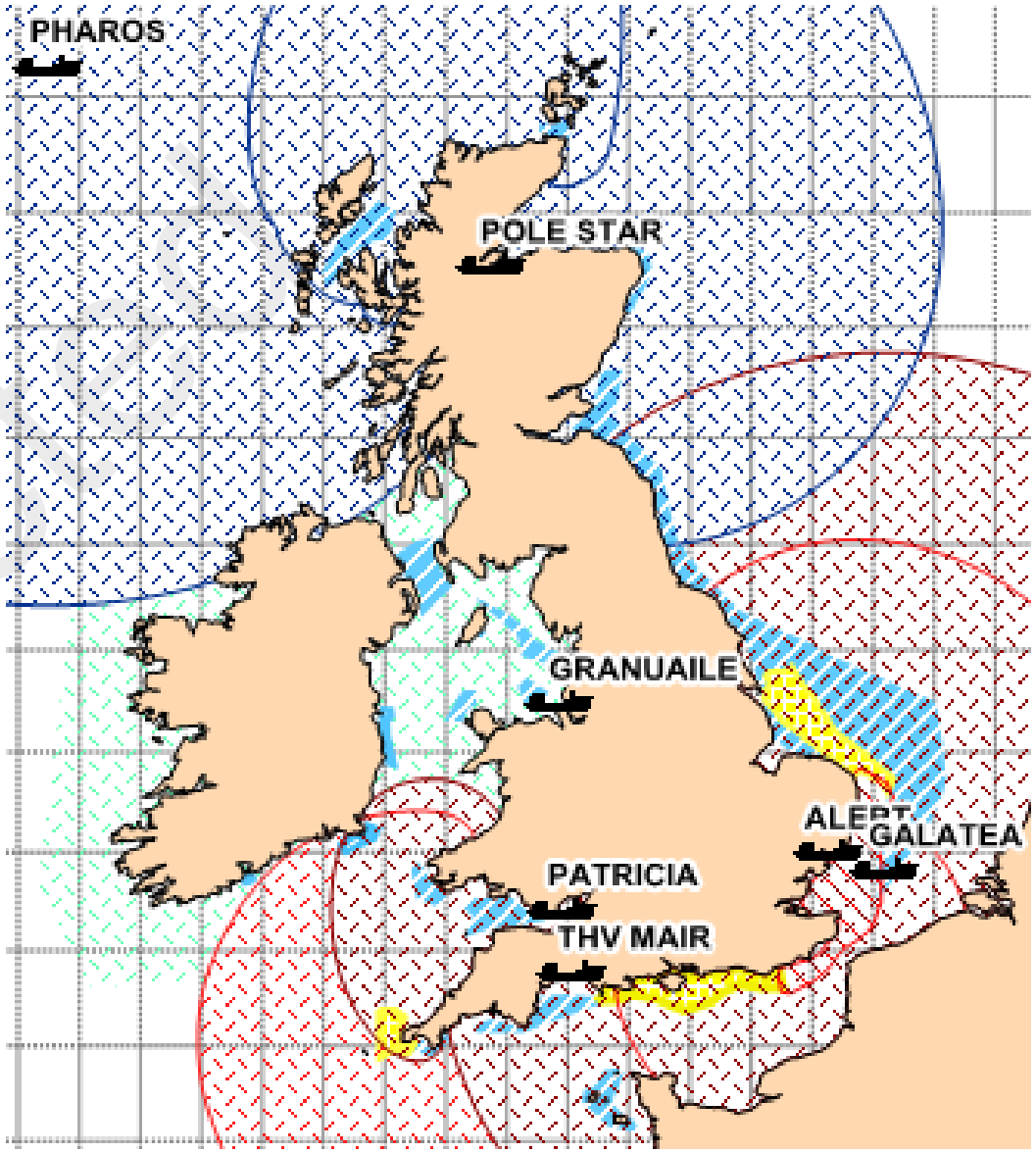
Wreck, AtoN Casualty, RRC Incidents	
Dover Straits 6 Hrs	*91 %*
Landsend 12 Hrs	*17 % covered*
Patricia Main Engine Problems	*Incident report No.84*
Granuaile DD&R	*Incident Report No. 82*
North Channel, Holyhead Dublin bay, Morecame Liverpool IoM, Cork	*0%*
Alert Manpower	*Incident Report No.87*
Met Office Contract	*Incident Report No.88*





12 Hrs RRC

24 Hrs RRC

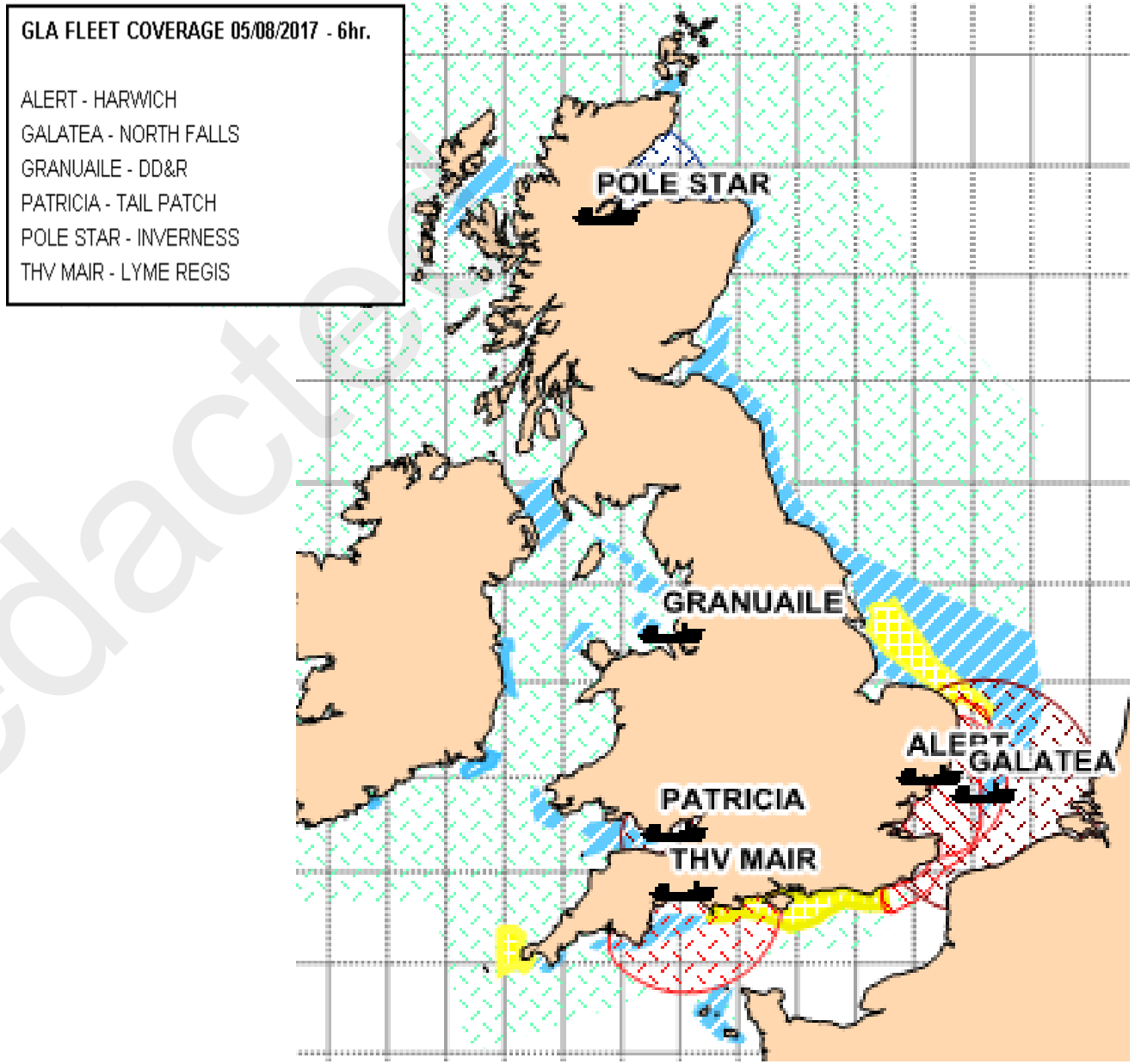


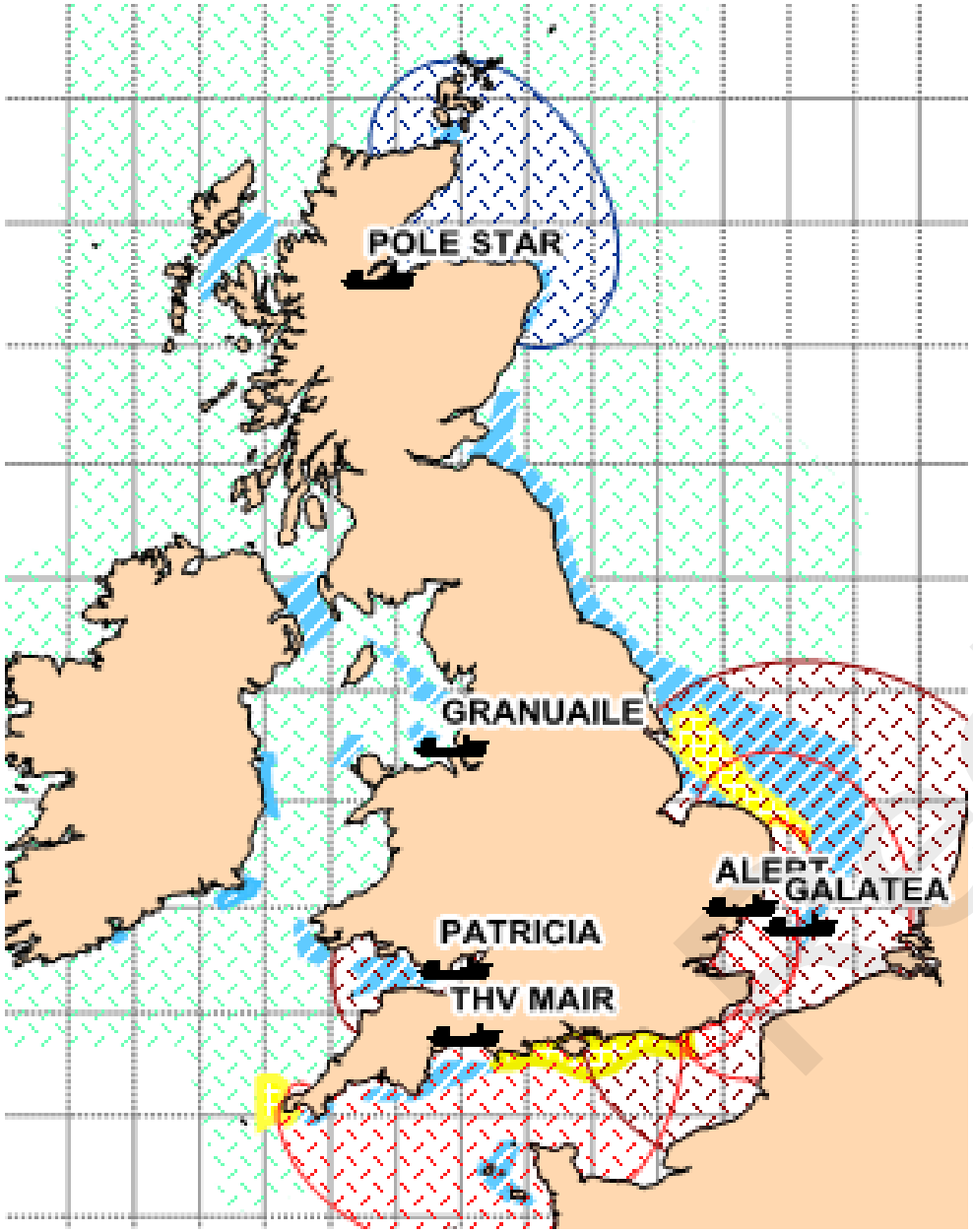
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	91%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, THV MAIR
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	17%	THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	No	0%	
19	PENZANCE TO SCILLIES	24	Yes	100%	THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR, THV MAIR

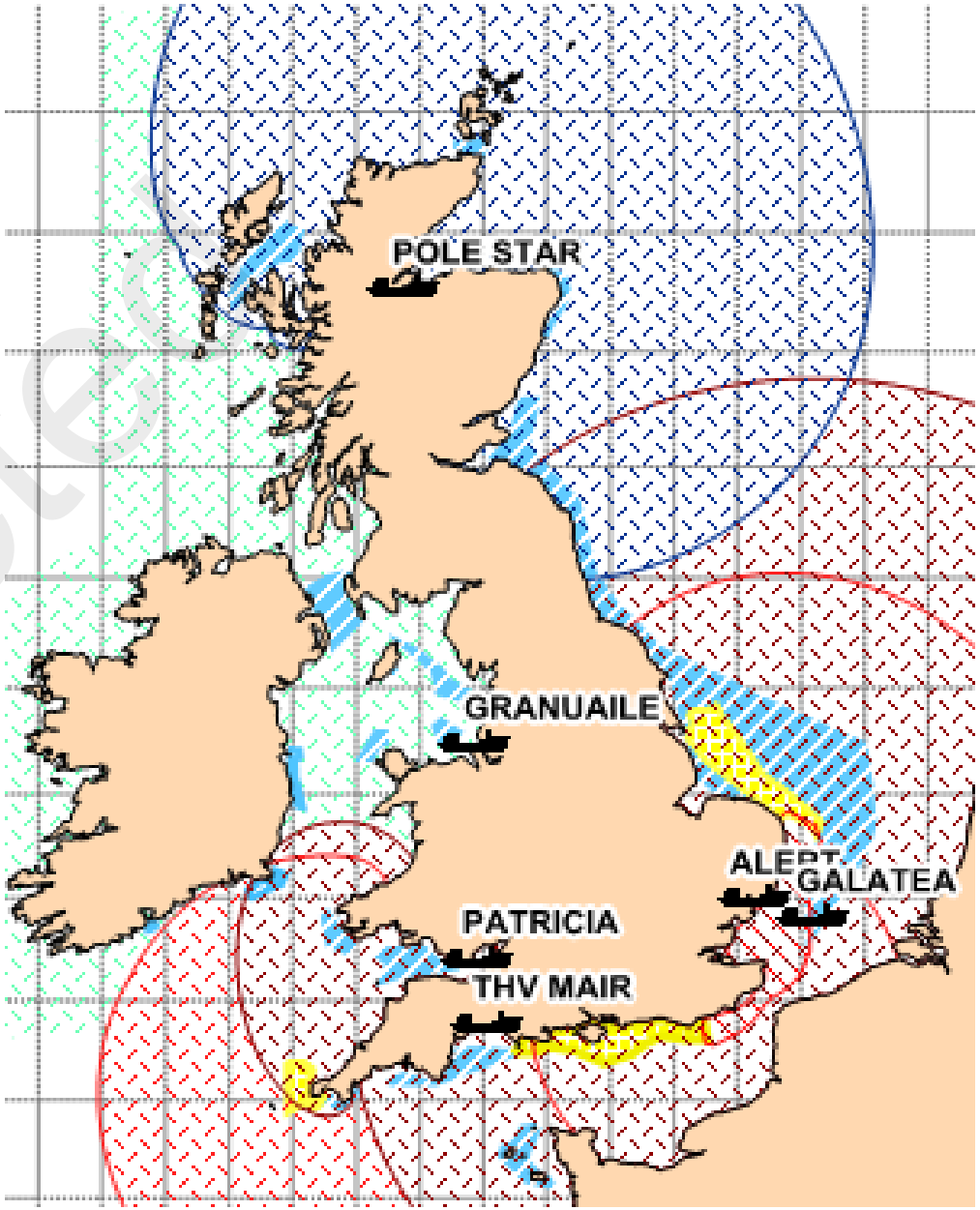
5th Aug 2017	6 Vessel Scenario- FAILED
THV Patricia	*Bristol Channel, Buoy work suspended due to Engine fault; investigated Drifting buoy report.*
THV Galatea	*Passage to Fluvius Tamar to discontinue EWMB's, transferred ETO to THV Alert, made passage to Gt Yarmouth pm*
THV Alert	*Harwich alongside; insufficient staff to sail.*
MV Mair	*Attended Charmouth Outfall buoy; unable to attend W Shambles topmark casualty due weather; passage to Poole*
NLV Pharos	***REMOVED***
NLV Pole Star	*Inverness alongside Training, Local Lights inspection pm*
ILV Granuaile	*Birkenhead DD&R*





12 Hrs RRC

24 Hrs RRC

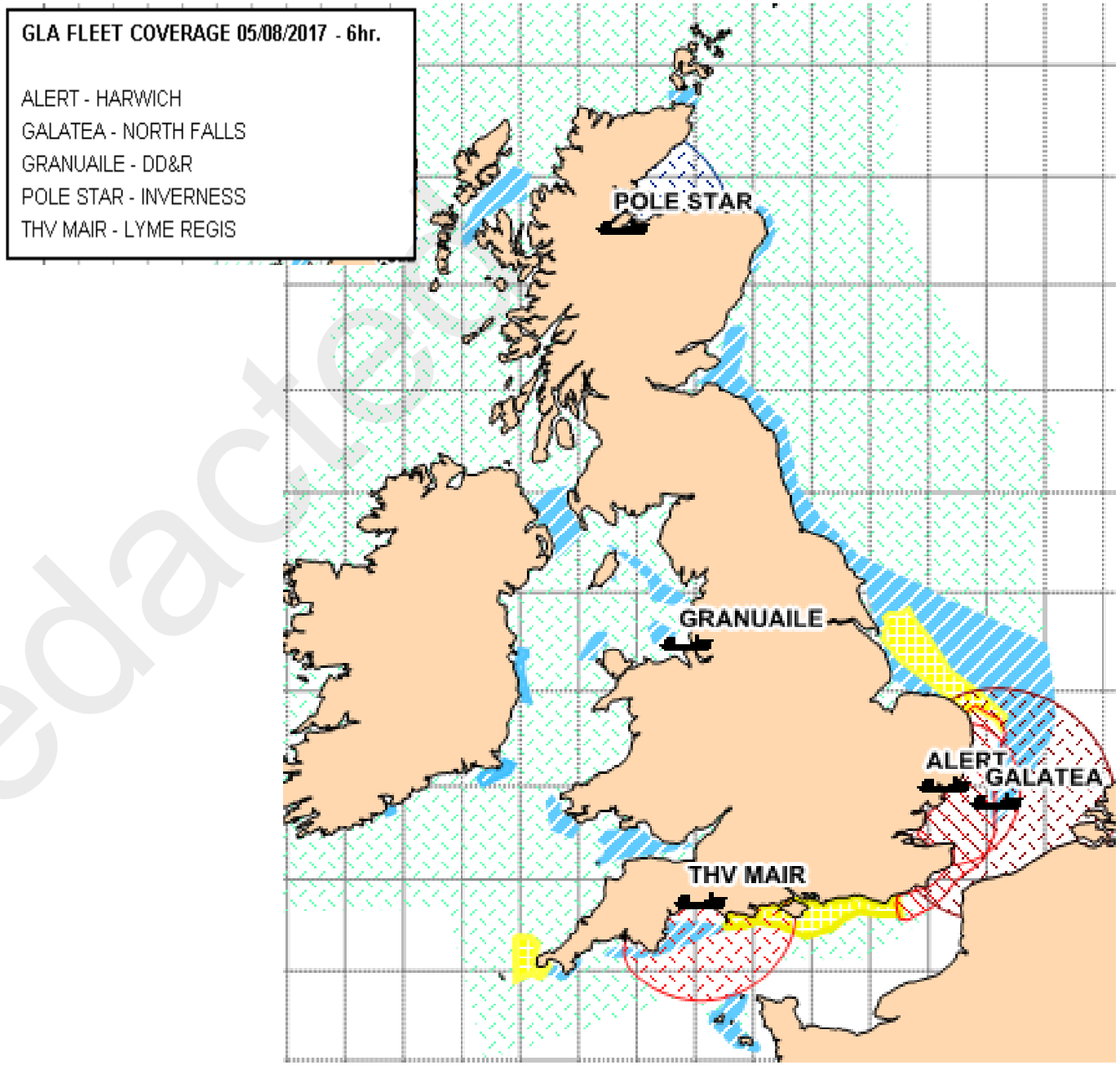


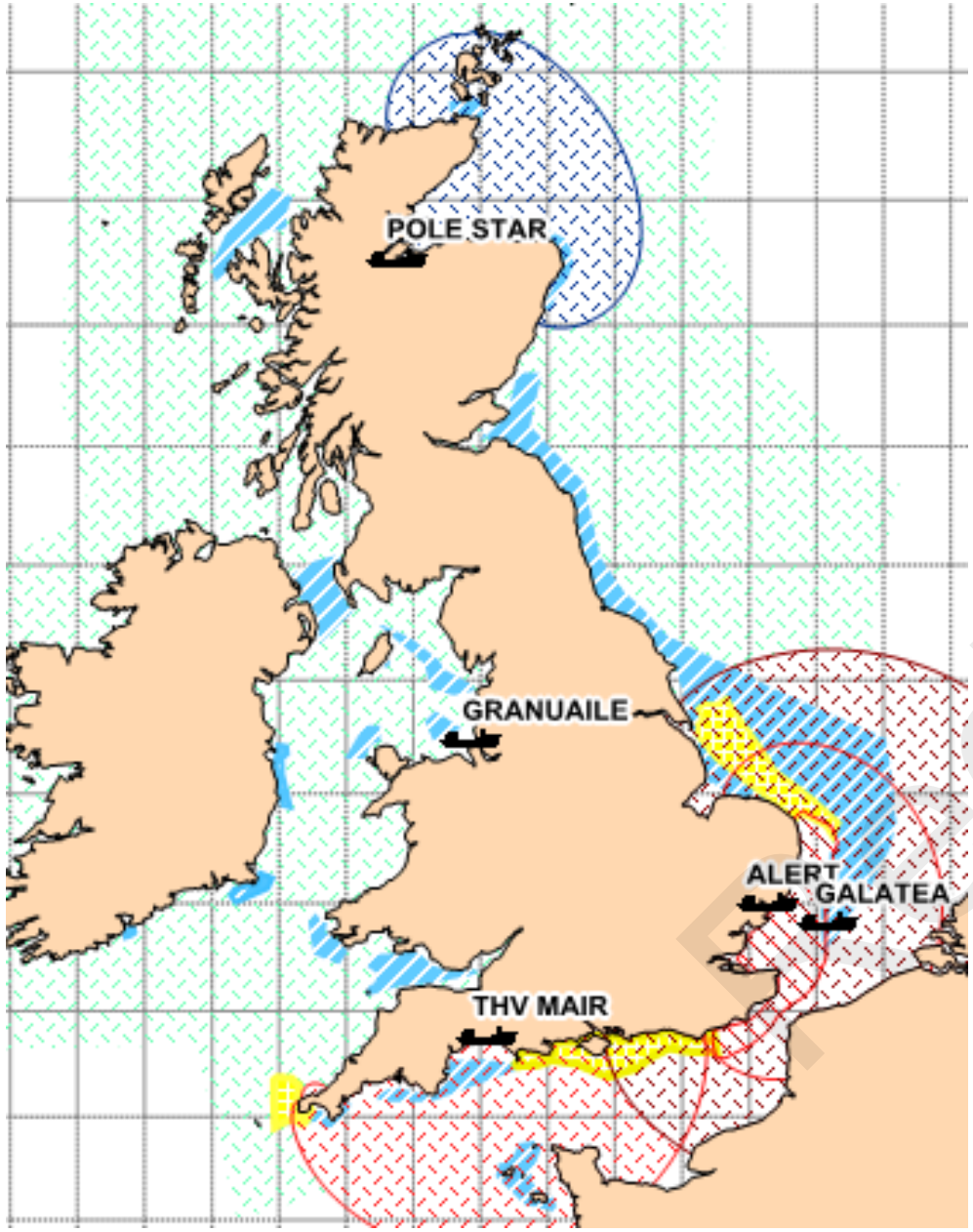
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	91%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, THV MAIR
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	17%	THV MAIR
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	No	0%	
19	PENZANCE TO SCILLIES	24	Yes	100%	THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, POLE STAR, THV MAIR

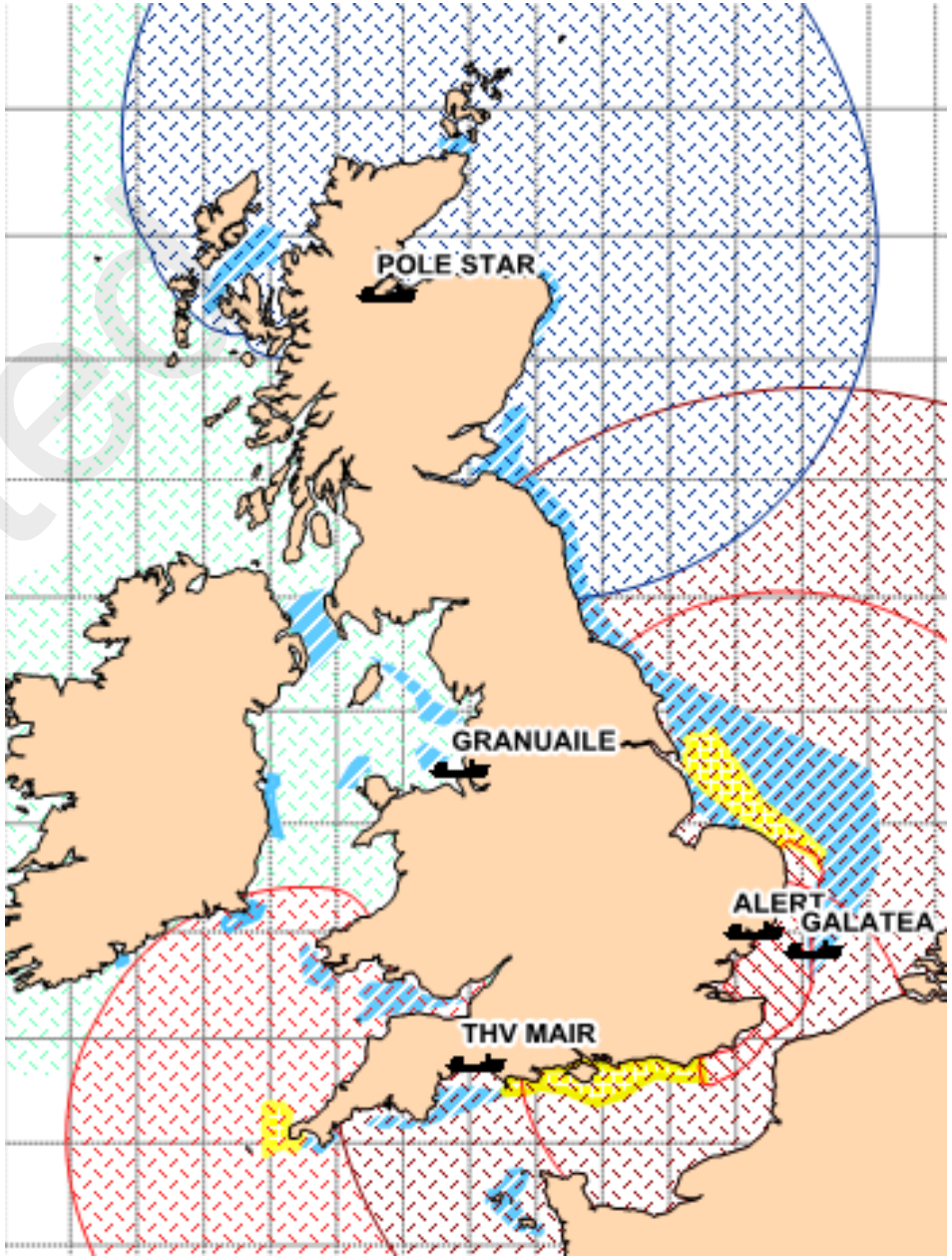
5th Aug 2017	5 Vessel Scenario- FAILED
THV Patricia	***REMOVED***
THV Galatea	*Passage to Fluvius Tamar to discontinue EWMB's, transferred ETO to THV Alert, made passage to Gt Yarmouth pm*
THV Alert	*Harwich alongside; insufficient staff to sail.*
MV Mair	*Attended Charmouth Outfall buoy; unable to attend W Shambles topmark casualty due weather; passage to Poole*
NLV Pharos	***REMOVED***
NLV Pole Star	*Inverness alongside Training, Local Lights inspection pm*
ILV Granuaile	*Birkenhead DD&R*





12 Hrs RRC

24 Hrs RRC

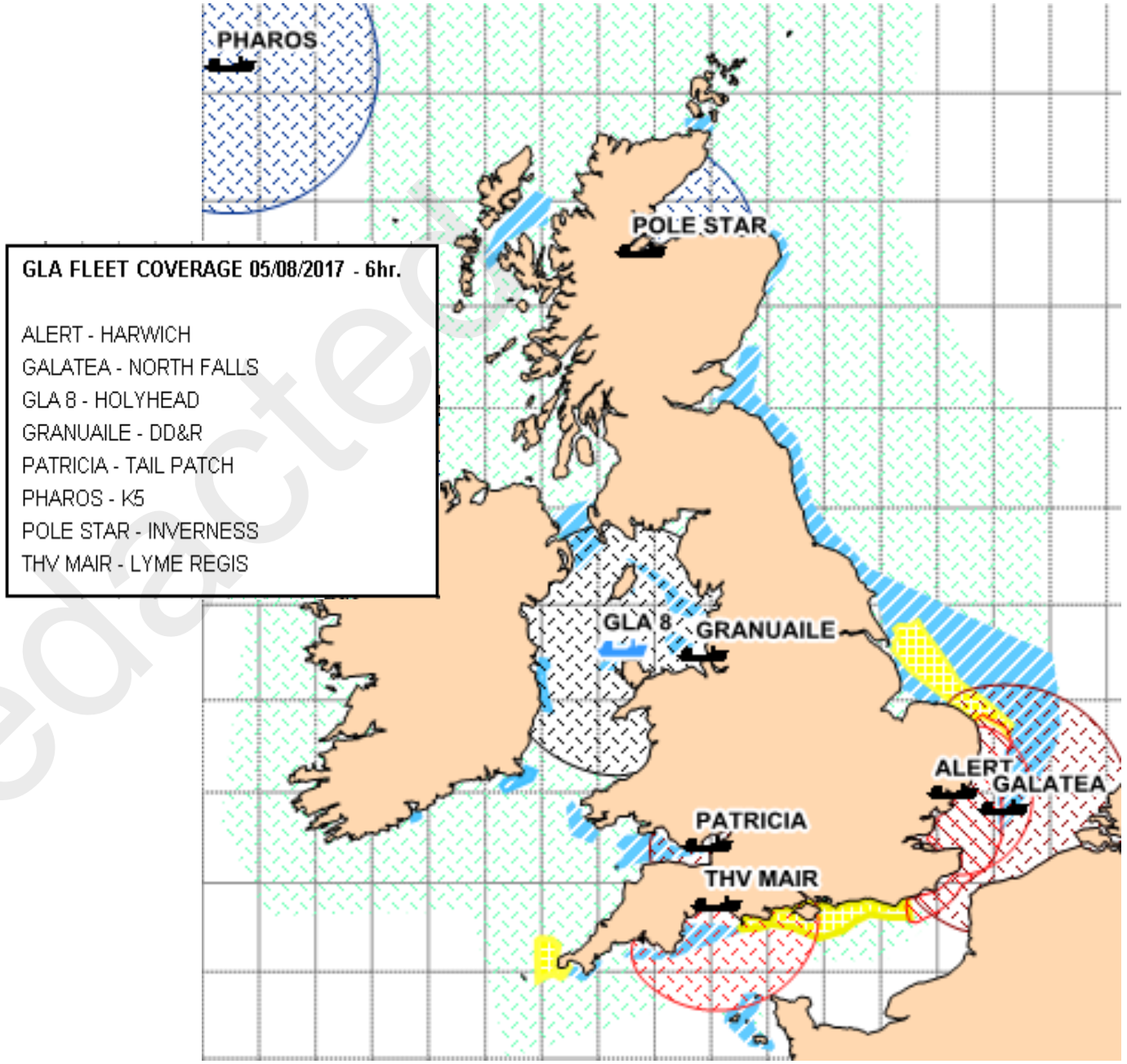


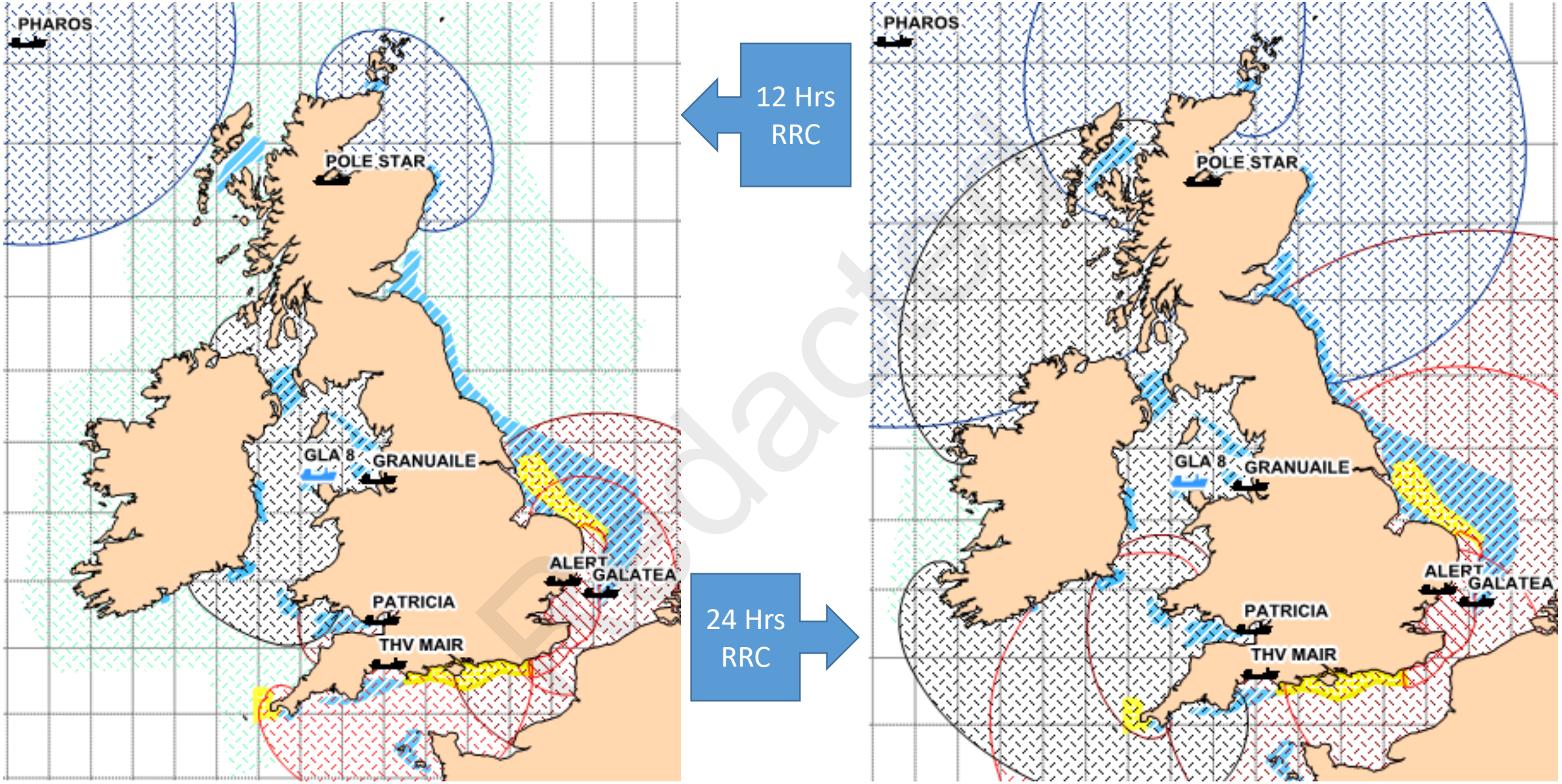
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	91%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, THV MAIR
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	17%	THV MAIR
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	No	0%	
19	PENZANCE TO SCILLIES	24	Yes	100%	THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR

5th Aug 2017	8 Vessel Scenario- FAILED
GLA 8	*Holyhead*
THV Patricia	*Bristol Channel, Buoy work suspended due to Engine fault; investigated Drifting buoy report.*
THV Galatea	*Passage to Fluvius Tamar to discontinue EWMB's, transferred ETO to THV Alert, made passage to Gt Yarmouth pm*
THV Alert	*Harwich alongside; insufficient staff to sail.*
MV Mair	*Attended Charmouth Outfall buoy; unable to attend W Shambles topmark casualty due weather; passage to Poole*
NLV Pharos	*K5 buoy renewal then passage to K7 ODAS buoy with Met Office personnel*
NLV Pole Star	*Inverness alongside Training, Local Lights inspection pm*
ILV Granuaile	*Birkenhead DD&R*




PHAROS
POLE STAR
GLA 8
GRANUAILE
ALERT
GALATEA
PATRICIA
THV MAIR
12 Hrs
RRC
24 Hrs
RRC
PHAROS
POLE STAR
GLA 8
GRANUAILE
ALERT
GALATEA
PATRICIA
THV MAIR

Response Region Coverage

File Edit

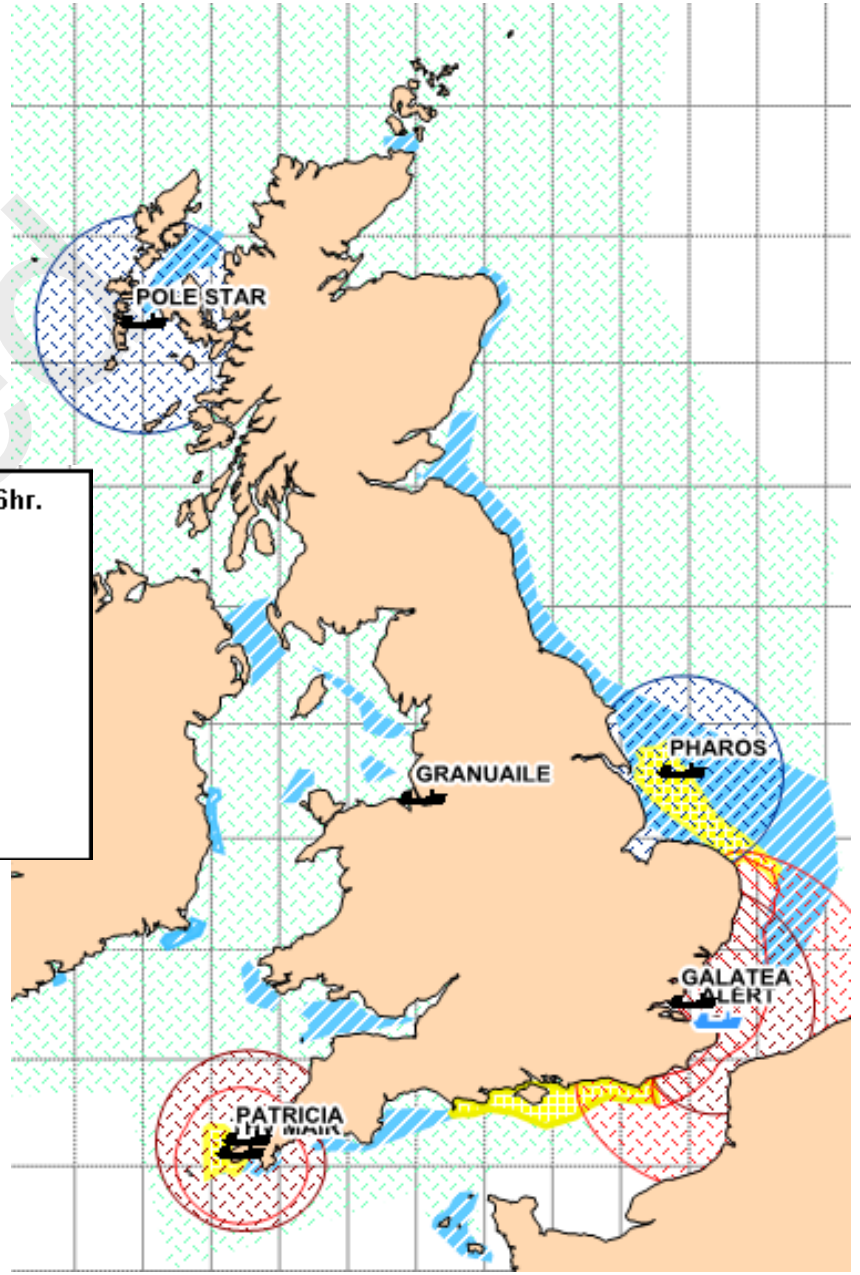
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	95%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, THV MAIR
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	55%	THV MAIR
5	THE MINCH	24	Yes	100%	GLA 8, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GLA 8
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8
16	LIVERPOOL BAY	24	Yes	100%	GLA 8
17	ISLE OF MAN	24	Yes	100%	GLA 8
18	CORK APPROACHES	24	Yes	100%	GLA 8, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GLA 8, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, PHAROS, POLE STAR, T...

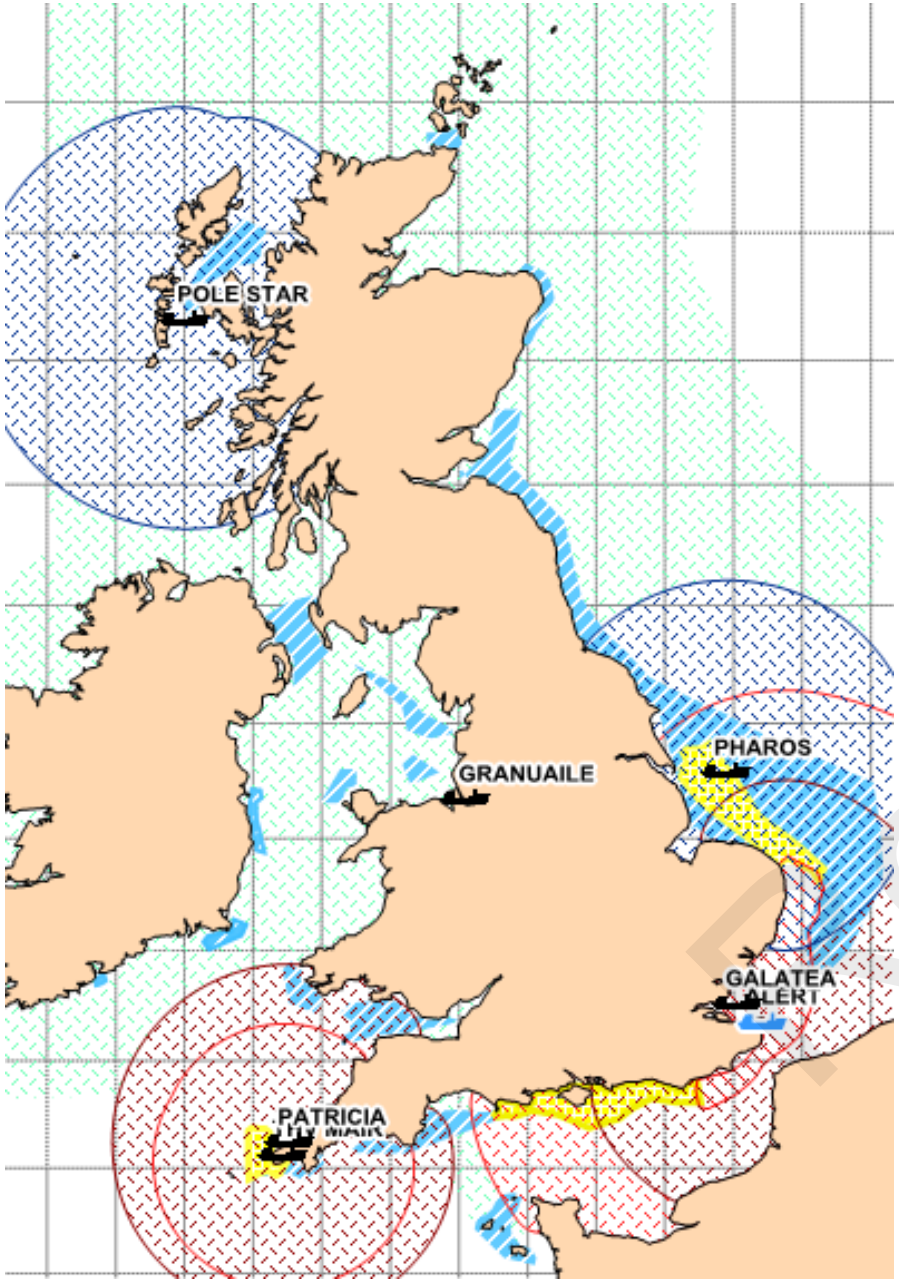
19th Aug 2017	7 Vessel Scenario - Failed
THV Patricia	*St Ives weatherbound*
THV Galatea	*Thames Estuary buoy work*
THV Alert	*Ramsgate ISM drills am; passage to Harwich pm*
MV Mair	*Newlyn weatherbound*
NLV Pharos	*MOD Contract work (Wash Area)*
NLV Pole Star	*Passage to Kalin No.2 outage- unable to attend due weather; passage to Oban pm*
ILV Granuaile	*Birkenhead DD&R*

Wreck, AtoN Casualty, RRC Incidents	
Ships Weatherbound	*Incident Report No. 91*
Liverpool Bay, IOM 24 Hrs	*0 %*
Aberdeen NE Coast 24 Hrs	*0 %*
Pharos MOD Contract work	*Incident Report No.73*

GLA FLEET COVERAGE 19/08/2017 - 6hr.

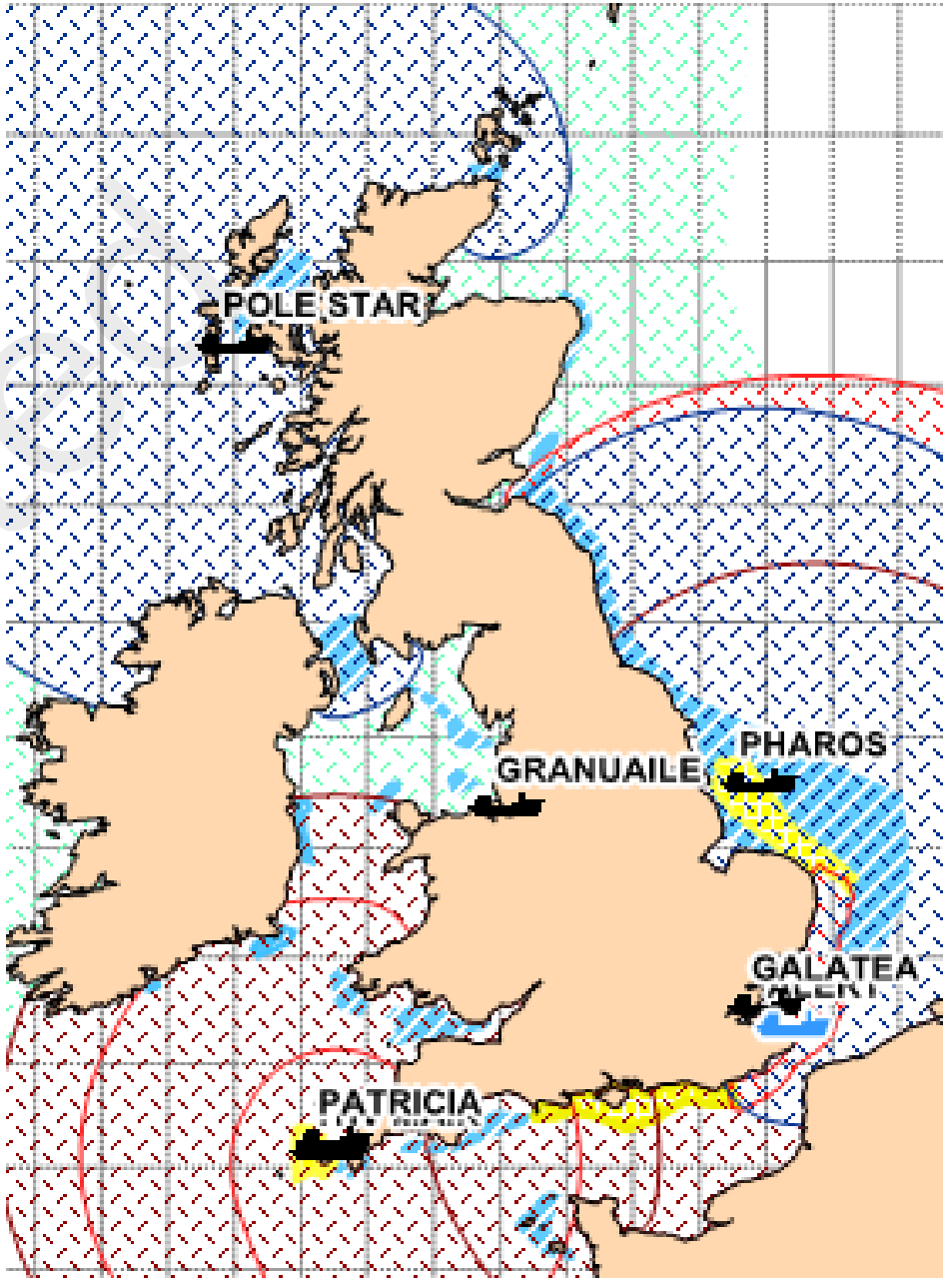
ALERT - RAMSGATE
GALATEA - SHIVERING SANDS
GRANUAILE - DD&R BIRKENHEAD
PATRICIA - WAVE HUB
PHAROS - MOD SANMO CONTRACT
POLE STAR - USHENISH
THV MAIR - NEWLYN





12 Hrs RRC

24 Hrs RRC

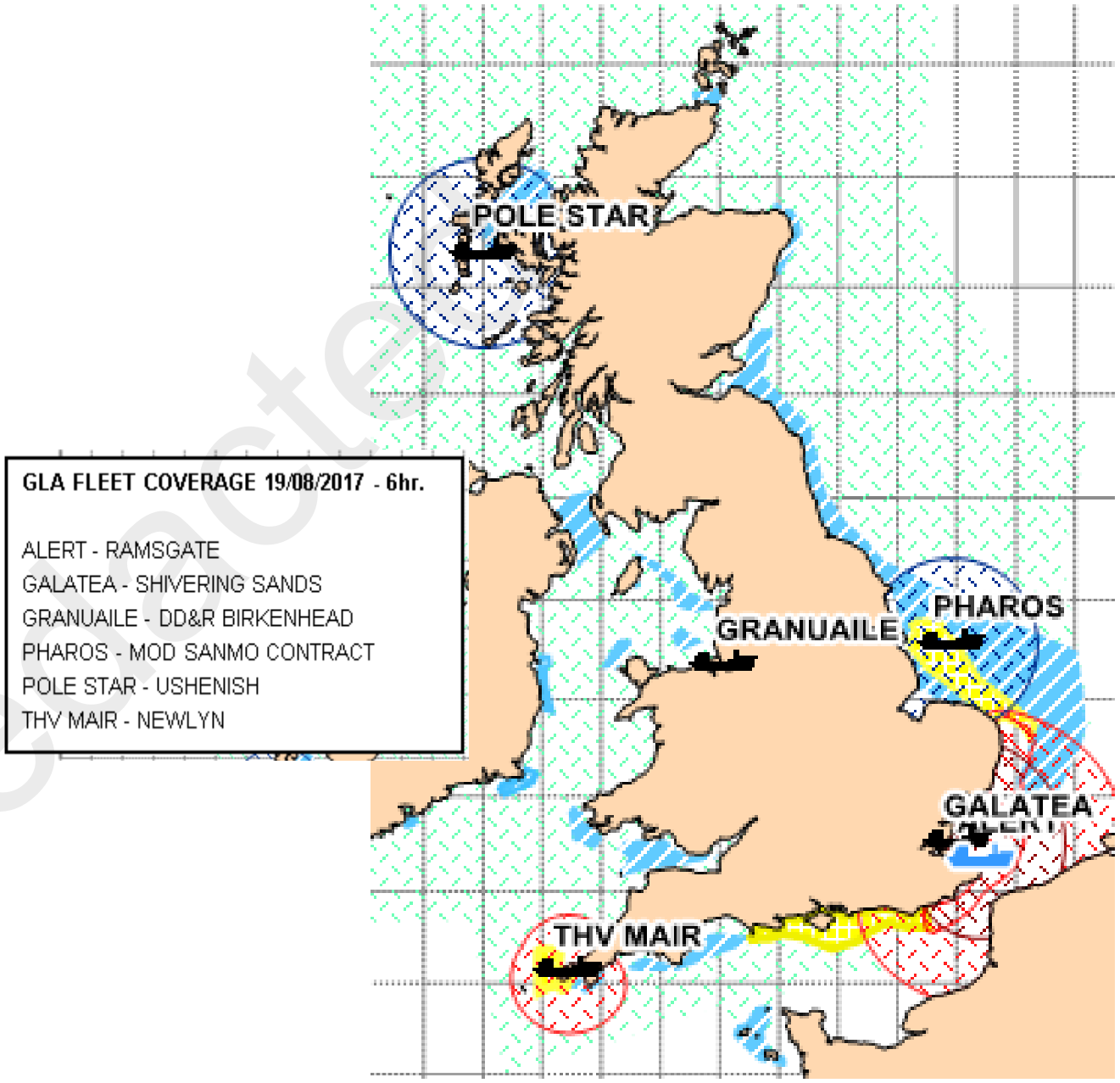


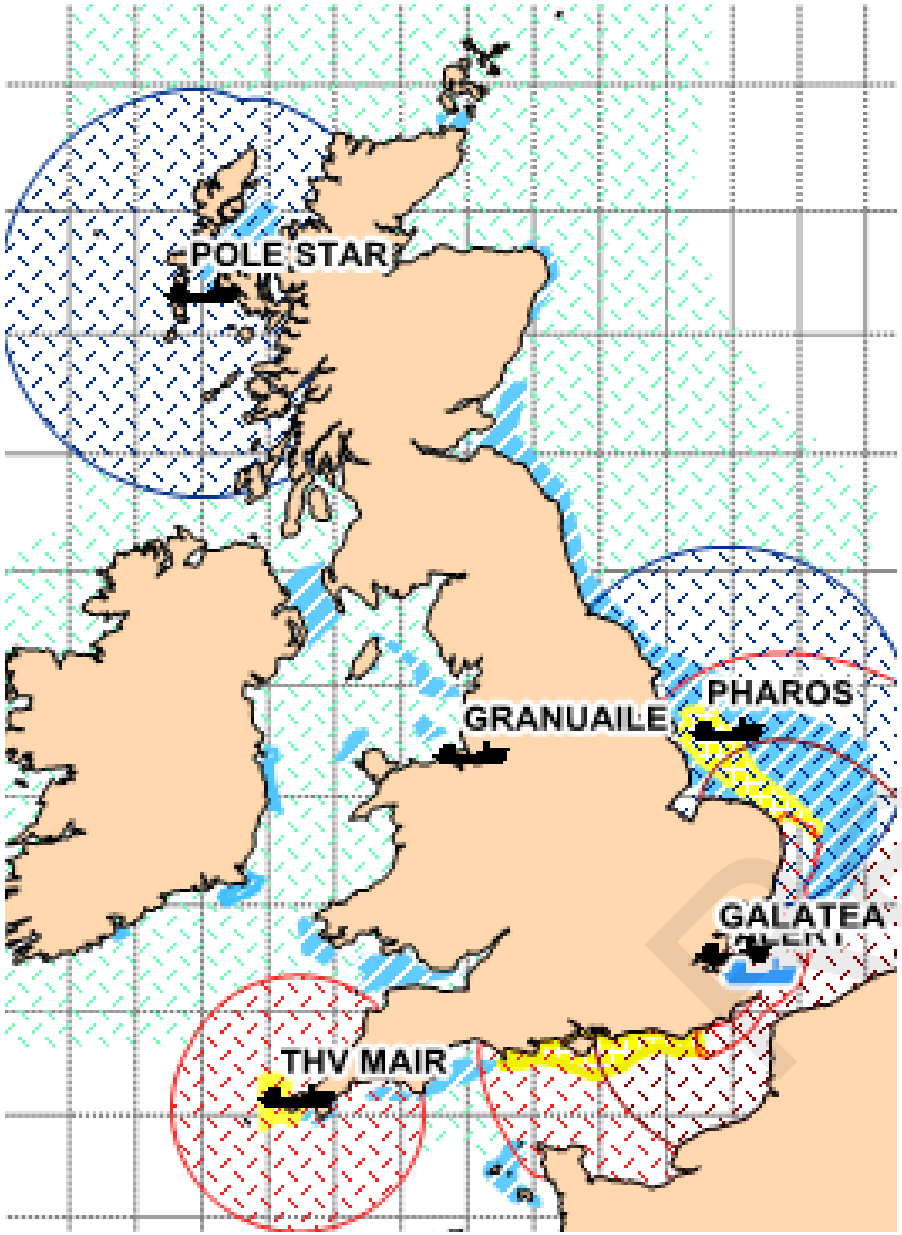
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PHAROS
4	LAND'S END	12	Yes	100%	PATRICIA, THV MAIR
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	98%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	POLE STAR
10	HOLYHEAD APPROACHES	24	No	43%	PATRICIA
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	No	2%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR, THV MAIR

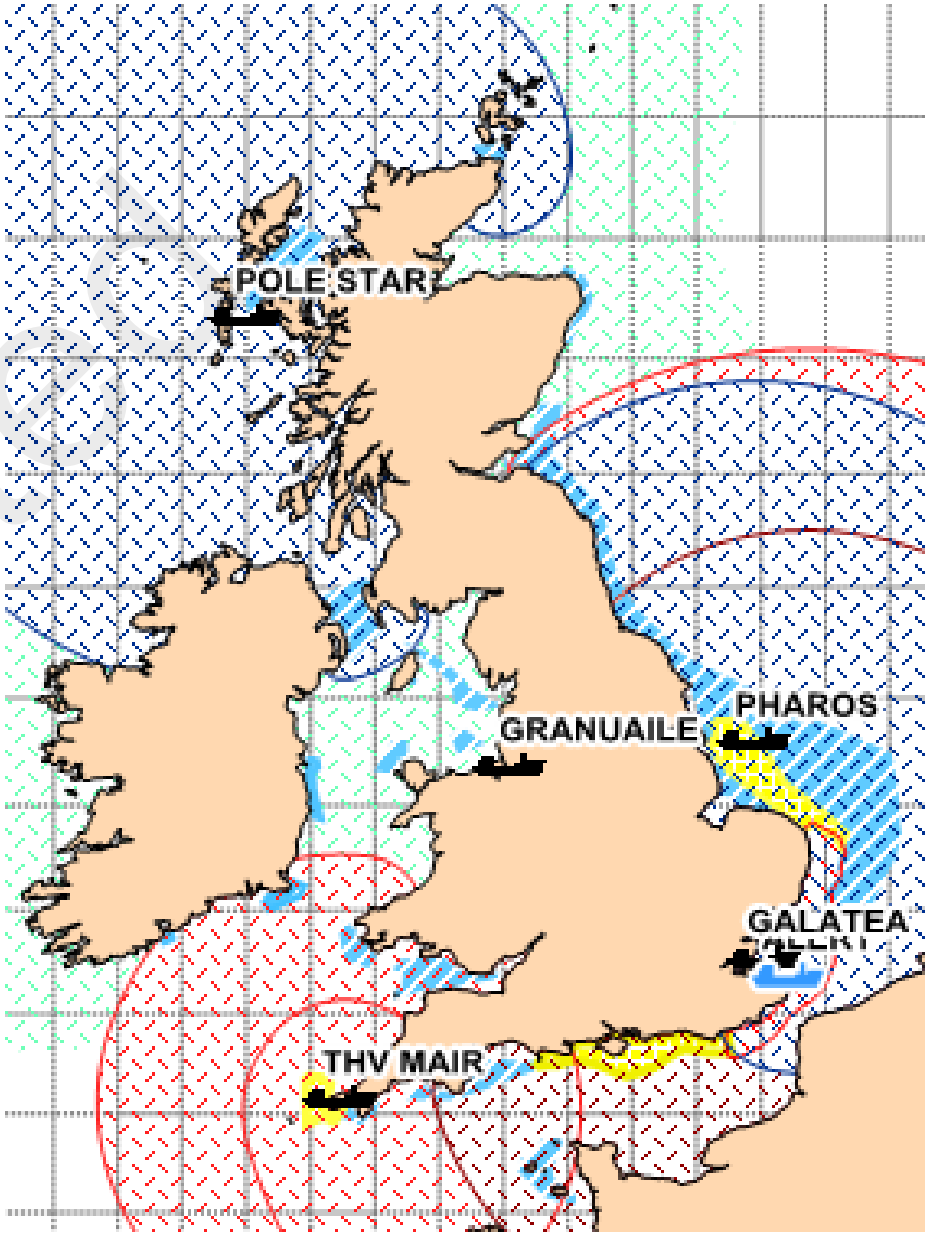
19th Aug 2017	6 Vessel Scenario - Failed
THV Patricia	***REMOVE***
THV Galatea	*Thames Estuary buoy work*
THV Alert	*Ramsgate ISM drills am; passage to Harwich pm*
MV Mair	*Newlyn weatherbound*
NLV Pharos	*MOD Contract work (Wash Area)*
NLV Pole Star	*Passage to Kalin No.2 outage- unable to attend due weather; passage to Oban pm*
ILV Granuaile	*Birkenhead DD&R*





12 Hrs RRC

24 Hrs RRC

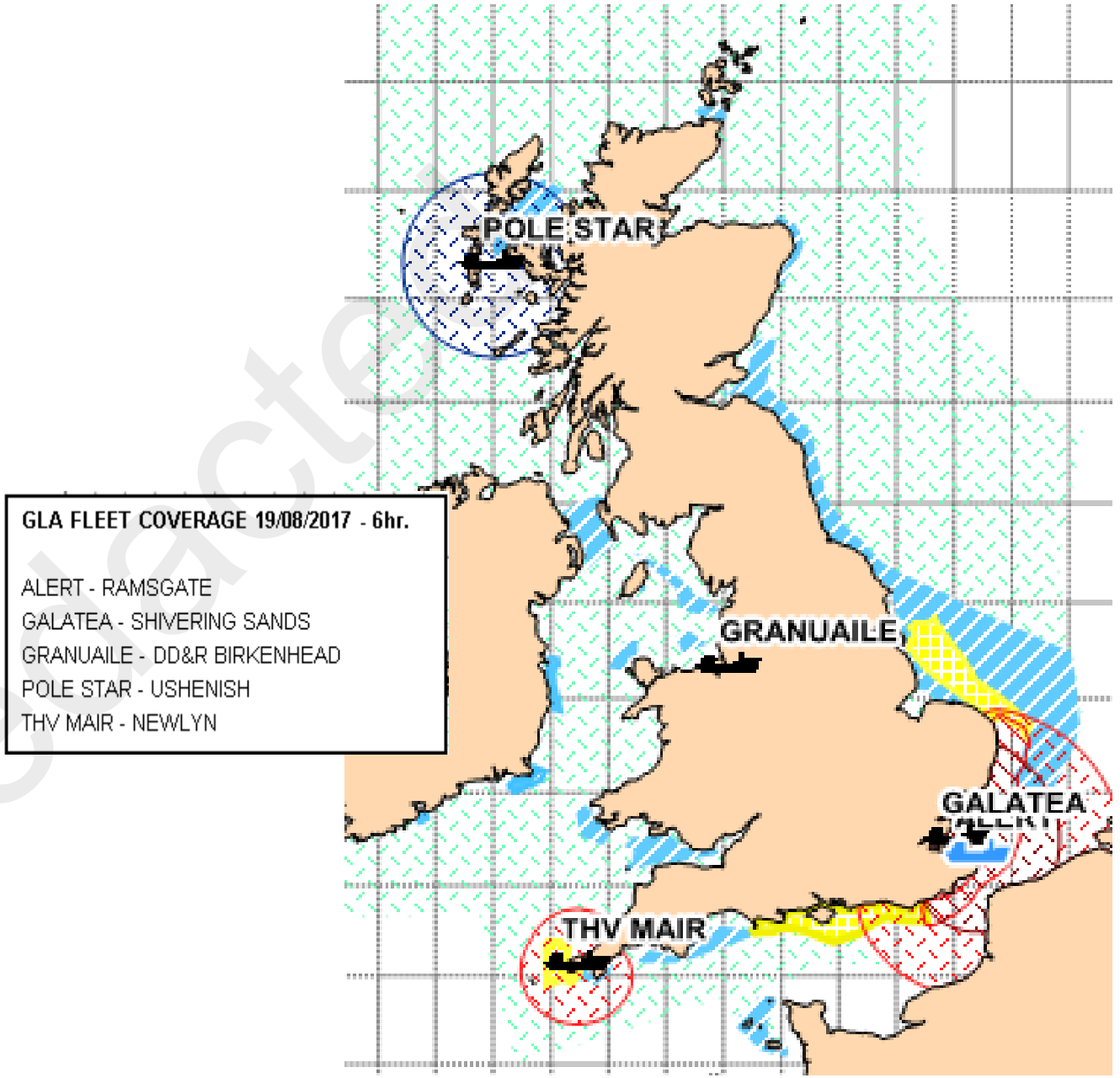


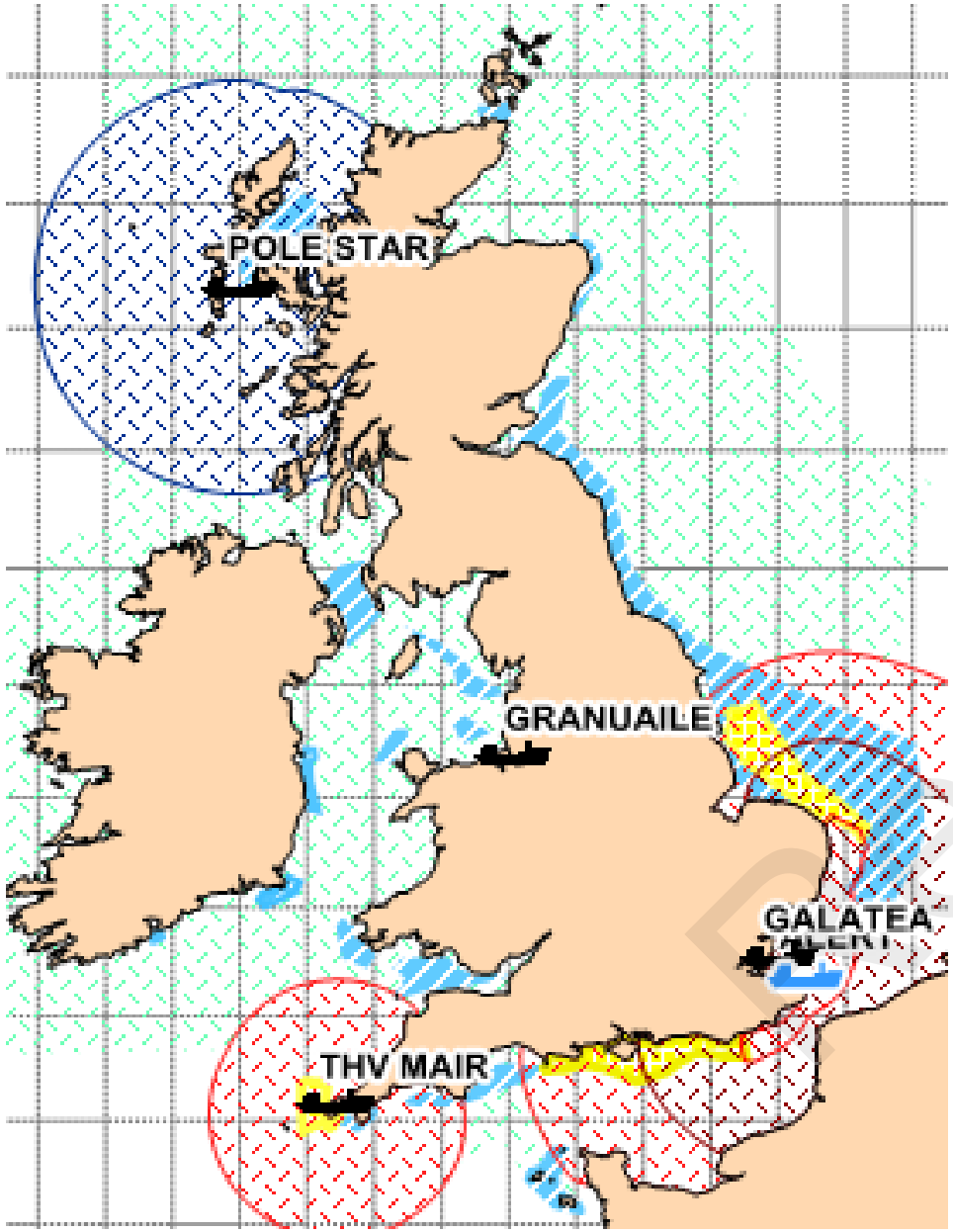
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PHAROS
4	LAND'S END	12	Yes	100%	THV MAIR
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	98%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	POLE STAR
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	2%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PHAROS, POLE STAR, THV MAIR

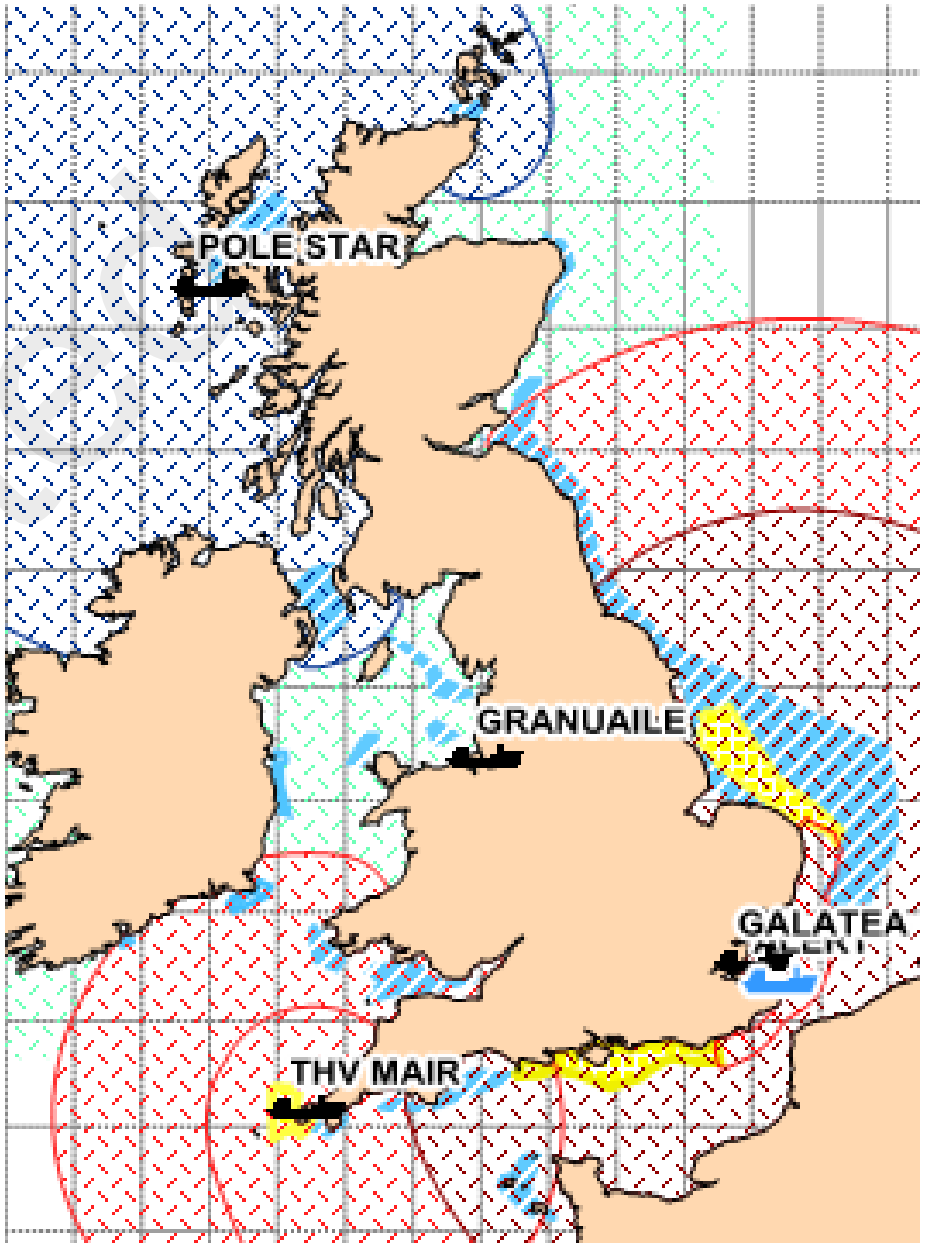
19th Aug 2017	5 Vessel Scenario - Failed
THV Patricia	***REMOVE***
THV Galatea	*Thames Estuary buoy work*
THV Alert	*Ramsgate ISM drills am; passage to Harwich pm*
MV Mair	*Newlyn weatherbound*
NLV Pharos	***REMOVE***
NLV Pole Star	*Passage to Kalin No.2 outage- unable to attend due weather; passage to Oban pm*
ILV Granuaile	*Birkenhead DD&R*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	THV MAIR
5	THE MINCH	24	Yes	100%	POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	98%	ALERT, GALATEA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	POLE STAR
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, THV MAIR
15	MORECAMBE BAY	24	No	2%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, POLE STAR, THV MAIR

19th Aug 2017	8 Vessel Scenario – Possible*
GLA 8	*Liverpool Bay*
THV Patricia	*St Ives weatherbound*
THV Galatea	*Thames Estuary buoy work*
THV Alert	*Ramsgate ISM drills am; passage to Harwich pm*
MV Mair	*Newlyn weatherbound*
NLV Pharos	*MOD Contract work (Wash Area)*
NLV Pole Star	*Passage to Kalin No.2 outage- unable to attend due weather; passage to Oban pm*
ILV Granuaile	*Birkenhead DD&R*

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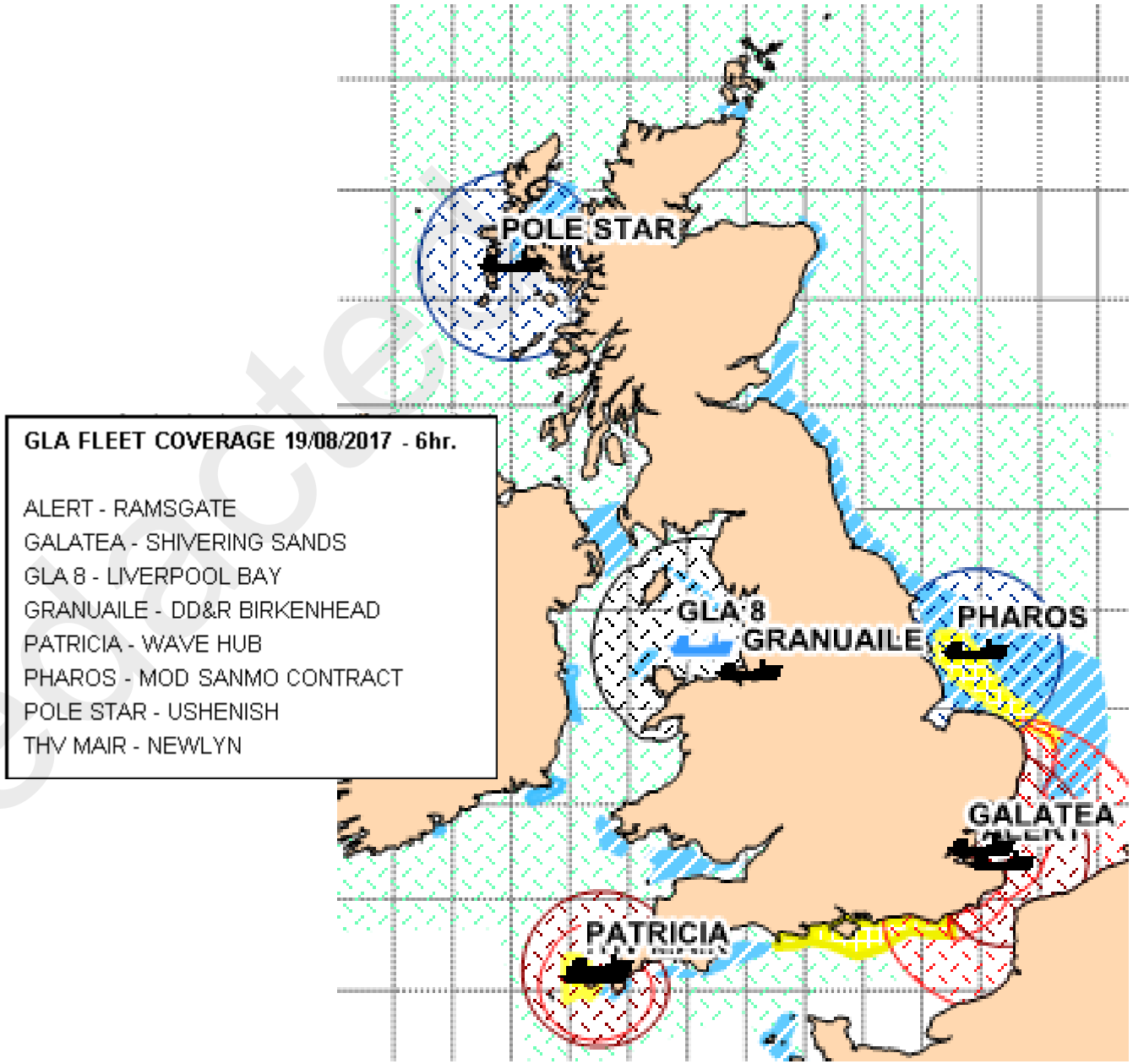
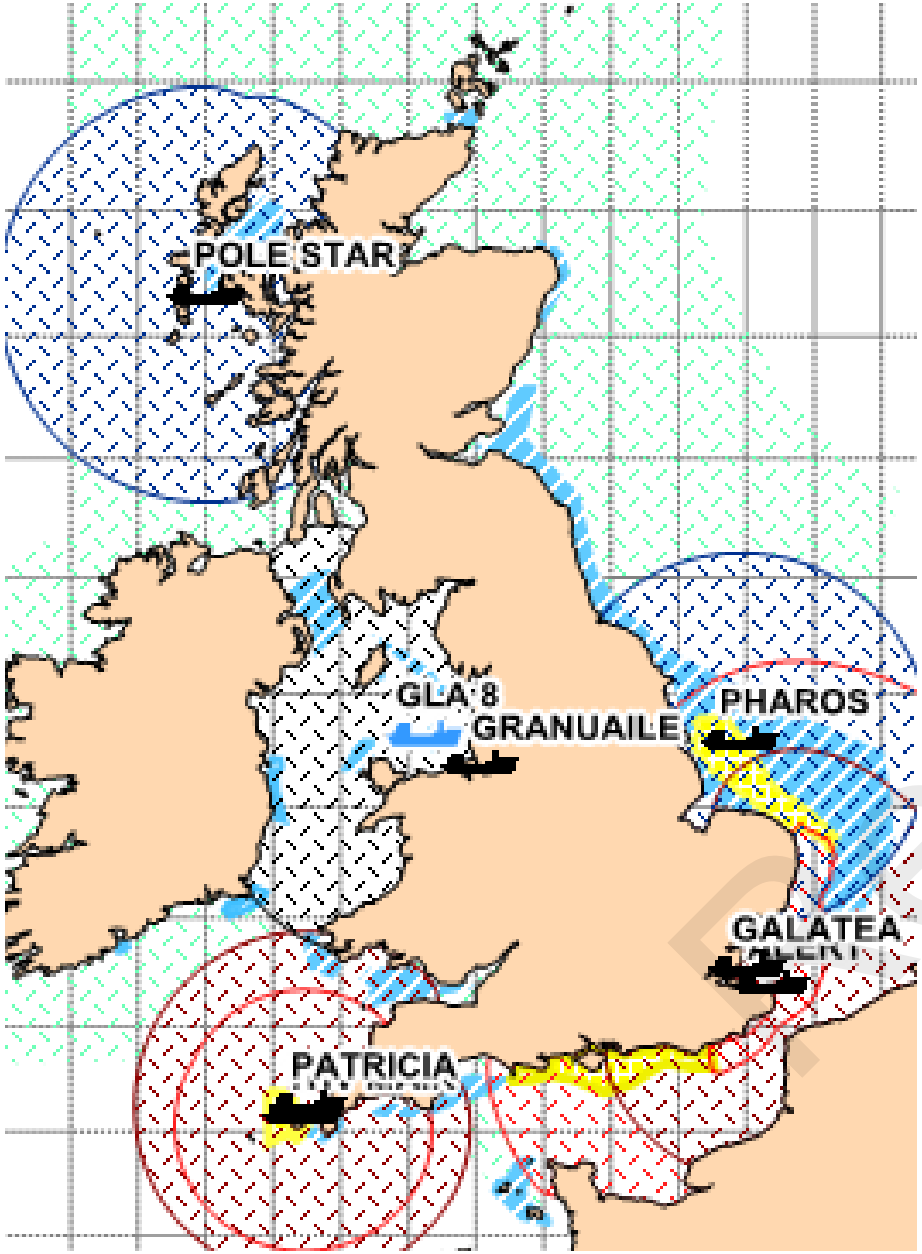
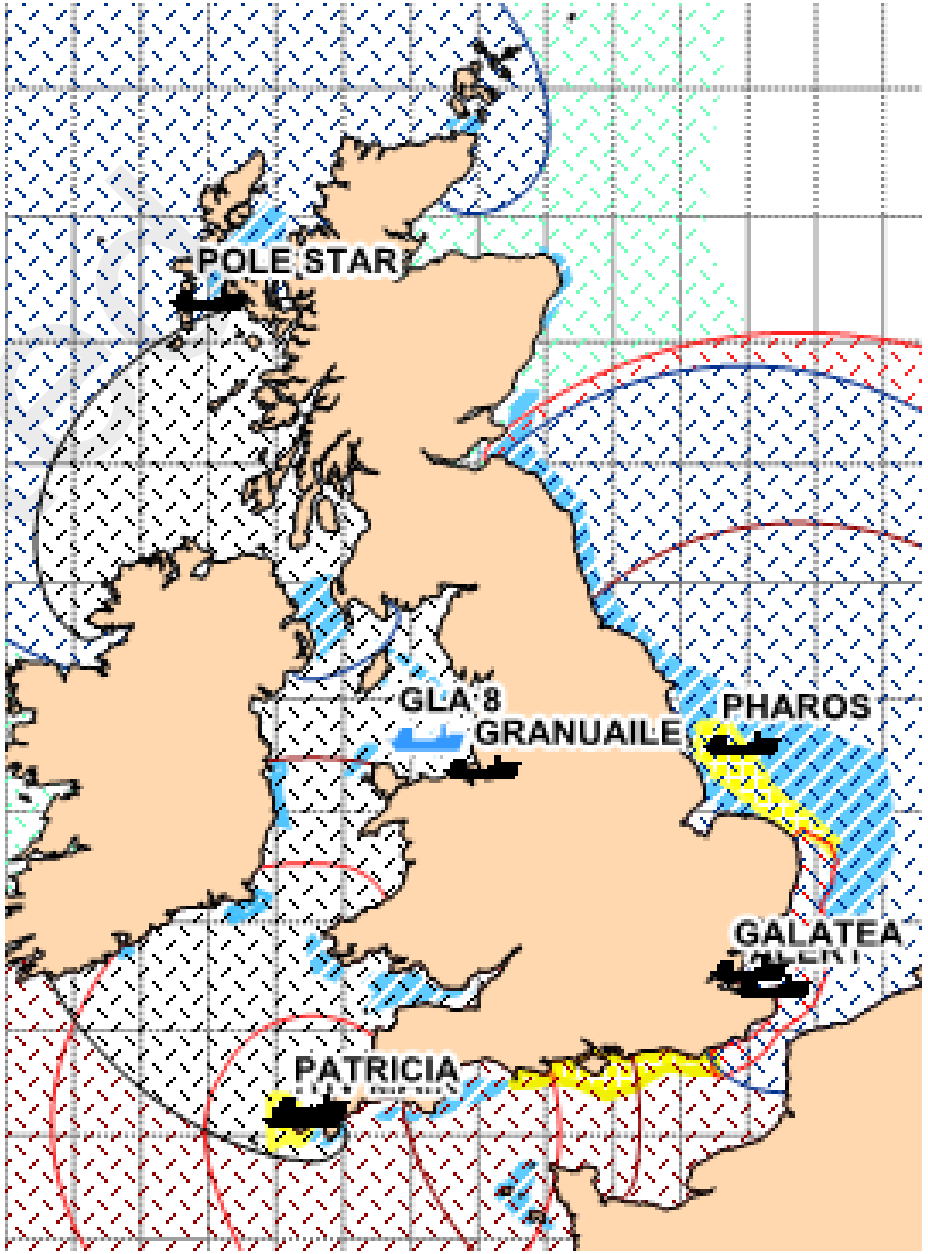
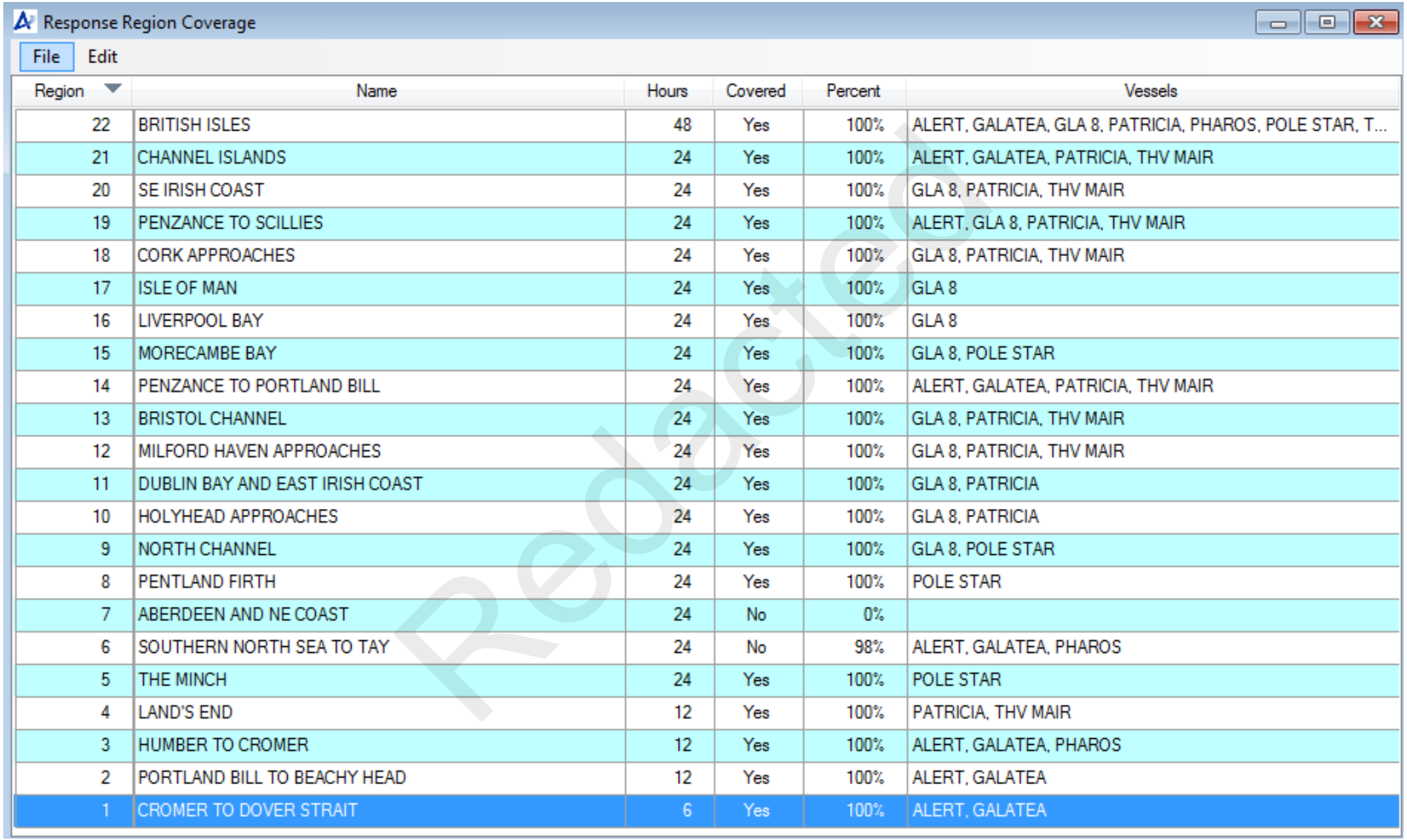




12 Hrs RRC

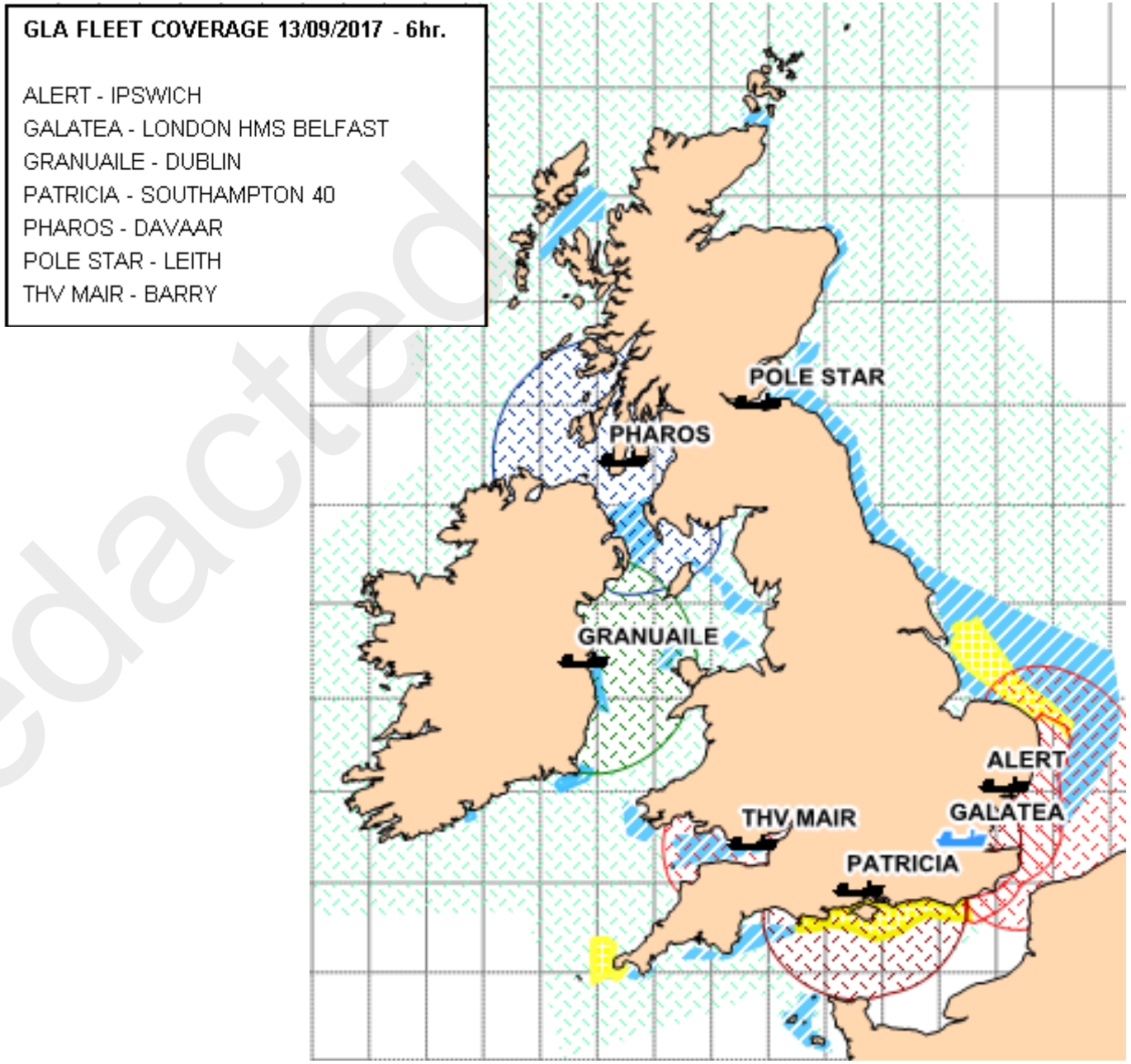
24 Hrs RRC

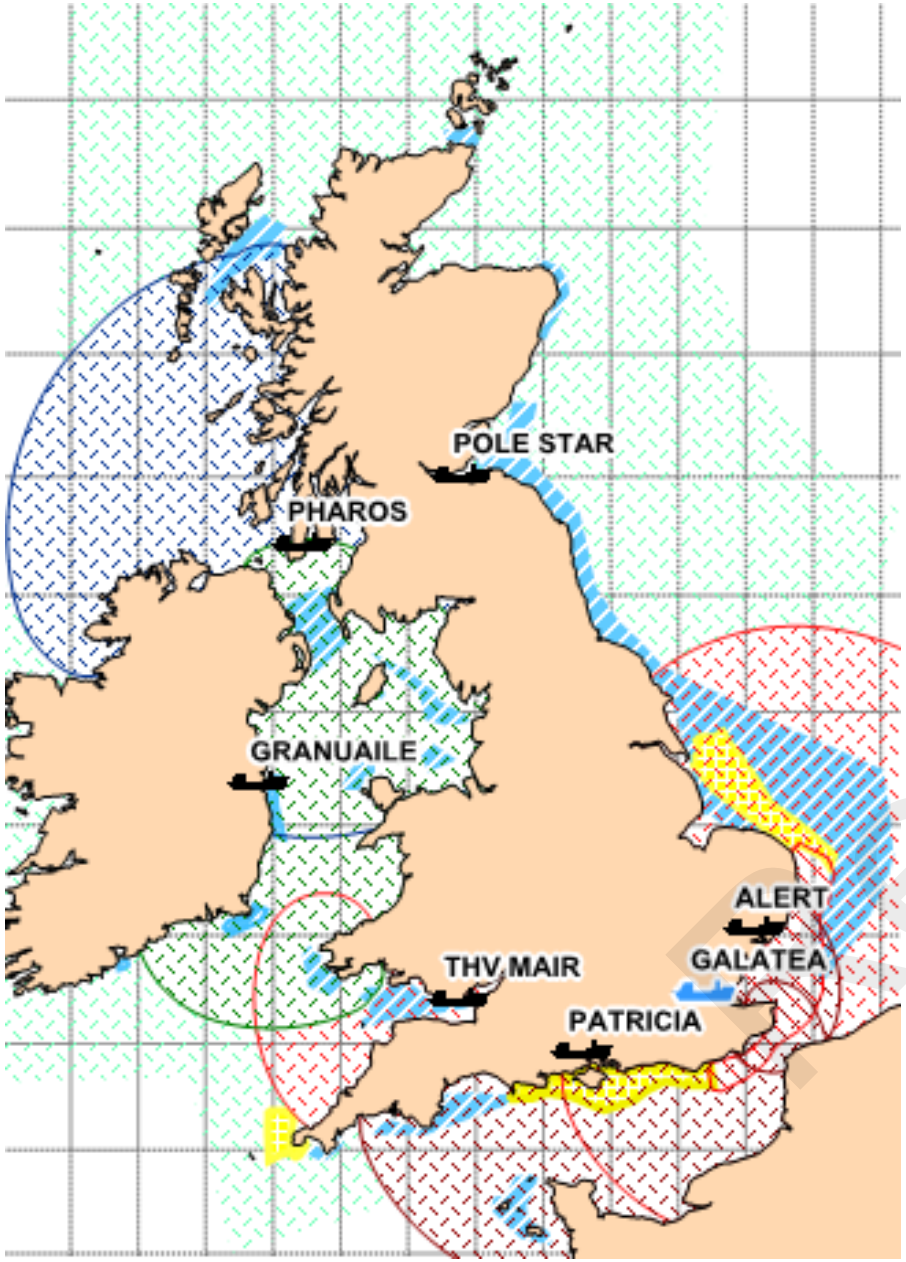



Response Region Coverage
File
Edit
Region
Name
Hours
Covered
Percent
Vessels
22 BRITISH ISLES 48 Yes 100% ALERT, GALATEA, GLA 8, PATRICIA, PHAROS, POLE STAR, T...
21 CHANNEL ISLANDS 24 Yes 100% ALERT, GALATEA, PATRICIA, THV MAIR
20 SE IRISH COAST 24 Yes 100% GLA 8, PATRICIA, THV MAIR
19 PENZANCE TO SCILLIES 24 Yes 100% ALERT, GLA 8, PATRICIA, THV MAIR
18 CORK APPROACHES 24 Yes 100% GLA 8, PATRICIA, THV MAIR
17 ISLE OF MAN 24 Yes 100% GLA 8
16 LIVERPOOL BAY 24 Yes 100% GLA 8
15 MORECAMBE BAY 24 Yes 100% GLA 8, POLE STAR
14 PENZANCE TO PORTLAND BILL 24 Yes 100% ALERT, GALATEA, PATRICIA, THV MAIR
13 BRISTOL CHANNEL 24 Yes 100% GLA 8, PATRICIA, THV MAIR
12 MILFORD HAVEN APPROACHES 24 Yes 100% GLA 8, PATRICIA, THV MAIR
11 DUBLIN BAY AND EAST IRISH COAST 24 Yes 100% GLA 8, PATRICIA
10 HOLYHEAD APPROACHES 24 Yes 100% GLA 8, PATRICIA
9 NORTH CHANNEL 24 Yes 100% GLA 8, POLE STAR
8 PENTLAND FIRTH 24 Yes 100% POLE STAR
7 ABERDEEN AND NE COAST 24 No 0%
6 SOUTHERN NORTH SEA TO TAY 24 No 98% ALERT, GALATEA, PHAROS
5 THE MINCH 24 Yes 100% POLE STAR
4 LAND'S END 12 Yes 100% PATRICIA, THV MAIR
3 HUMBER TO CROMER 12 Yes 100% ALERT, GALATEA, PHAROS
2 PORTLAND BILL TO BEACHY HEAD 12 Yes 100% ALERT, GALATEA
1 CROMER TO DOVER STRAIT 6 Yes 100% ALERT, GALATEA
Redacted

12th Sept 2017	7 Vessel Scenario - FAILED
THV Patricia	*Wight area buoy work*
THV Galatea	*London - RRC*
THV Alert	*Harwich e-polaris work am; passage to Ipswich pm weatherbound*
MV Mair	*Barry bow thruster repairs; attend contract beacons by road.*
NLV Pharos	*Sanda Heli-Ops*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Kish Lighthouse attendance; Dublin pm weatherbound*

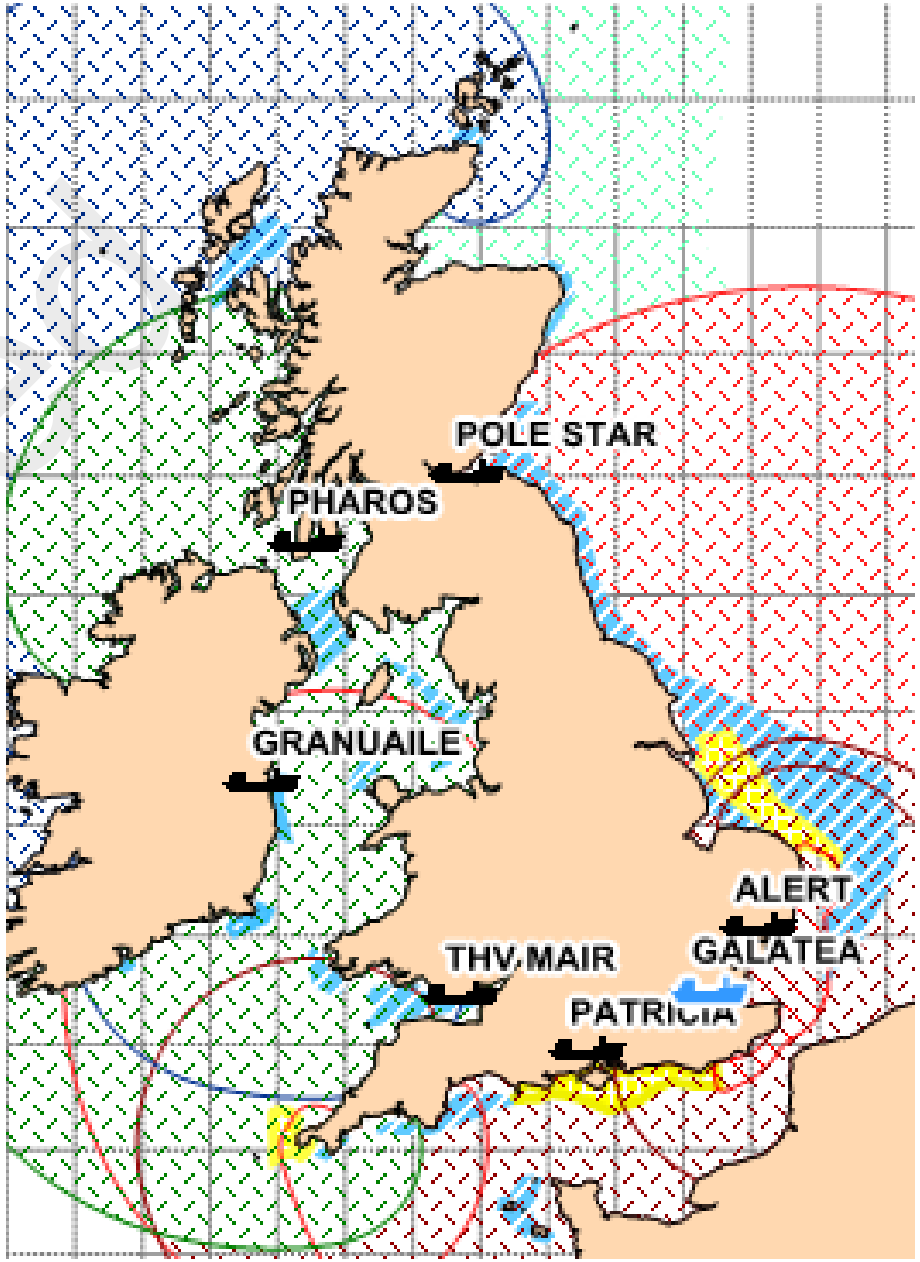
Wreck, AtoN Casualty, RRC Incidents	
Mair Bowthruster Repairs	*Incident Report No.98*
Land's End 12 Hrs	*0 %*
Pole Star Self Refit	*Incident Report No.96*
Aberdeen & NE Coast 24 Hrs	*0 %*





12 Hrs RRC

24 Hrs RRC

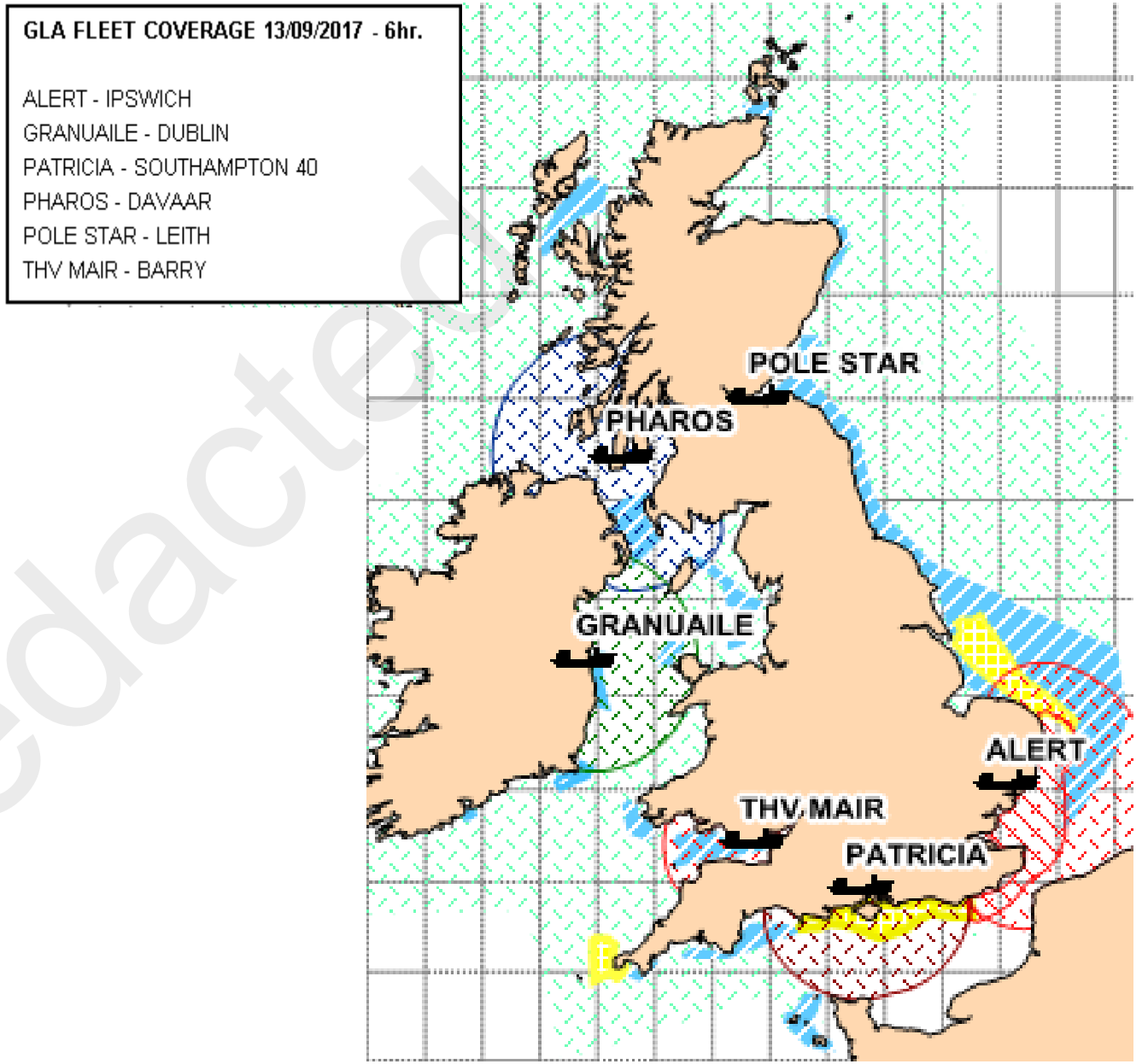


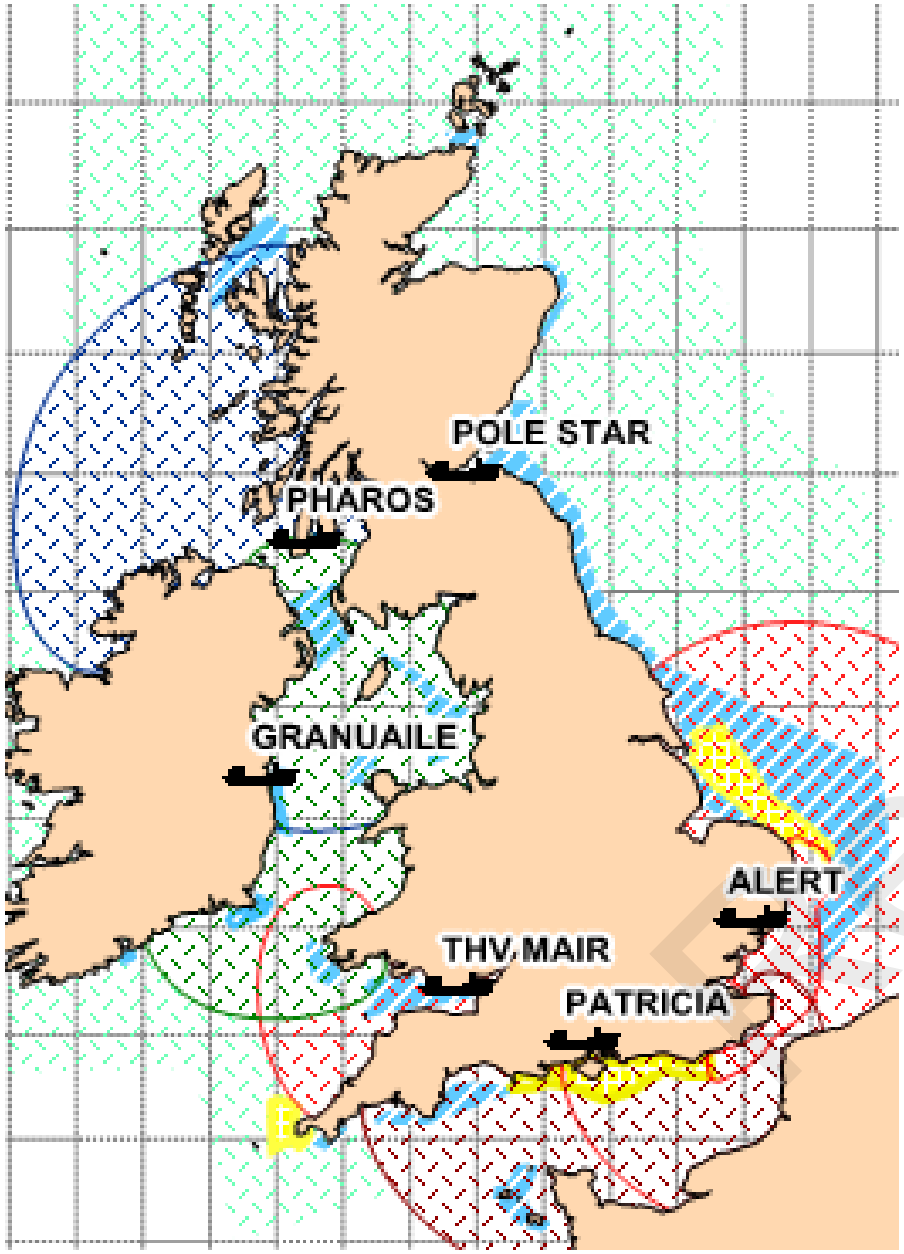
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	98%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

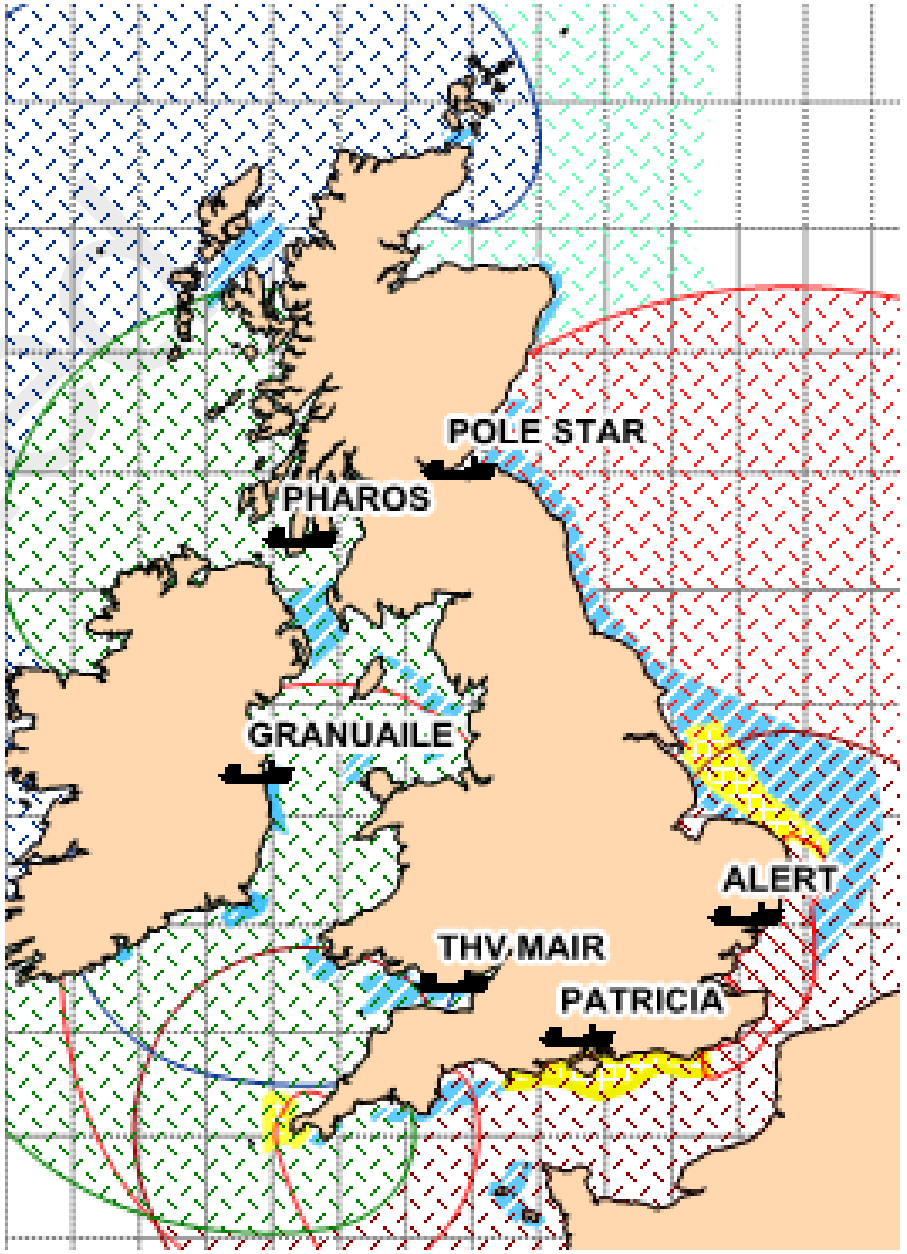
12th Sept 2017	6 Vessel Scenario - Failed
THV Patricia	*Wight area buoy work*
THV Galatea	***REMOVE***
THV Alert	*Harwich e-polaris work am; passage to Ipswich pm weatherbound*
MV Mair	*Barry bow thruster repairs; attend contract beacons by road.*
NLV Pharos	*Sanda Heli-Ops*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Kish Lighthouse attendance; Dublin pm weatherbound*





12 Hrs RRC

24 Hrs RRC

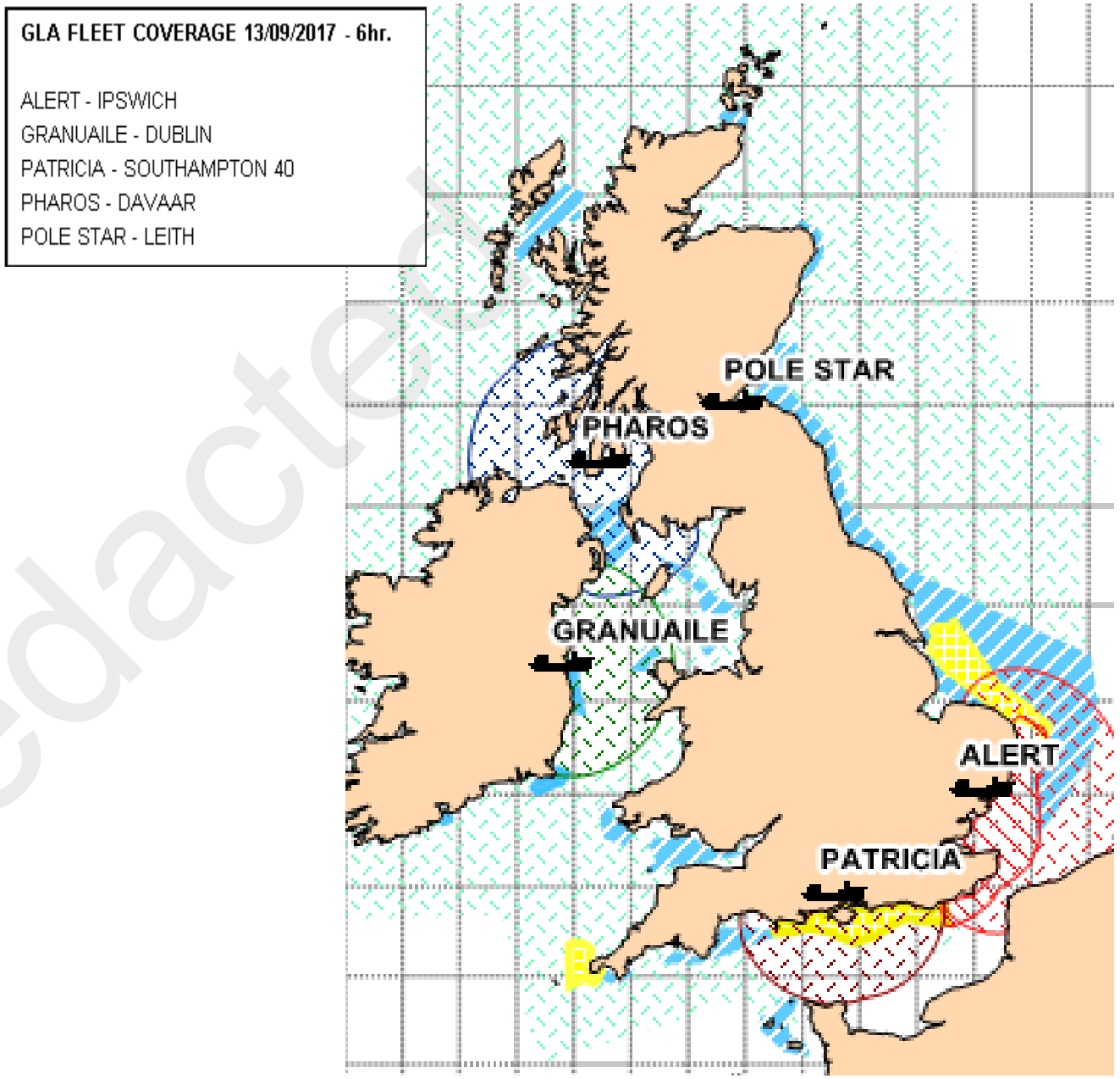


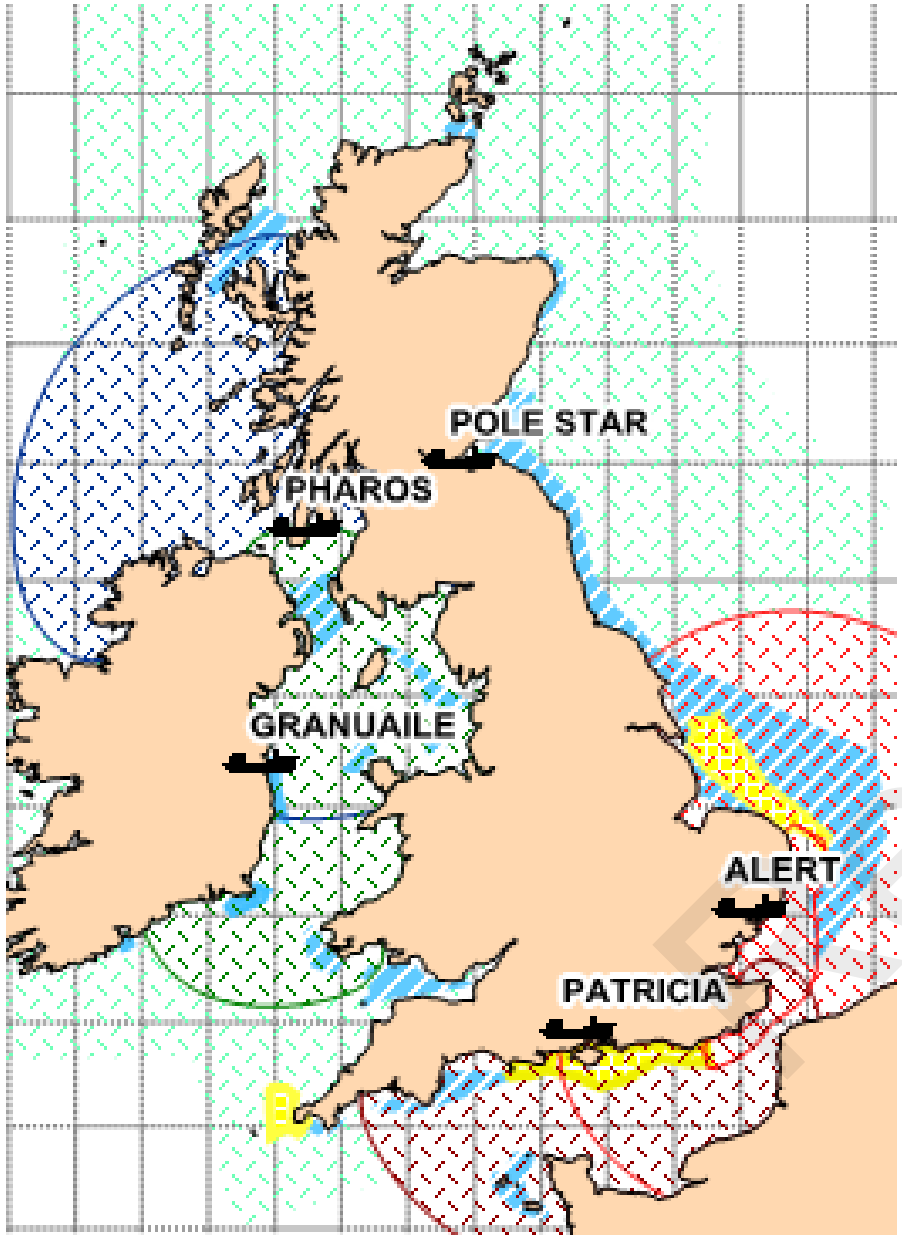
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	98%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, THV MAIR

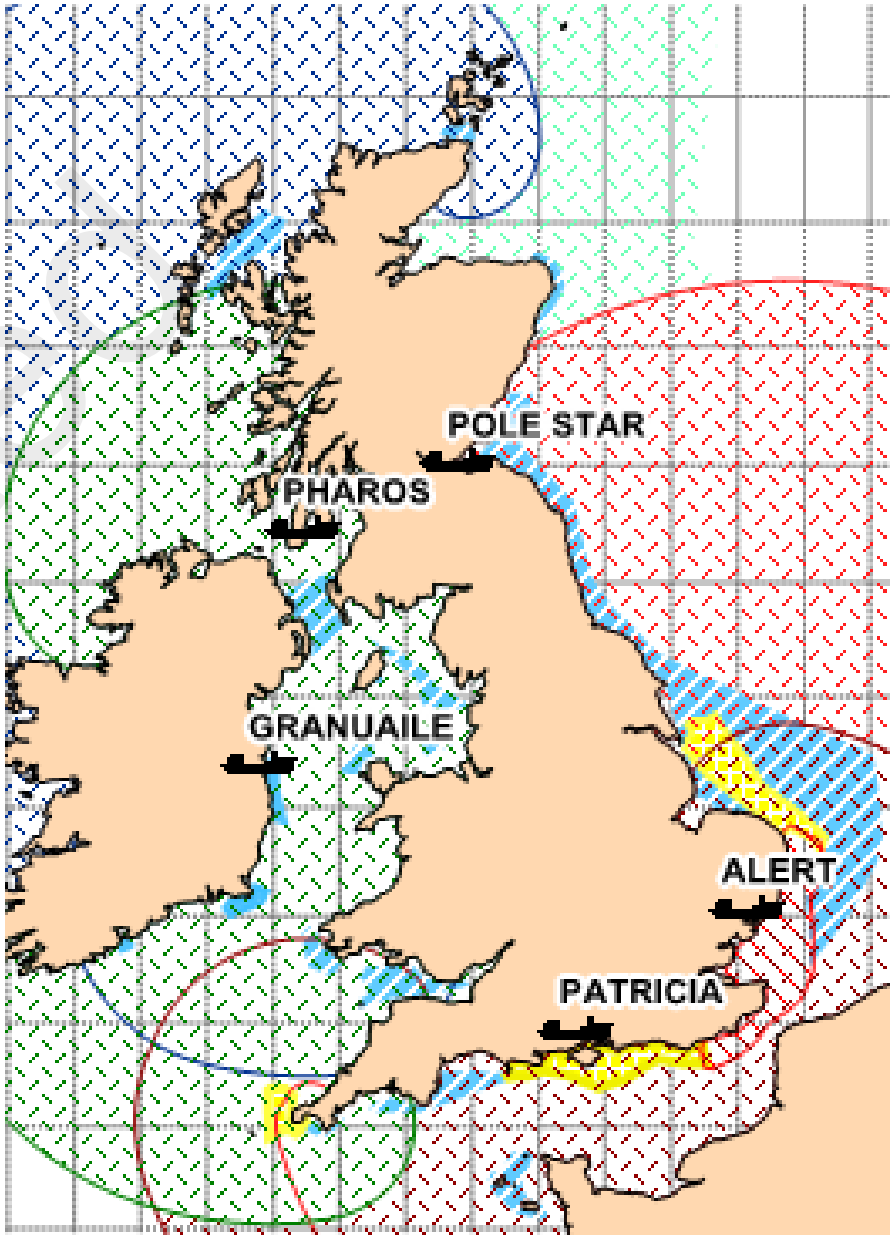
12th Sept 2017	5 Vessel Scenario - Failed
THV Patricia	*Wight area buoy work*
THV Galatea	***REMOVE***
THV Alert	*Harwich e-polaris work am; passage to Ipswich pm weatherbound*
MV Mair	***REMOVE***
NLV Pharos	*Sanda Heli-Ops*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Kish Lighthouse attendance; Dublin pm weatherbound*





12 Hrs RRC

24 Hrs RRC

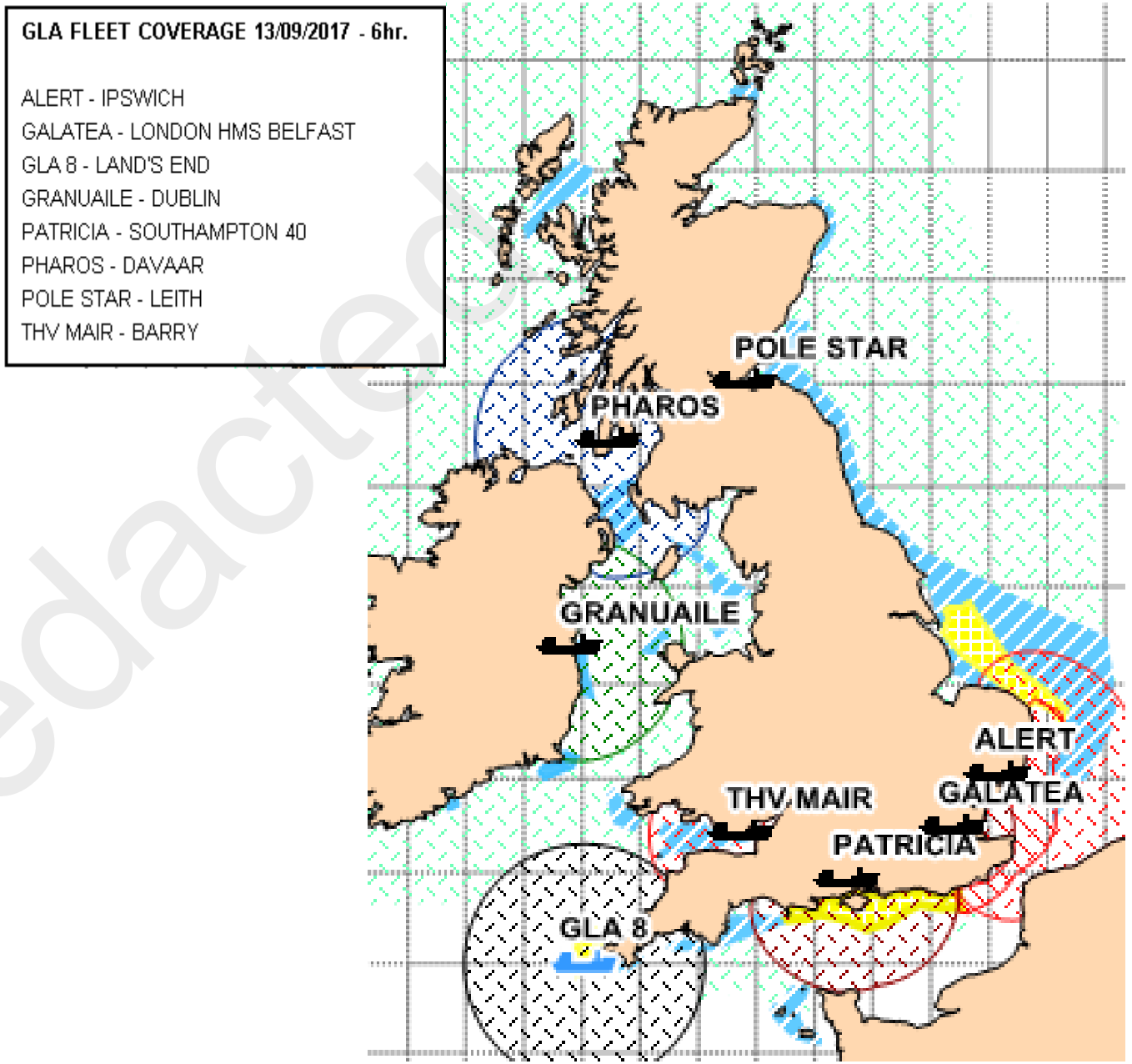


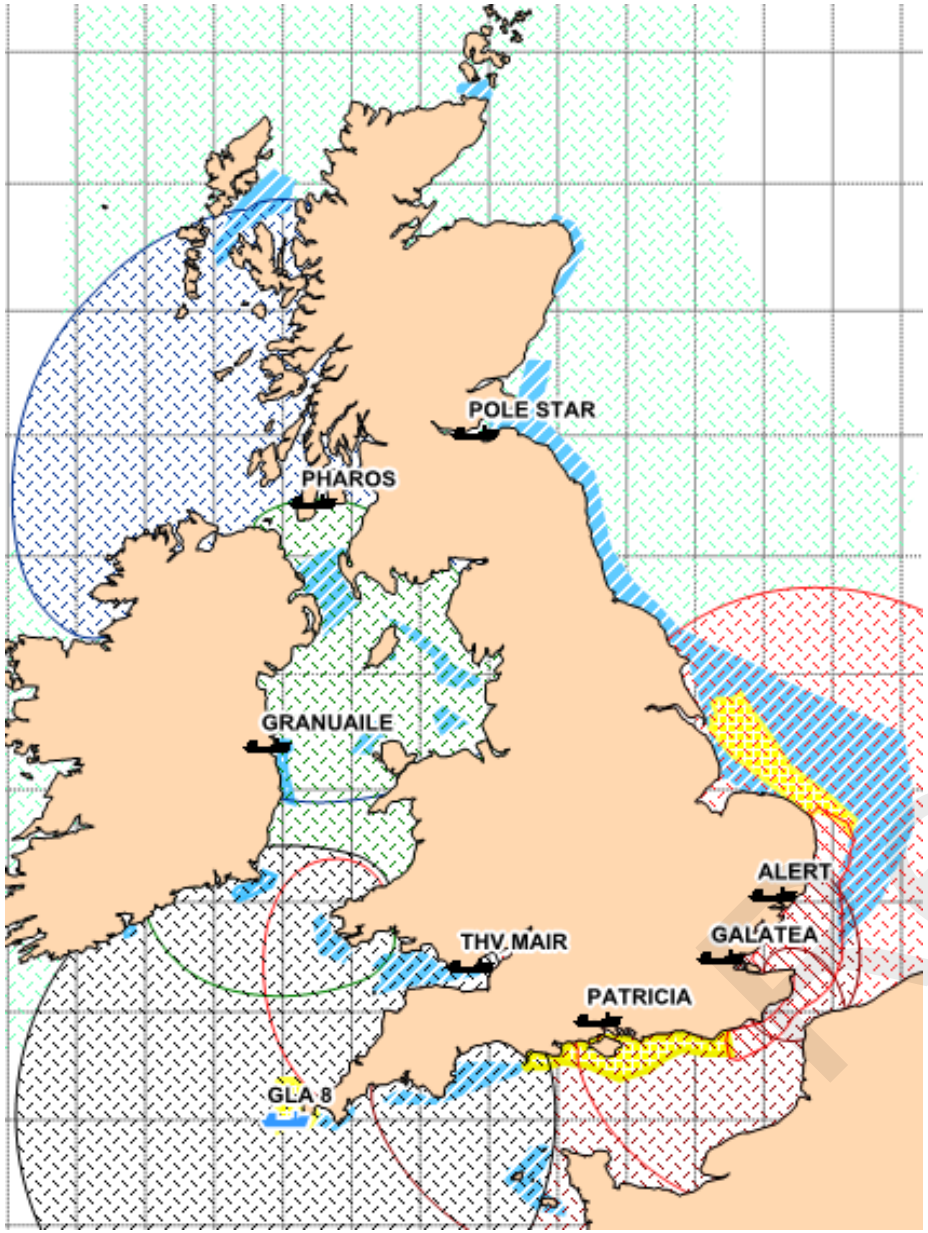
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	98%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS

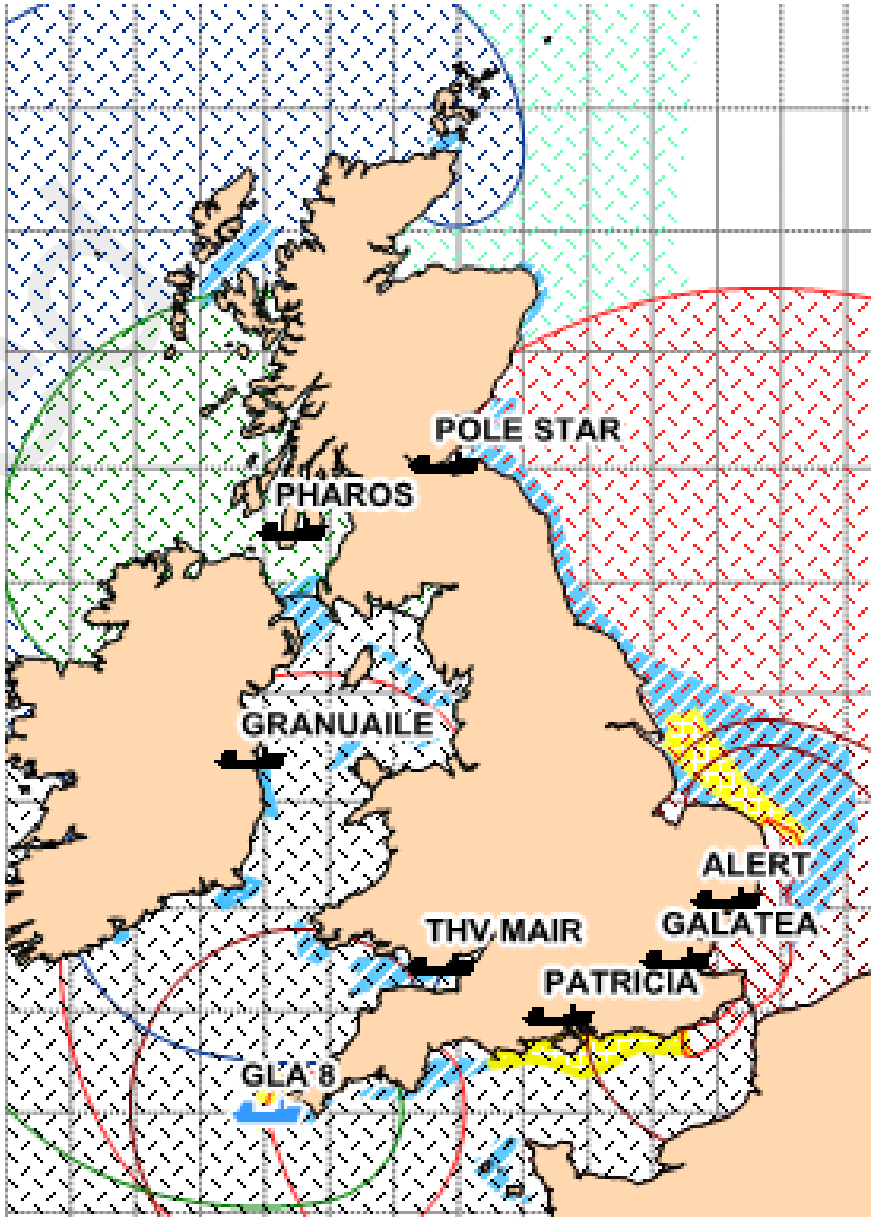
12th Sept 2017	8 Vessel Scenario - FAILED
GLA 8	*Land's End*
THV Patricia	*Wight area buoy work*
THV Galatea	*London - RRC*
THV Alert	*Harwich e-polaris work am; passage to Ipswich pm weatherbound*
MV Mair	*Barry bow thruster repairs; attend contract beacons by road.*
NLV Pharos	*Sanda Heli-Ops*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Kish Lighthouse attendance; Dublin pm weatherbound*





12 Hrs RRC

24 Hrs RRC



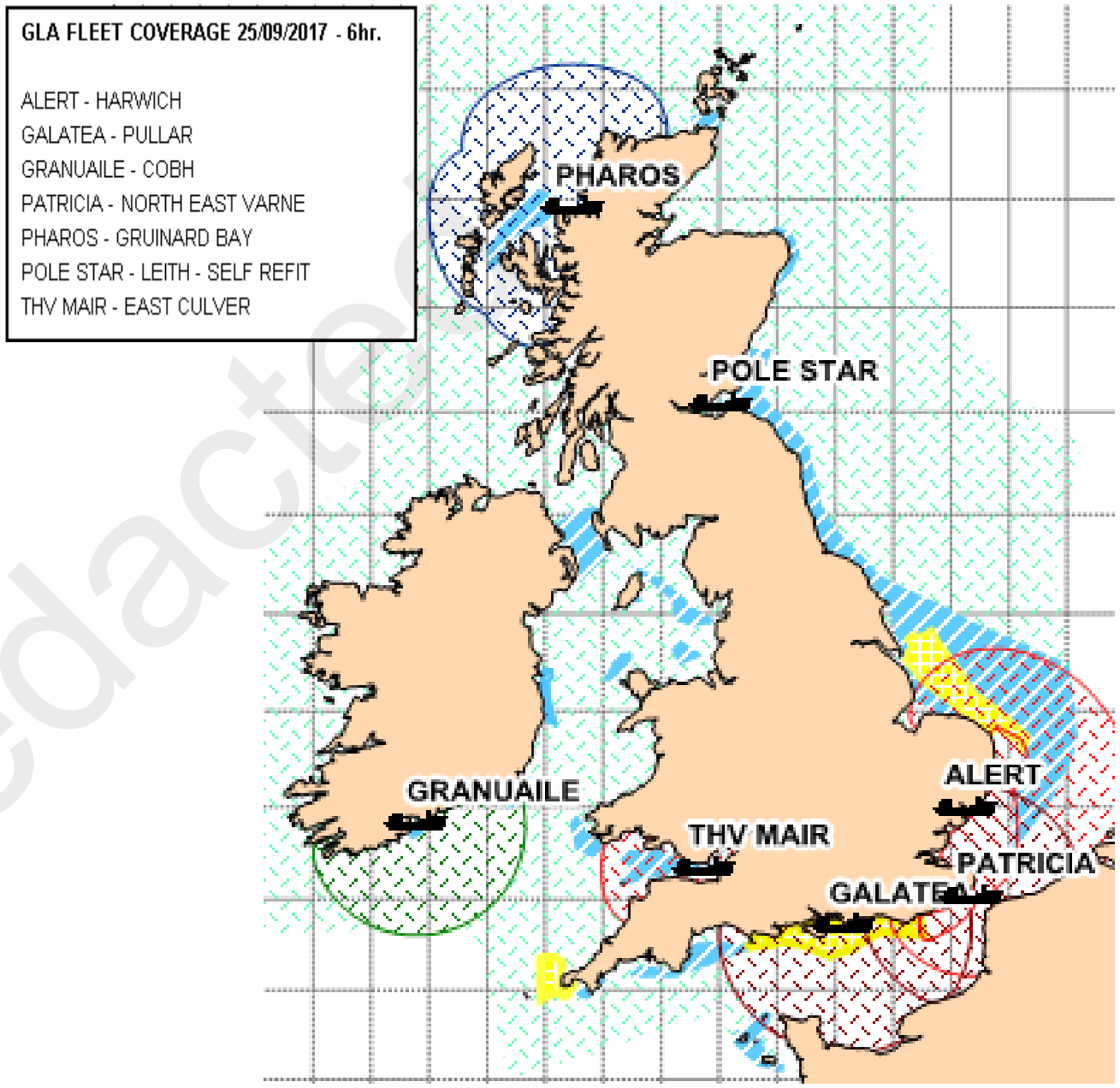
Response Region Coverage

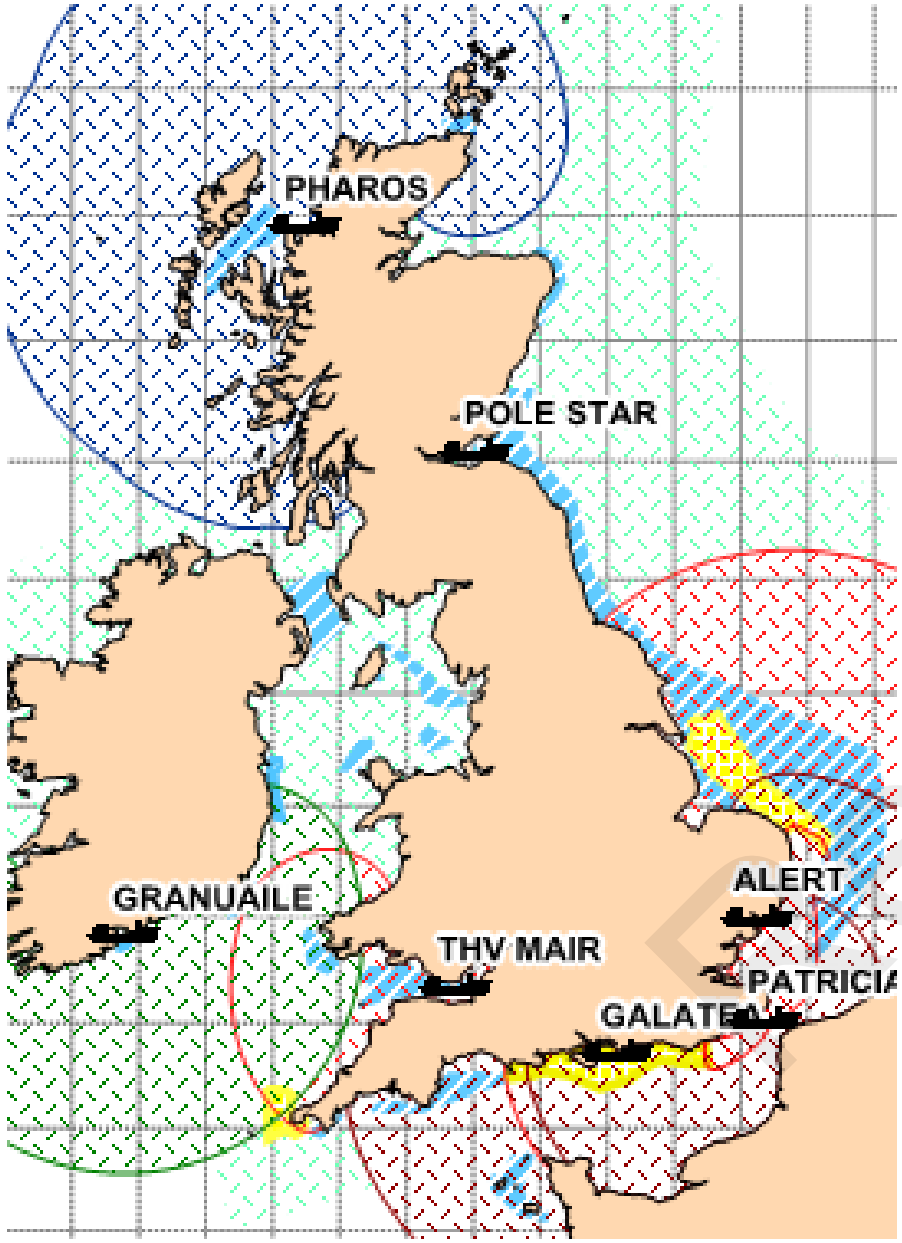
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	98%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	Yes	100%	GLA 8
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	No	0%	
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, PATRICIA, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, PATRICIA, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GLA 8, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GLA 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, T...

25th Sept 2017	7 Vessel Scenario - Failed
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Cork for windlass repairs*

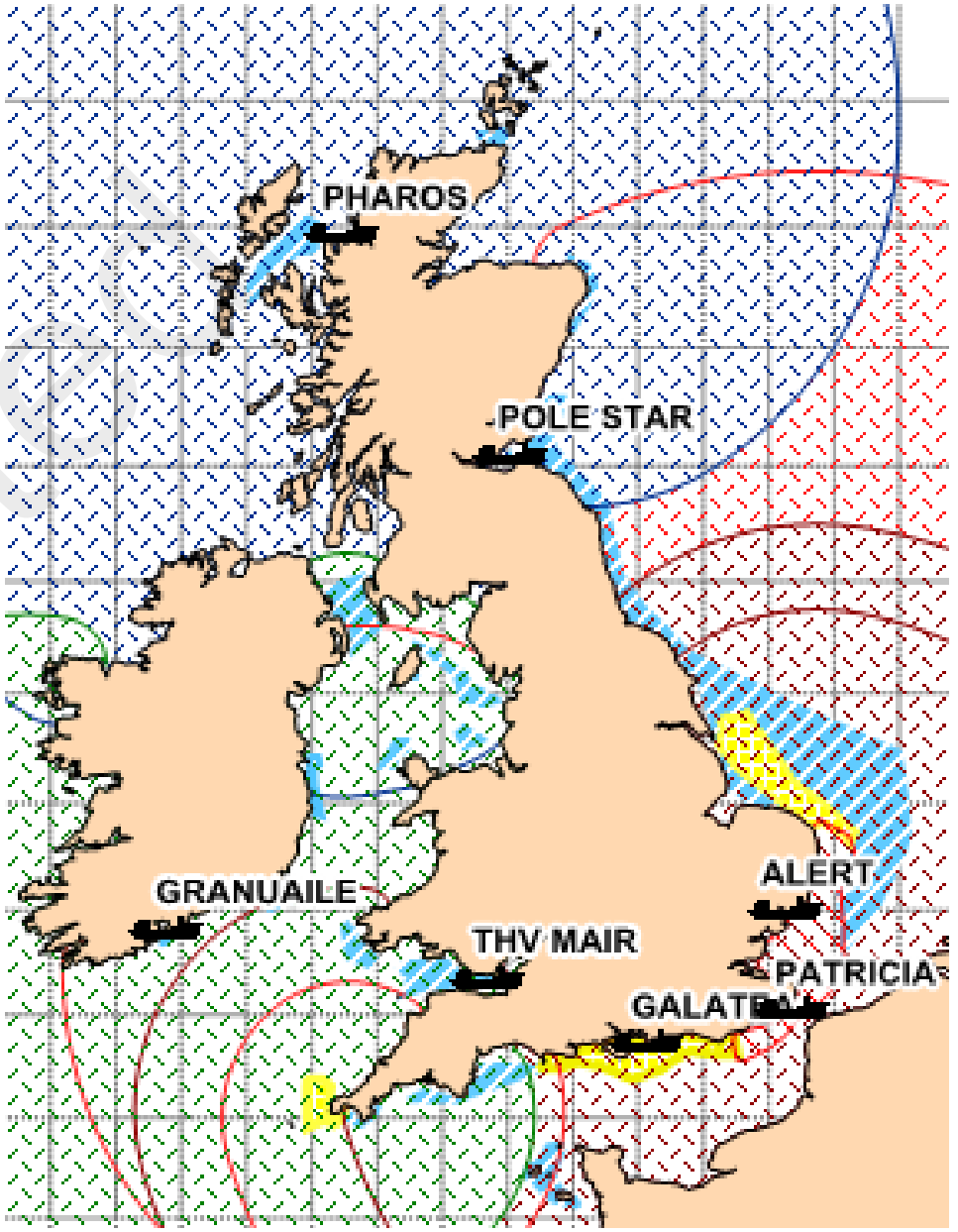
Wreck, AtoN Casualty, RRC Incidents	
Barry Coverage Limits	*Incident Report No.99*
Land's End 12 Hrs	*67 % coverage*
Land's End Coverage Limits	*Incident Report No.107*





12 Hrs RRC

24 Hrs RRC

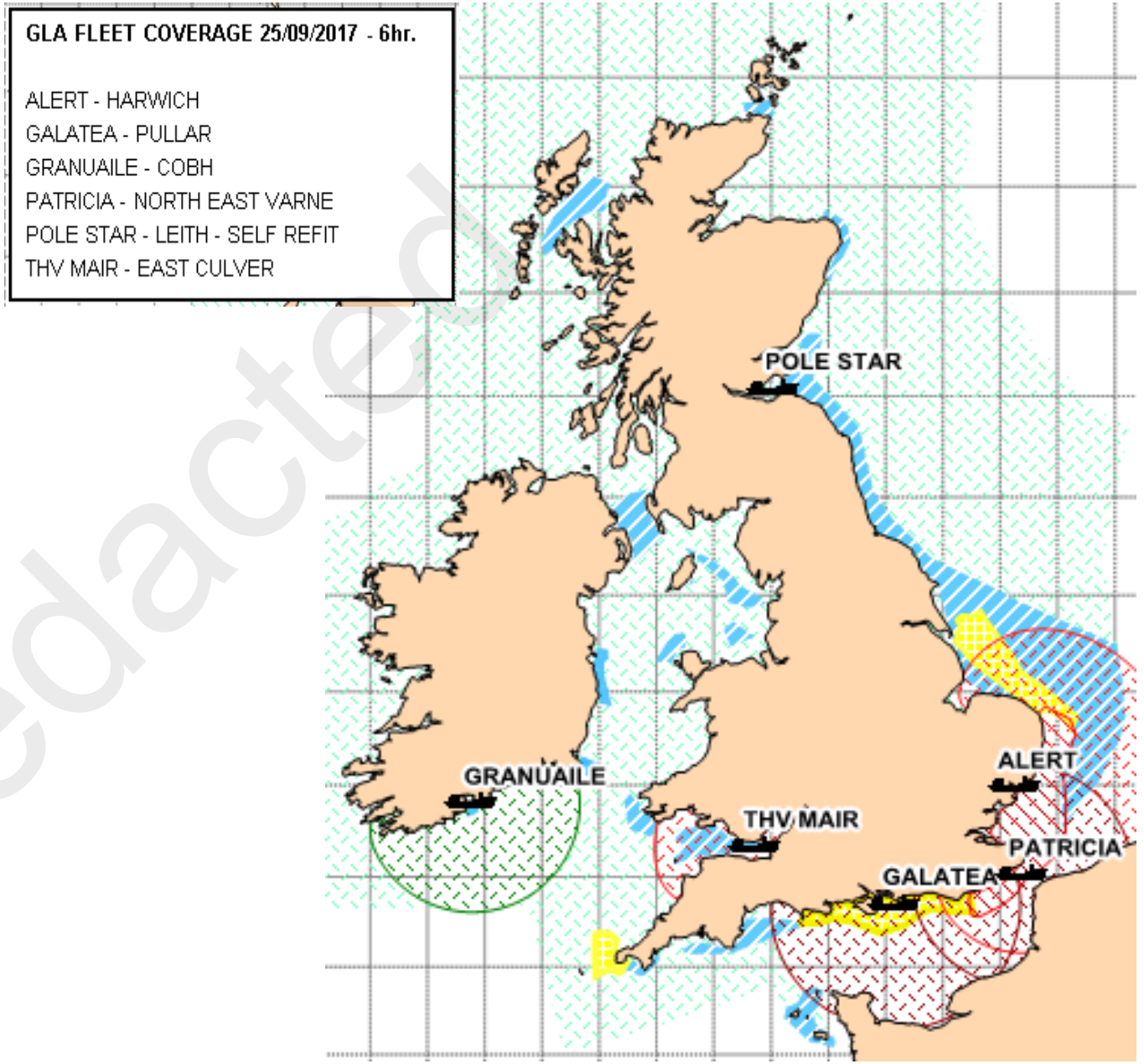


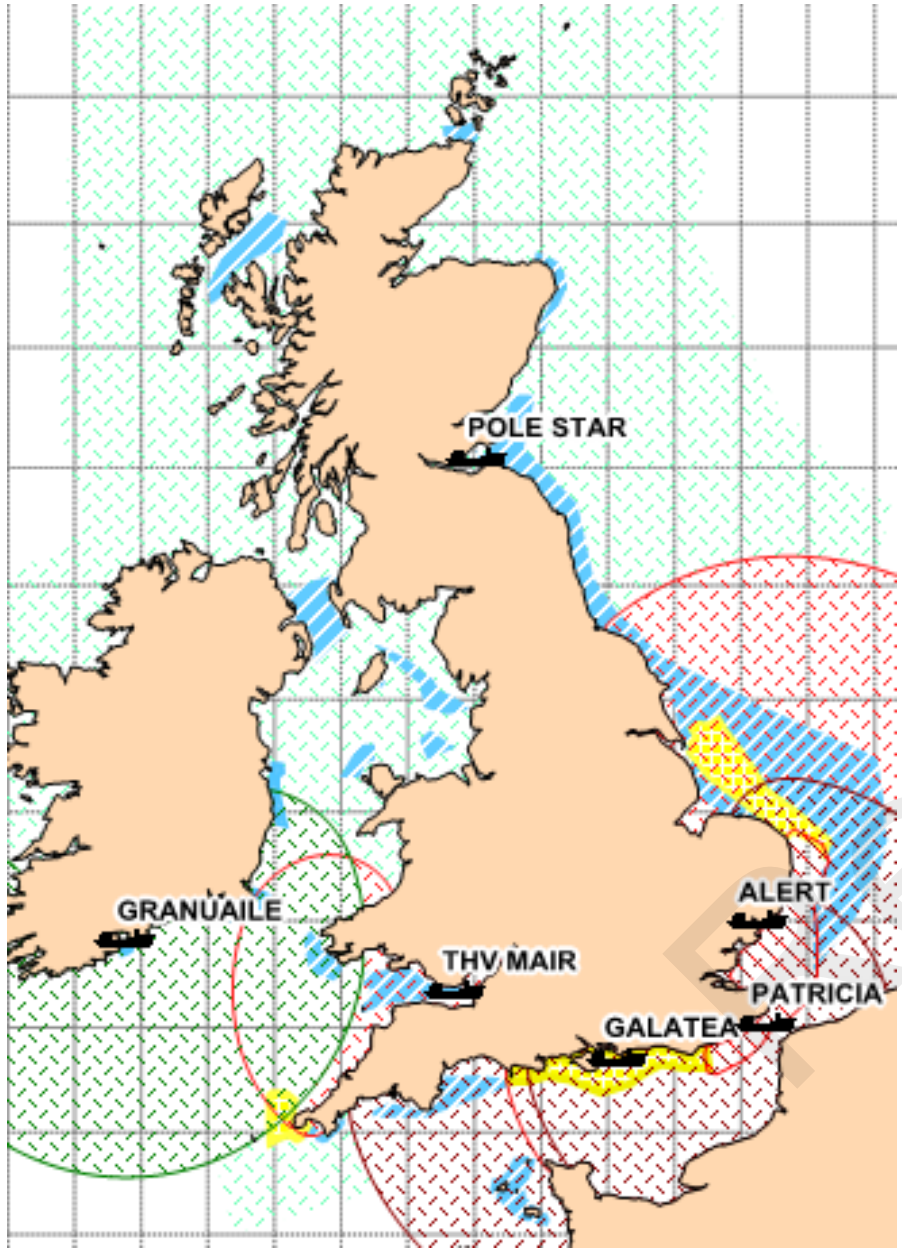
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	67%	GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

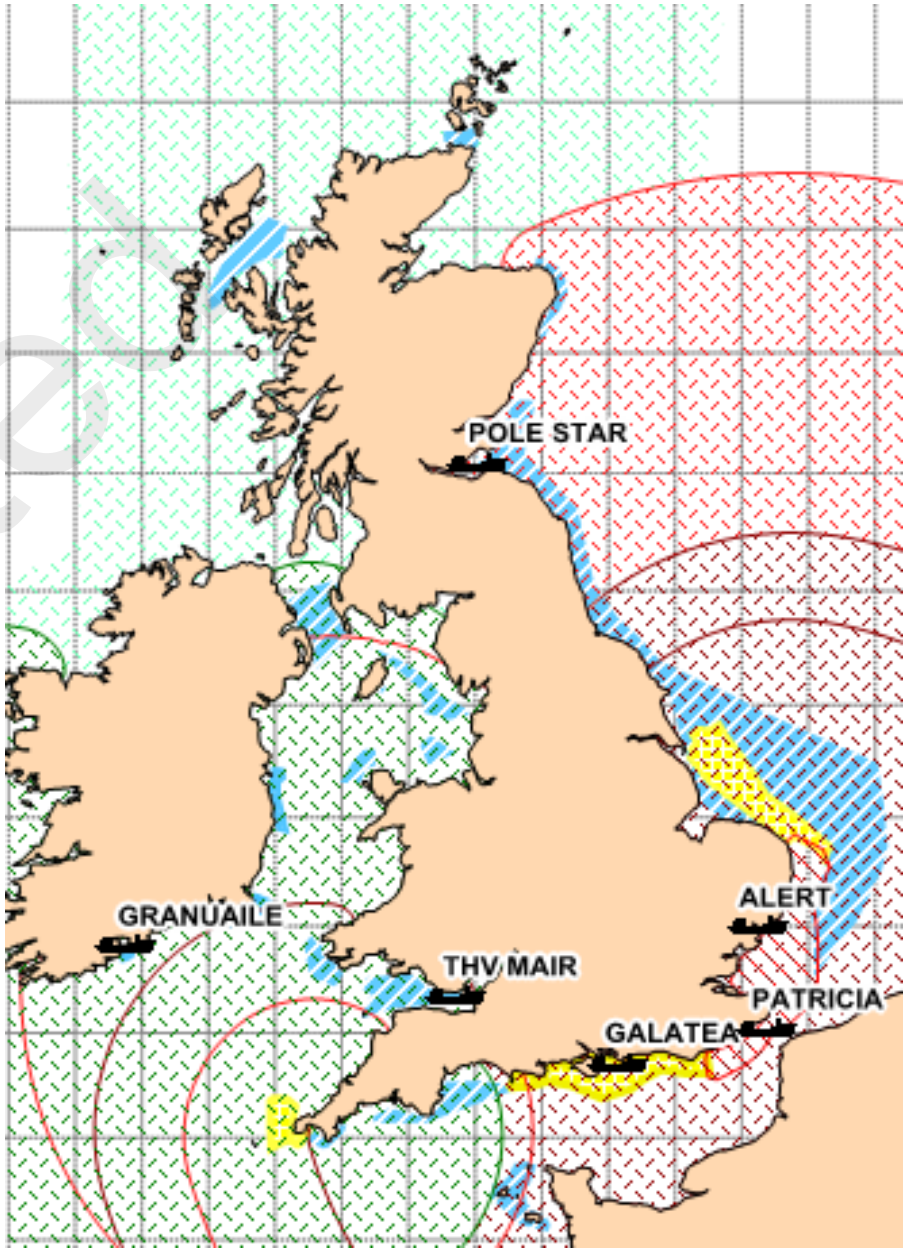
25th Sept 2017	6 Vessel Scenario - Failed
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	***REMOVED***
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Cork for windlass repairs*





12 Hrs RRC

24 Hrs RRC

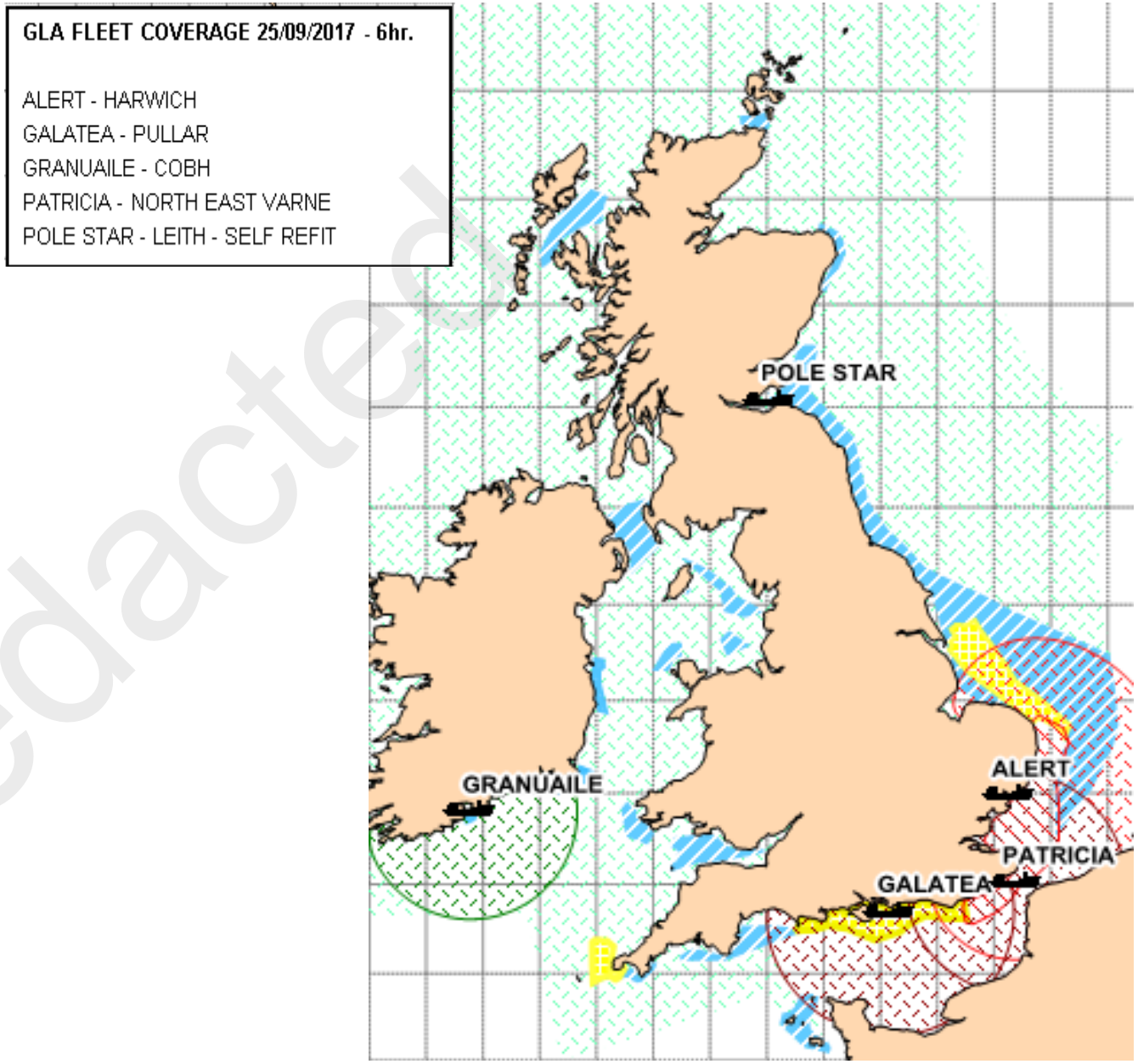


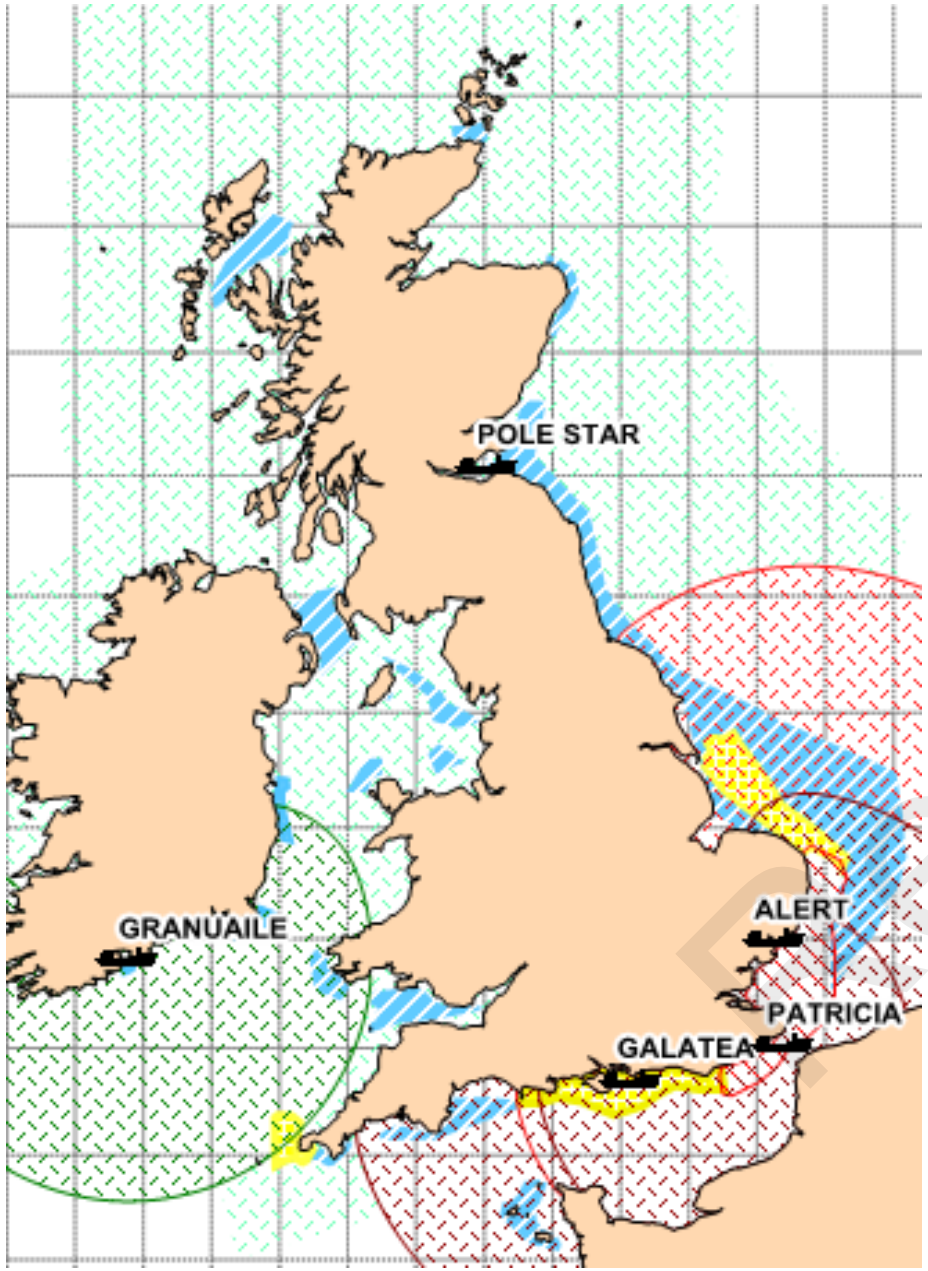
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	67%	GRANUAILE, THV MAIR
5	THE MINCH	24	No	0%	
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT
8	PENTLAND FIRTH	24	No	0%	
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR

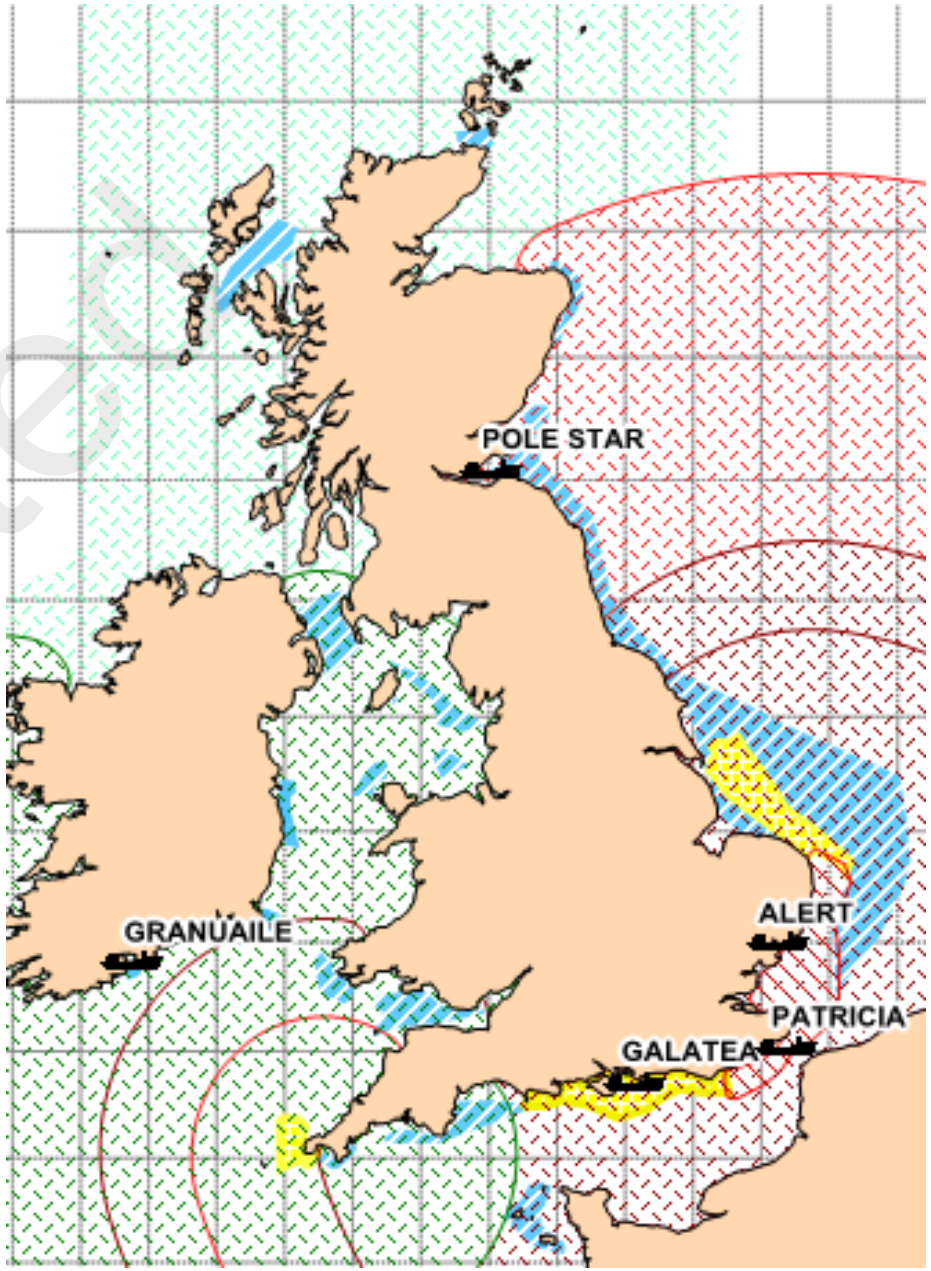
25th Sept 2017	5 Vessel Scenario - Failed
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Cork for windlass repairs*





12 Hrs RRC

24 Hrs RRC

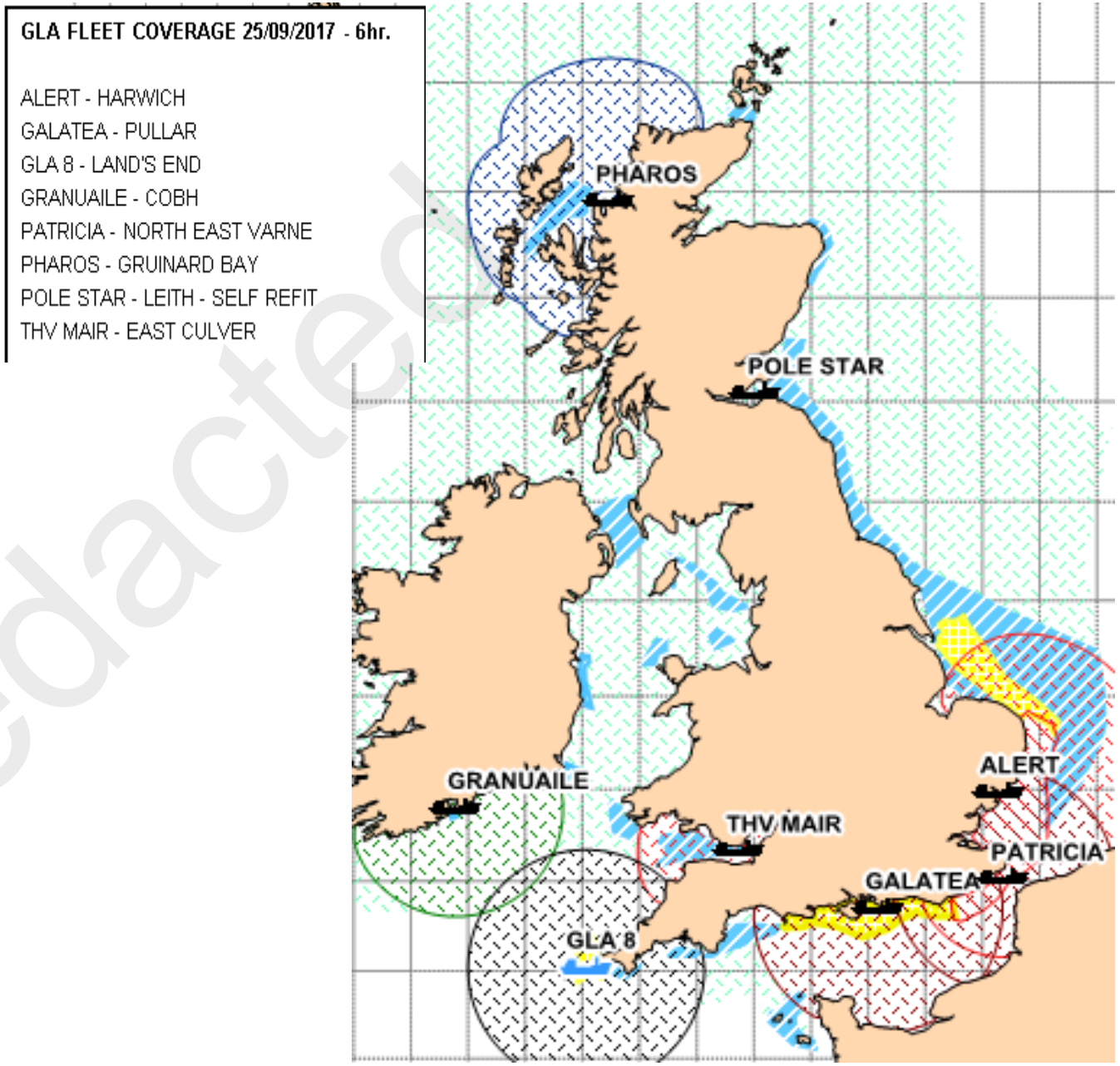


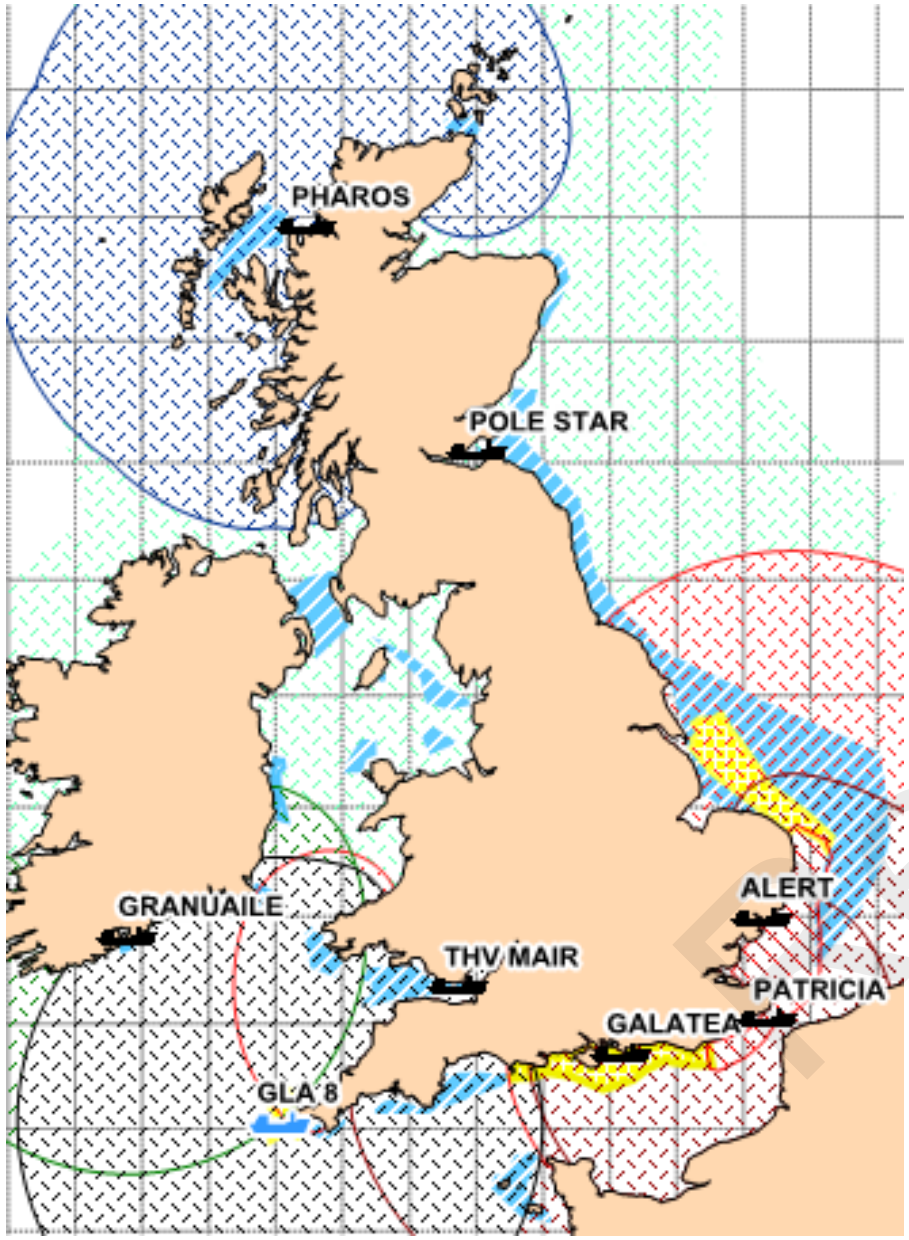
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	54%	GRANUAILE
5	THE MINCH	24	No	0%	
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT
8	PENTLAND FIRTH	24	No	0%	
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA

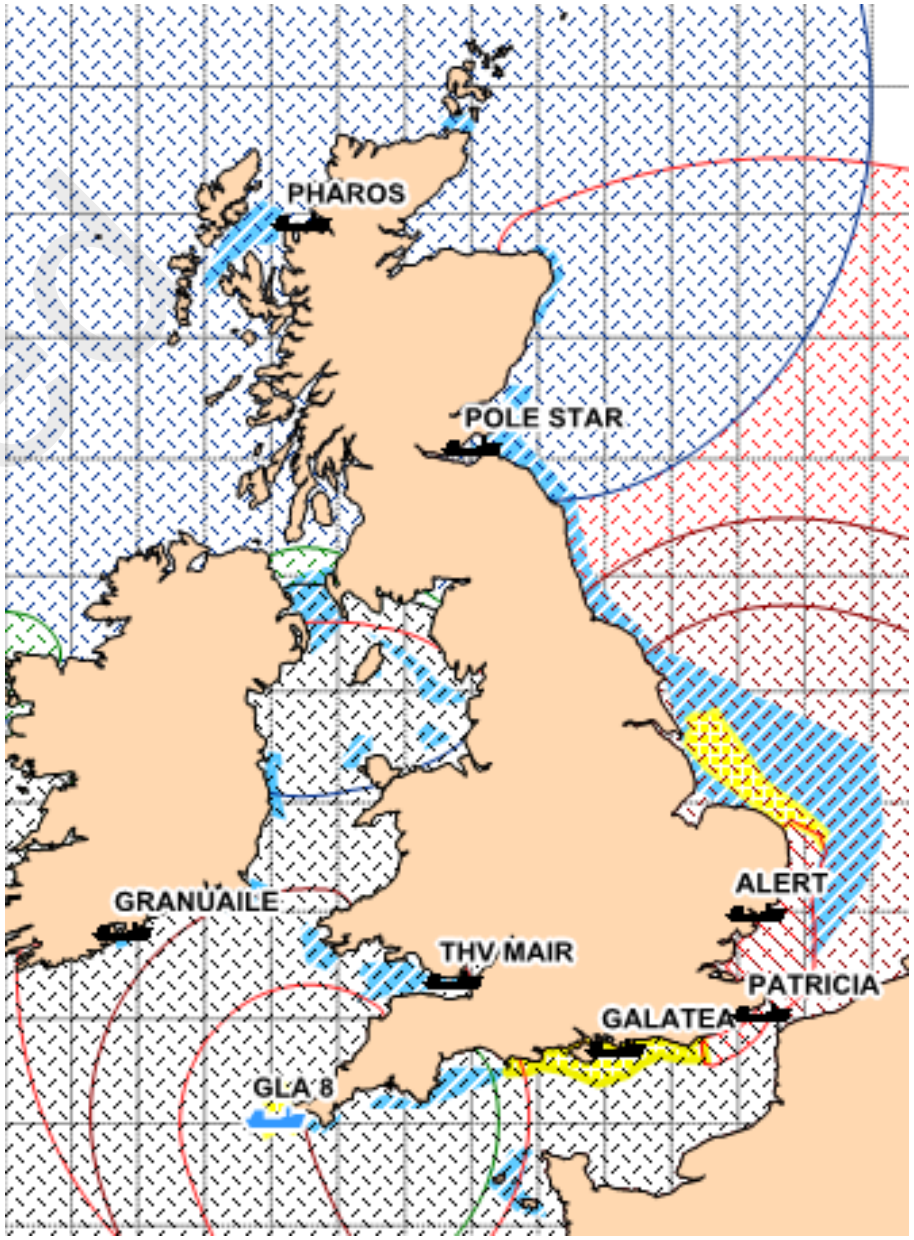
25th Sept 2017	8 Vessel Scenario - Pass
GLA 8	*Land's End*
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Cork for windlass repairs*





12 Hrs RRC

24 Hrs RRC



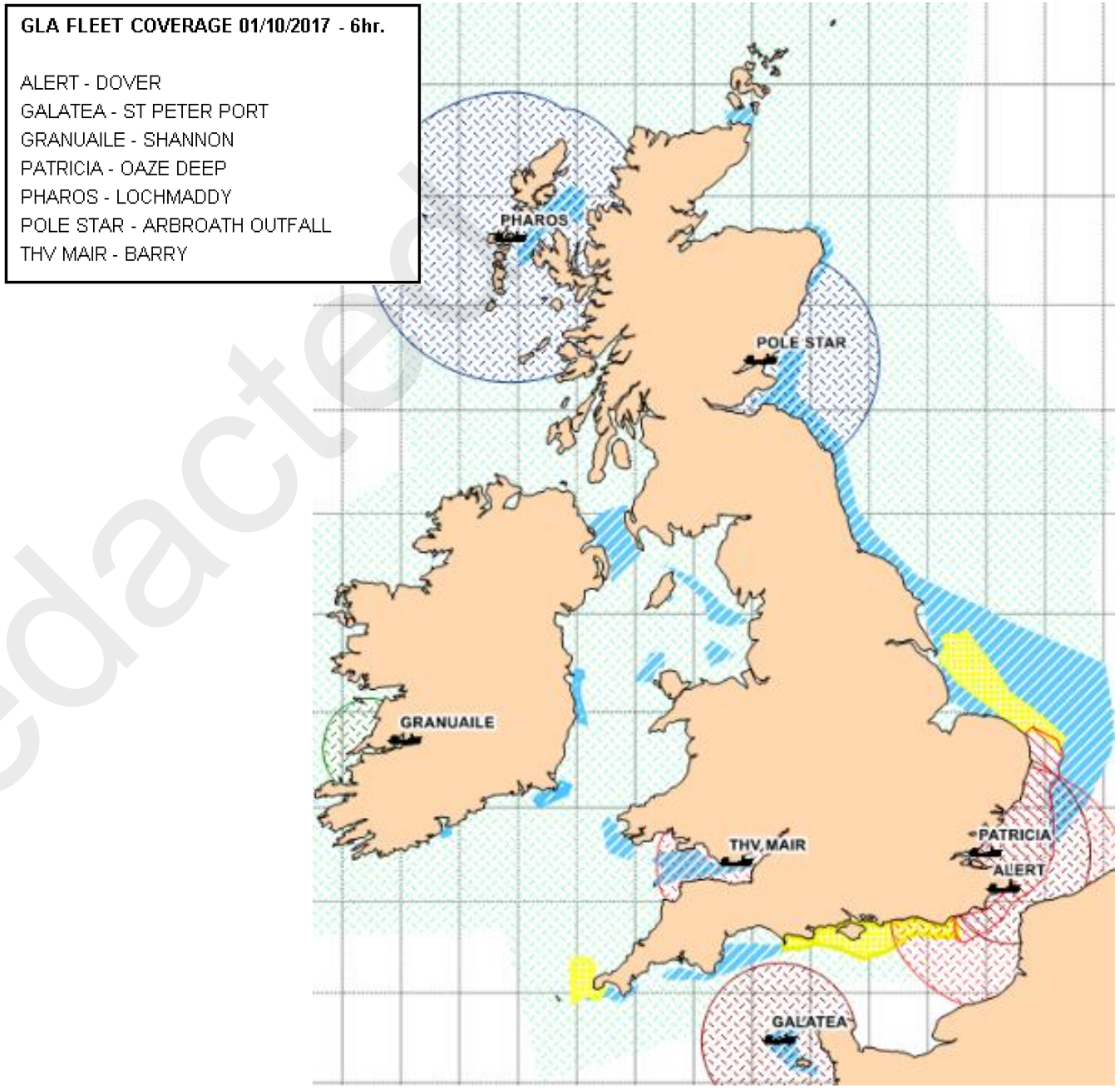
Response Region Coverage

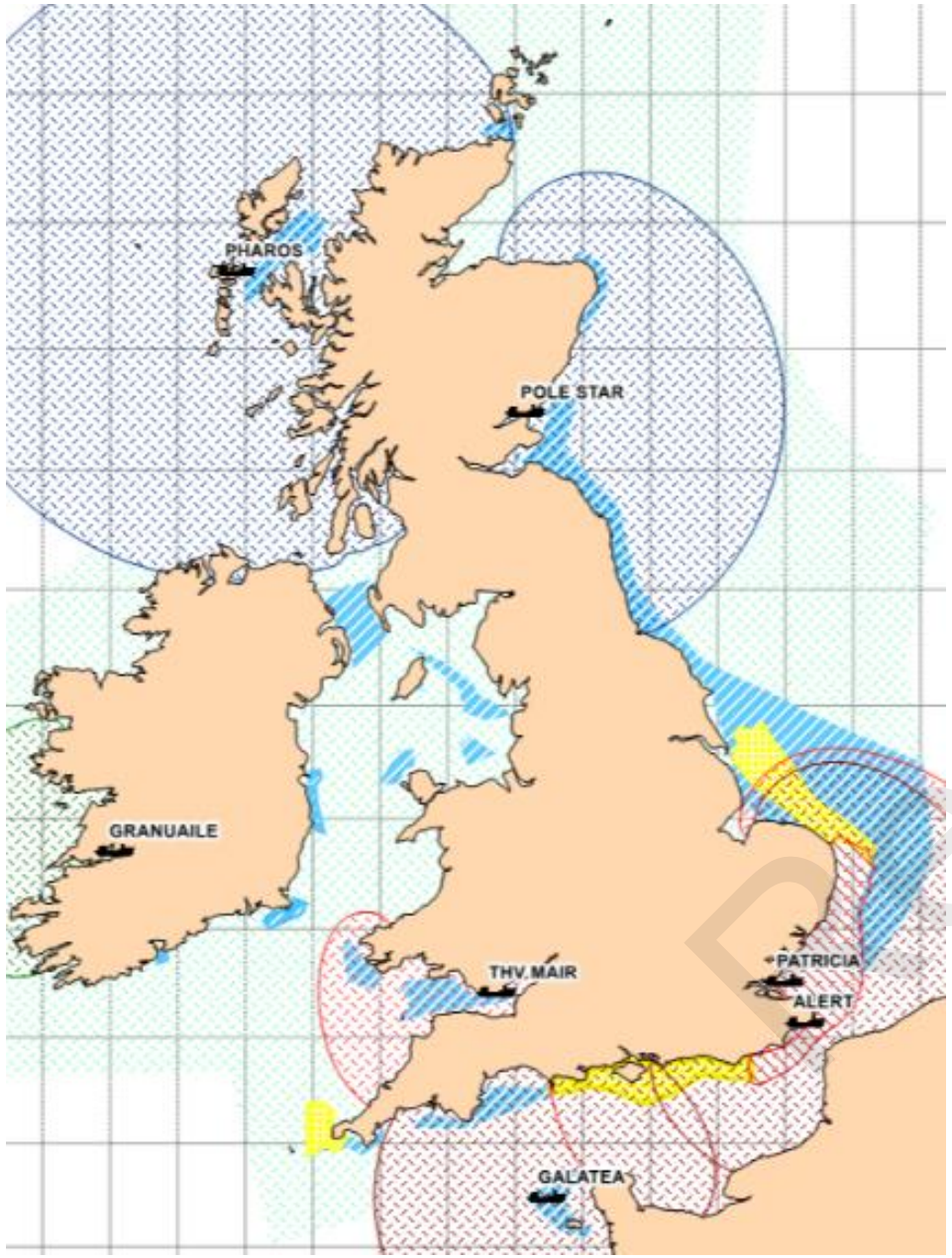
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GLA 8, GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GLA 8, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GLA 8, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GLA 8, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, T...

1st Oct 2017	7 Vessel Scenario - Failed
THV Patricia	*Estuary area buoy work*
THV Galatea	*St Peters Port weatherbound*
THV Alert	*Dover weatherbound*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Loch Maddy to Staffin Bay*
NLV Pole Star	*Cromarty Firth buoy work*
ILV Granuaile	*Shannon Estuary weatherbound*

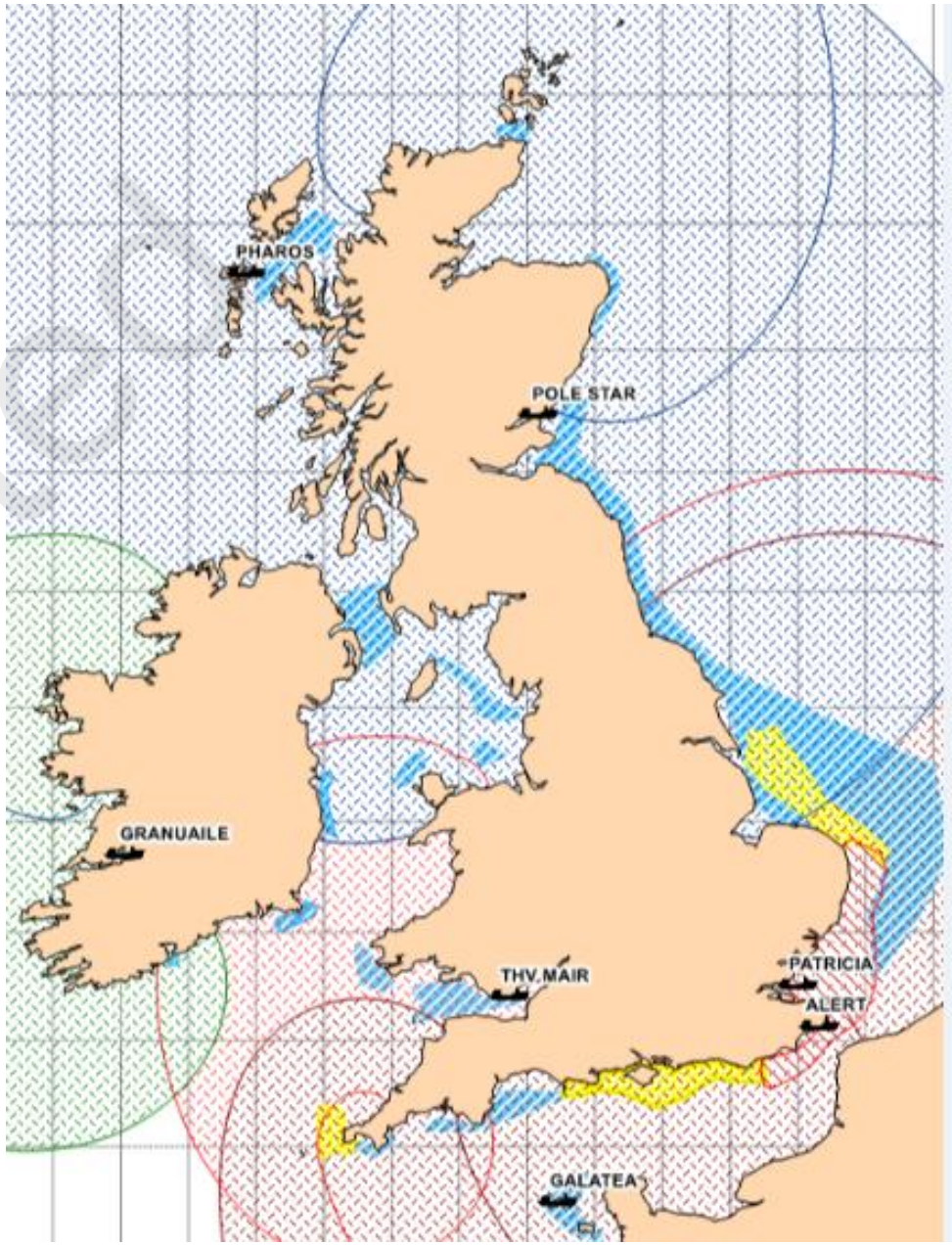
Wreck, AtoN Casualty, RRC Incidents	
Humber Coverage Limits (Weather)	*Incident Report No. 108*
Humber to Cromer 12 Hrs	*65 %*
Dover Straits 6 Hrs	*87 %*





12 Hrs RRC

24 Hrs RRC

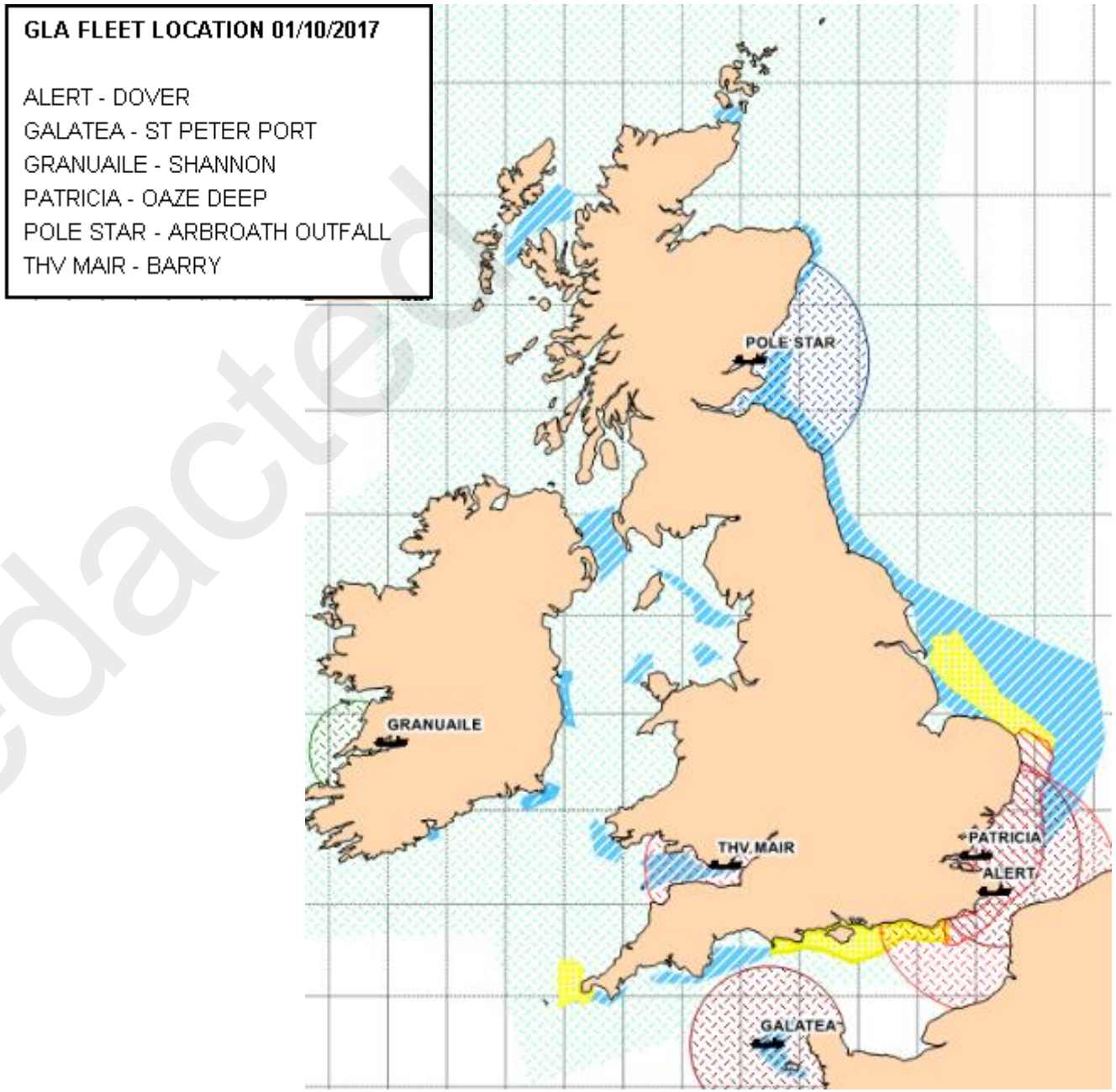


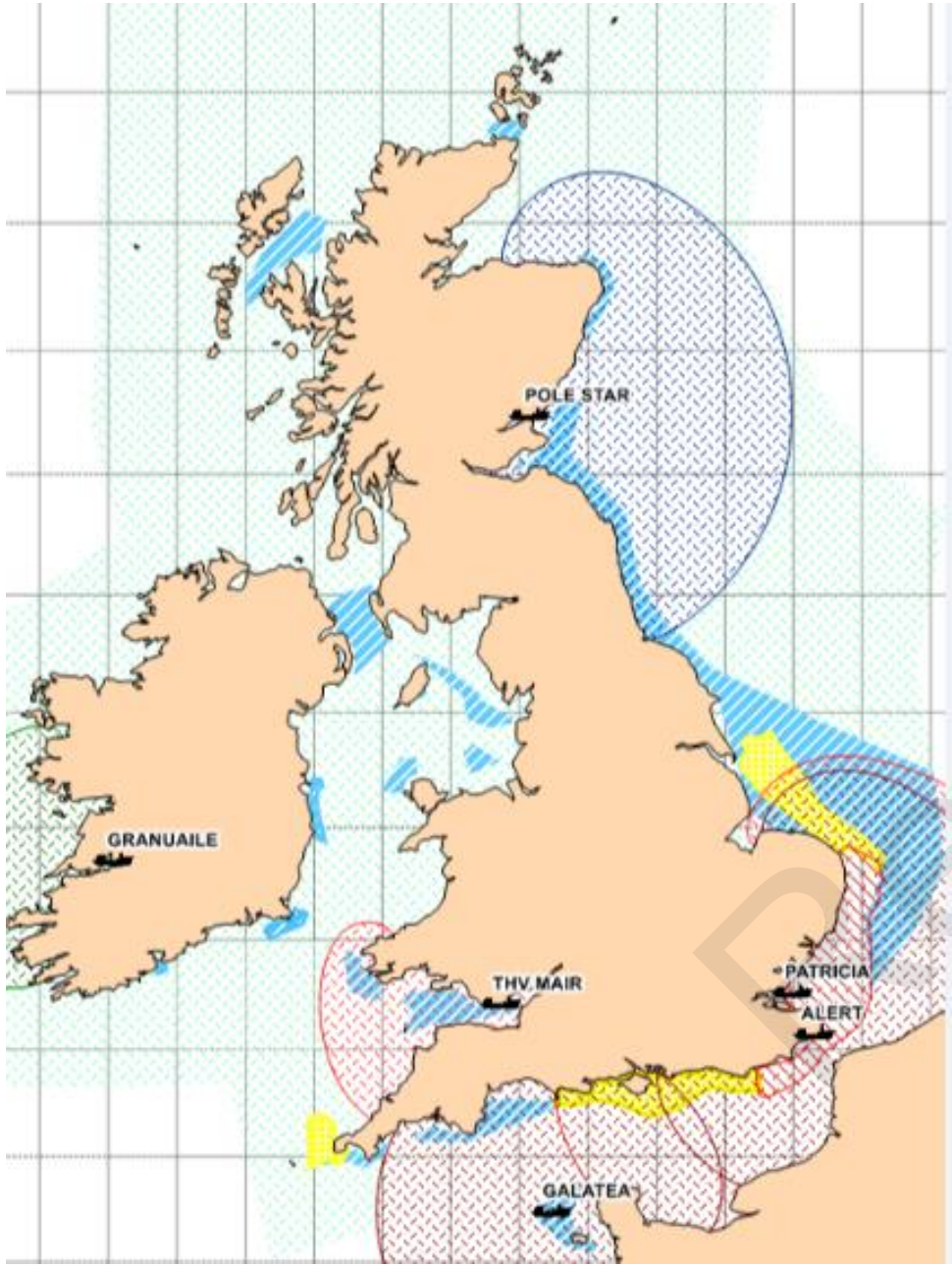
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	87%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	65%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PHAROS
16	LIVERPOOL BAY	24	Yes	100%	PHAROS
17	ISLE OF MAN	24	Yes	100%	PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

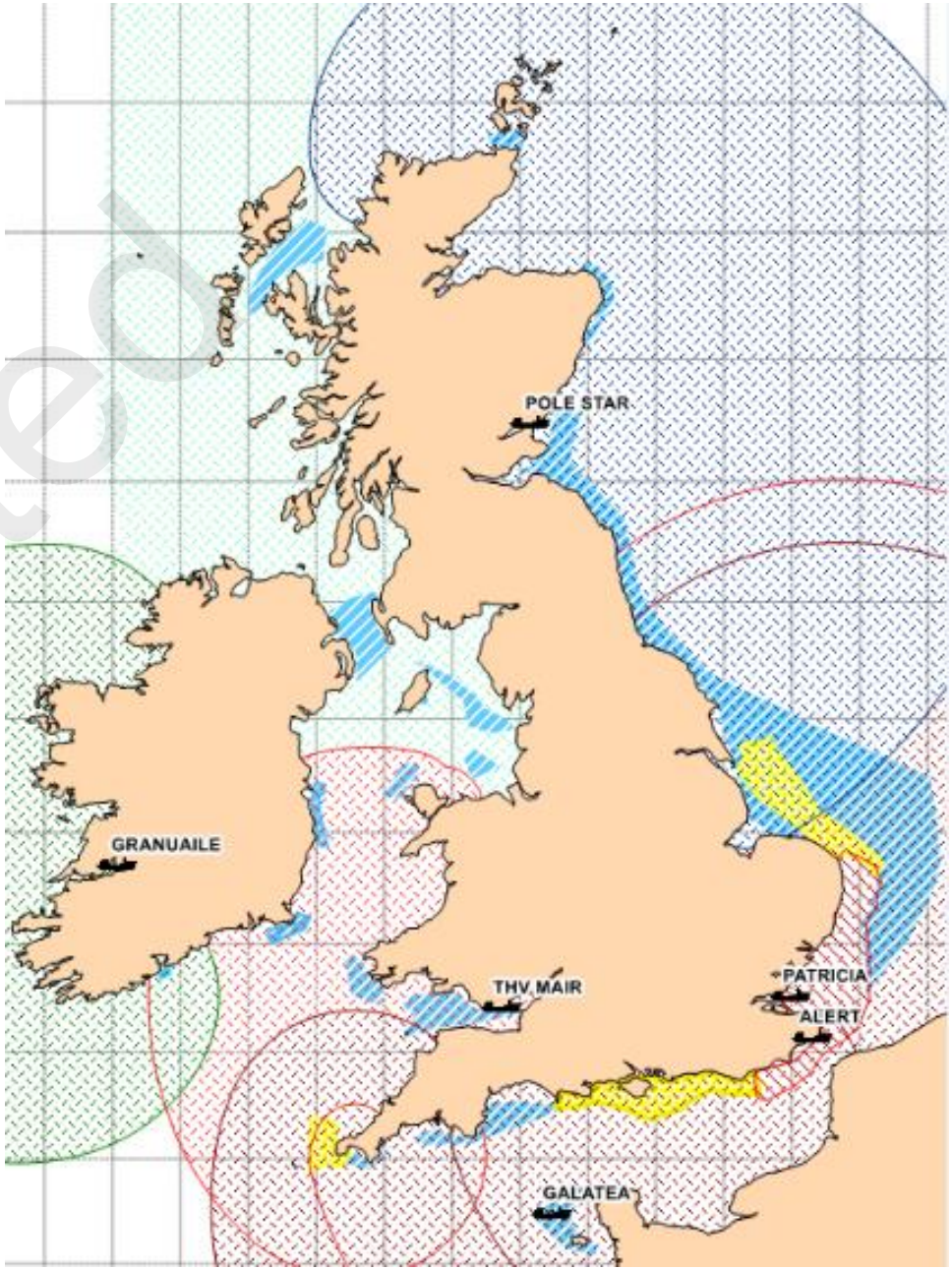
1st Oct 2017	6 Vessel Scenario - Failed
THV Patricia	*Estuary area buoy work*
THV Galatea	*St Peters Port weatherbound*
THV Alert	*Dover weatherbound*
MV Mair	*Barry RRC*
NLV Pharos	***REMOVE***
NLV Pole Star	*Cromarty Firth buoy work*
ILV Granuaile	*Shannon Estuary weatherbound*





12 Hrs RRC

24 Hrs RRC

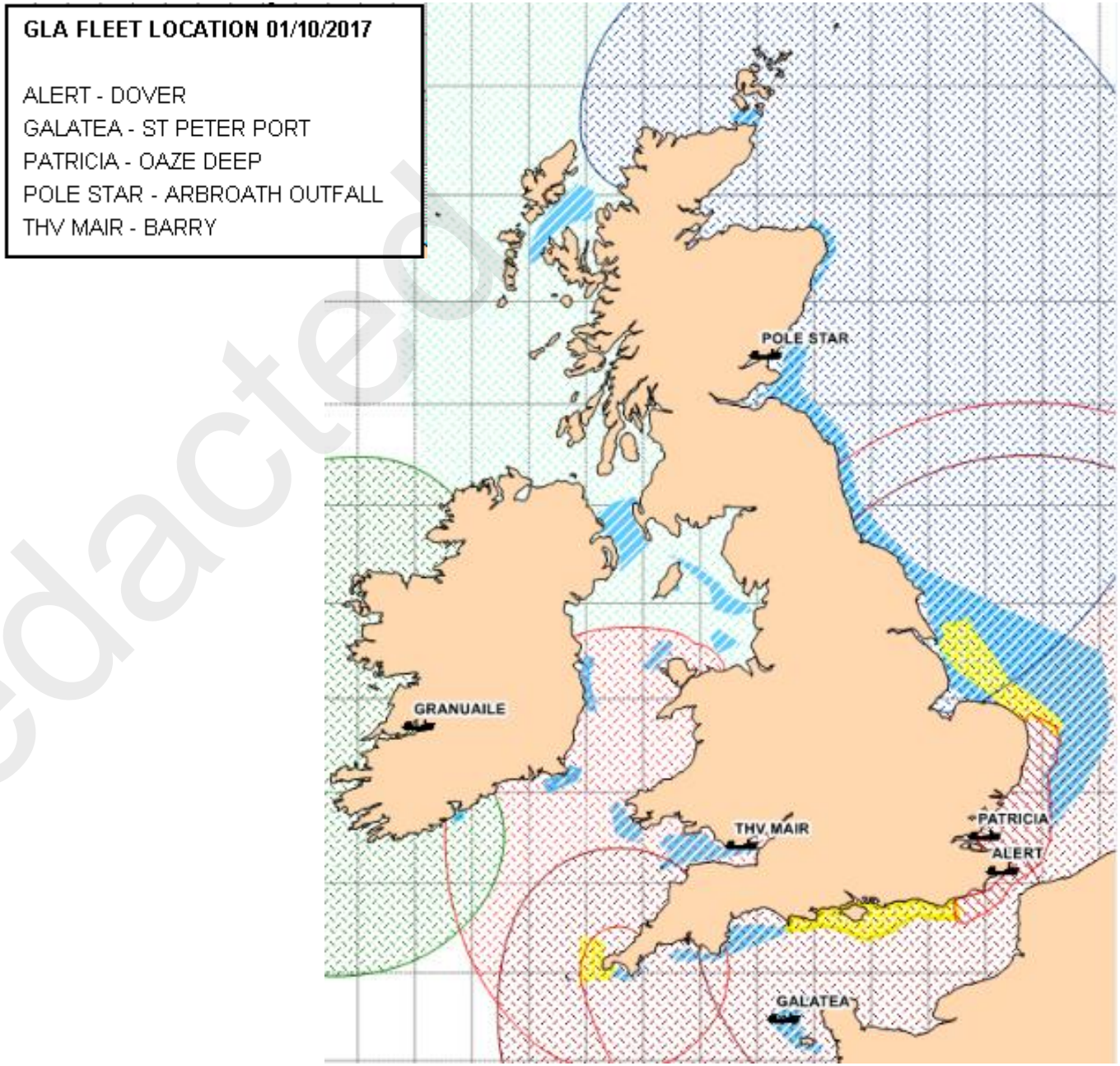


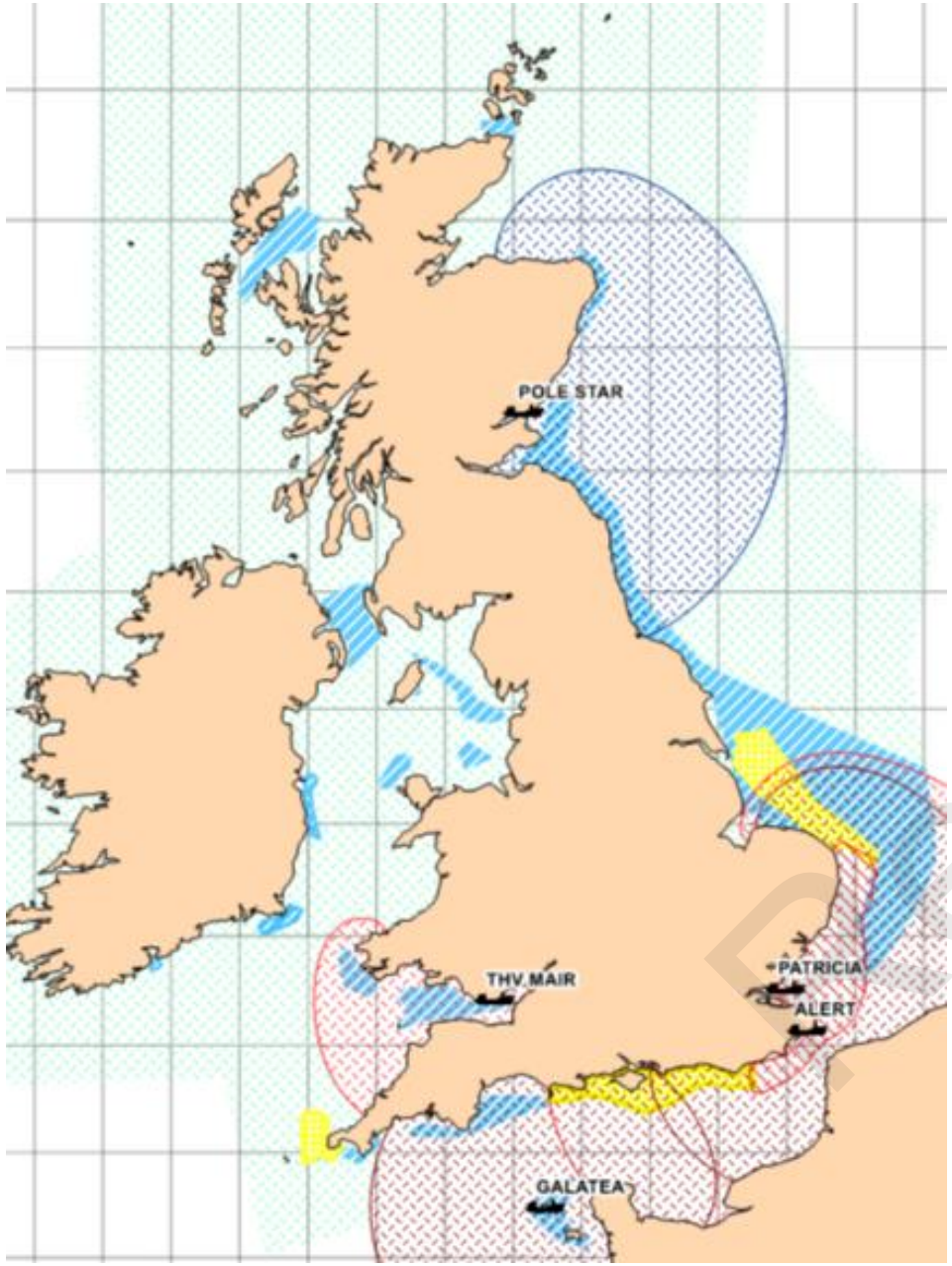
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	87%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	65%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	No	0%	
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	Yes	100%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, POLE STAR, THV ...

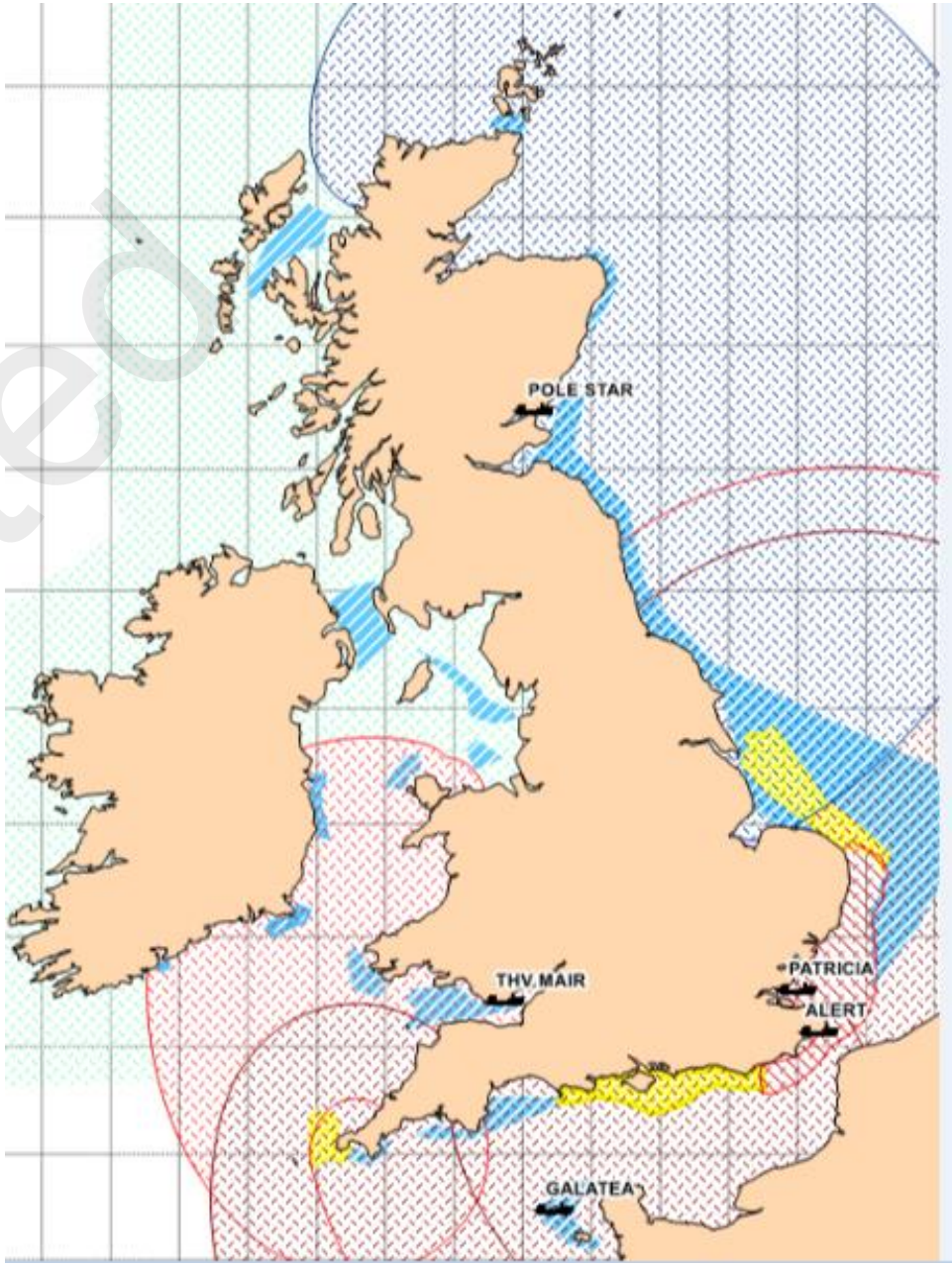
1st Oct 2017	5 Vessel Scenario - Failed
THV Patricia	*Estuary area buoy work*
THV Galatea	*St Peters Port weatherbound*
THV Alert	*Dover weatherbound*
MV Mair	*Barry RRC*
NLV Pharos	***REMOVE***
NLV Pole Star	*Cromarty Firth buoy work*
ILV Granuaile	***REMOVE***





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

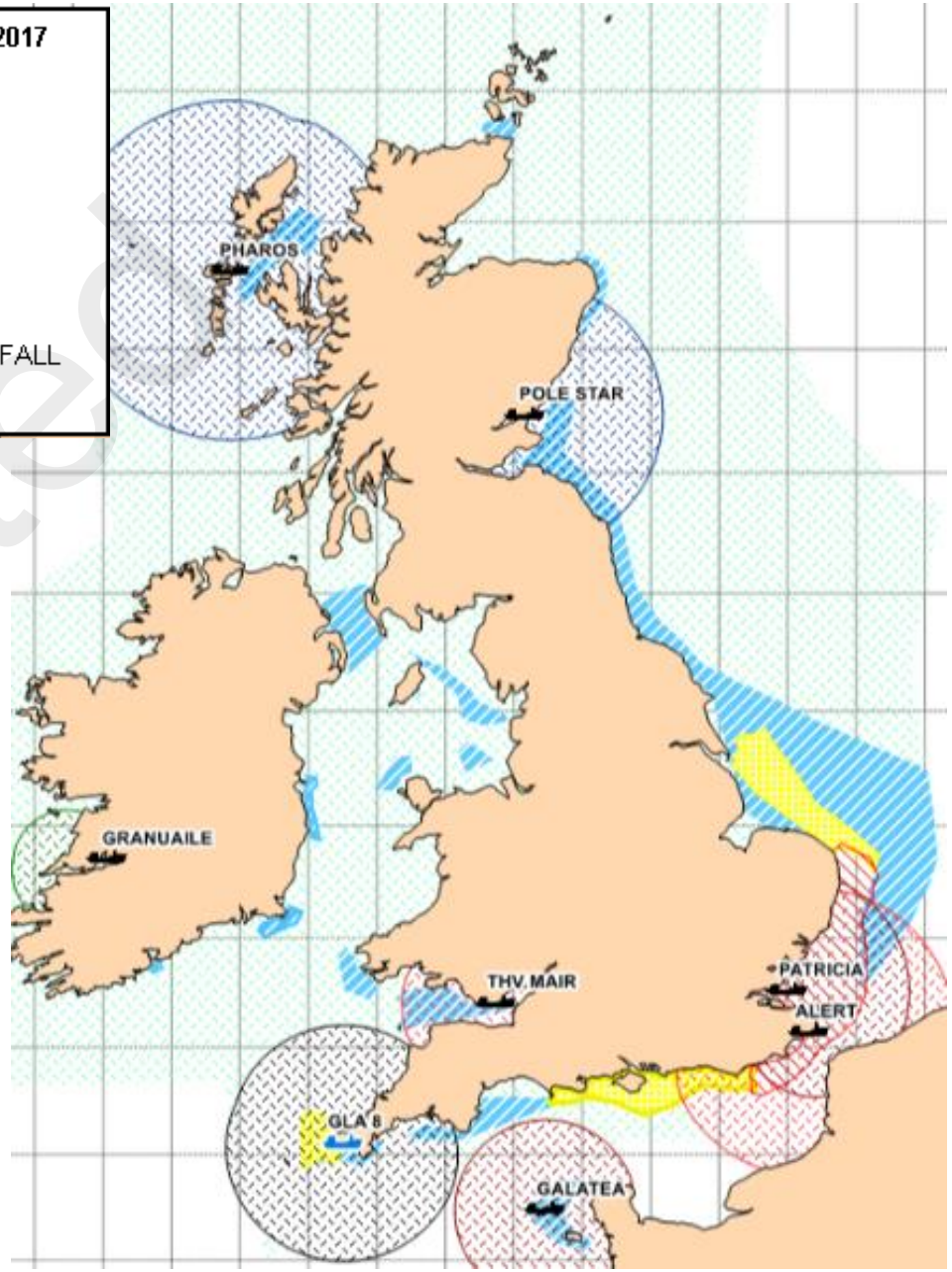
File Edit

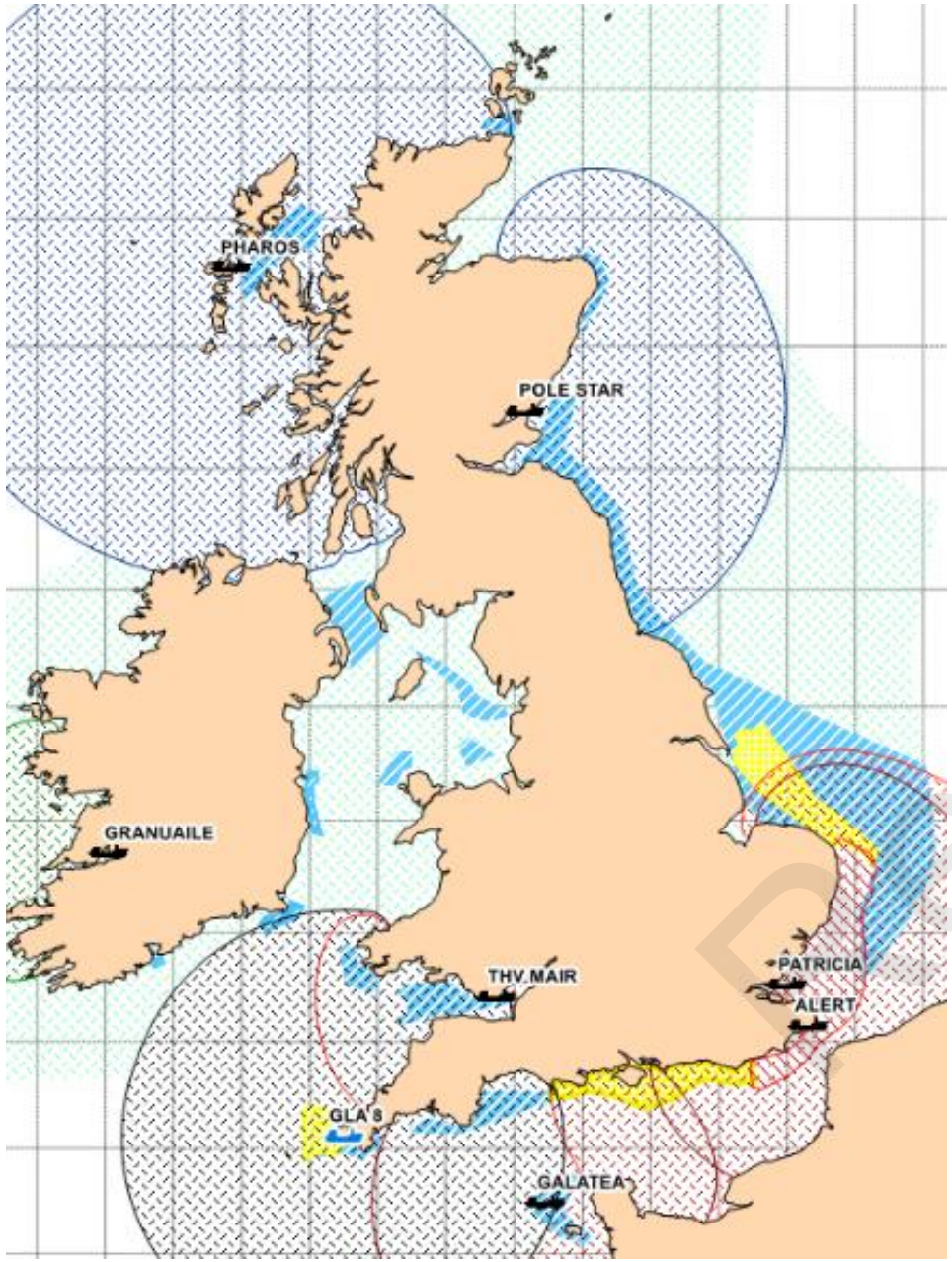
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	87%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	No	65%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	No	0%	
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	No	0%	
10	HOLYHEAD APPROACHES	24	Yes	100%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	No	97%	ALERT, GALATEA, PATRICIA, POLE STAR, THV MAIR

1st Oct 2017	8 Vessel Scenario - Failed
GLA 8	*Land's End*
THV Patricia	*Estuary area buoy work*
THV Galatea	*St Peters Port weatherbound*
THV Alert	*Dover weatherbound*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Loch Maddy to Staffin Bay*
NLV Pole Star	*Cromarty Firth buoy work*
ILV Granuaile	*Shannon Estuary weatherbound*

GLA FLEET LOCATION 01/10/2017

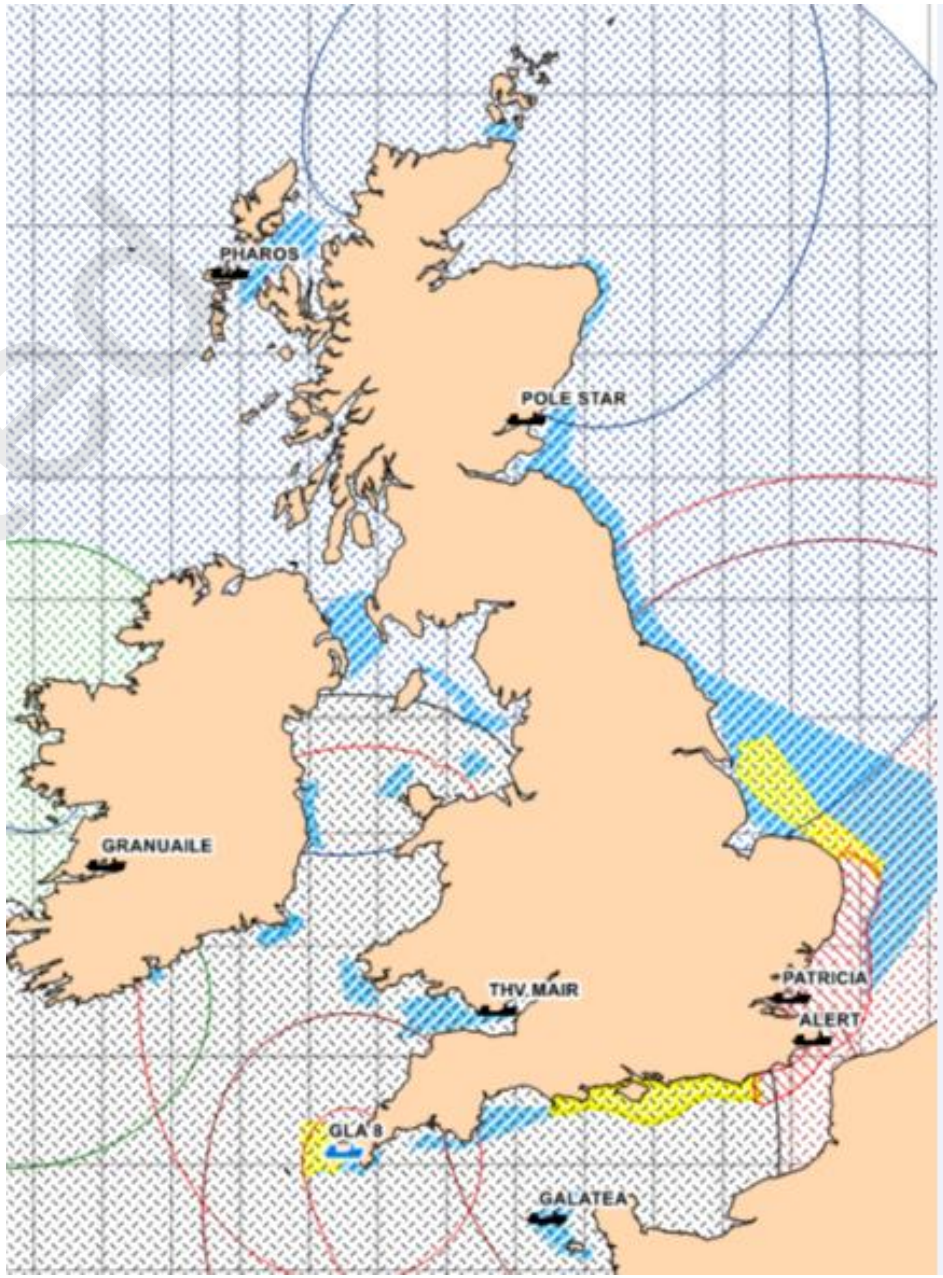
ALERT - DOVER
GALATEA - ST PETER PORT
GLA 8 - LANDS END
GRANUAILE - SHANNON
PATRICIA - OAZE DEEP
PHAROS - LOCHMADDY
POLE STAR - ARBROATH OUTFALL
THV MAIR - BARRY





12 Hrs RRC

24 Hrs RRC



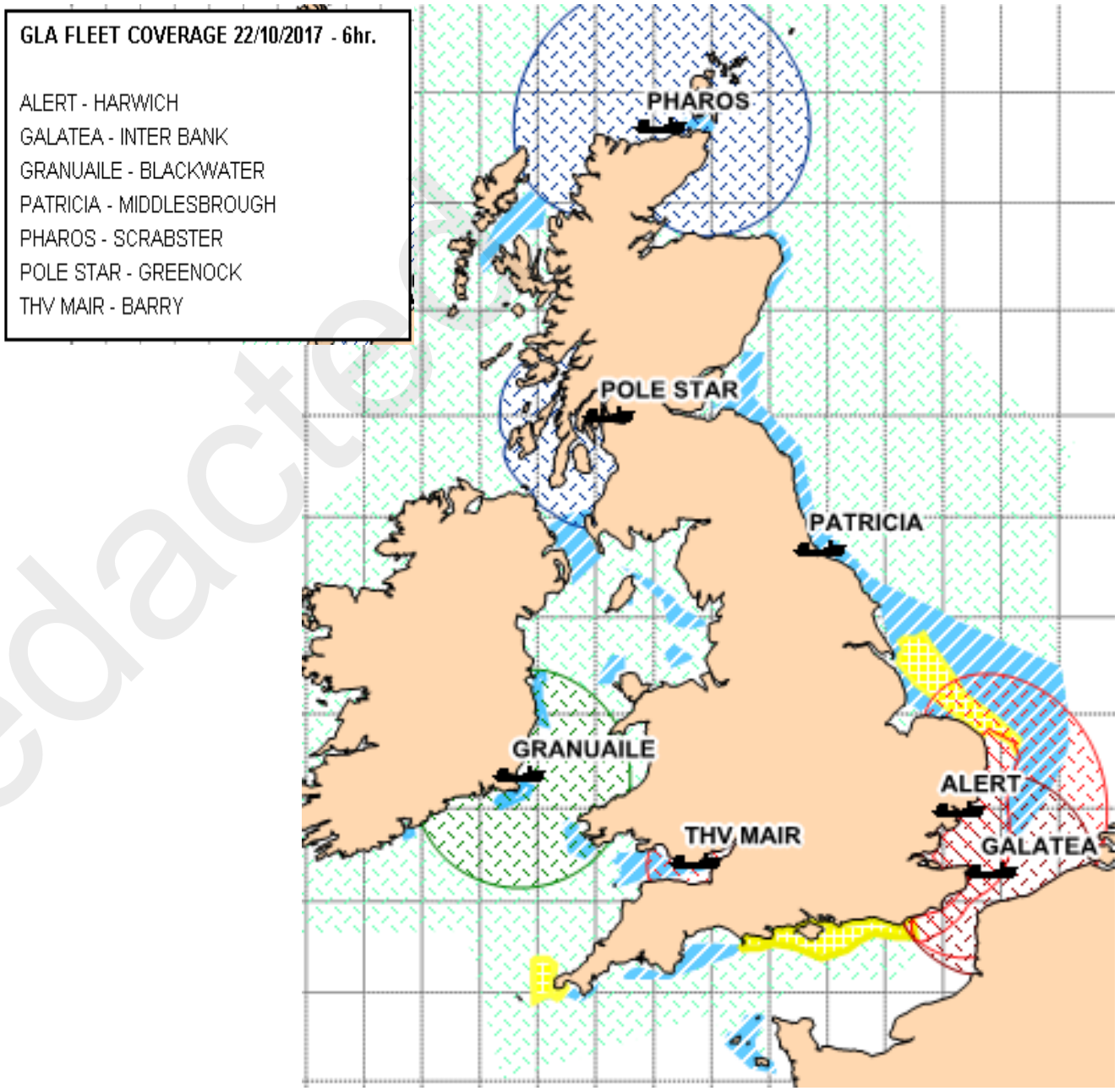
Response Region Coverage

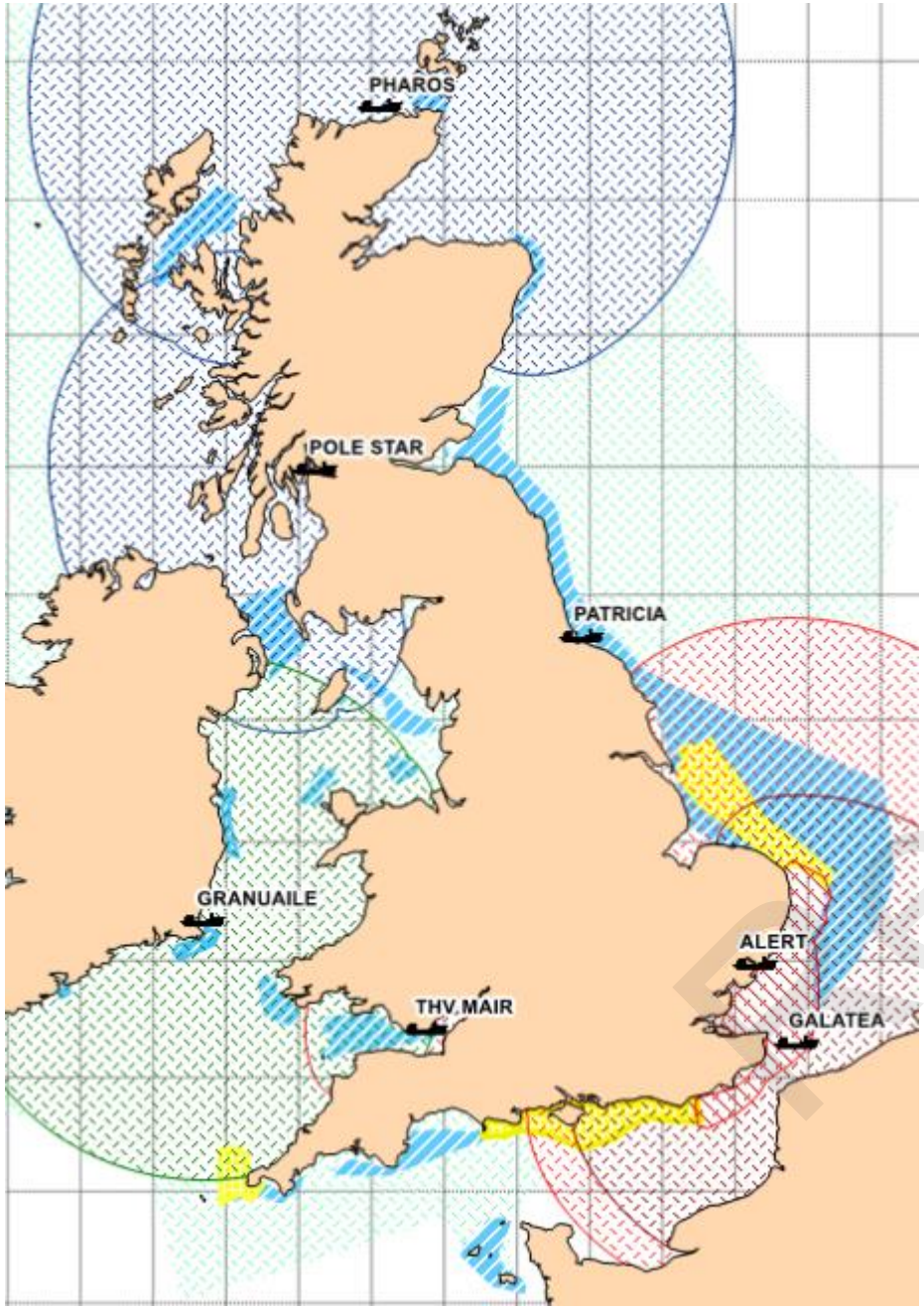
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	87%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
3	HUMBER TO CROMER	12	No	65%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GLA 8
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA 8, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GLA 8, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GLA 8, PHAROS
17	ISLE OF MAN	24	Yes	100%	GLA 8, PHAROS
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

22nd Oct 2017	7 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Inter Bank Casualty; attendance- unable to rectify due weather*
THV Alert	*Harwich RRC*
MV Mair	*Barry RRC*
NLV Pharos	*Passage to Stornoway; remain overnight*
NLV Pole Star	*Local light inspections overnight; overnight anchorage Lamlash Bay*
ILV Granuaile	*Attended South Blackwater casualty*

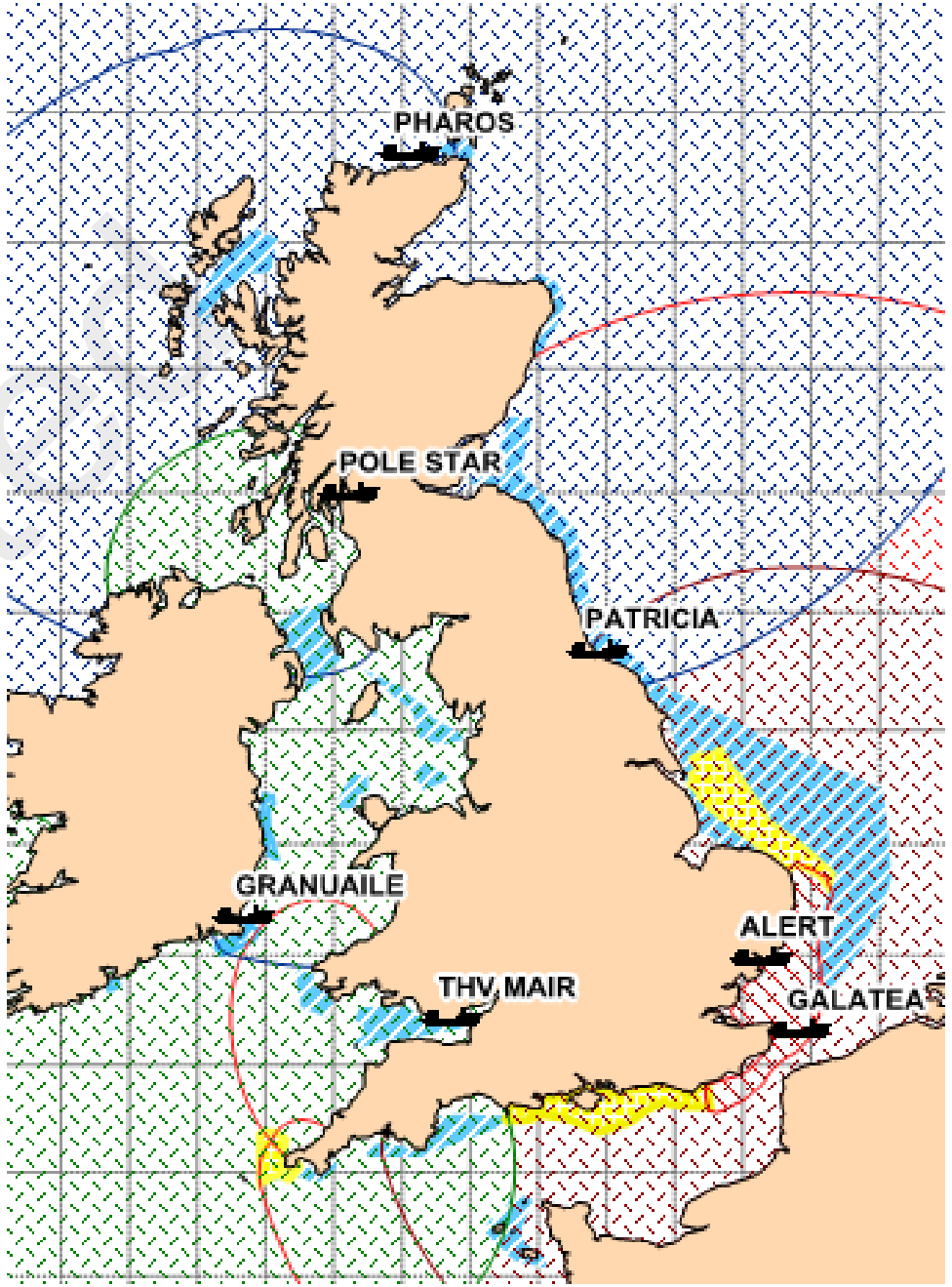
Wreck, AtoN Casualty, RRC Incidents	
Storm Brian	*Incident Report No.143*





12 Hrs RRC

24 Hrs RRC



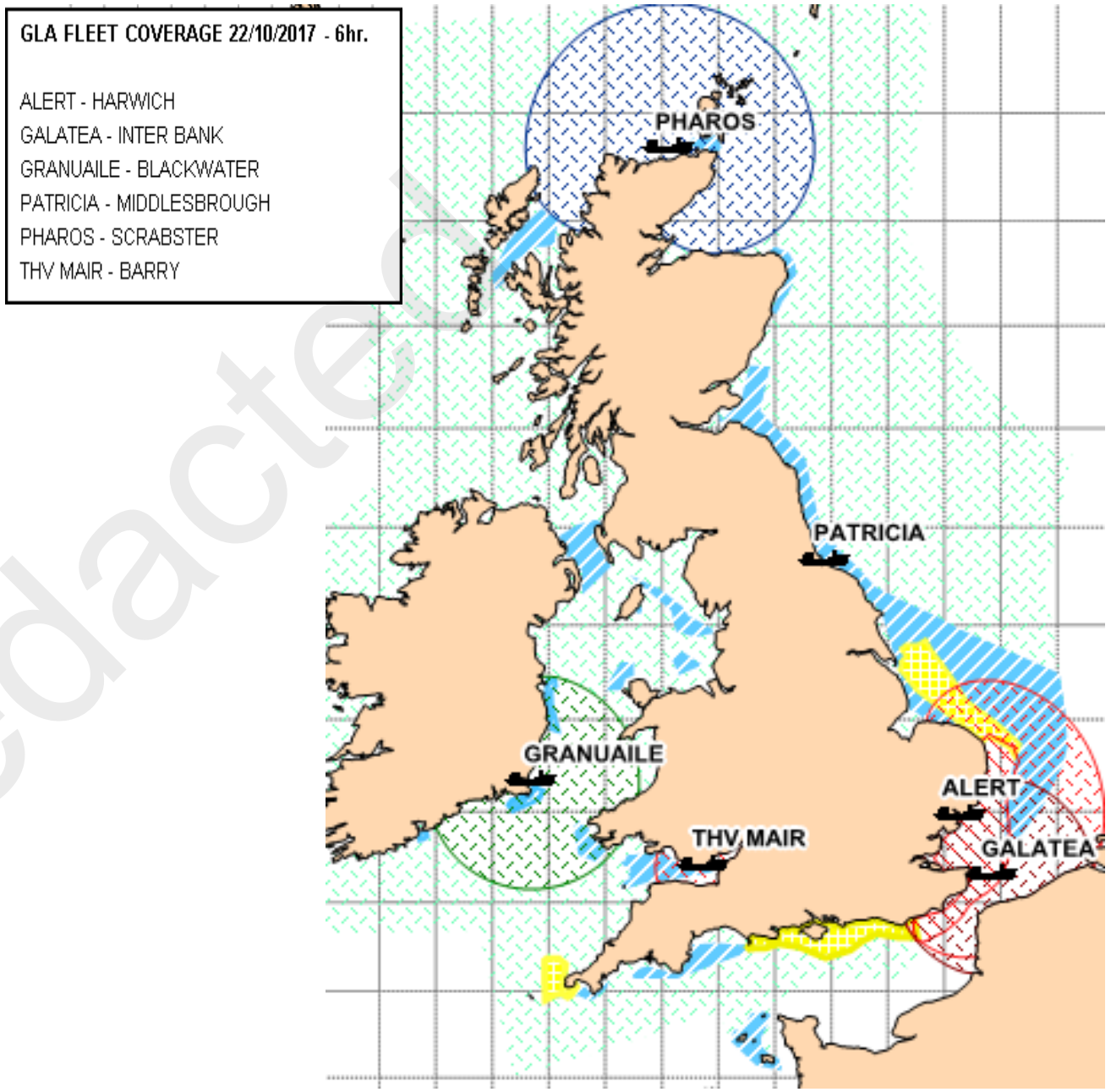
Response Region Coverage

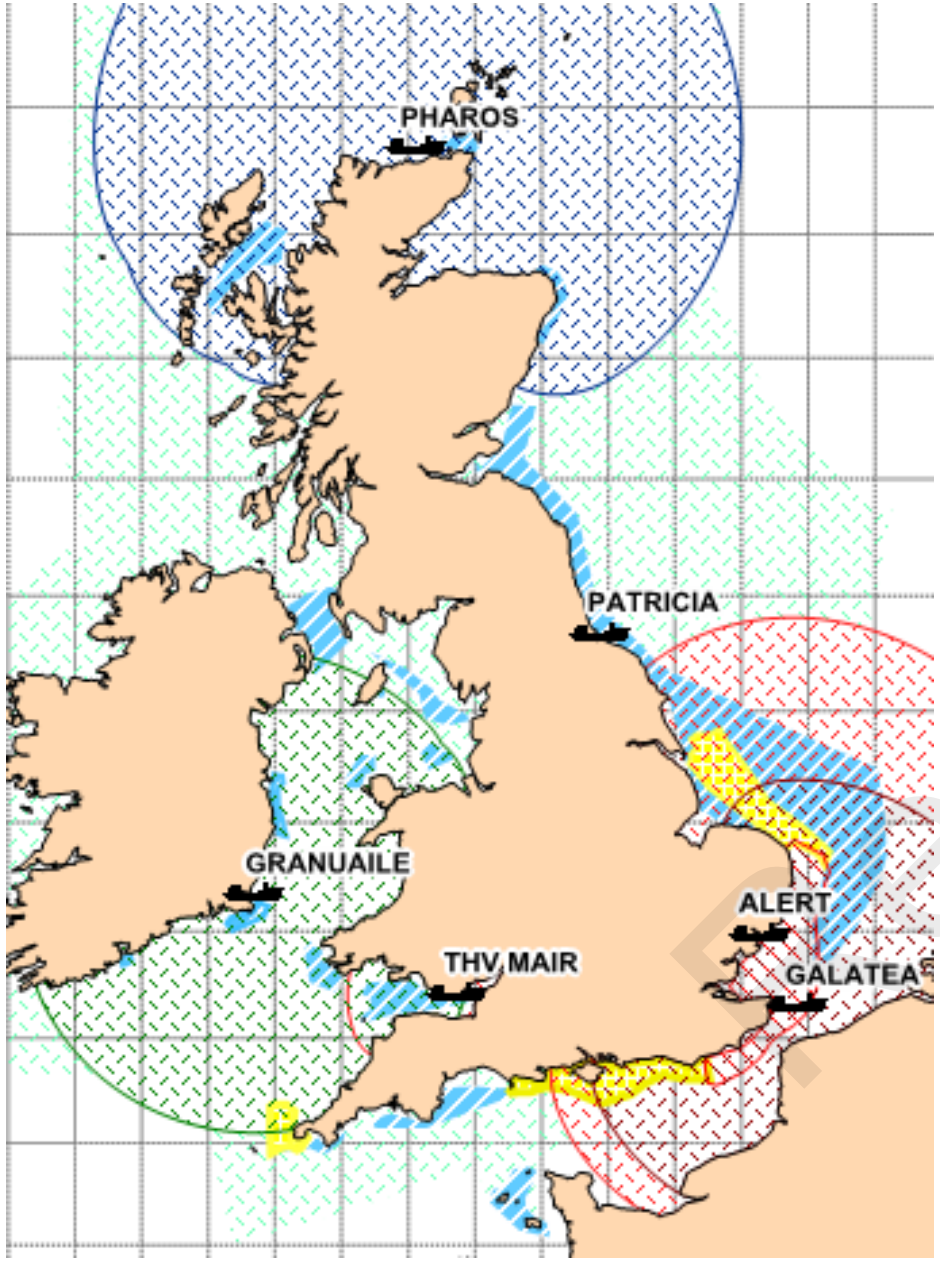
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	No	89%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	54%	GRANUAILE
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, POLE STAR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, POLE STAR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, POLE STAR, THV M...

22nd Oct 2017	6 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Inter Bank Casualty; attendance- unable to rectify due weather*
THV Alert	*Harwich RRC*
MV Mair	*Barry RRC*
NLV Pharos	*Passage to Stornoway; remain overnight*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Attended South Blackwater casualty*

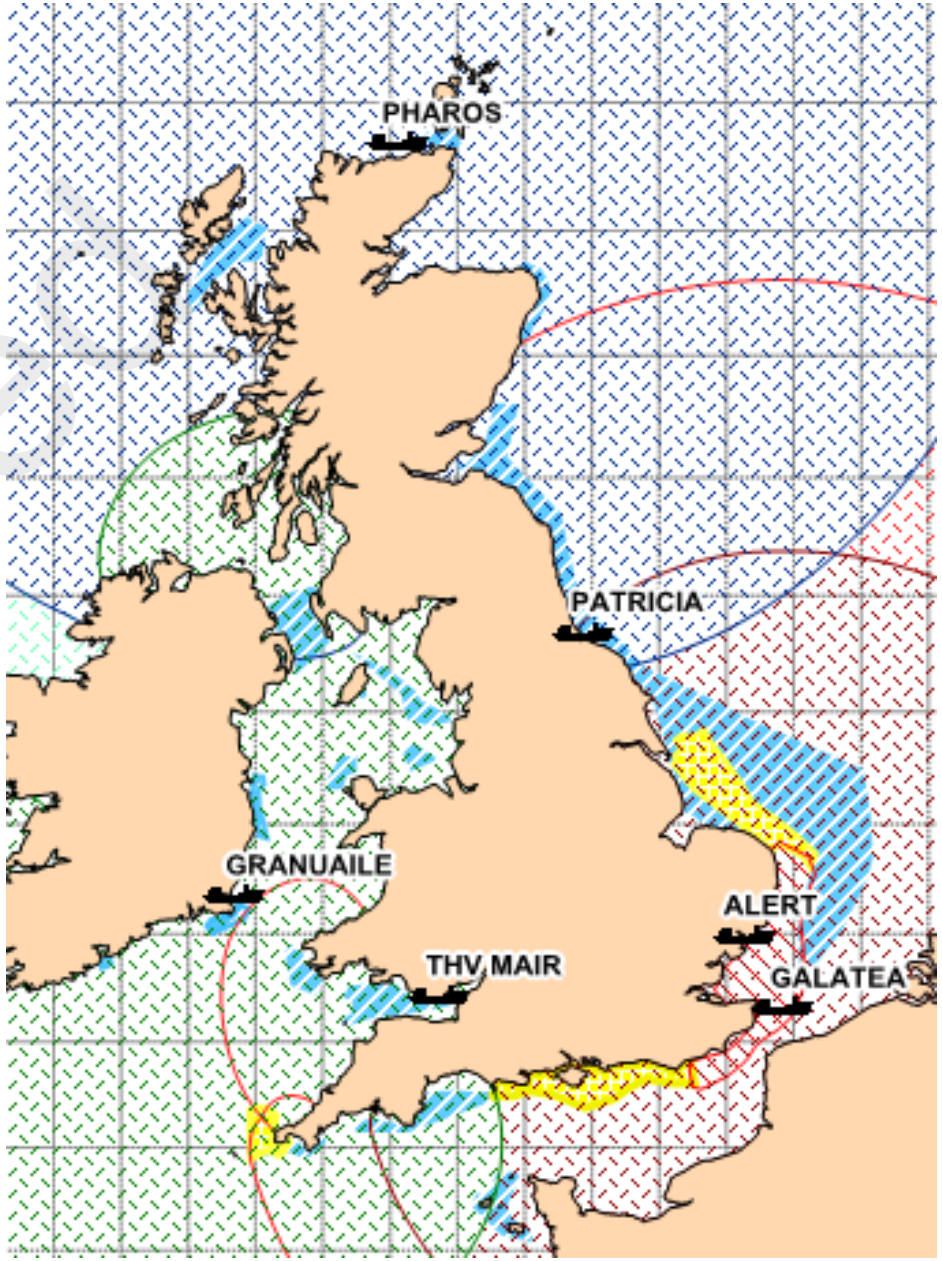
Wreck, AtoN Casualty, RRC Incidents	
Storm Brian	*Incident Report No.143*





12 Hrs RRC

24 Hrs RRC

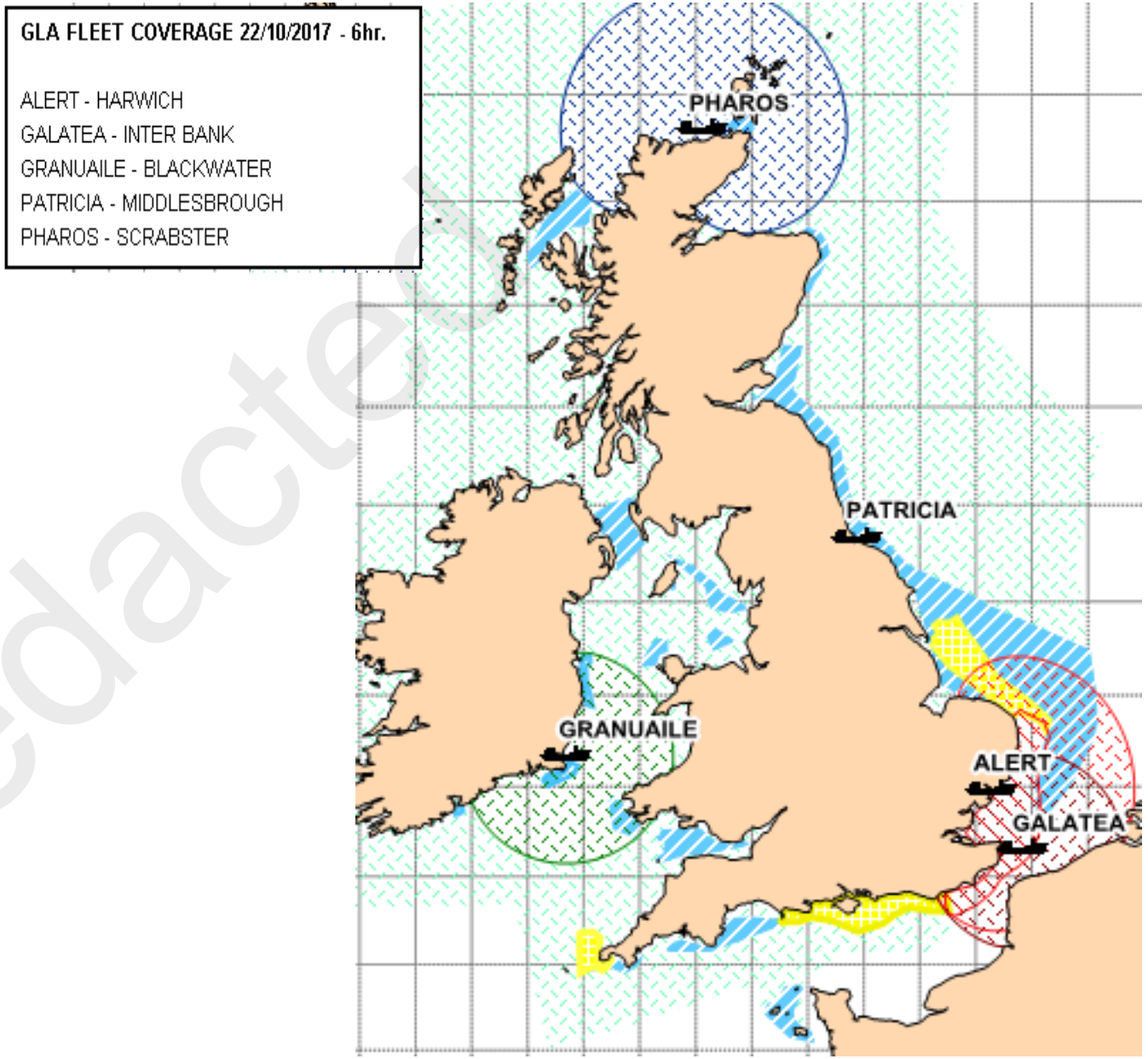


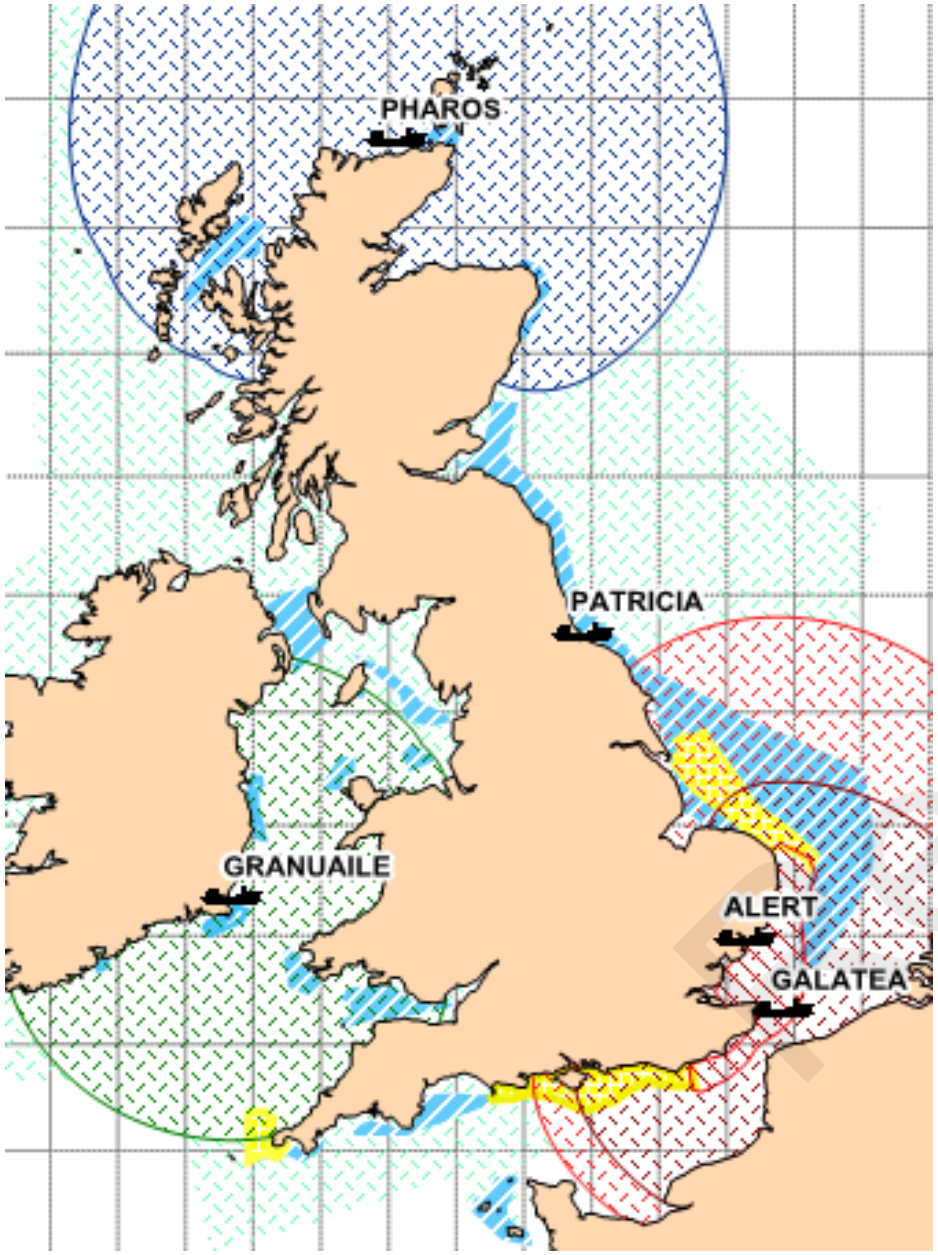
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	No	89%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	54%	GRANUAILE
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, THV MAIR

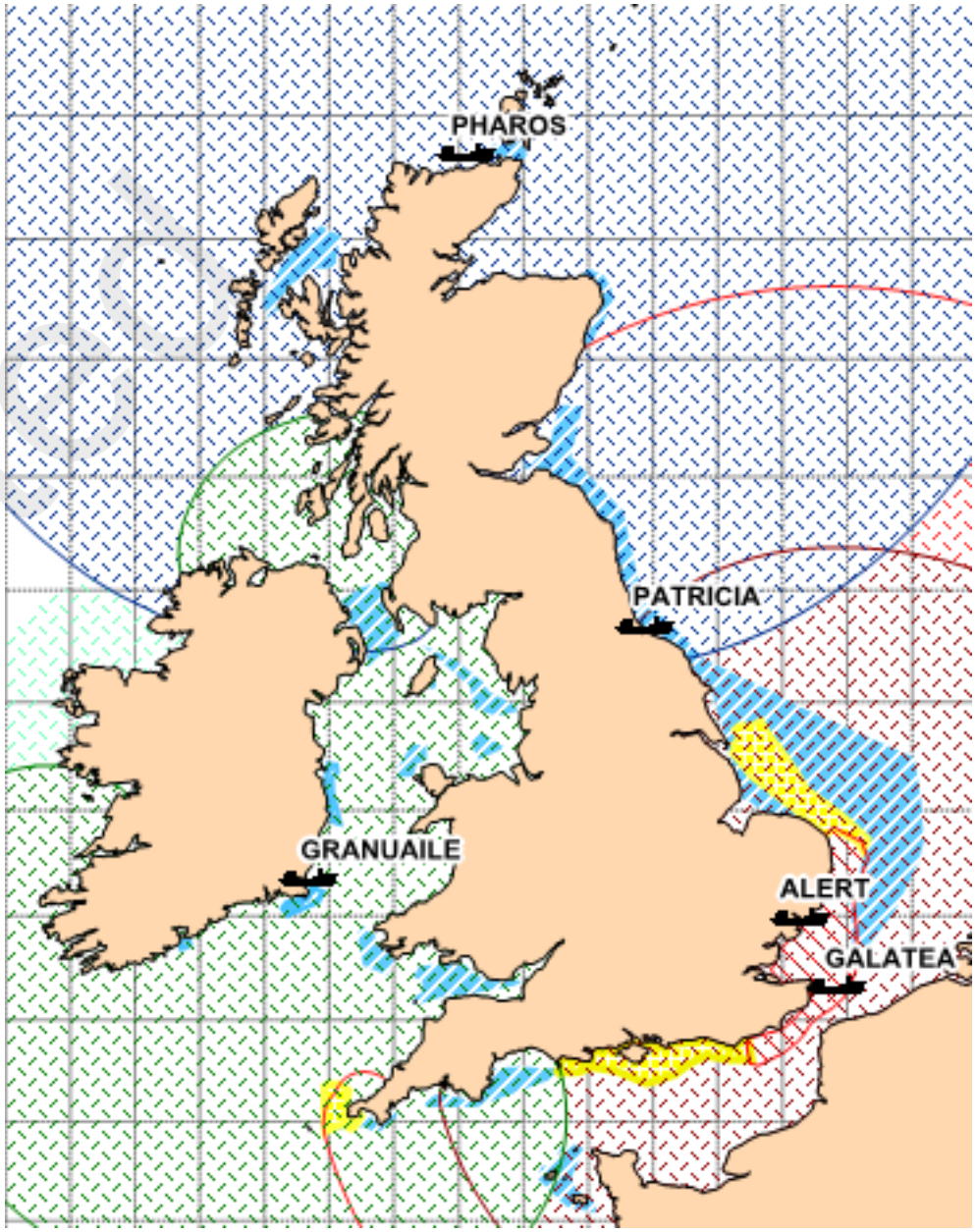
22nd Oct 2017	5 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Inter Bank Casualty; attendance- unable to rectify due weather*
THV Alert	*Harwich RRC*
MV Mair	***REMOVED***
NLV Pharos	*Passage to Stornoway; remain overnight*
NLV Pole Star	***REMOVED***
ILV Granuaile	*Attended South Blackwater casualty*





12 Hrs RRC

24 Hrs RRC

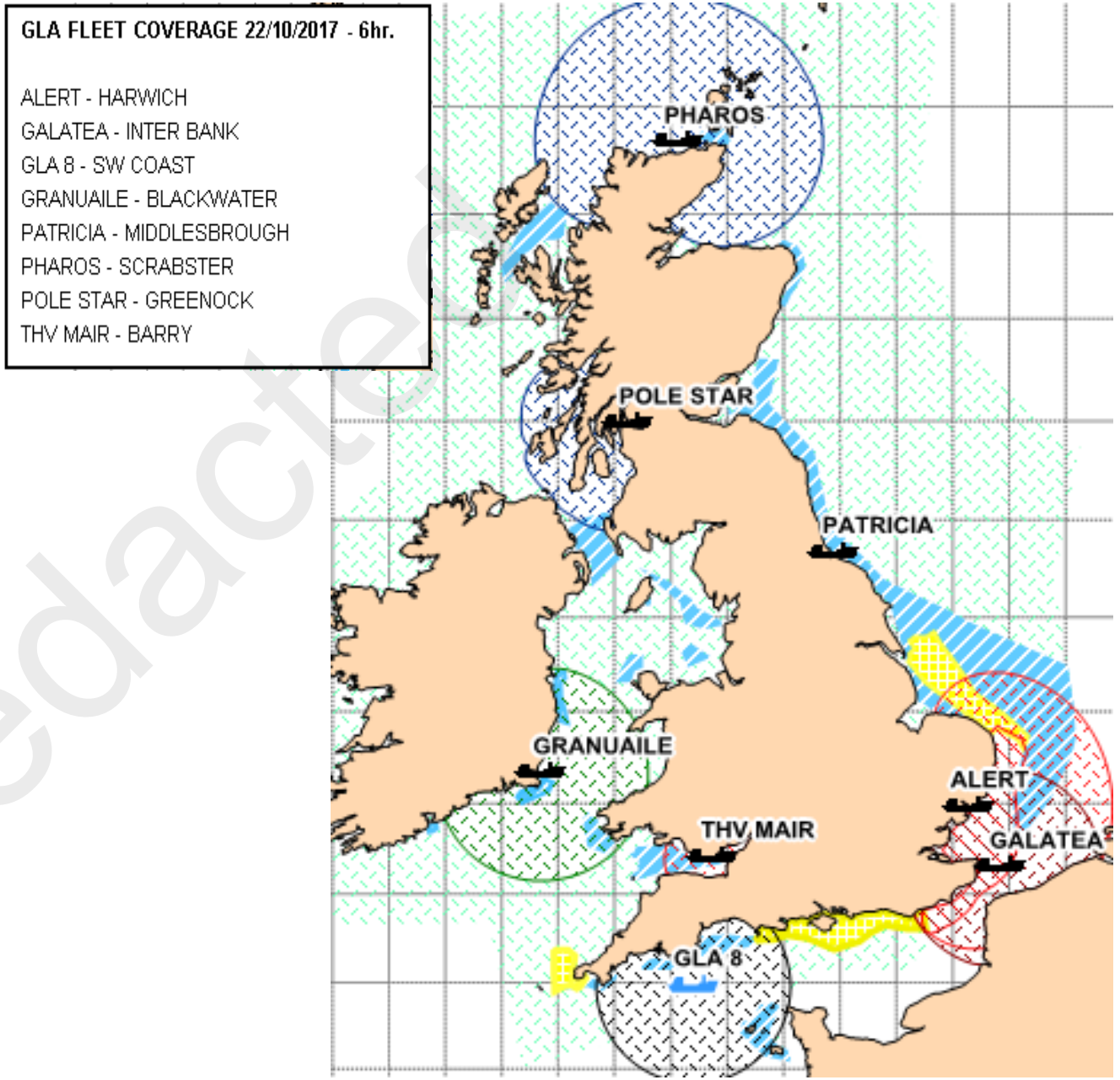


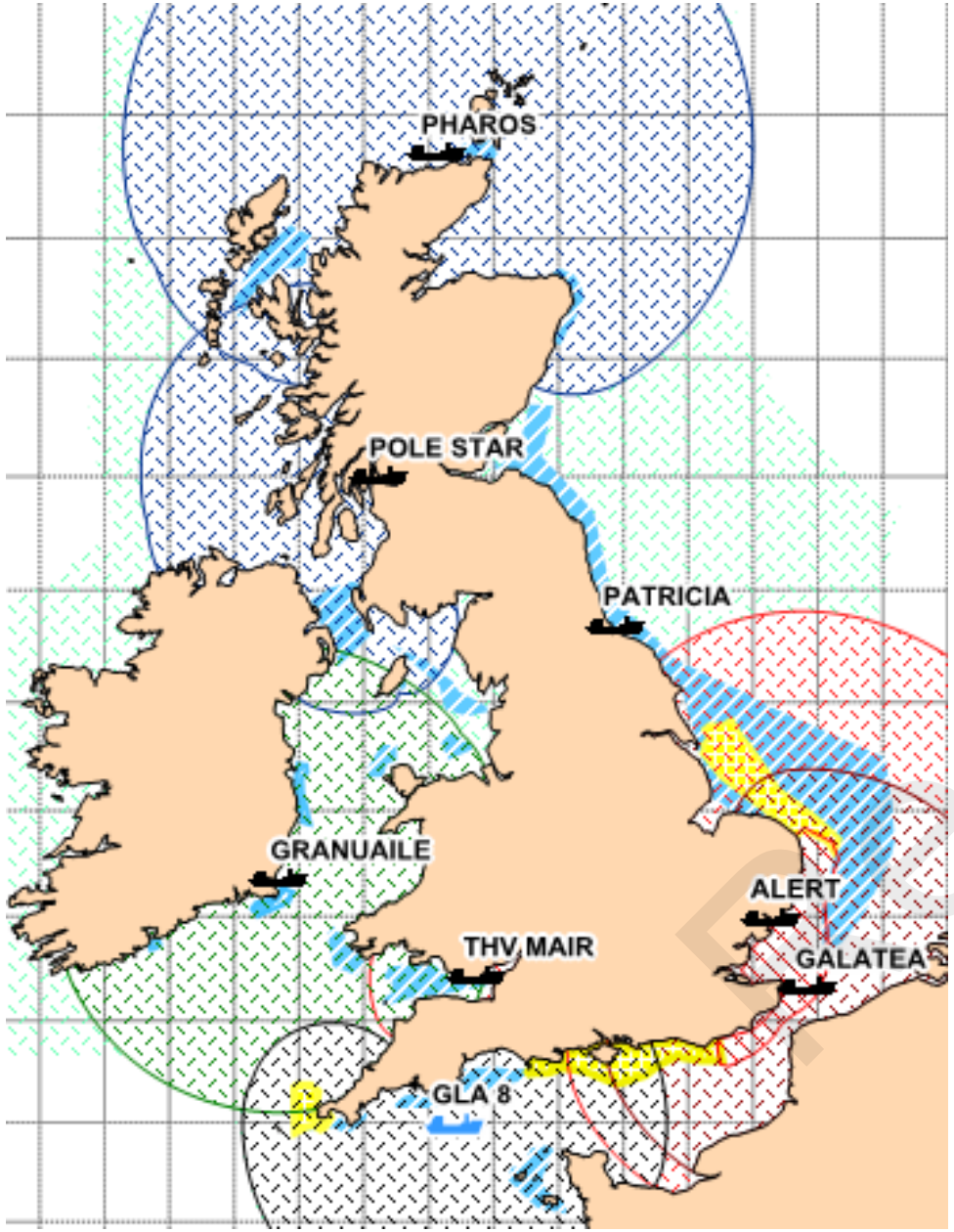
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	No	89%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	54%	GRANUAILE
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS

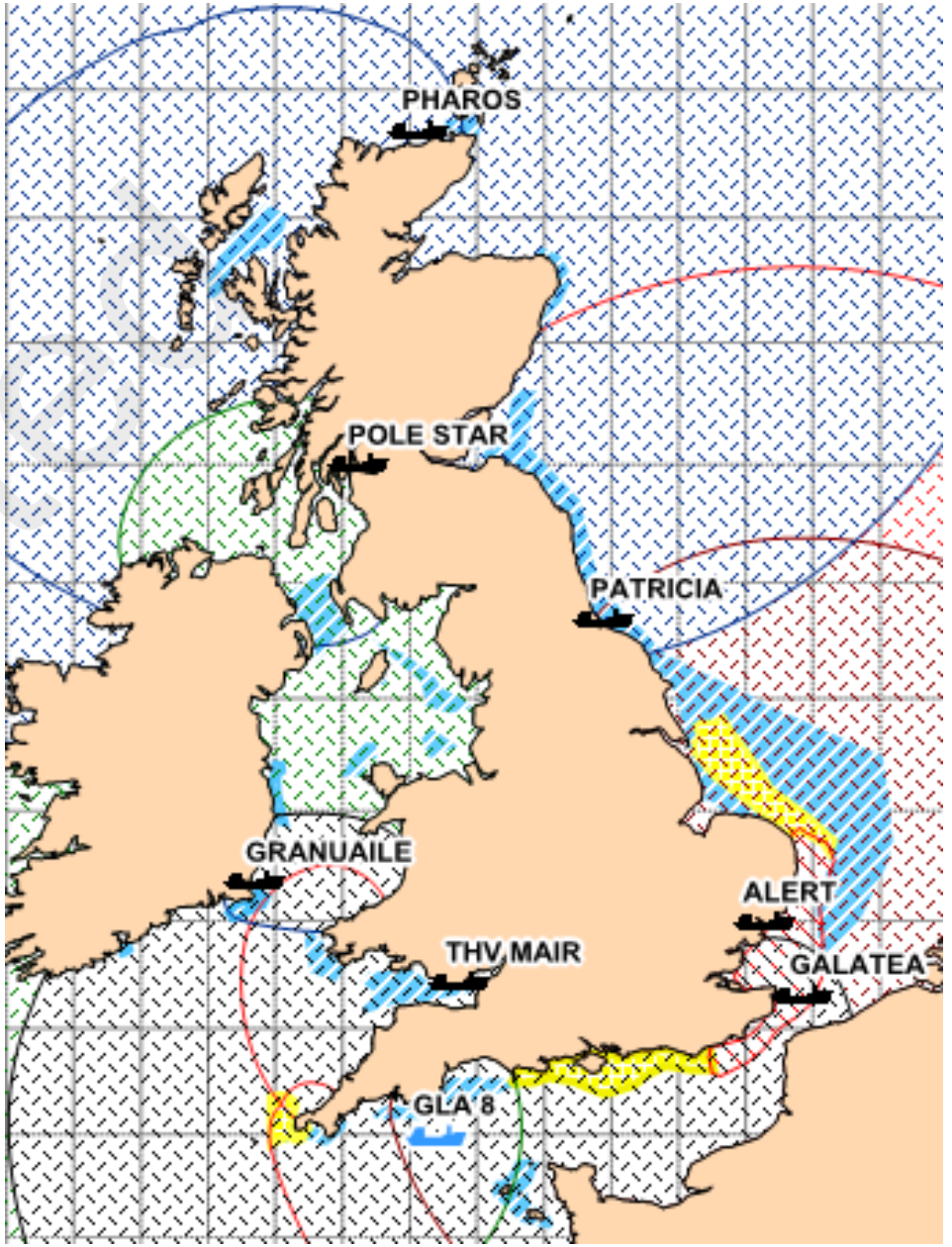
22nd Oct 2017	8 Vessel Scenario - Pass
GLA 8	*SW Coast*
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Inter Bank Casualty; attendance- unable to rectify due weather*
THV Alert	*Harwich RRC*
MV Mair	*Barry RRC*
NLV Pharos	*Passage to Stornoway; remain overnight*
NLV Pole Star	*Local light inspections overnight; overnight anchorage Lamlash Bay*
ILV Granuaile	*Attended South Blackwater casualty*





12 Hrs RRC

24 Hrs RRC



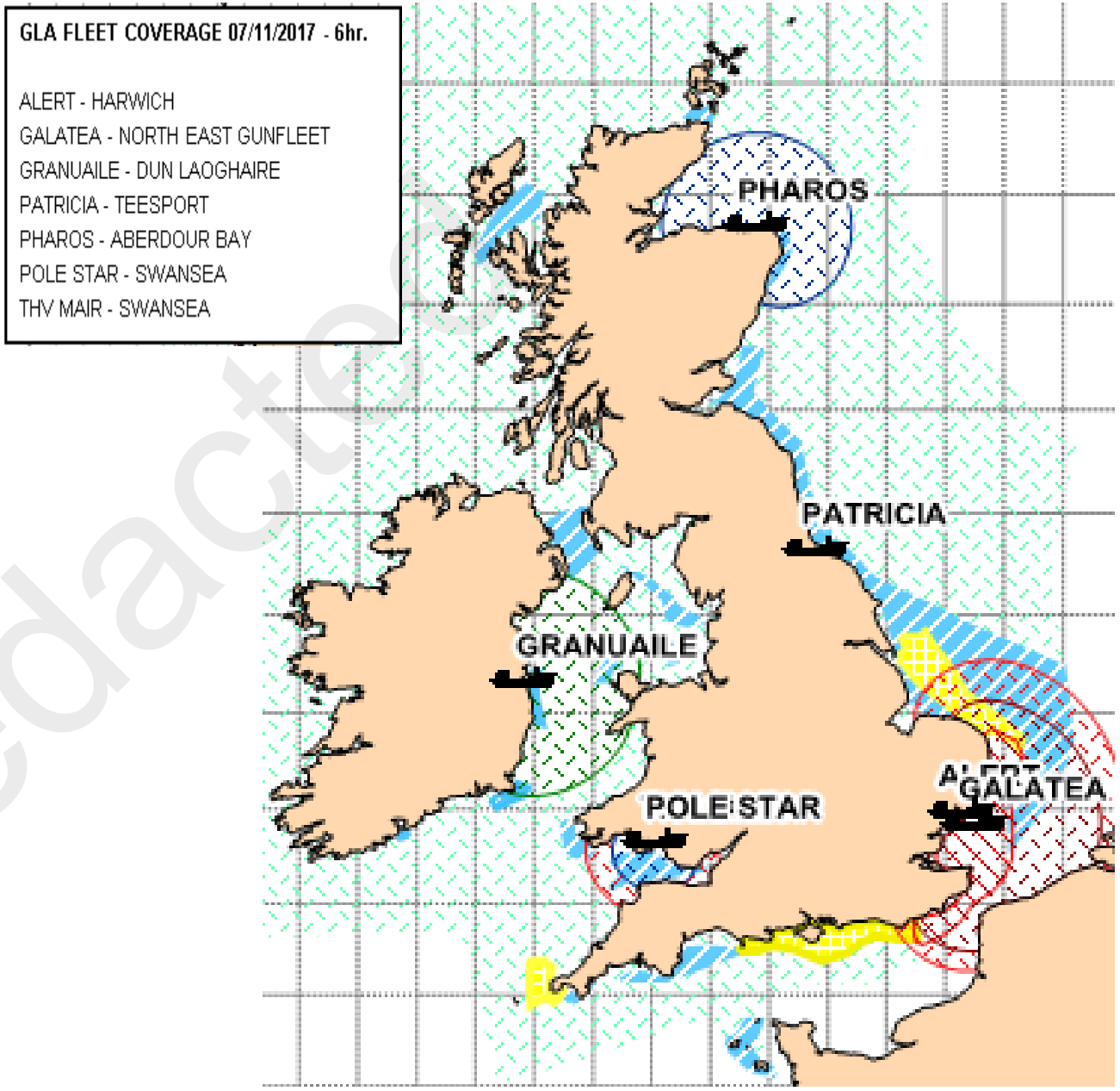
Response Region Coverage

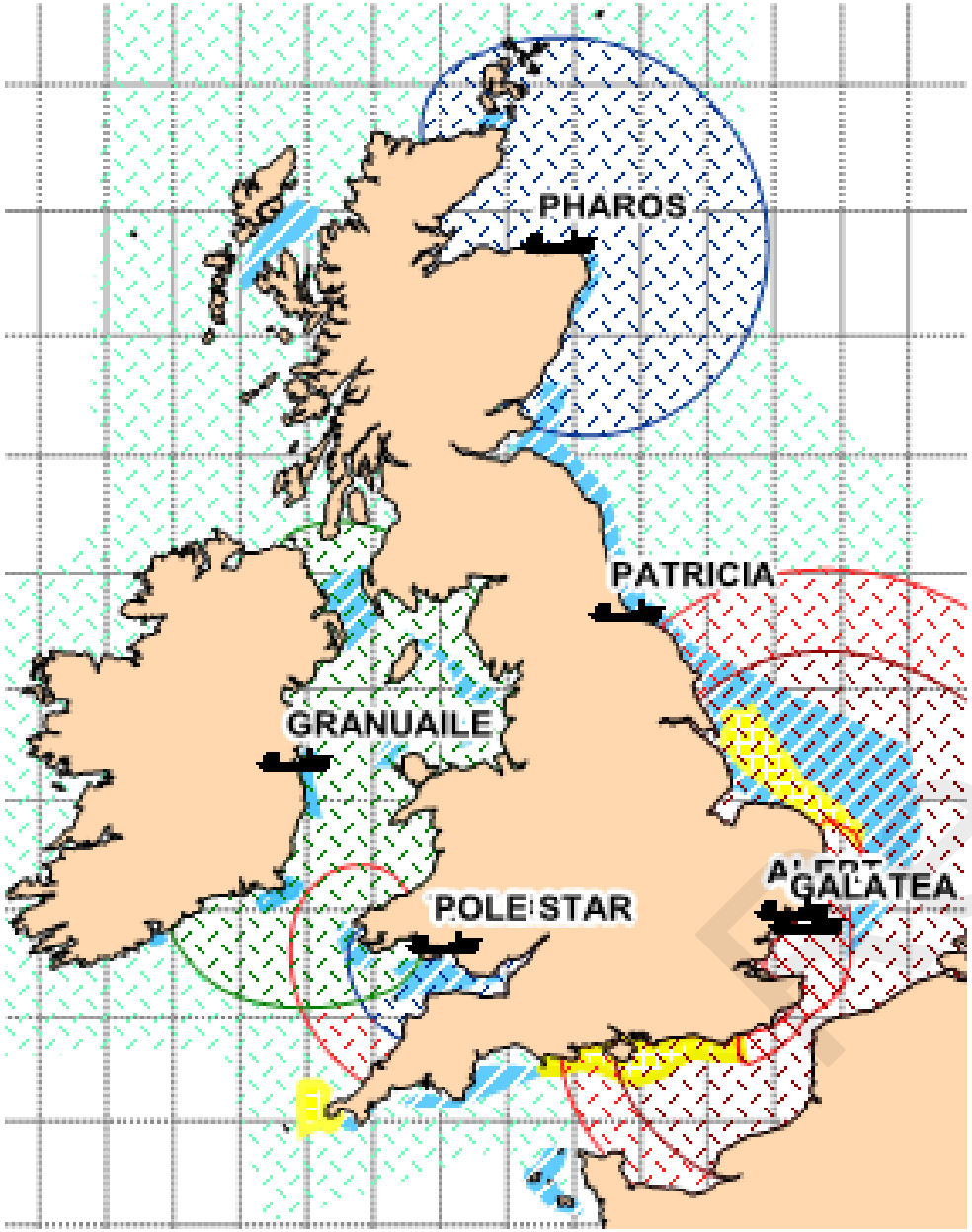
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	GLA 8, GRANUAILE
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, GLA 8, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, POLE STAR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GLA 8, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PHAROS, POLE STAR,...

7th Nov 2017	7 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Weatherbound am; Harwich area buoy work pm*
THV Alert	*Passage to Foxtrot 3 & East Goodwin; weather conditions unfit; passage to Dover pm*
MV Mair	*Barry weatherbound; processing Kenfig Sands Survey*
NLV Pharos	*Aberdour Bay weatherbound*
NLV Pole Star	*Swansea weatherbound loaded bunkers*
ILV Granuaile	*Attended South India buoy casualty*

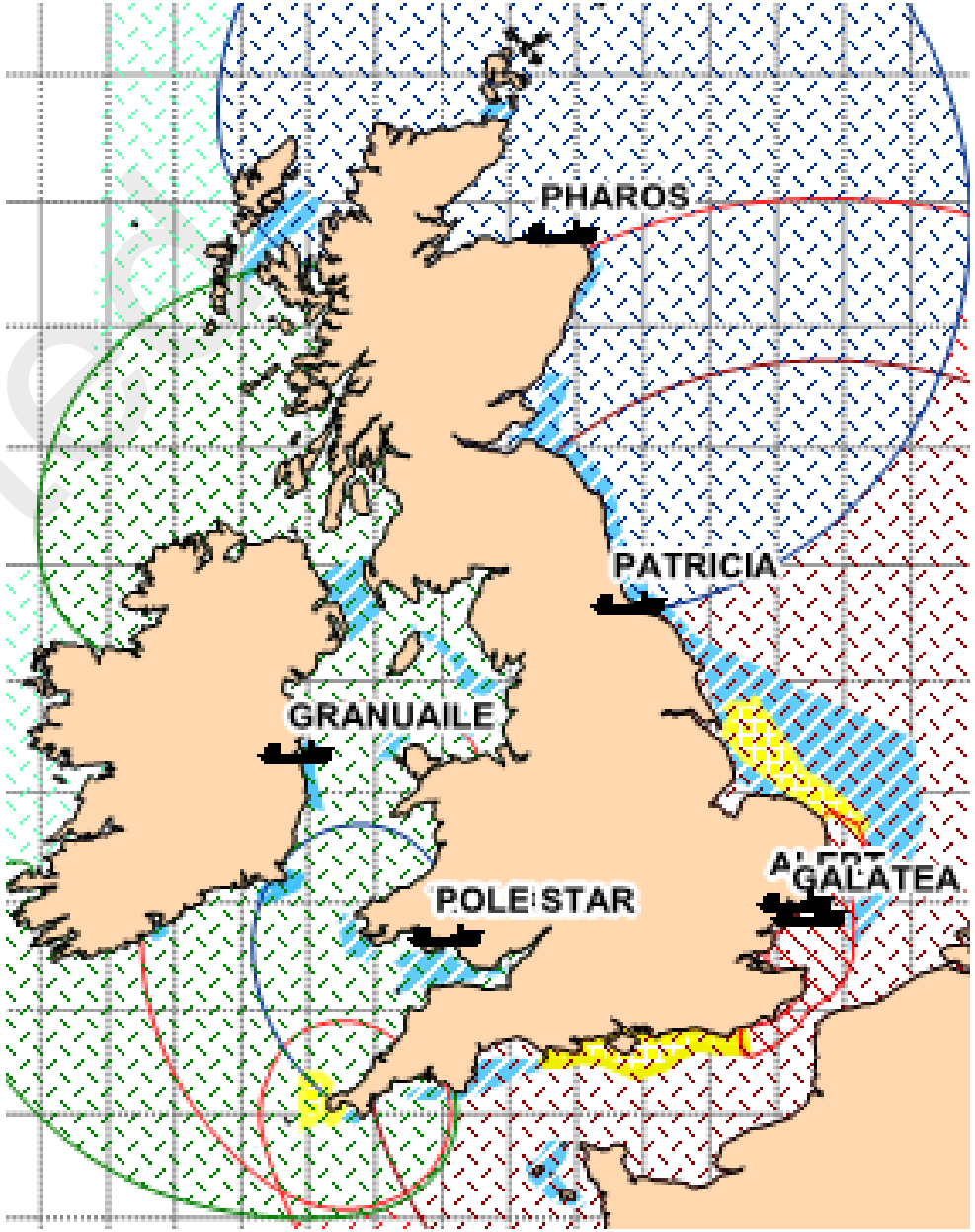
Wreck, AtoN Casualty, RRC Incidents	
Land's End Area	*0%*
Baggy Leap	*Incident 159*
Weatherbound day	*Incident 169*





12 Hrs RRC

24 Hrs RRC

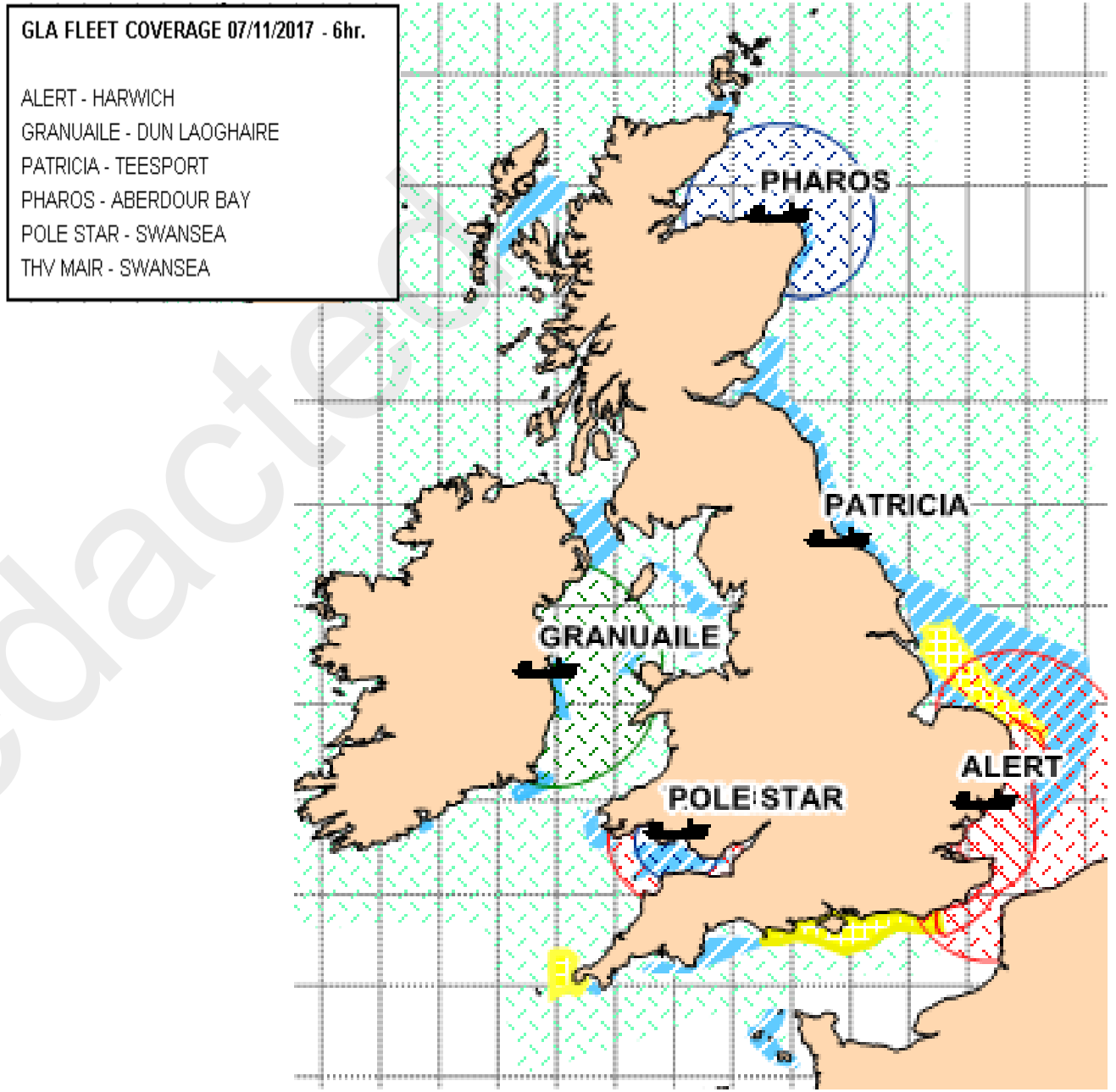


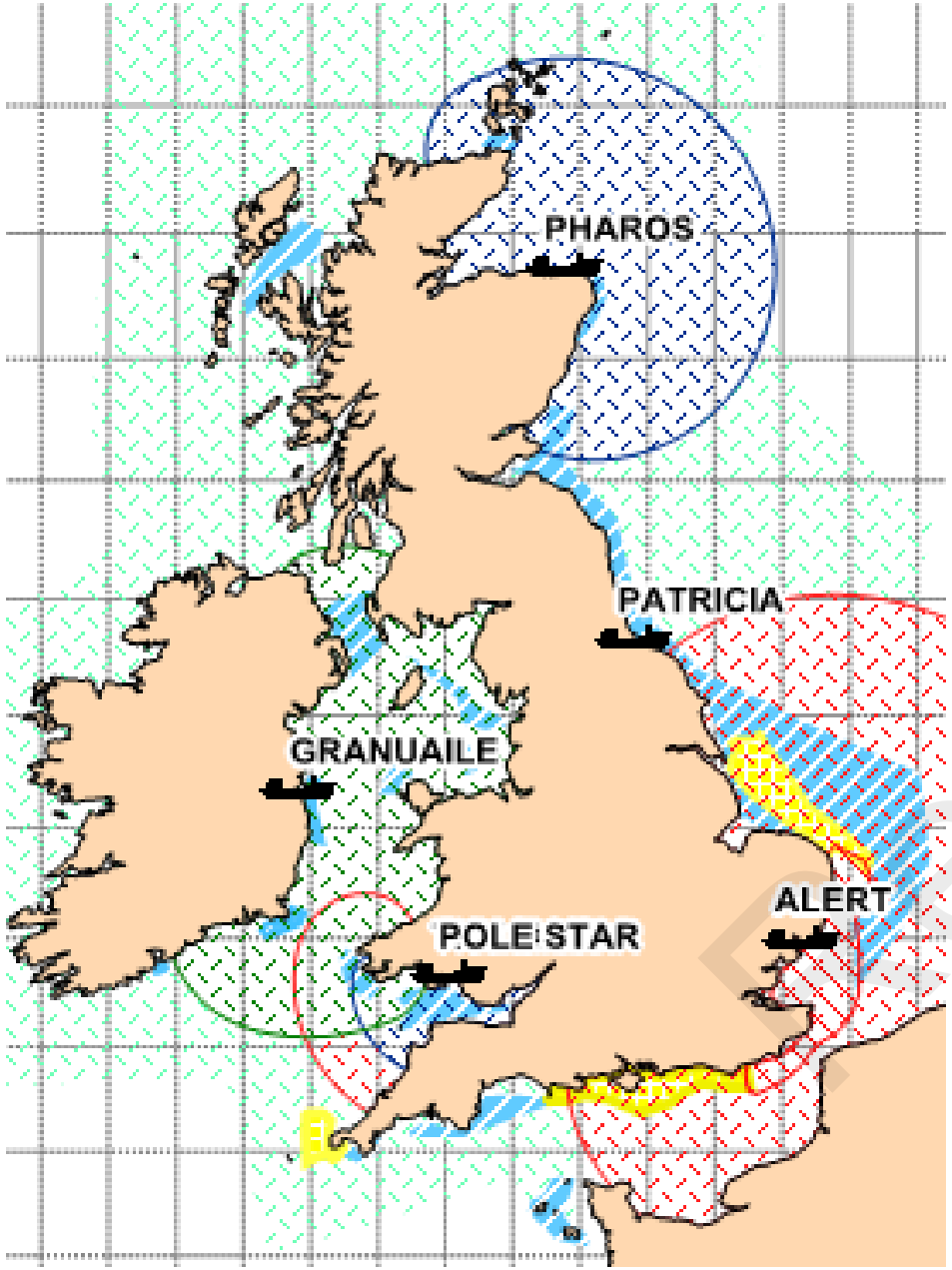
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	No	94%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	No	75%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, POLE STAR, THV M...

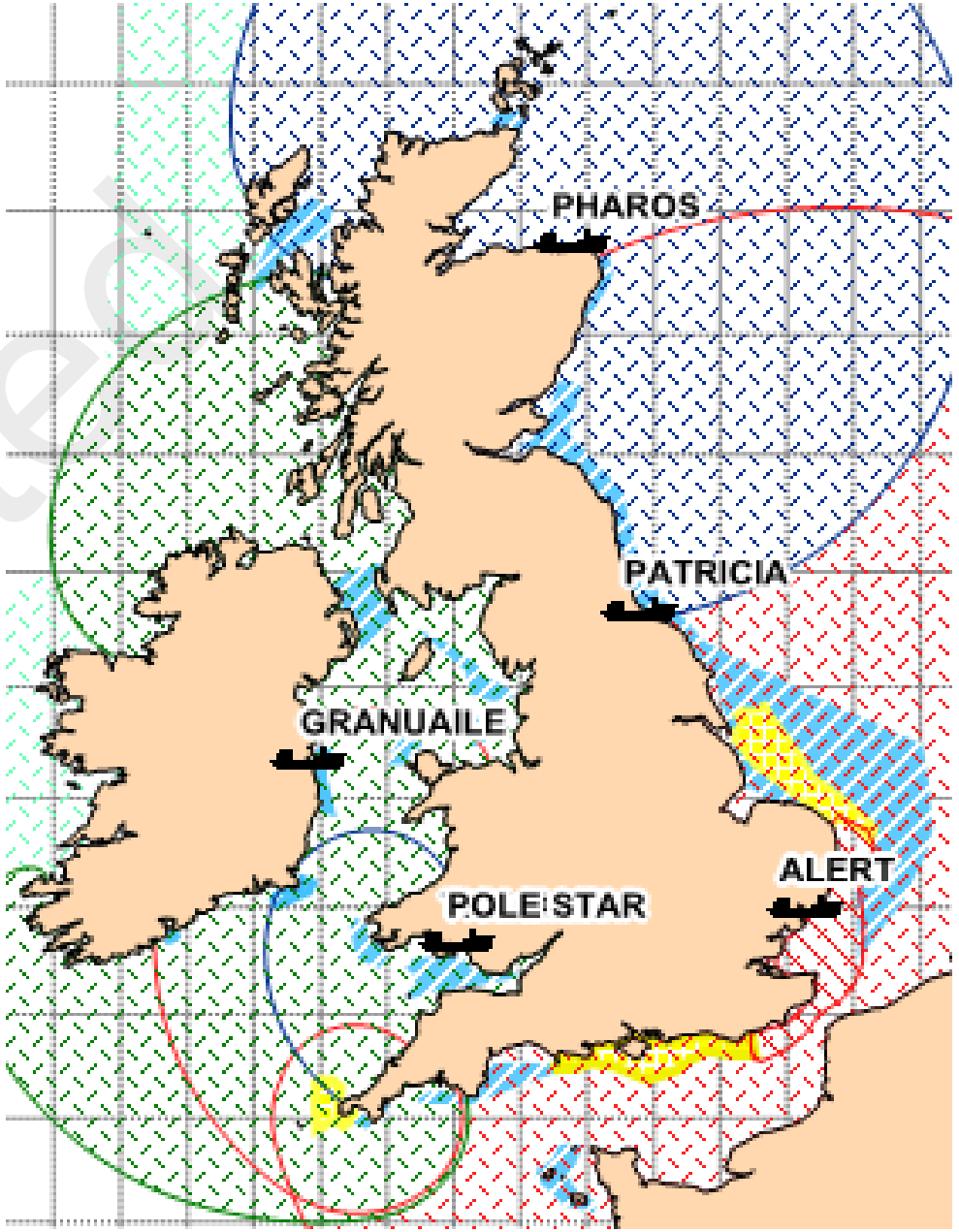
7th Nov 2017	6 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	***REMOVE***
THV Alert	*Passage to Foxtrot 3 & East Goodwin; weather conditions unfit; passage to Dover pm*
MV Mair	*Barry weatherbound; processing Kenfig Sands Survey*
NLV Pharos	*Aberdour Bay weatherbound*
NLV Pole Star	*Swansea weatherbound loaded bunkers*
ILV Granuaile	*Attended South India buoy casualty*





12 Hrs RRC

24 Hrs RRC

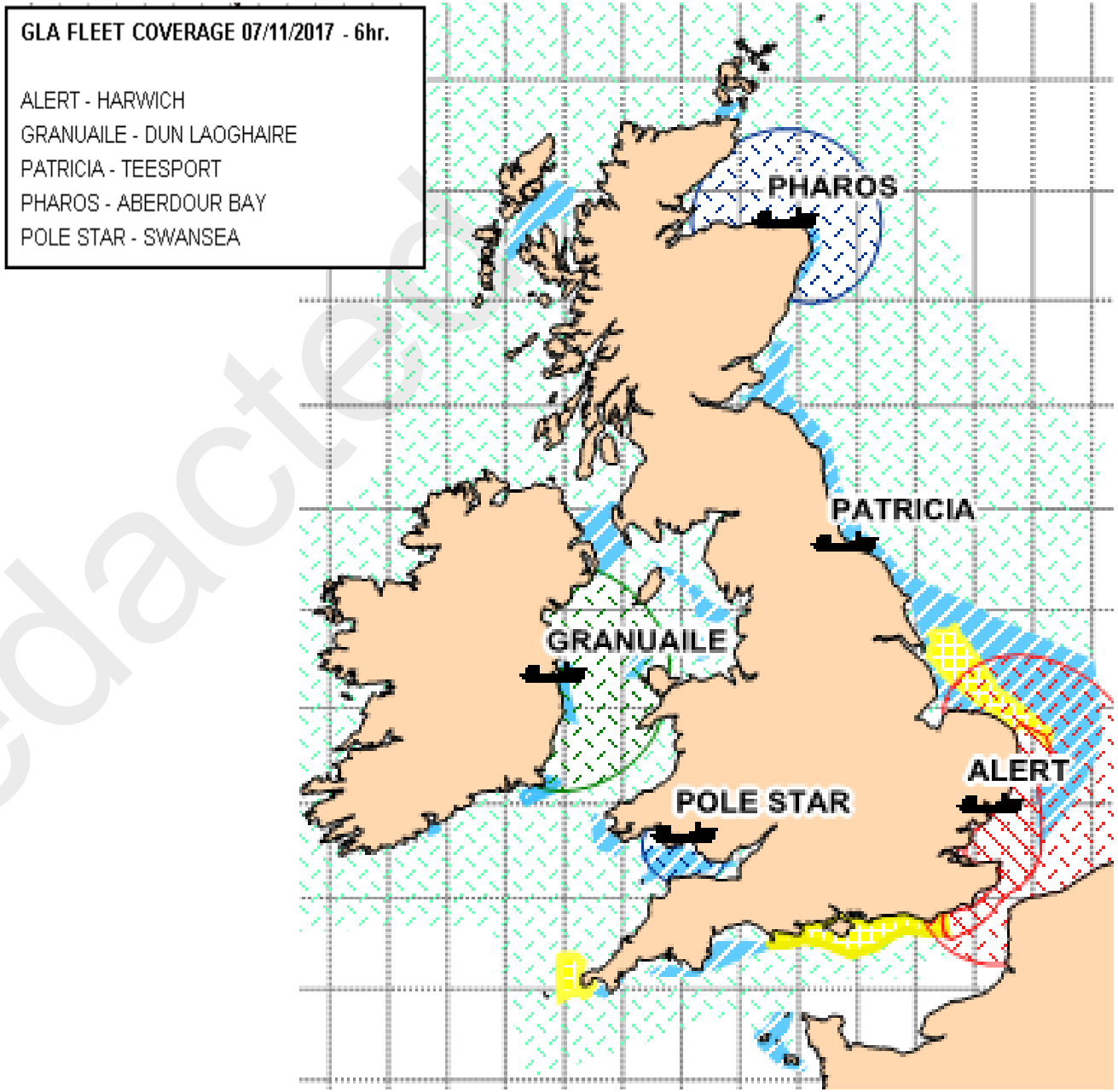


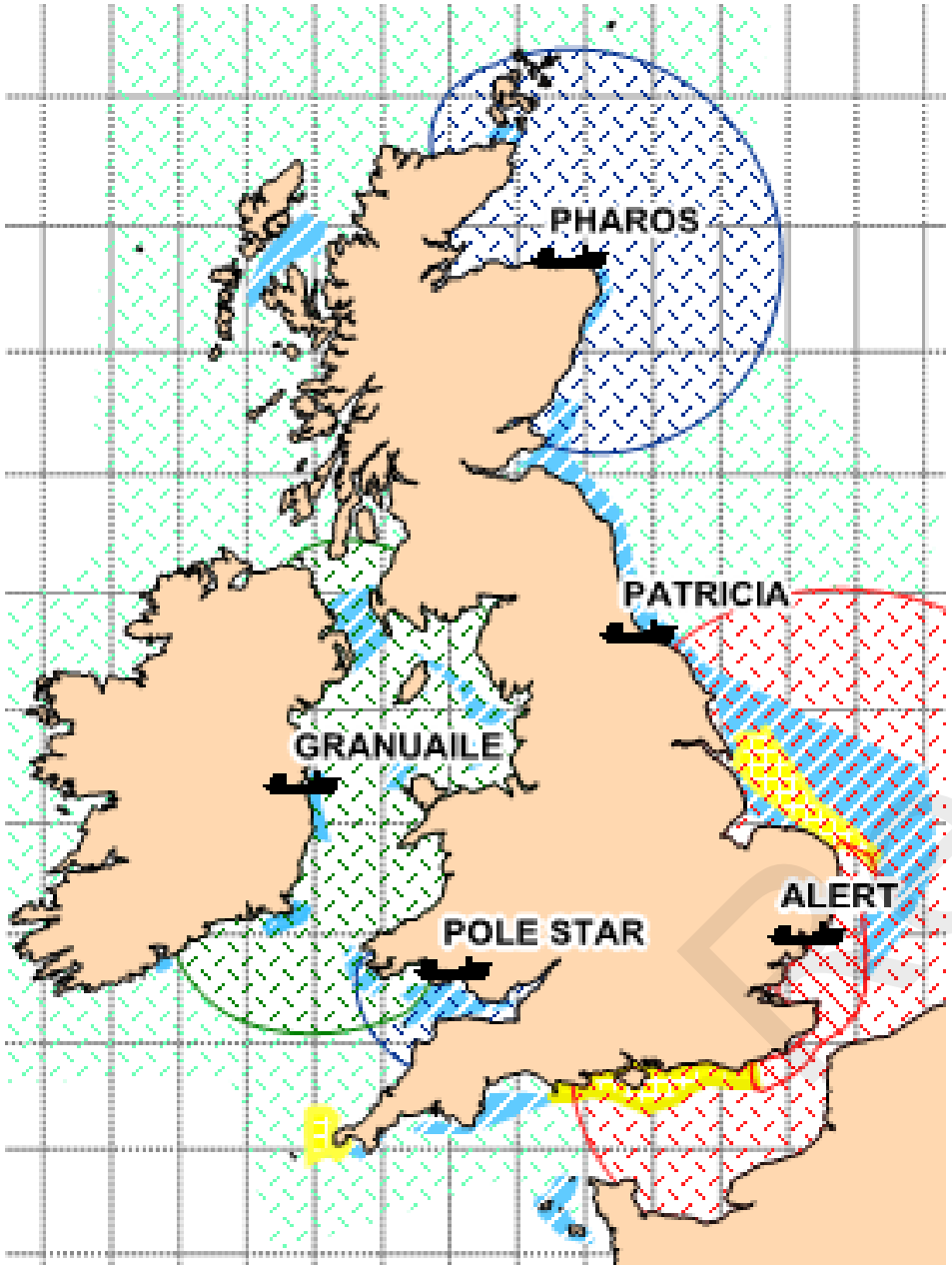
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT
2	PORTLAND BILL TO BEACHY HEAD	12	No	94%	ALERT
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	No	75%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PHAROS, POLE STAR, THV MAIR

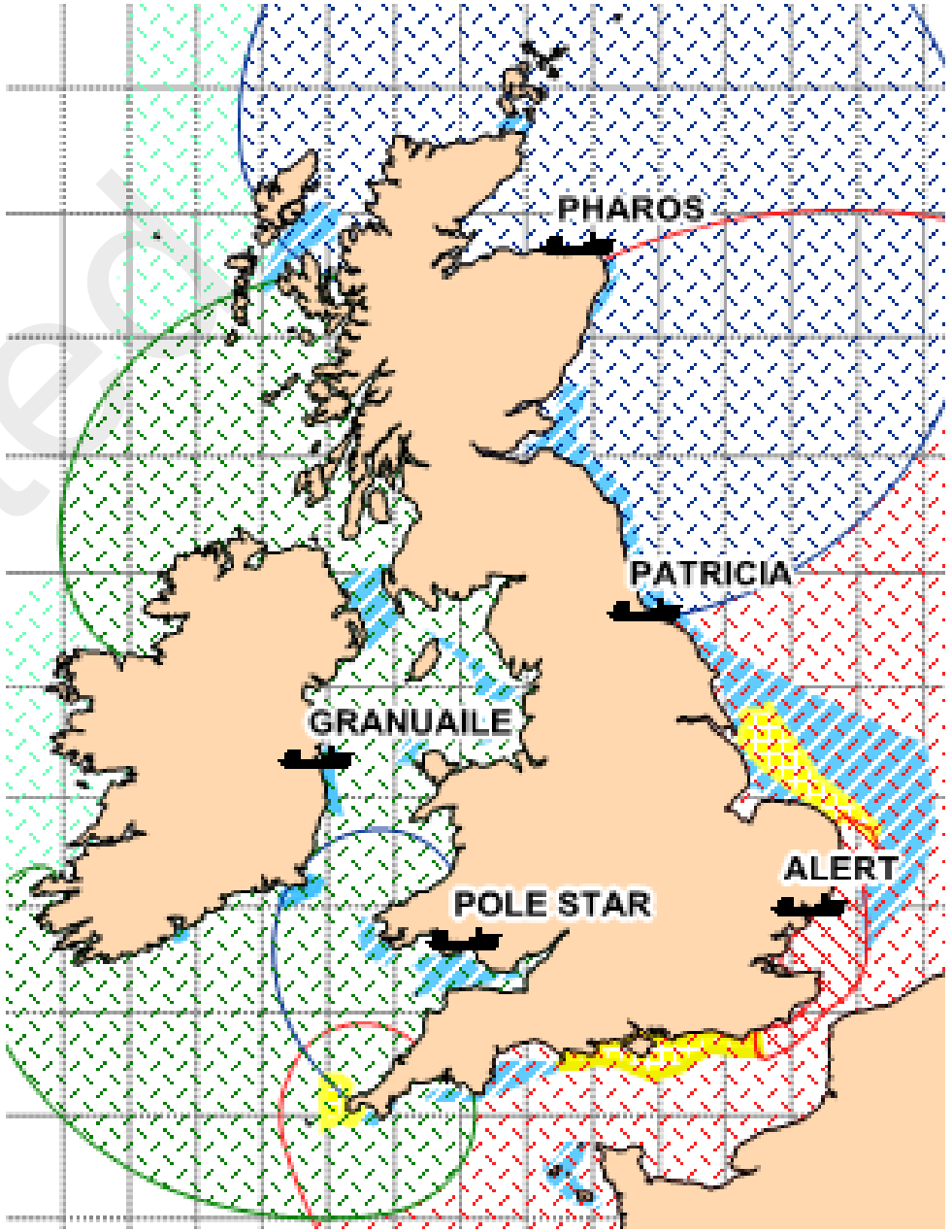
7th Nov 2017	5 Vessel Scenario - Failed
THV Patricia	*DD&R Middlesbrough*
THV Galatea	***REMOVE***
THV Alert	*Passage to Foxtrot 3 & East Goodwin; weather conditions unfit; passage to Dover pm*
MV Mair	***REMOVE***
NLV Pharos	*Aberdour Bay weatherbound*
NLV Pole Star	*Swansea weatherbound loaded bunkers*
ILV Granuaile	*Attended South India buoy casualty*





12 Hrs
RRC

24 Hrs
RRC

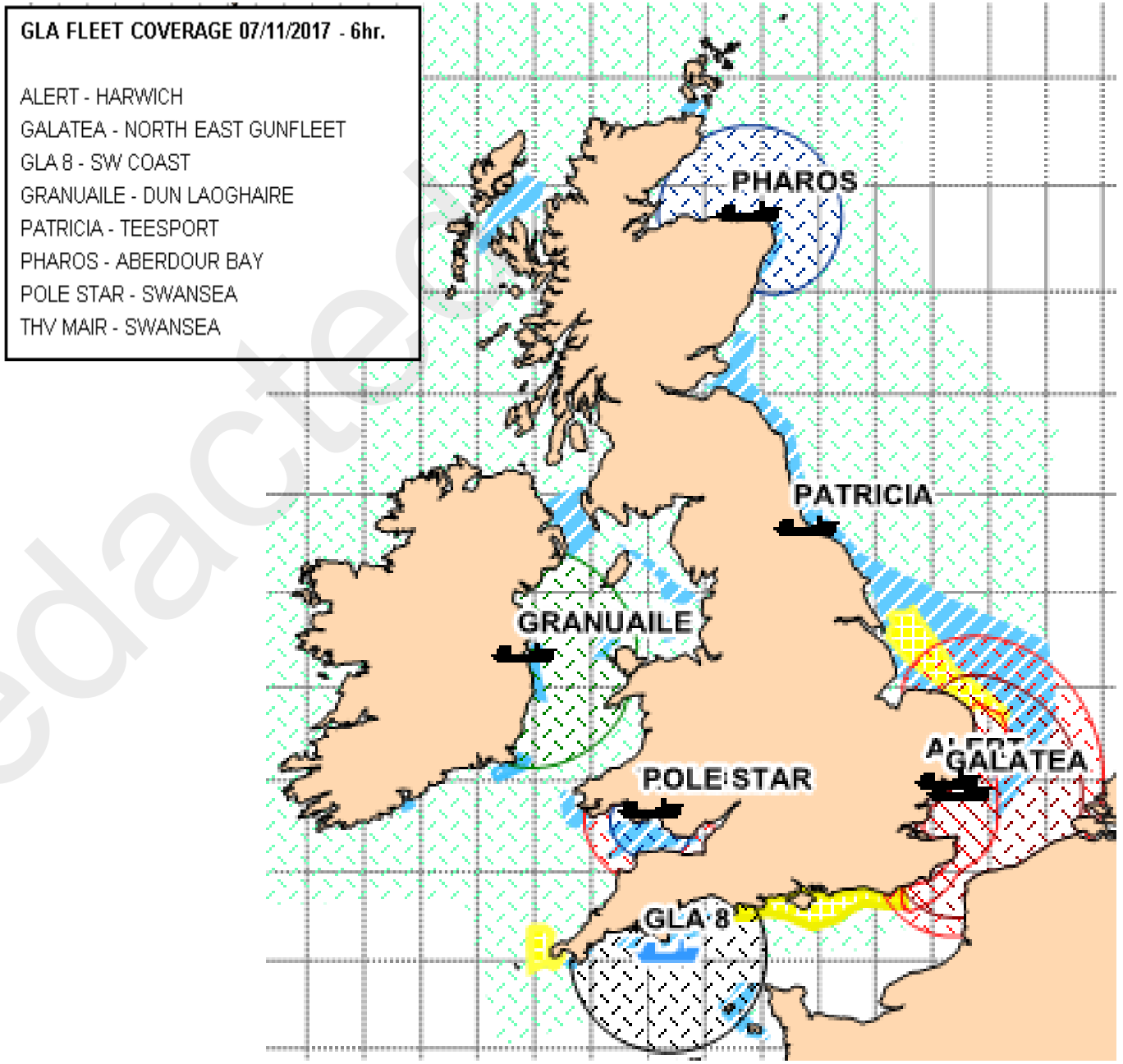


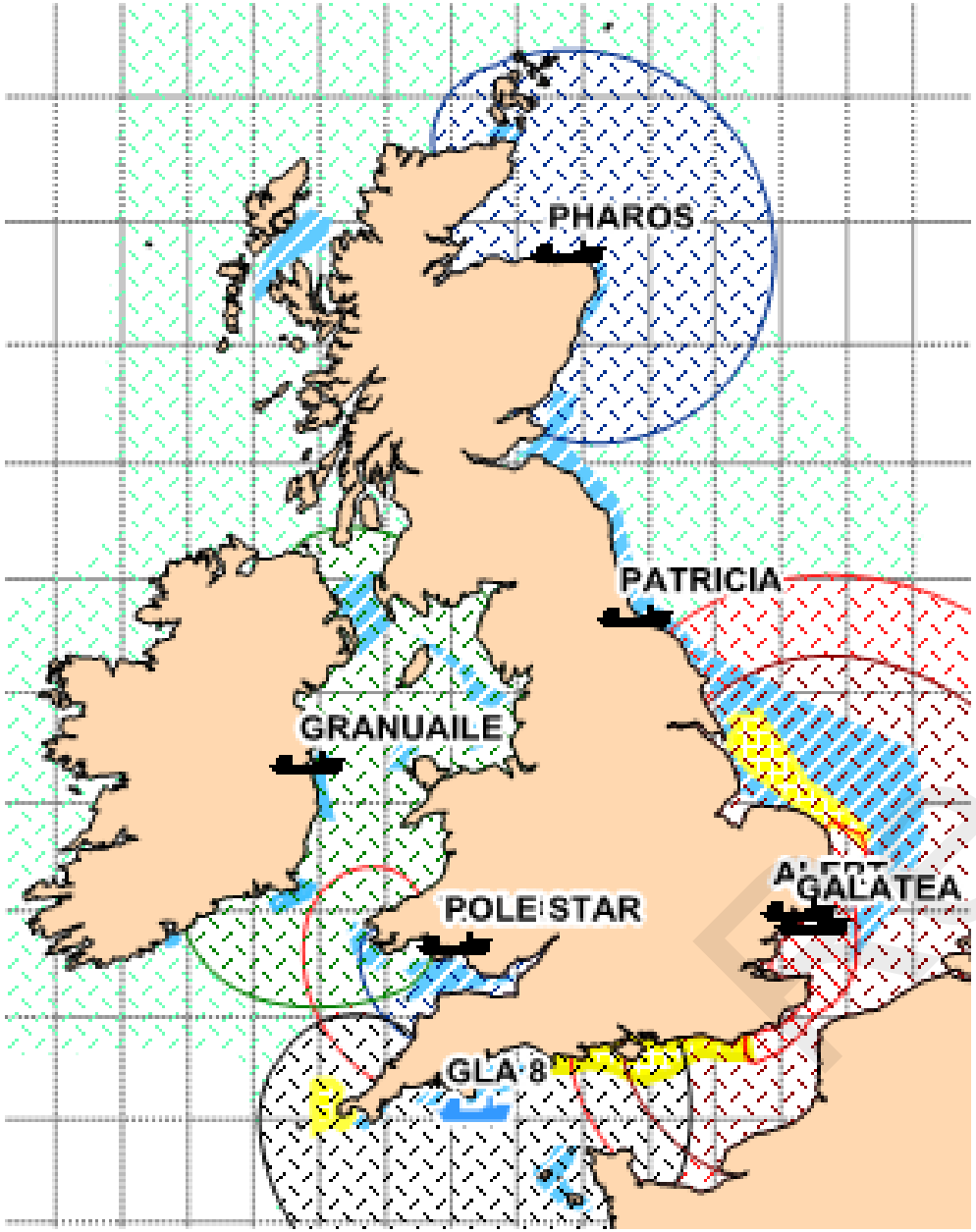
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT
2	PORTLAND BILL TO BEACHY HEAD	12	No	94%	ALERT
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	No	0%	
5	THE MINCH	24	No	75%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, POLE STAR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, POLE STAR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, POLE STAR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PHAROS, POLE STAR

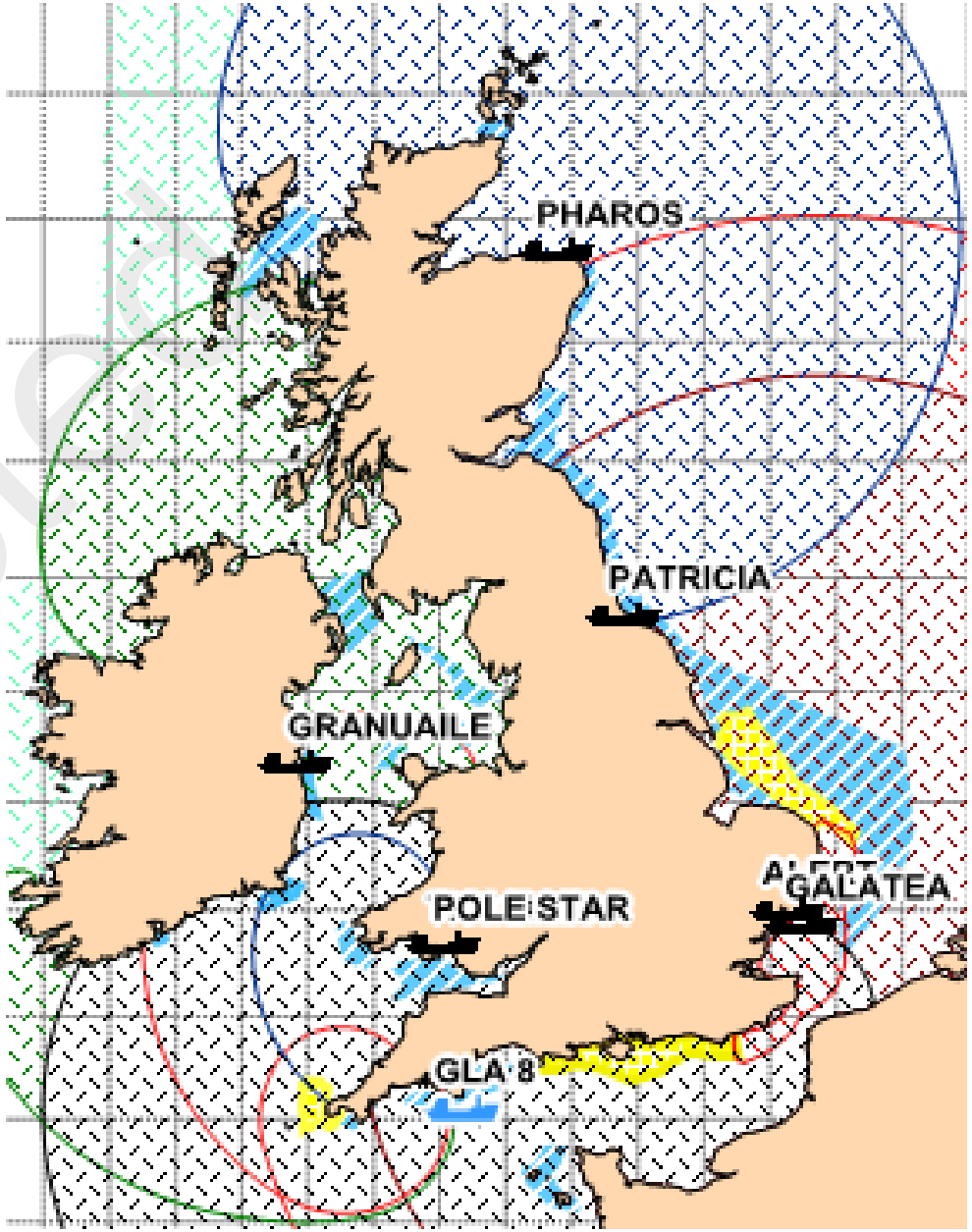
7th Nov 2017	8 Vessel Scenario - Failed
GLA 8	*SW Coast*
THV Patricia	*DD&R Middlesbrough*
THV Galatea	*Weatherbound am; Harwich area buoy work pm*
THV Alert	*Passage to Foxtrot 3 & East Goodwin; weather conditions unfit; passage to Dover pm*
MV Mair	*Barry weatherbound; processing Kenfig Sands Survey*
NLV Pharos	*Aberdour Bay weatherbound*
NLV Pole Star	*Swansea weatherbound loaded bunkers*
ILV Granuaile	*Attended South India buoy casualty*





12 Hrs RRC

24 Hrs RRC



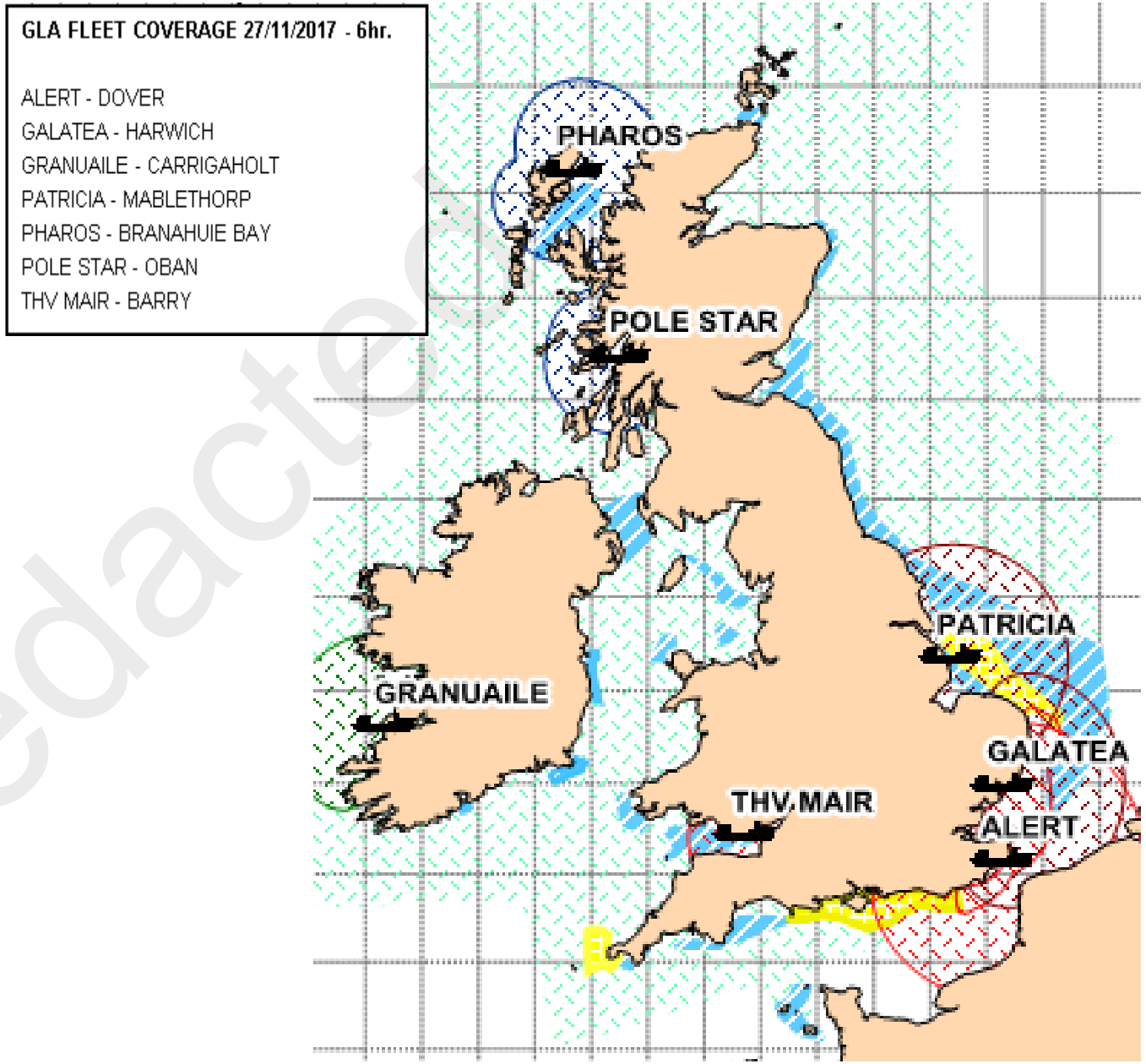
Response Region Coverage

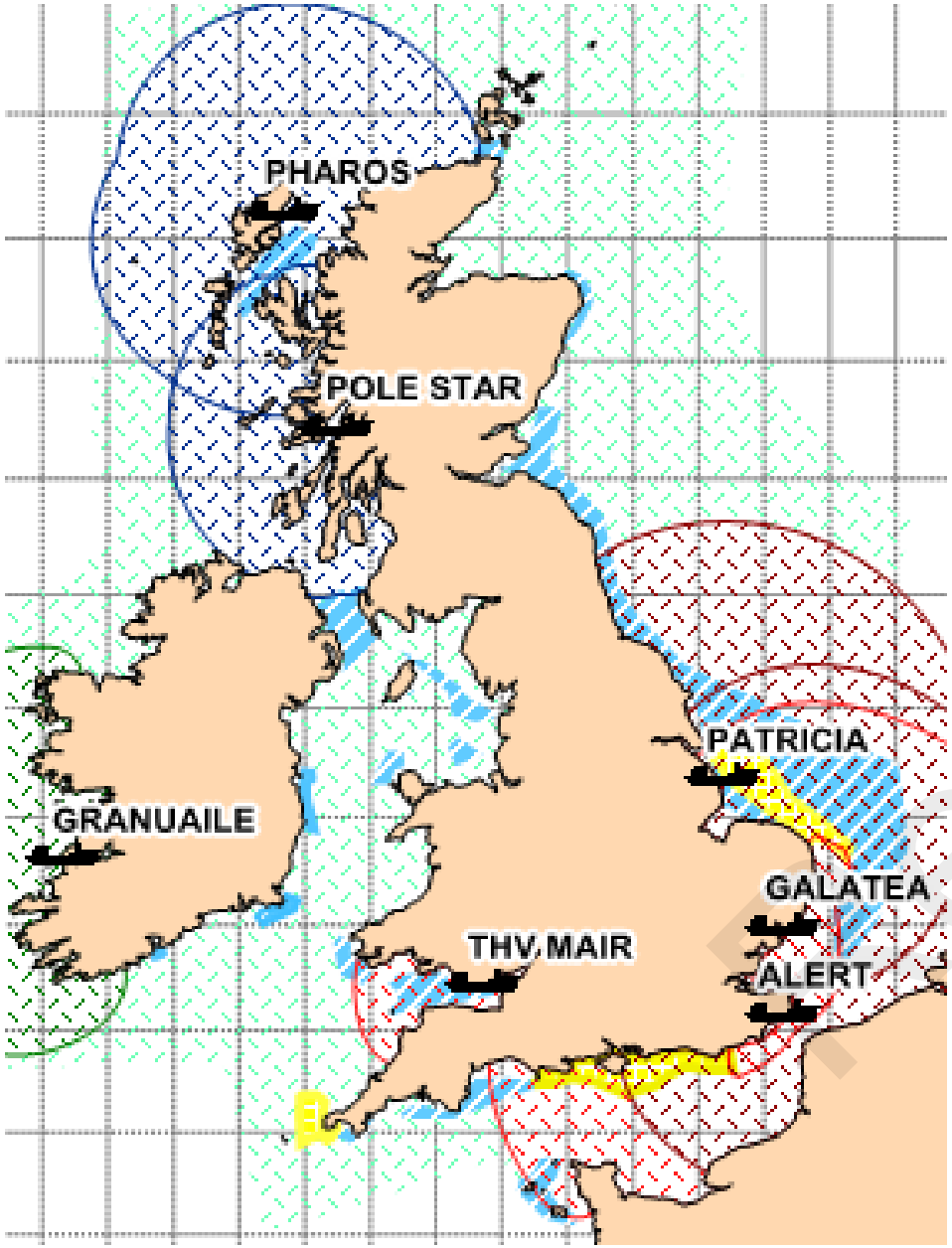
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, GLA 8
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	GLA 8
5	THE MINCH	24	No	75%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, GLA 8, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PHAROS, POLE STAR,...

27th Nov 2017	7 Vessel Scenario - Failed
THV Patricia	*Wash Area Weatherbound*
THV Galatea	*Harwich loading & discharging*
THV Alert	*Dover RRC processing survey results*
MV Mair	*Barry weatherbound*
NLV Pharos	*Branahuie Bay weatherbound*
NLV Pole Star	*Oban weatherbound. Local Lights inspections by road*
ILV Granuaile	*Shannon Estuary buoy work*

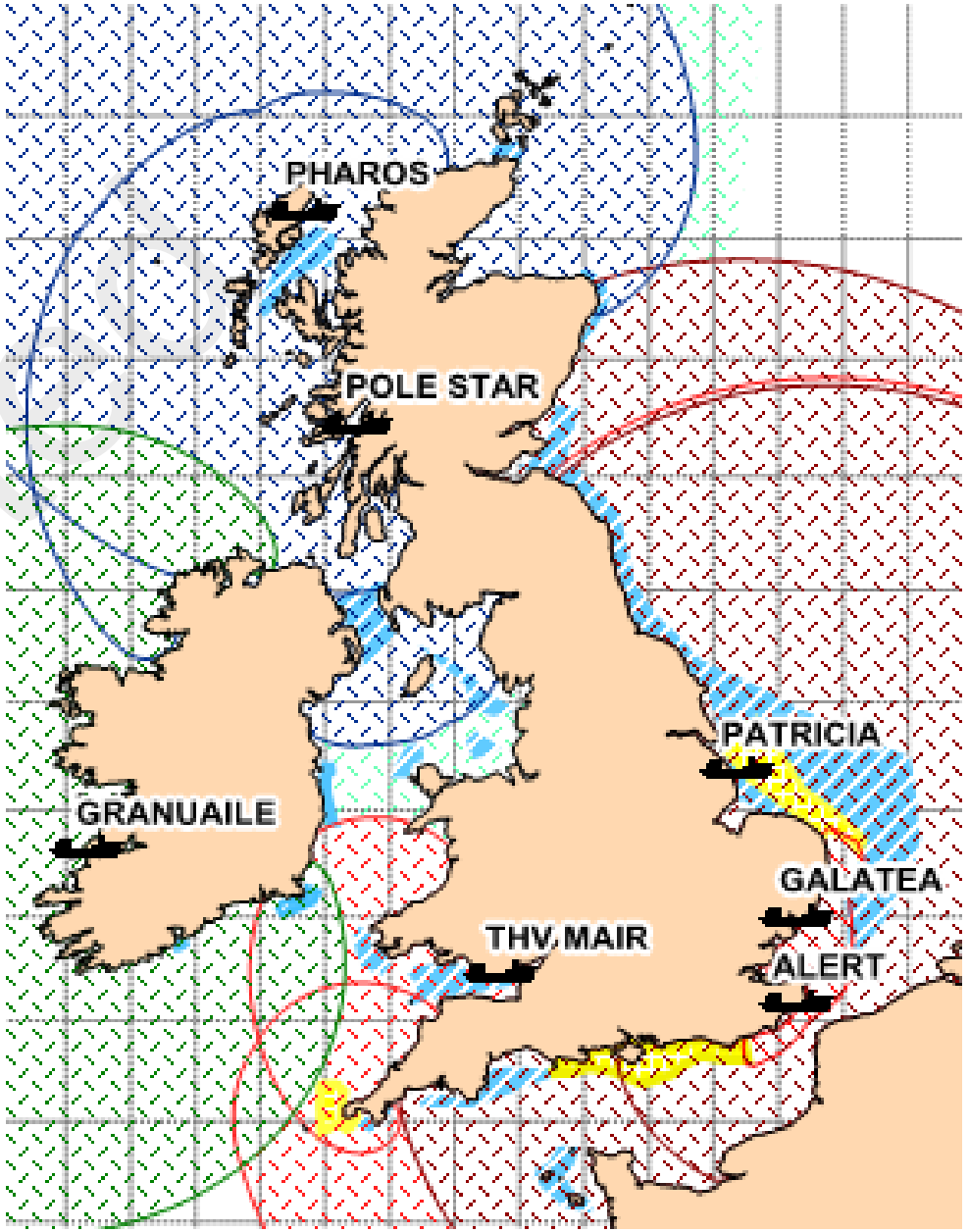
Wreck, AtoN Casualty, RRC Incidents	
Land's End	*0%*
Holyhead Approaches	*0%*
Dublin Bay	*0%*
Liverpool Bay	*0%*
Morecambe Bay	*63%*
Weatherbound	*Incident 164*





12 Hrs RRC

24 Hrs RRC

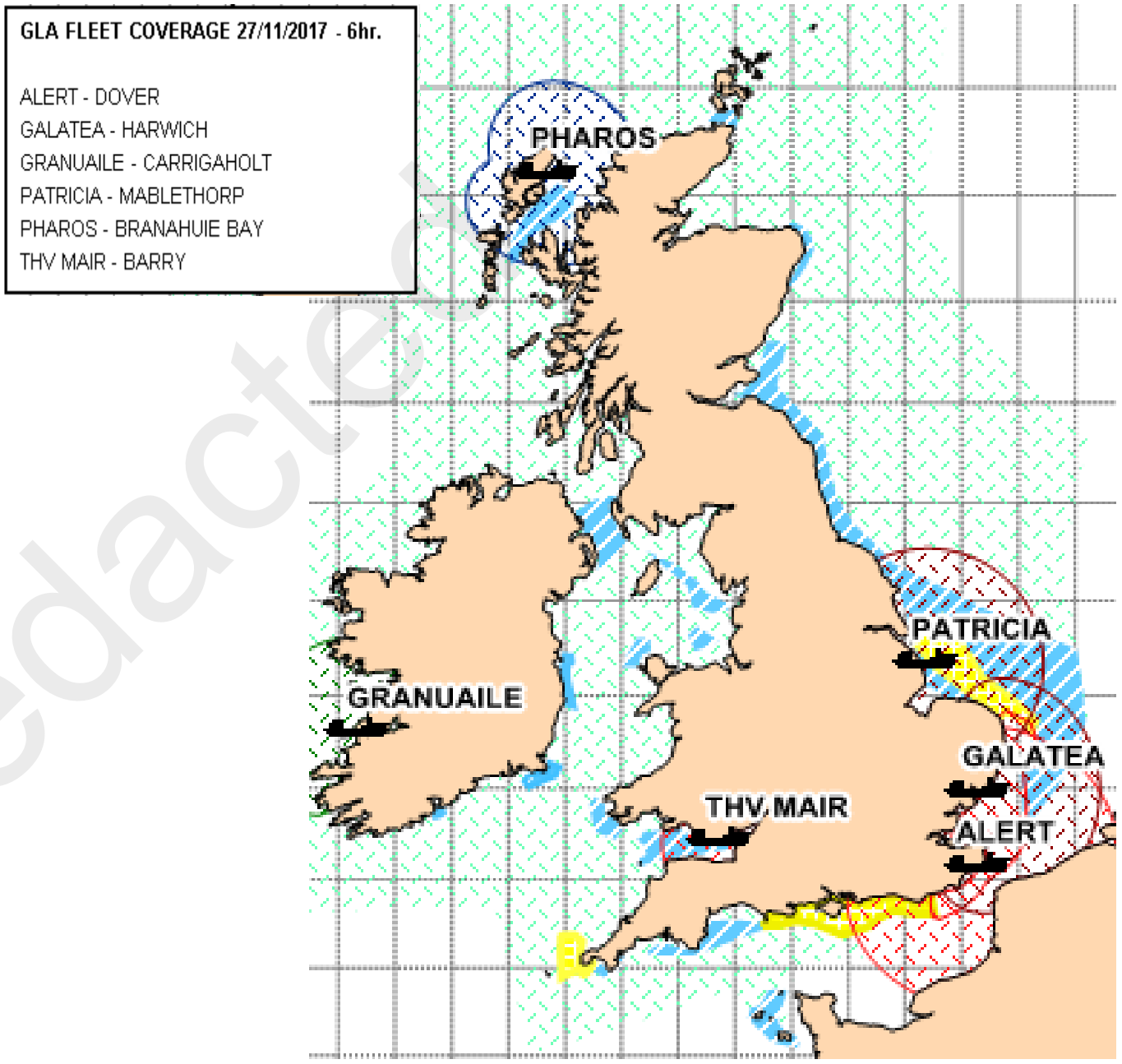


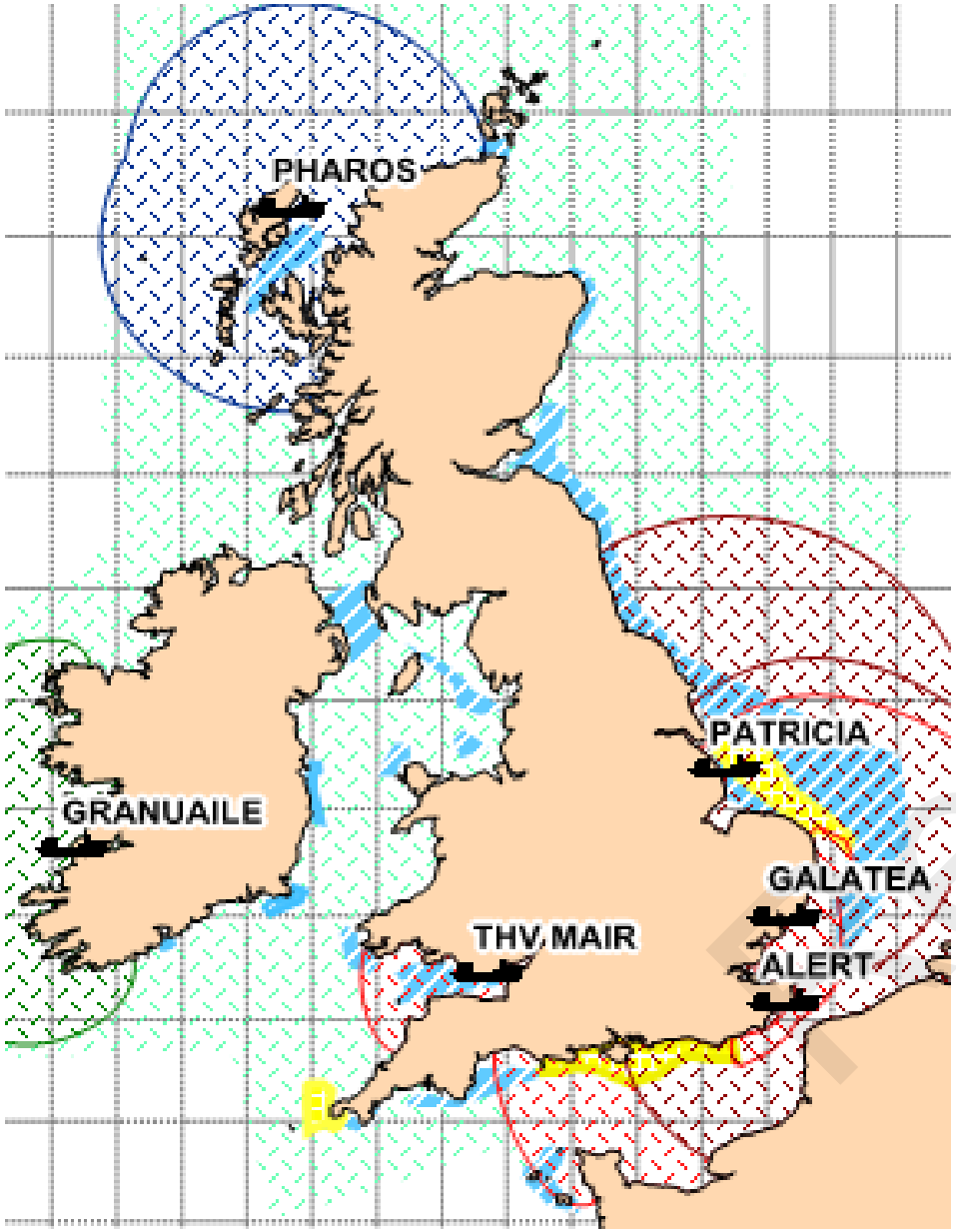
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PATRICIA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA
15	MORECAMBE BAY	24	No	63%	POLE STAR
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	Yes	100%	POLE STAR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

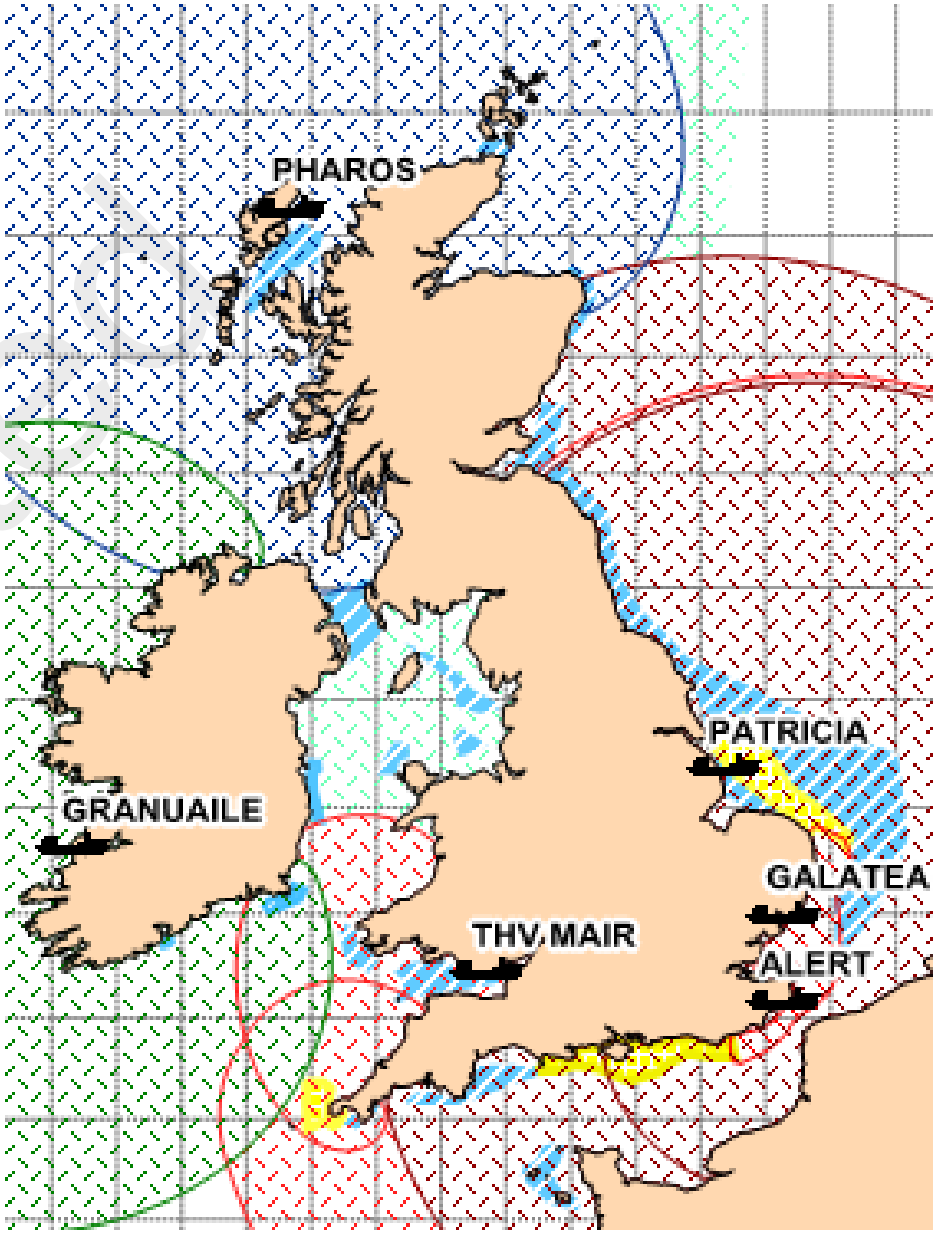
27th Nov 2017	6 Vessel Scenario - Failed
THV Patricia	*Wash Area Weatherbound*
THV Galatea	*Harwich loading & discharging*
THV Alert	*Dover RRC processing survey results*
MV Mair	*Barry weatherbound*
NLV Pharos	*Branahuie Bay weatherbound*
NLV Pole Star	***REMOVE***
ILV Granuaile	*Shannon Estuary buoy work*





12 Hrs
RRC

24 Hrs
RRC

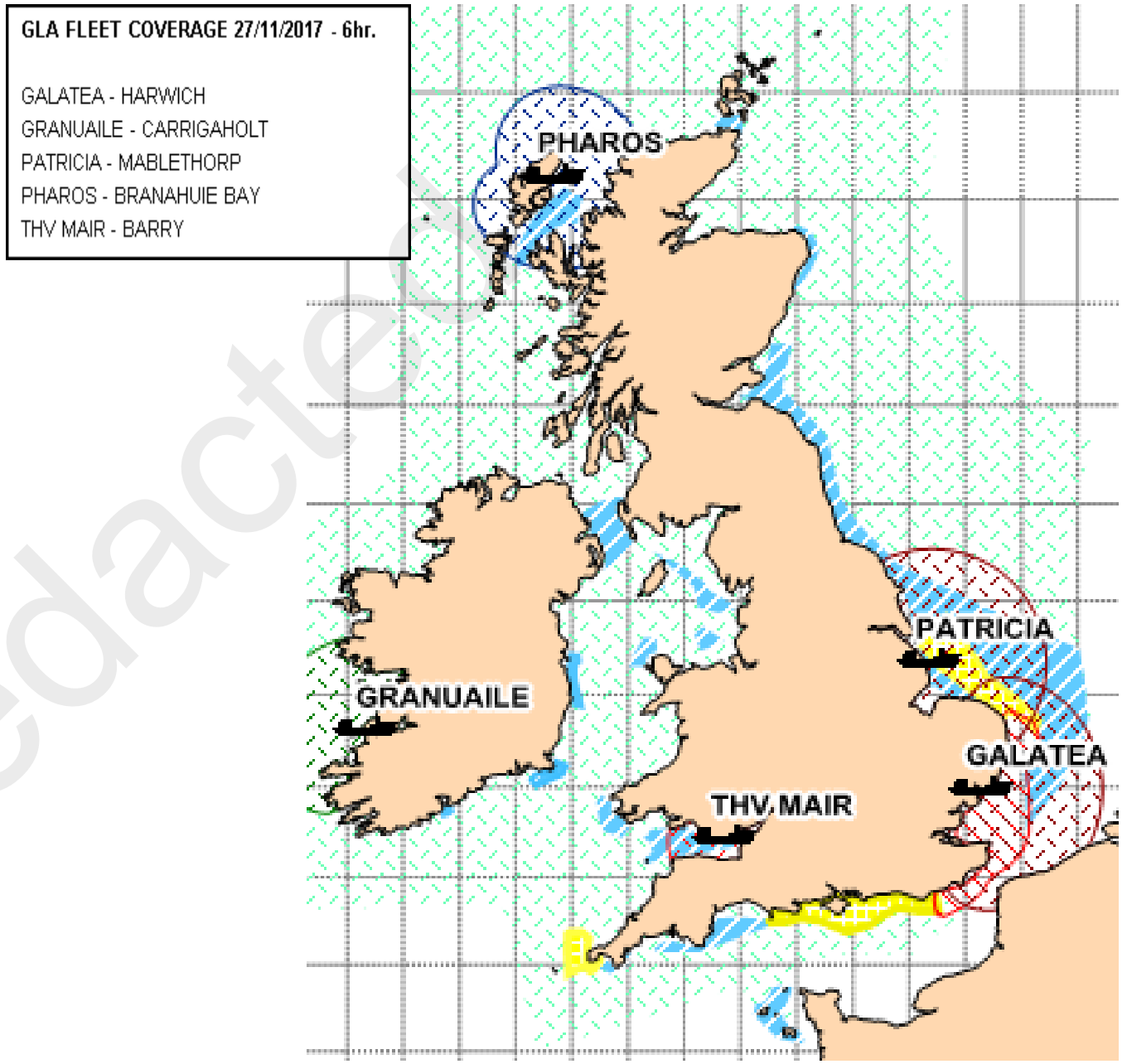


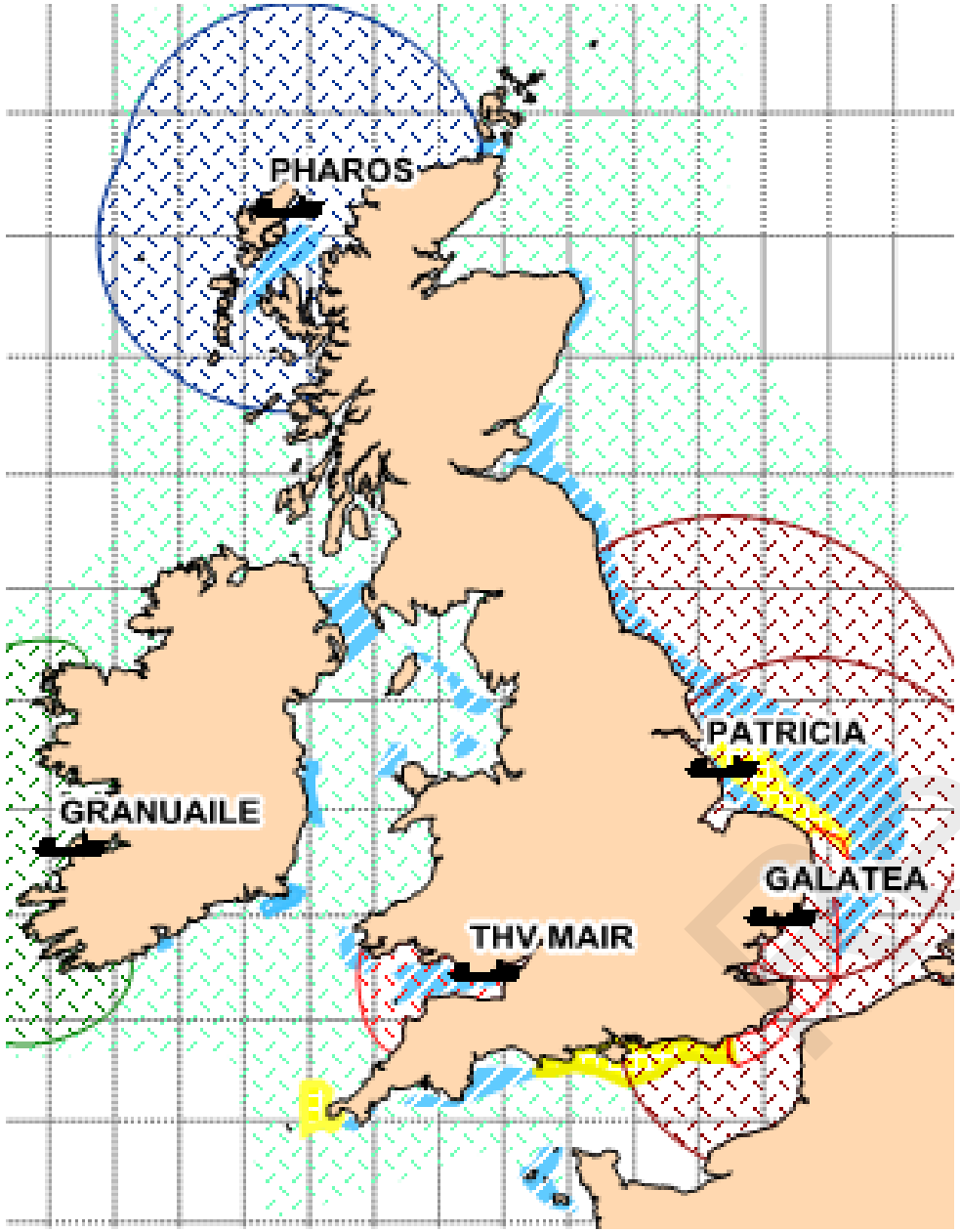
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PATRICIA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	No	8%	PHAROS
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

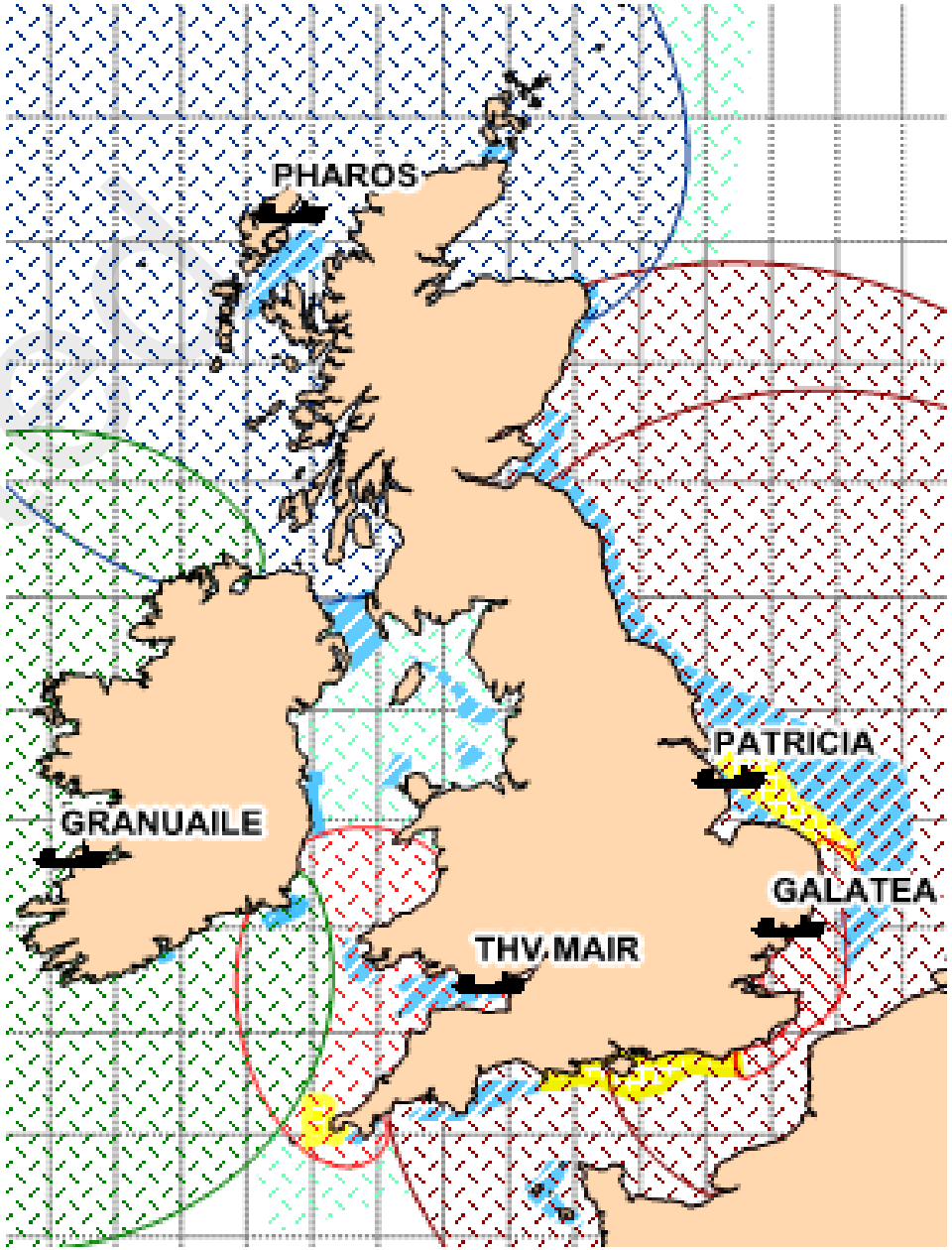
27th Nov 2017	5 Vessel Scenario - Failed
THV Patricia	*Wash Area Weatherbound*
THV Galatea	*Harwich loading & discharging*
THV Alert	***REMOVE***
MV Mair	*Barry weatherbound*
NLV Pharos	*Branahuie Bay weatherbound*
NLV Pole Star	***REMOVE***
ILV Granuaile	*Shannon Estuary buoy work*





12 Hrs RRC

24 Hrs RRC

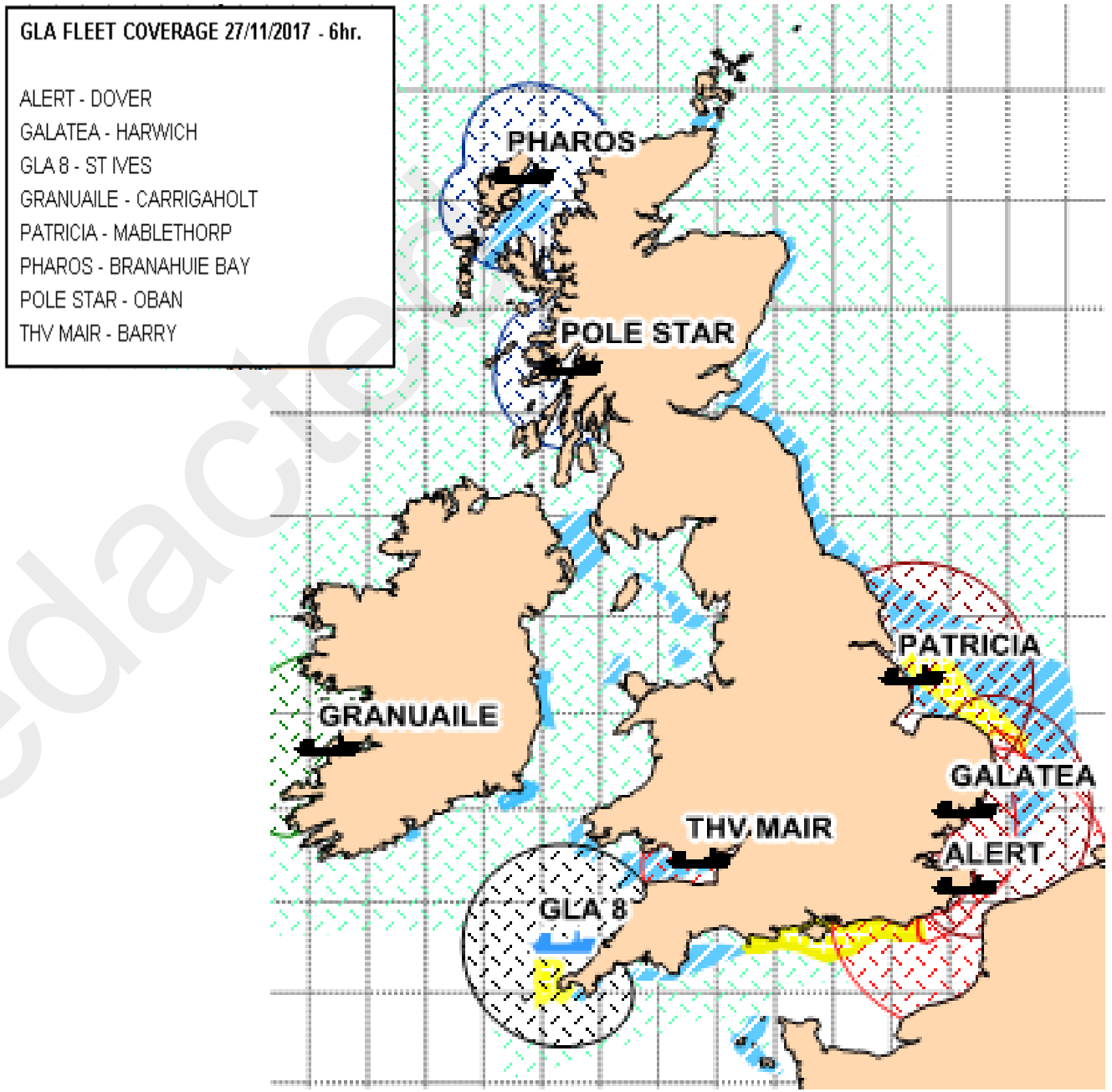


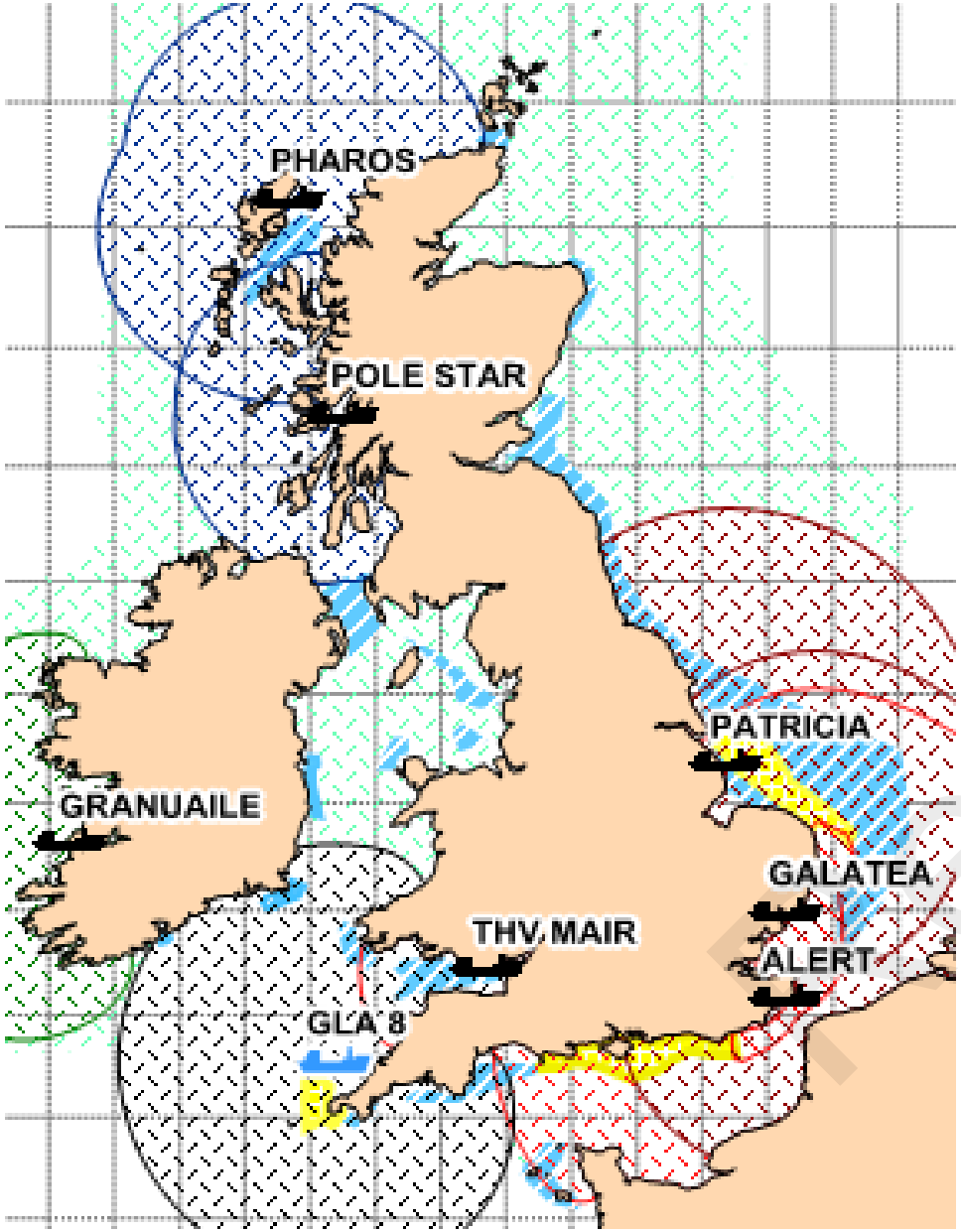
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	62%	GALATEA
3	HUMBER TO CROMER	12	Yes	100%	GALATEA, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PATRICIA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	No	8%	PHAROS
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	0%	
12	MILFORD HAVEN APPROACHES	24	Yes	100%	THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA
15	MORECAMBE BAY	24	No	0%	
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	0%	
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA
22	BRITISH ISLES	48	Yes	100%	GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

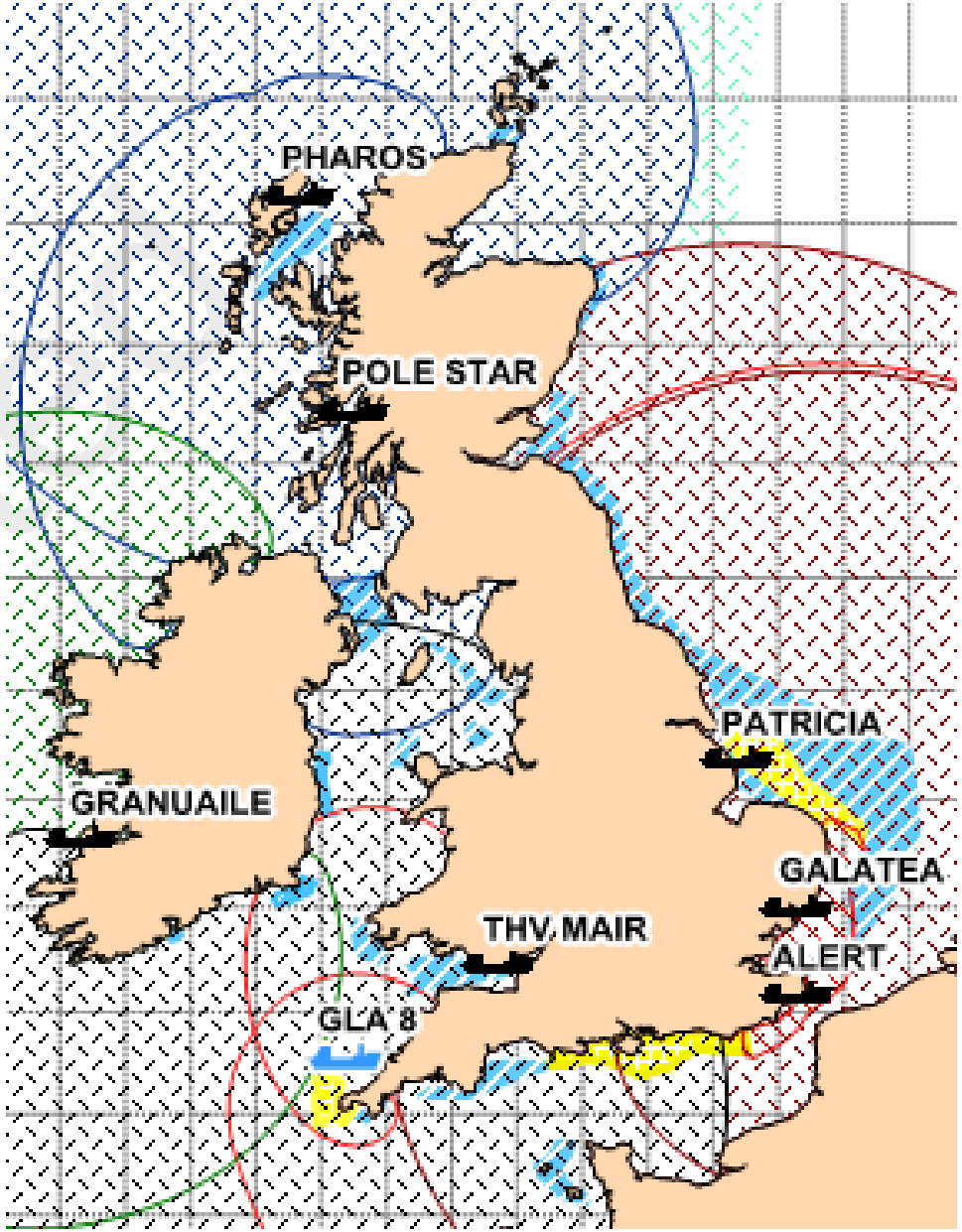
27th Nov 2017	8 Vessel Scenario - Pass
GLA 8	*St Ives Bay*
THV Patricia	*Wash Area Weatherbound*
THV Galatea	*Harwich loading & discharging*
THV Alert	*Dover RRC processing survey results*
MV Mair	*Barry weatherbound*
NLV Pharos	*Branahuie Bay weatherbound*
NLV Pole Star	*Oban weatherbound. Local Lights inspections by road*
ILV Granuaile	*Shannon Estuary buoy work*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

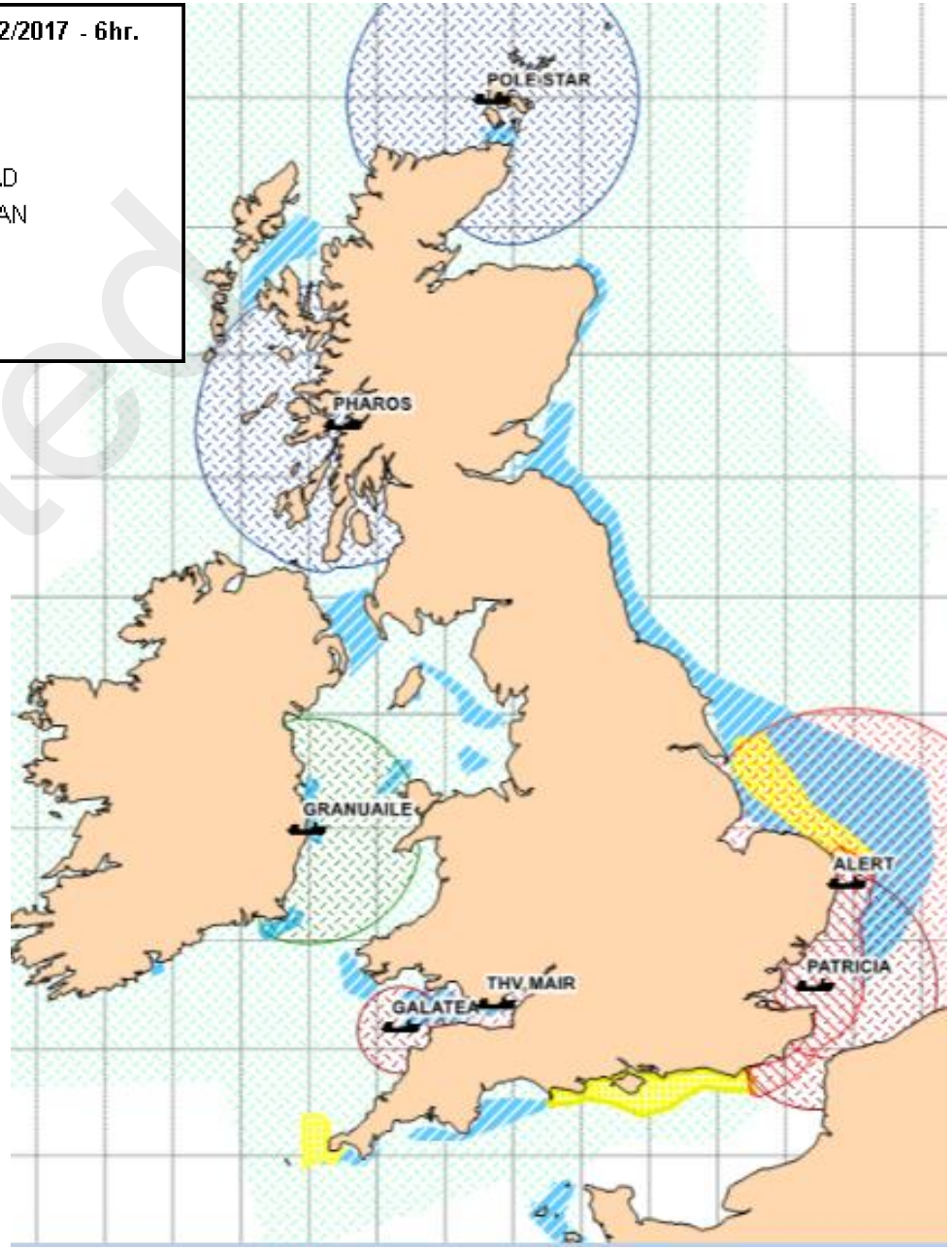
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PATRICIA
4	LAND'S END	12	Yes	100%	GLA 8
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	PATRICIA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GLA 8, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GLA 8
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GLA 8
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GLA 8, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GLA 8, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA 8
15	MORECAMBE BAY	24	Yes	100%	GLA 8, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GLA 8
17	ISLE OF MAN	24	Yes	100%	GLA 8, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GLA 8, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GLA 8, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GLA 8, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GLA 8
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA 8, GRANUAILE, PATRICIA, PHAROS, P...

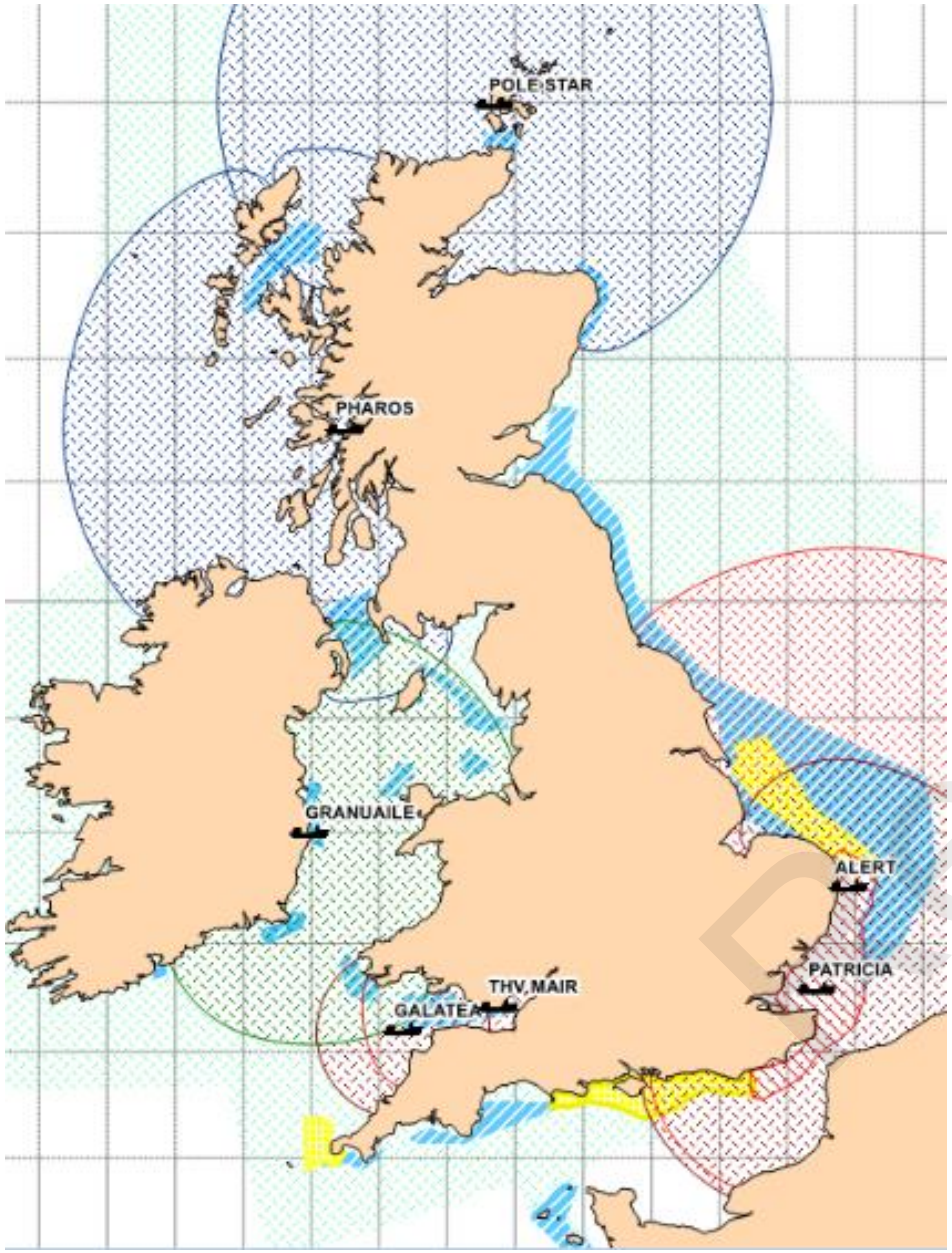
10th Dec 2017	7 Vessel Scenario - Failed
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	*Made passage to Lundy for Light inspections*
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	*Made passage from Stromness to Shetlands*
ILV Granuaile	*Dublin Bay weatherbound*

Wreck, AtoN Casualty, RRC Incidents	
Land's End	*0%*
Portland to Beachy	*60%*
Weatherbound	*Incident 164*

GLA FLEET COVERAGE 10/12/2017 - 6hr.

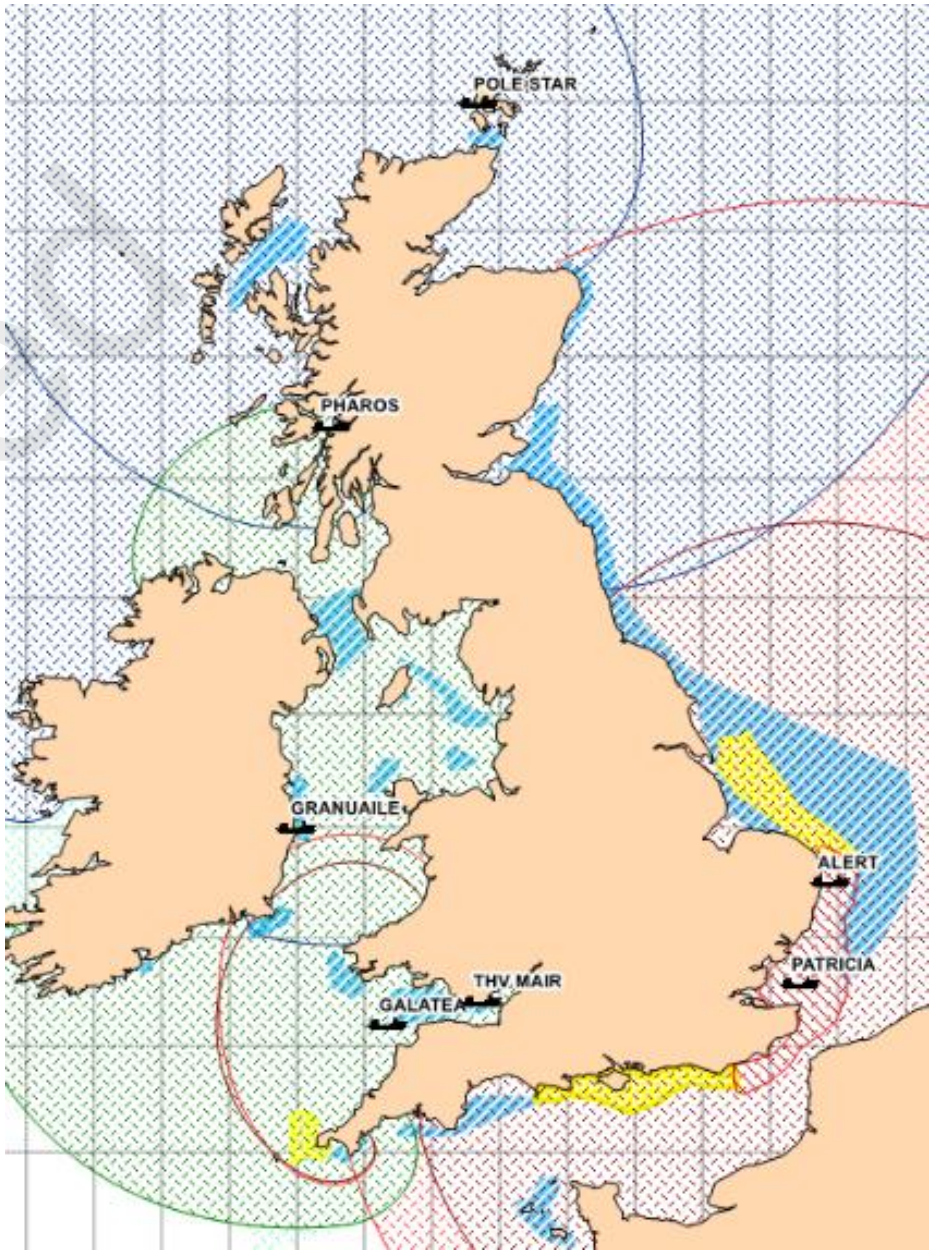
ALERT - LOWESTOFT
GALATEA - LUNDY SOUTH
GRANUAILE - WICKLOW HEAD
PATRICIA - OUTER FISHERMAN
PHAROS - OBAN
POLE STAR - STROMNESS
THV MAIR - BARRY





12 Hrs RRC

24 Hrs RRC

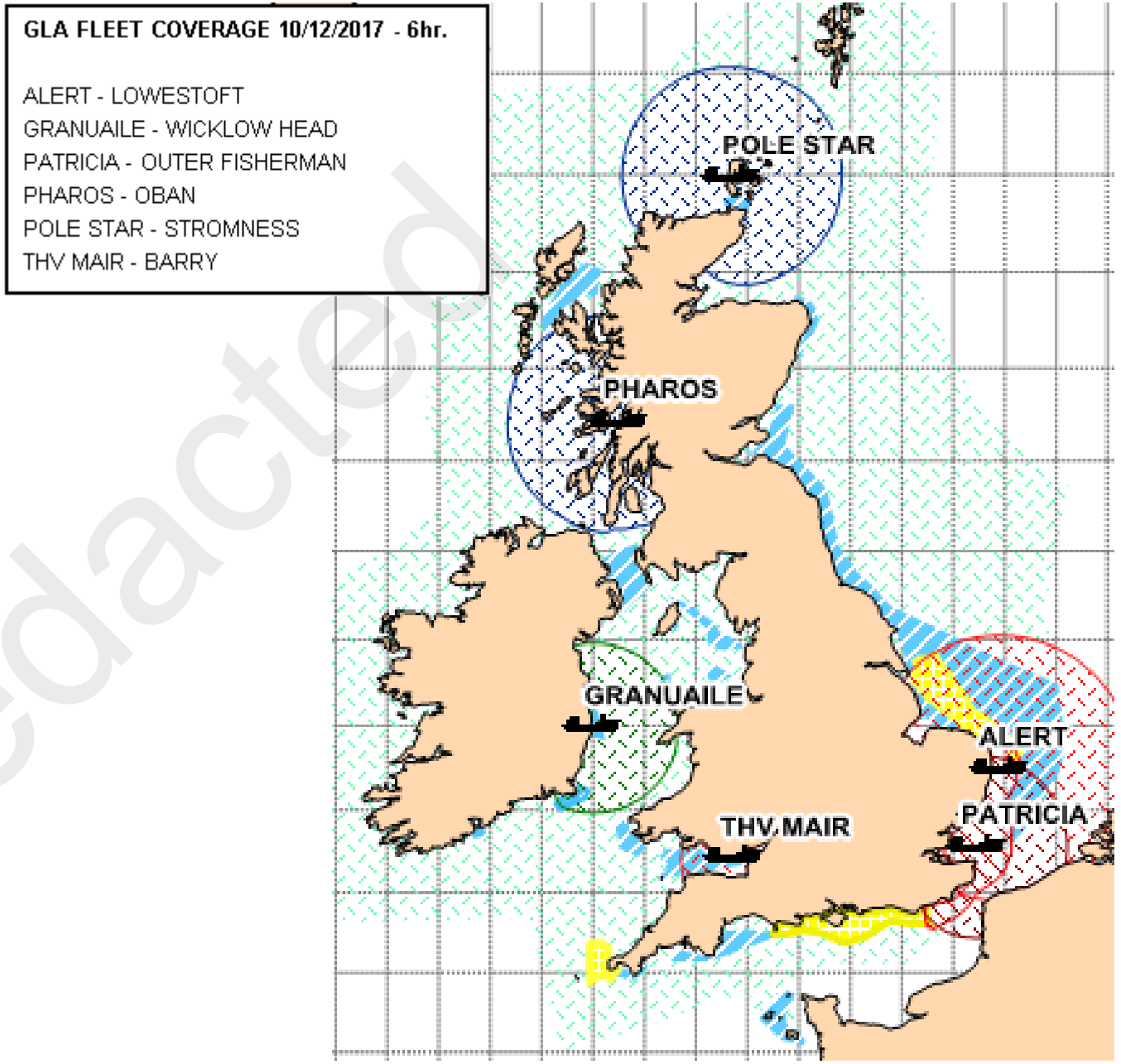


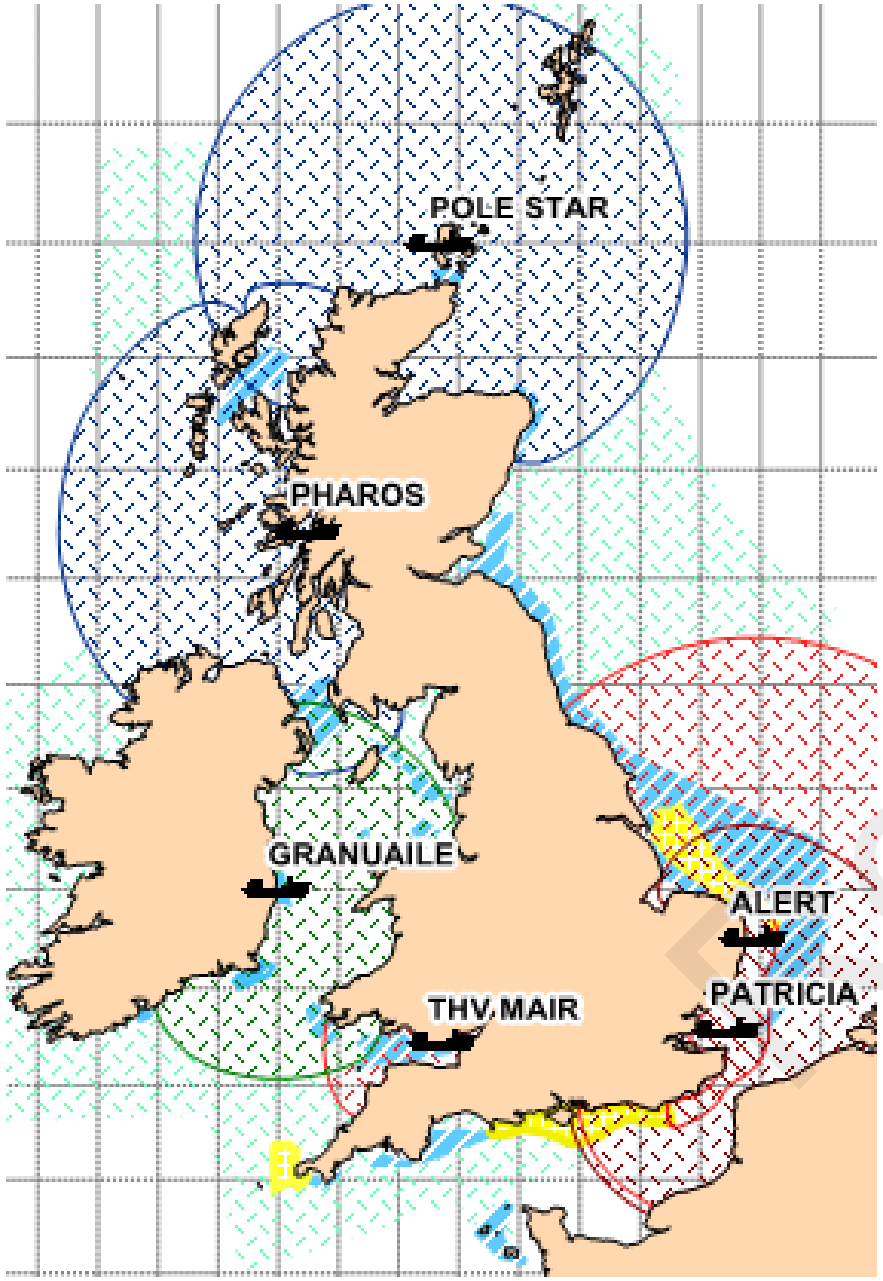
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	60%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE STAR, T...

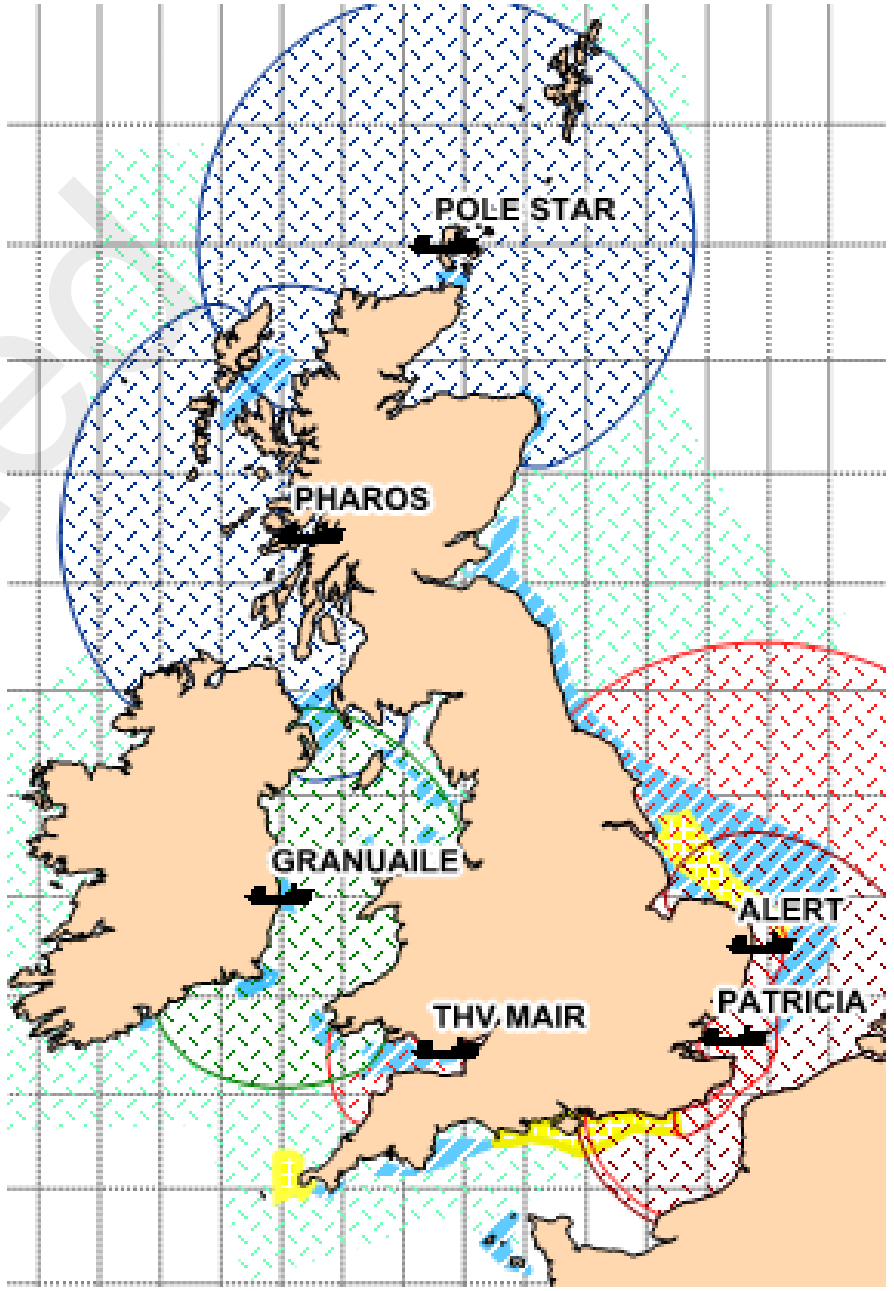
10th Dec 2017	6 Vessel Scenario - Failed
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	***REMOVE***
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	*Made passage from Stromness to Shetlands*
ILV Granuaile	*Dublin Bay weatherbound*





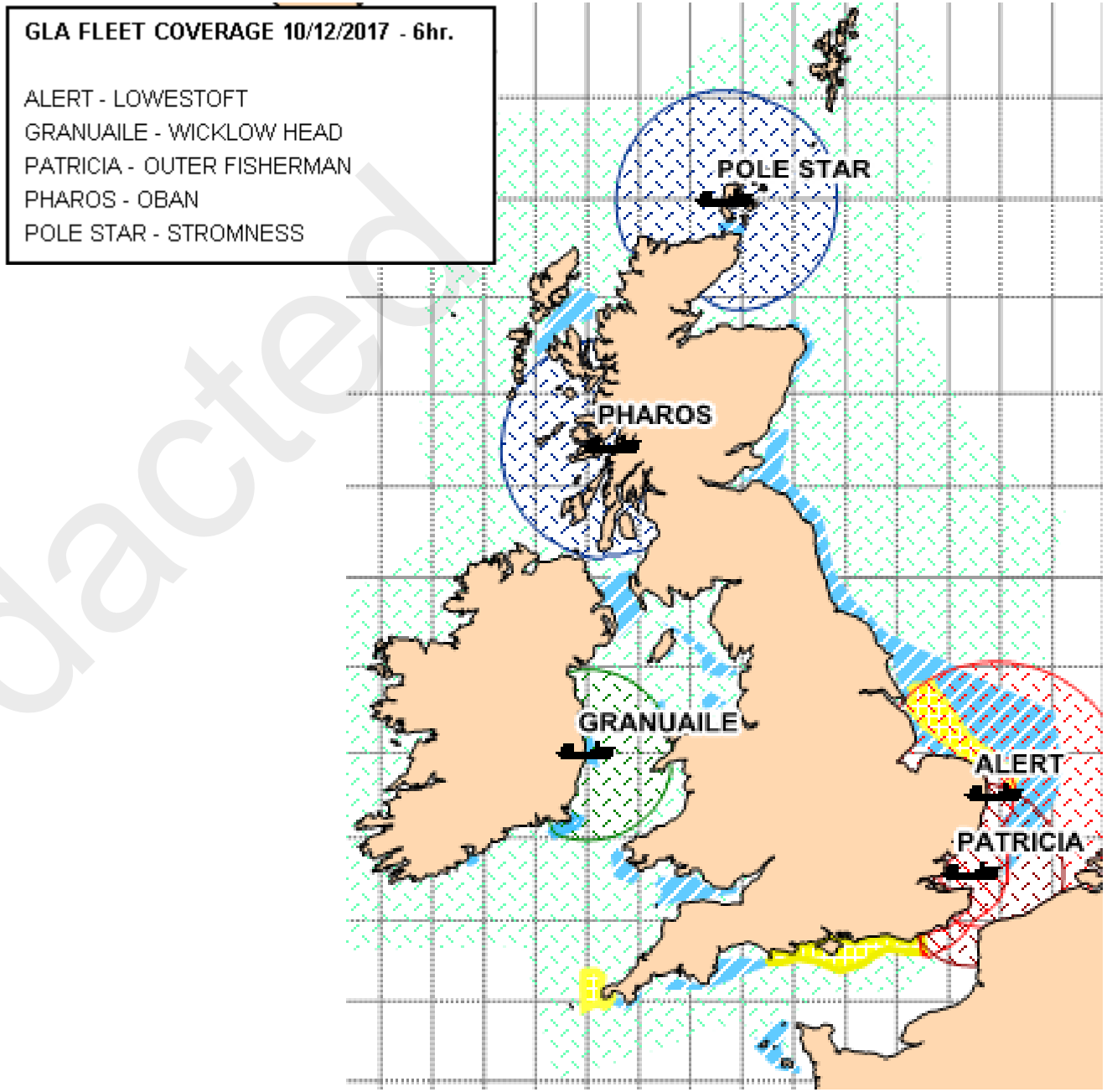
12 Hrs RRC

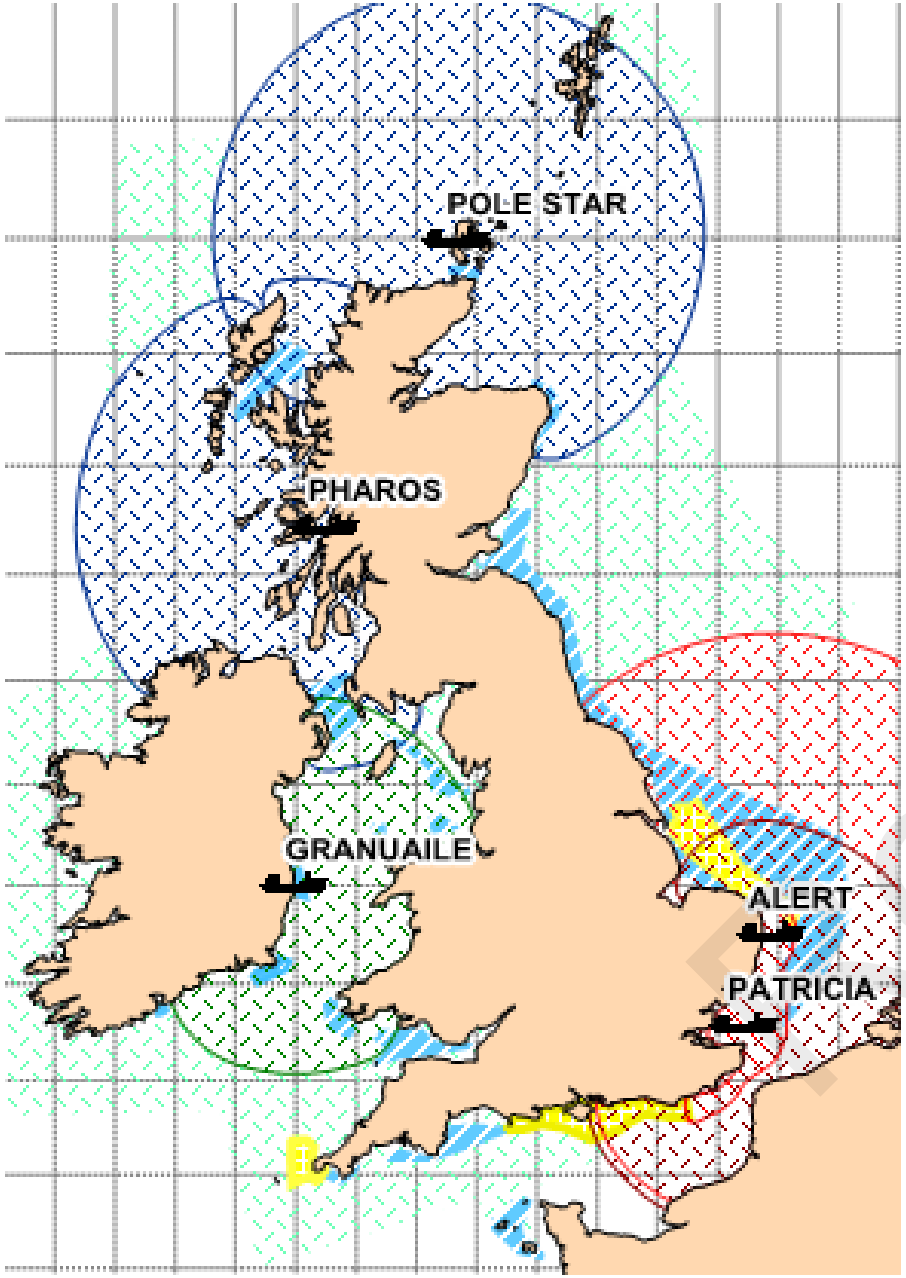
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	60%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV M...

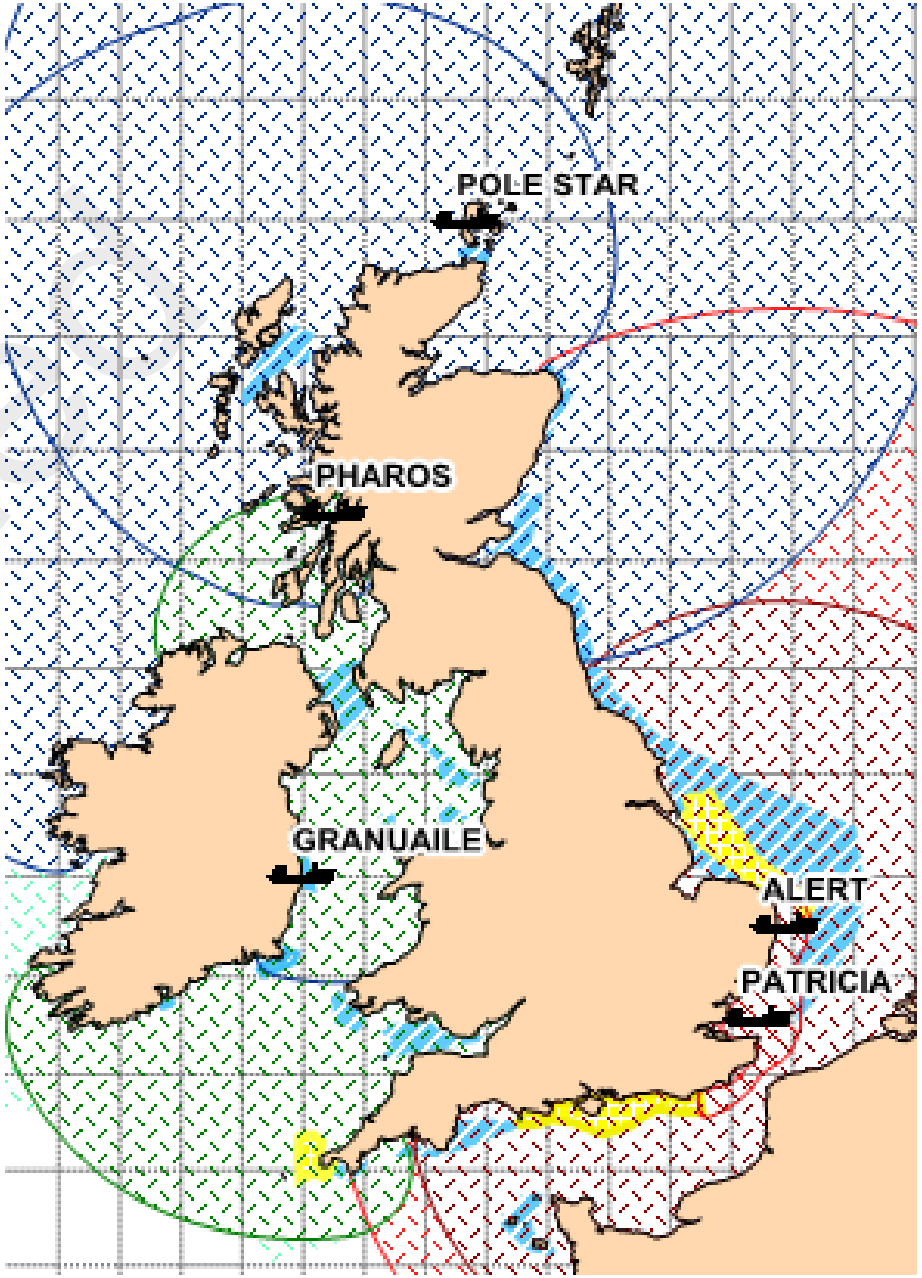
10th Dec 2017	5 Vessel Scenario - Failed
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	***REMOVE***
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	***REMOVE***
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	*Made passage from Stromness to Shetlands*
ILV Granuaile	*Dublin Bay weatherbound*





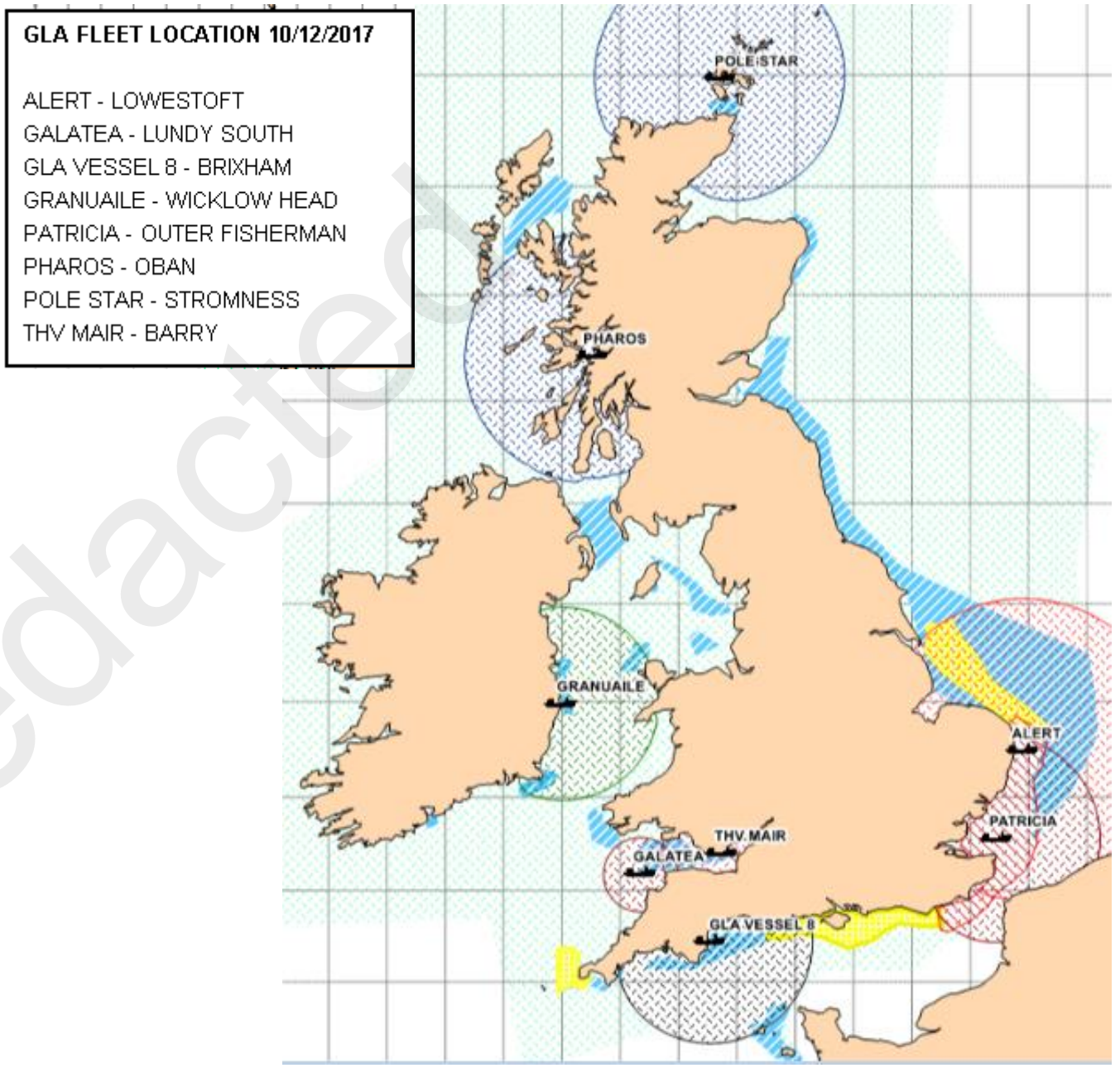
12 Hrs RRC

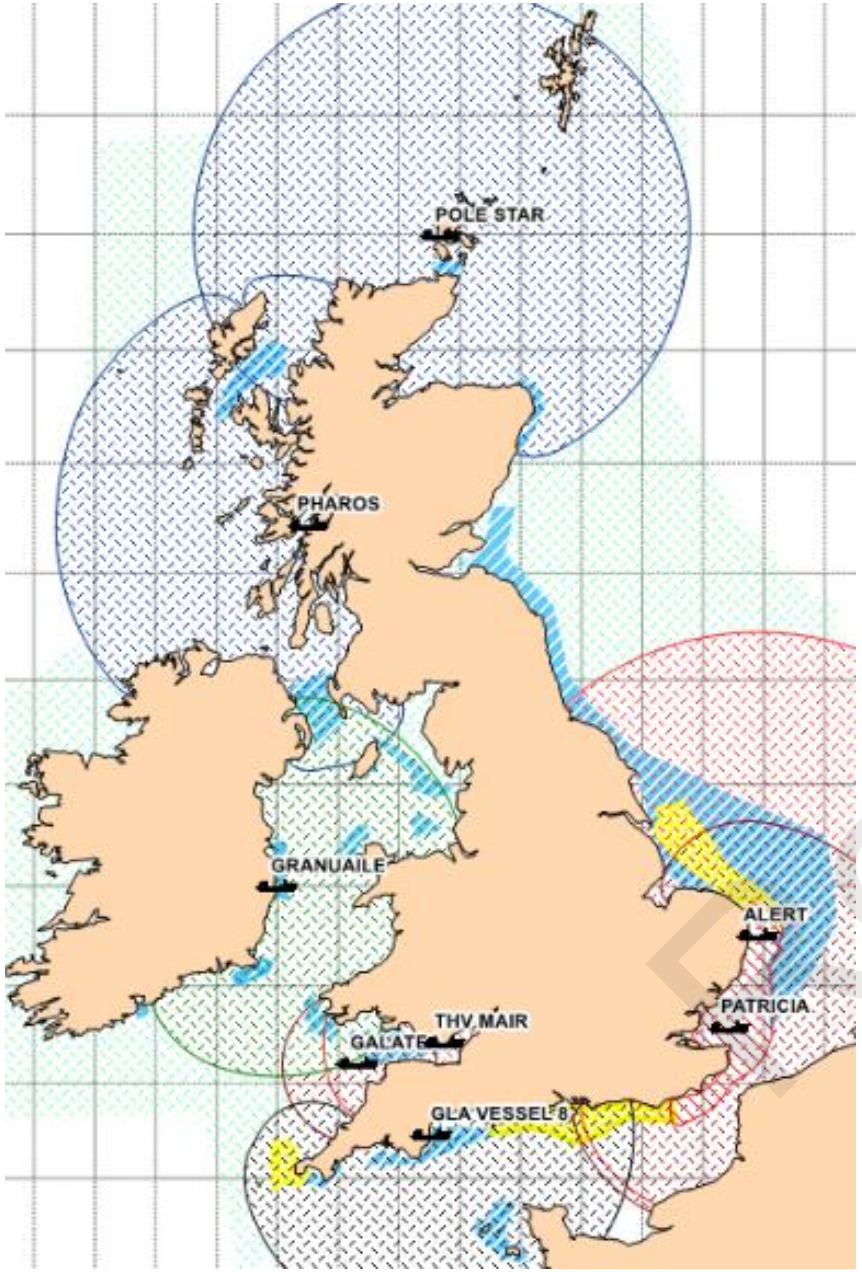
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	60%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE
13	BRISTOL CHANNEL	24	Yes	100%	GRANUAILE
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR

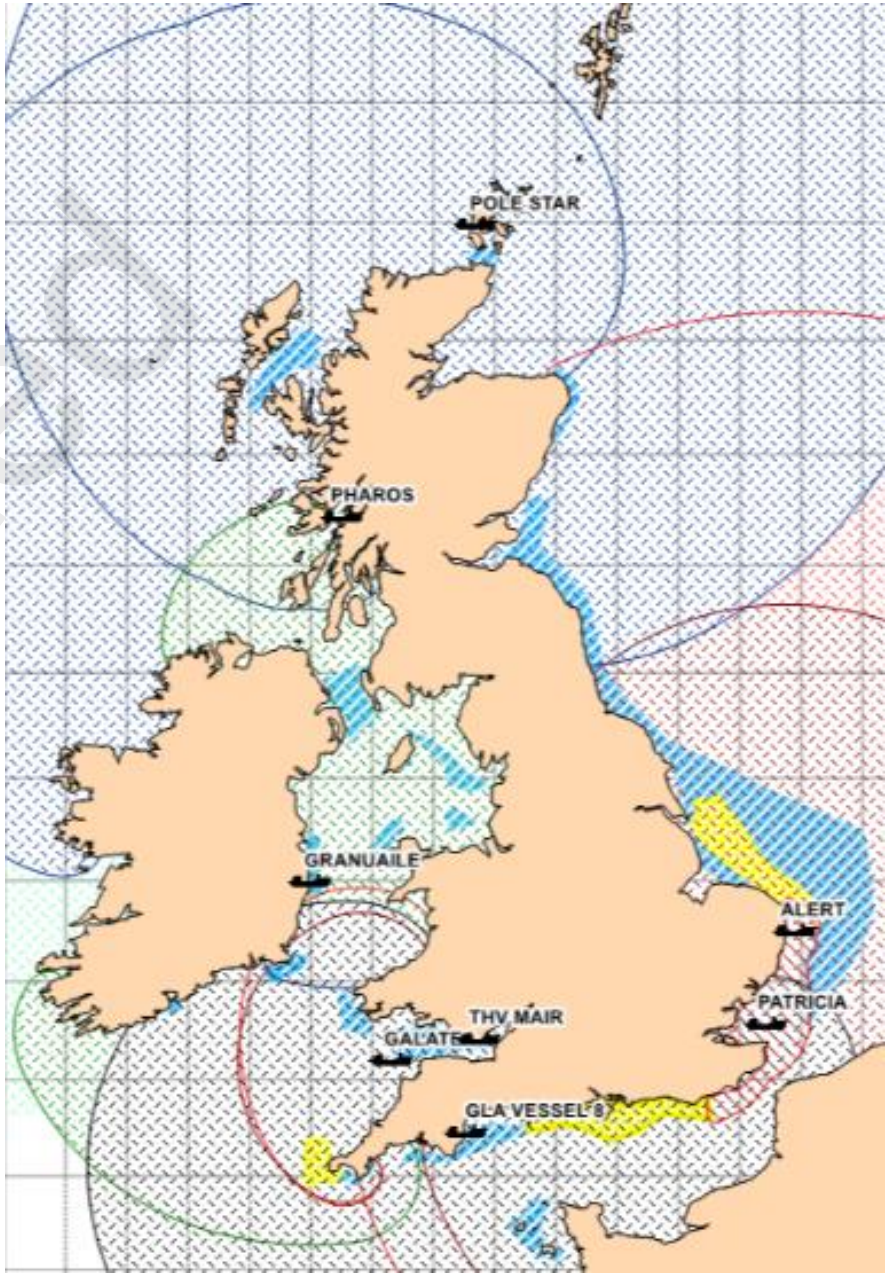
10th Dec 2017	8 Vessel Scenario - Pass
GLA 8	*Brixham*
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	*Made passage to Lundy for Light inspections*
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	*Made passage from Stromness to Shetlands*
ILV Granuaile	*Dublin Bay weatherbound*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GLA VESSEL 8
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GLA VESSEL 8, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GLA VESSEL 8, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA VESSEL 8, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA VESSEL 8, GRANUAILE, PATRICIA, PHAROS,...

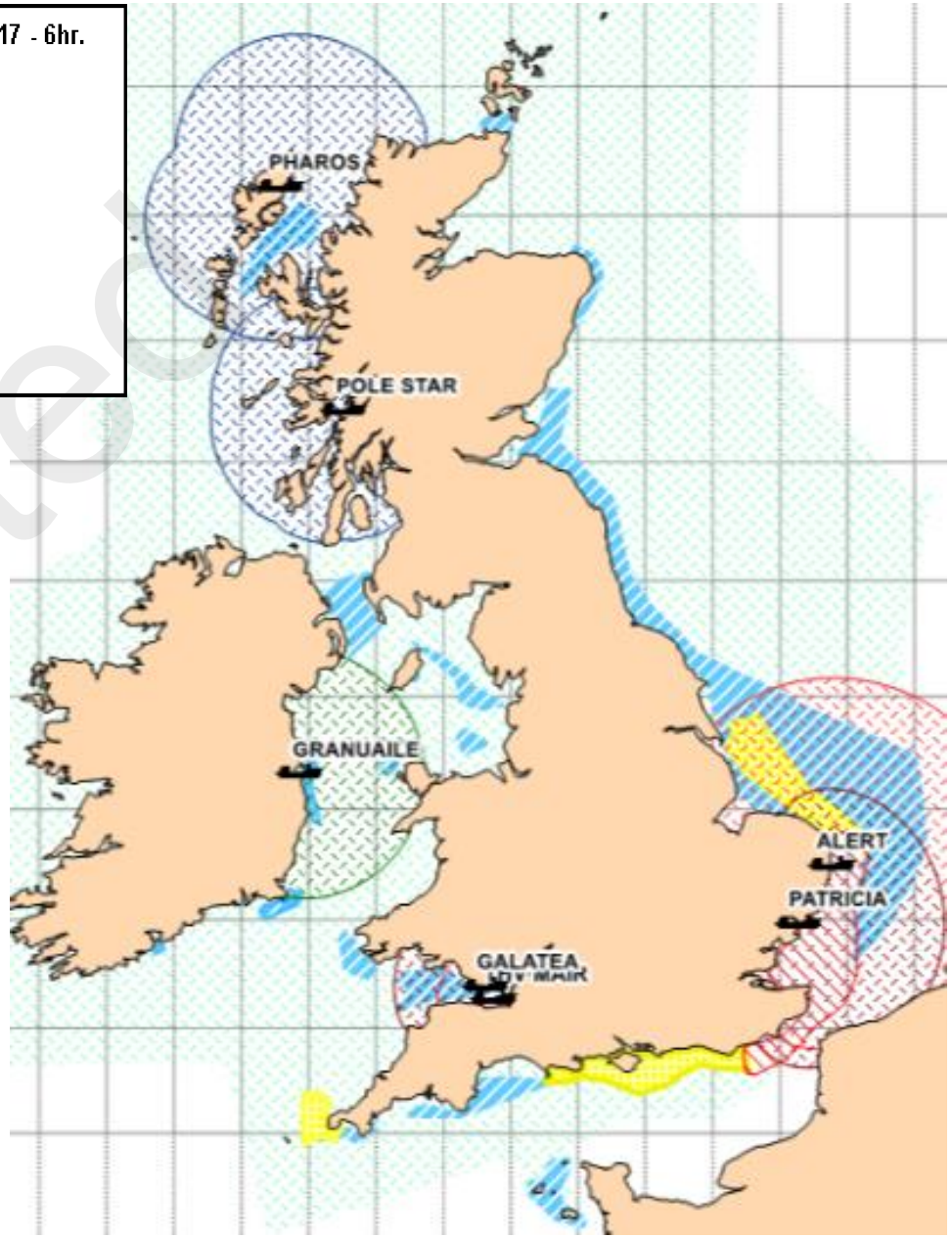
14th Dec 2017	7 Vessel Scenario - Failed
THV Patricia	*Harwich investigating crane fault*
THV Galatea	*Barry area weatherbound*
THV Alert	*Lowestoft weatherbound*
MV Mair	*Barry weatherbound – bowthruster investigations*
NLV Pharos	*Stornoway- masters changeover*
NLV Pole Star	*Oban Masters Changeover*
ILV Granuaile	*Dun Laoghaire loading & discharging*

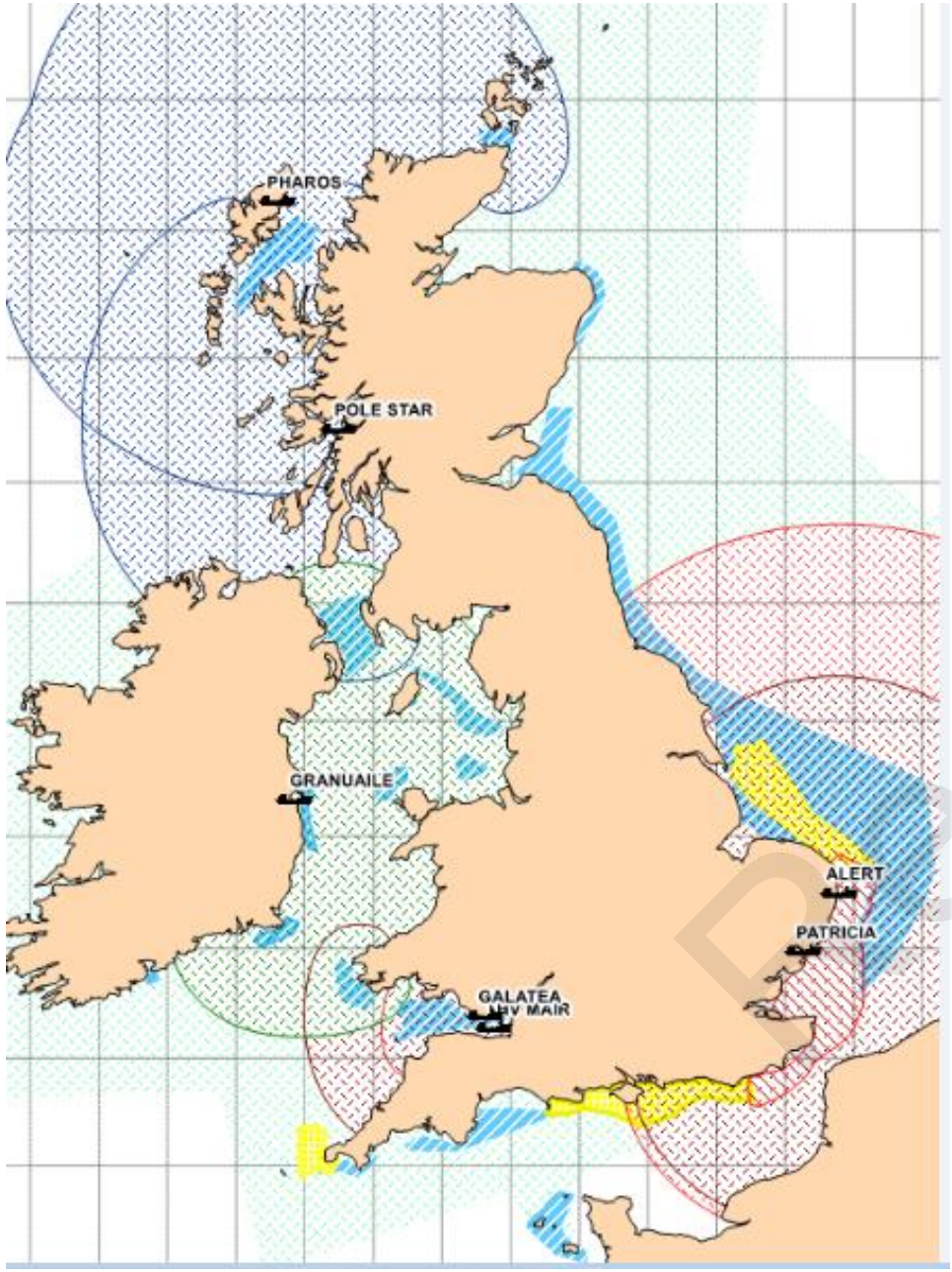
Wreck, AtoN Casualty, RRC Incidents

Dover to Cromer	*93%*
Portland to Beachy	*69%*
Land's End	*0%*
Alert Lowestoft Repairs	*Incident 178*
Mair Bowthruster repairs	*Incident 179*

GLA FLEET COVERAGE 14/12/2017 - 6hr.

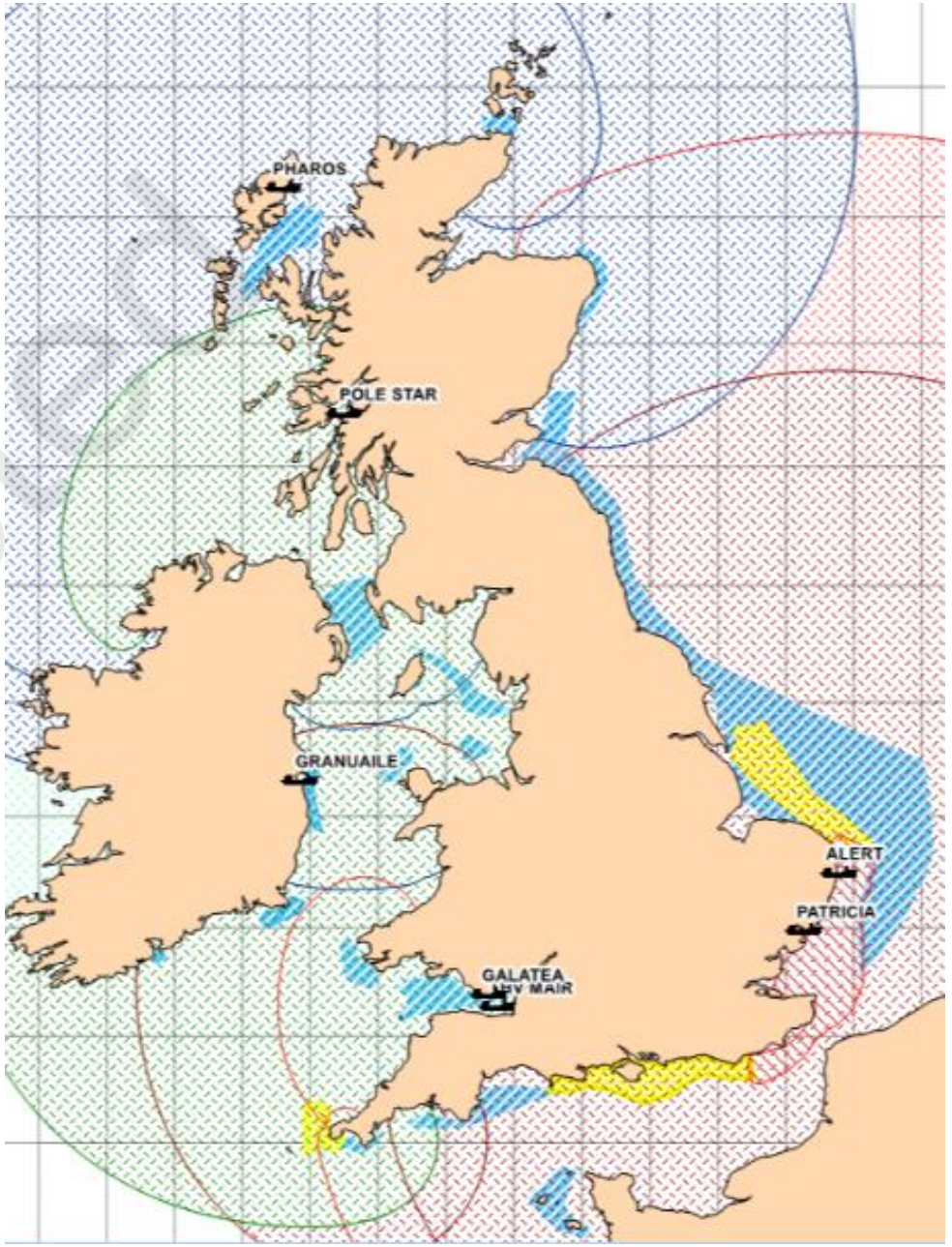
ALERT - LOWESTOFT
GALATEA - BARRY
GRANUAILE - DUN LAOGHAIRE
PATRICIA - HARWICH
PHAROS - STORNOWAY
POLE STAR - OBAN
THV MAIR - BARRY





12 Hrs RRC

24 Hrs RRC

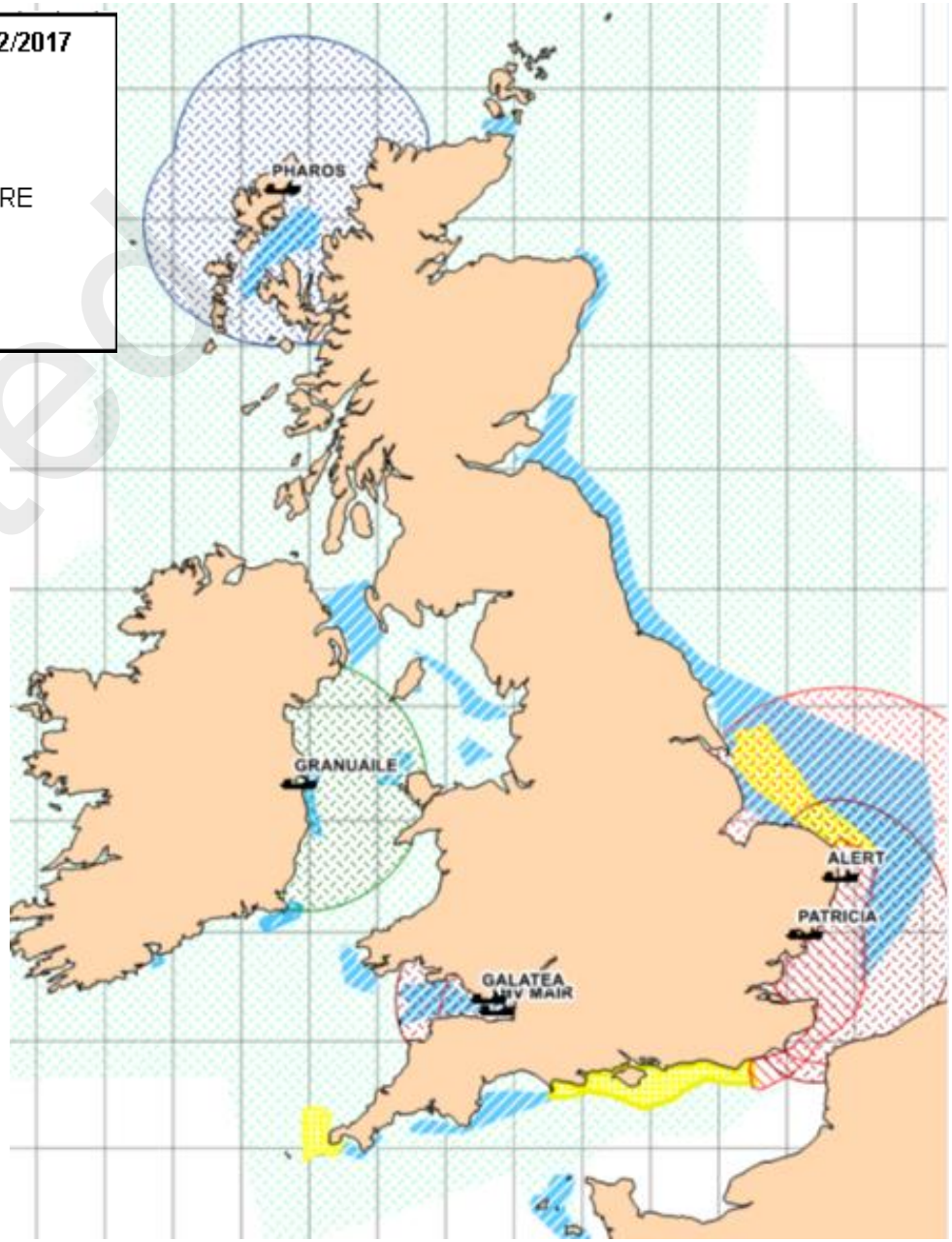


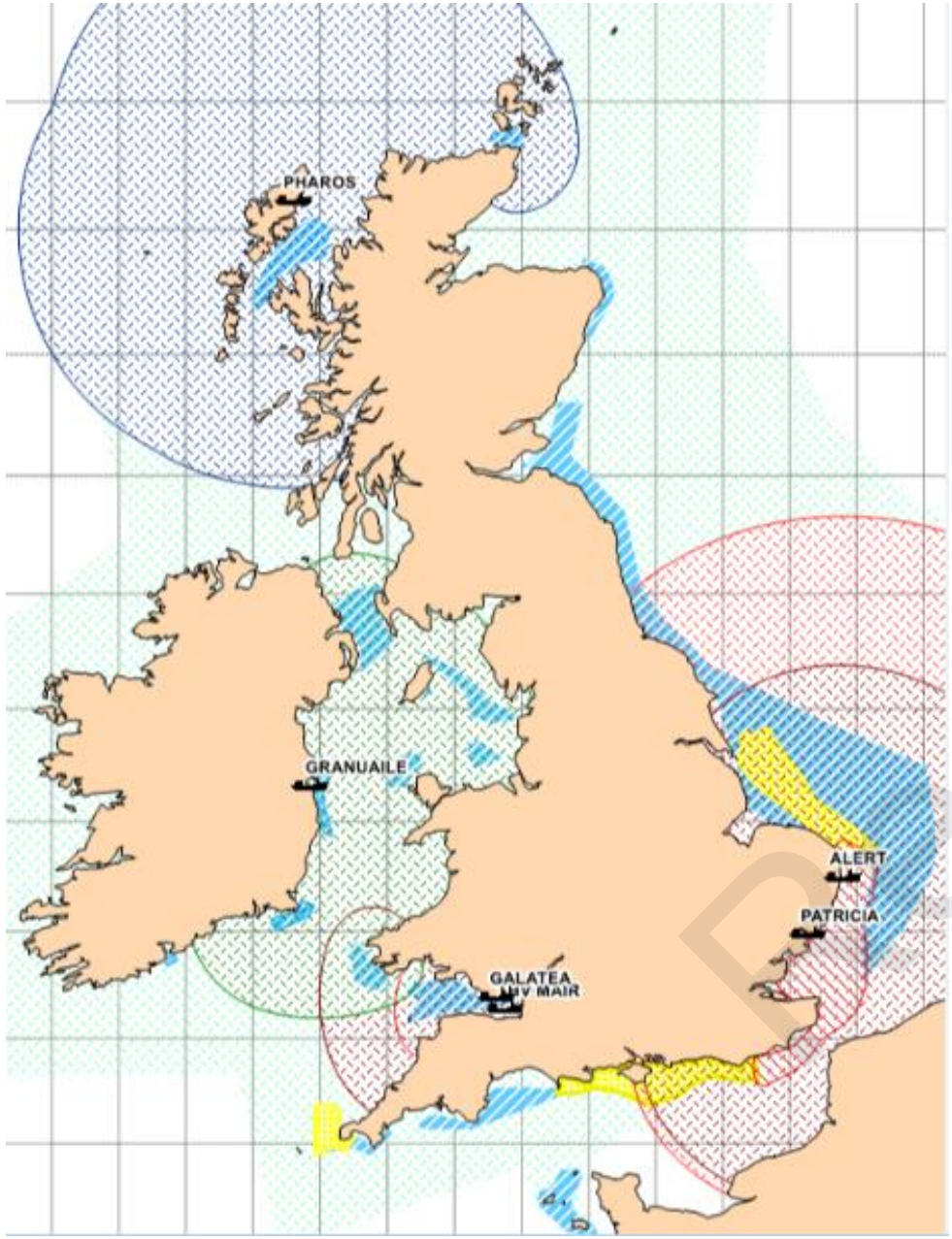
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	69%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

14th Dec 2017	6 Vessel Scenario - Failed
THV Patricia	*Harwich investigating crane fault*
THV Galatea	*Barry area weatherbound*
THV Alert	*Lowestoft weatherbound*
MV Mair	*Barry weatherbound – bowthruster investigations*
NLV Pharos	*Stornoway- masters changeover*
NLV Pole Star	***REMOVE***
ILV Granuaile	*Dun Laoghaire loading & discharging*

GLA FLEET LOCATION 14/12/2017

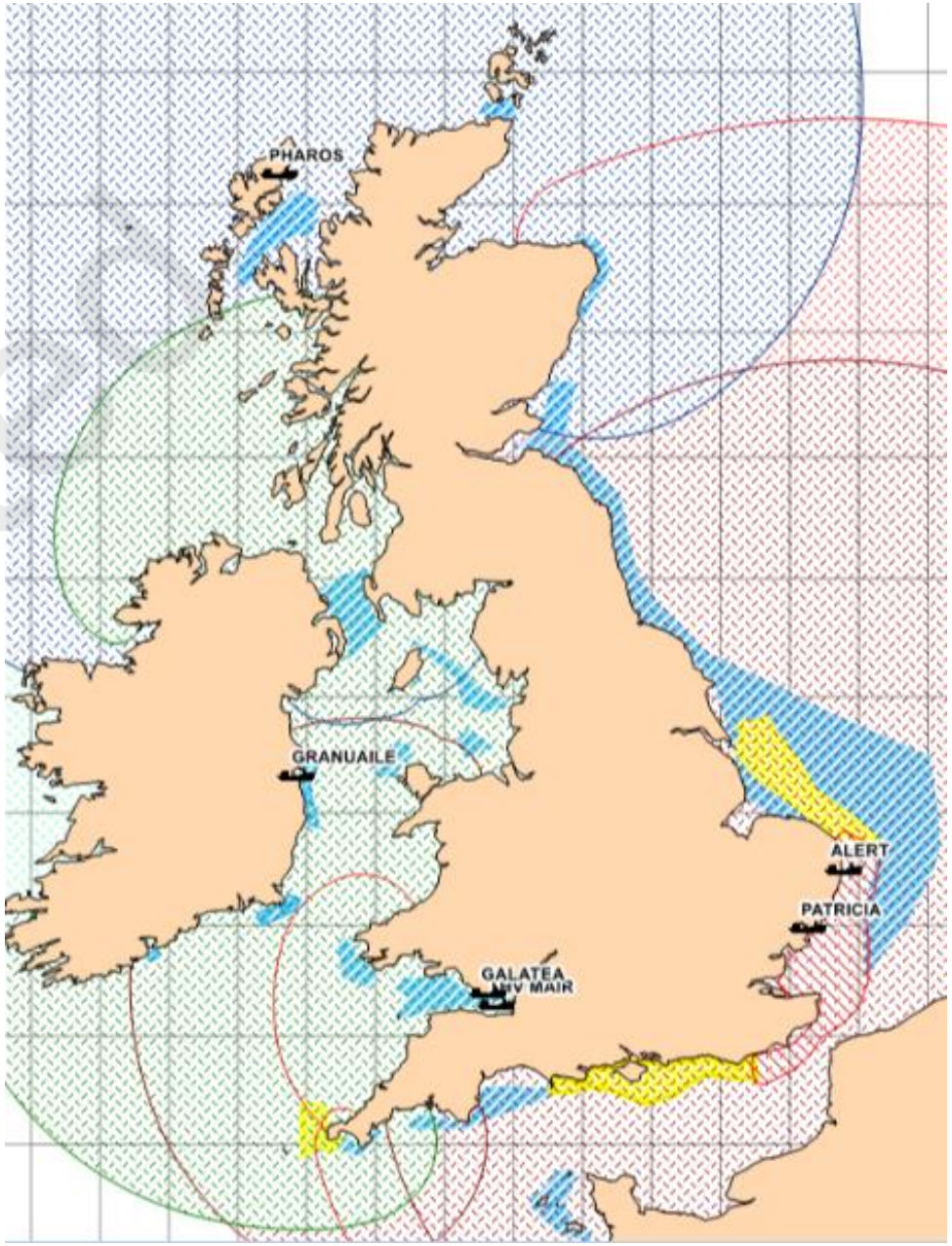
ALERT - LOWESTOFT
GALATEA - BARRY
GRANUAILE - DUN LAOGHAIRE
PATRICIA - HARWICH
PHAROS - STORNOWAY
THV MAIR - BARRY





12 Hrs RRC

24 Hrs RRC

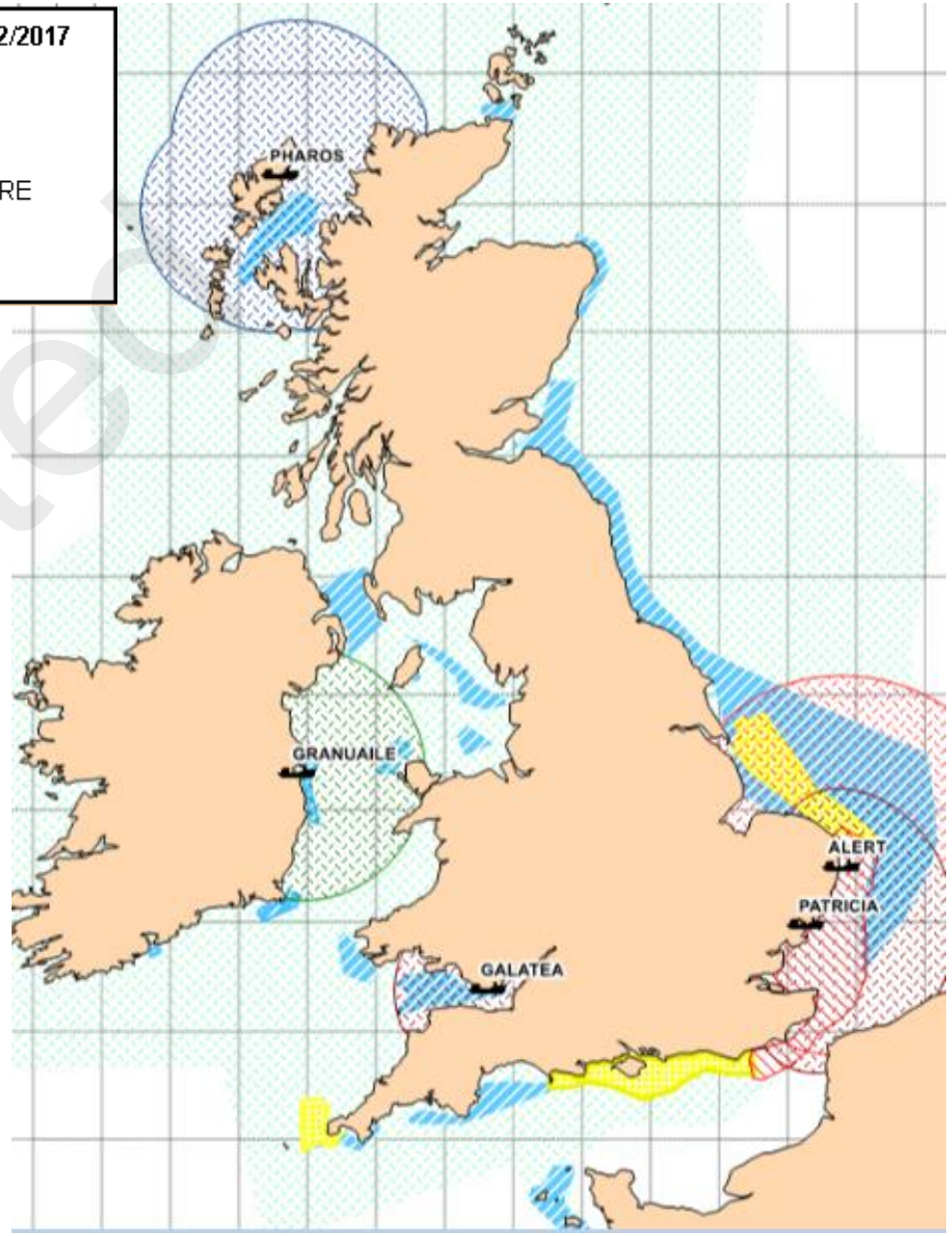


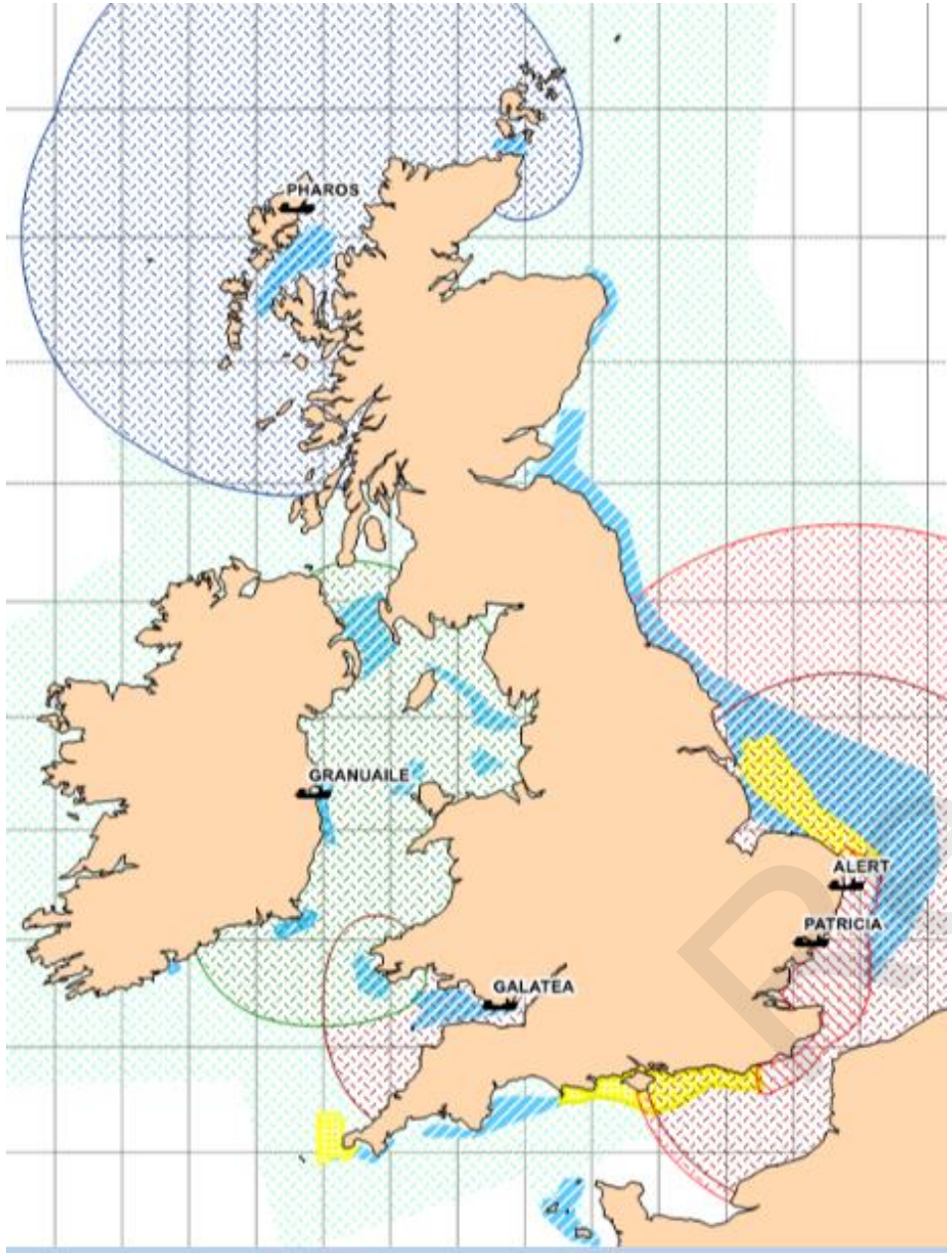
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	69%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

14th Dec 2017	5 Vessel Scenario - Failed
THV Patricia	*Harwich investigating crane fault*
THV Galatea	*Barry area weatherbound*
THV Alert	*Lowestoft weatherbound*
MV Mair	***REMOVE***
NLV Pharos	*Stornoway- masters changeover*
NLV Pole Star	***REMOVE***
ILV Granuaile	*Dun Laoghaire loading & discharging*

GLA FLEET LOCATION 14/12/2017

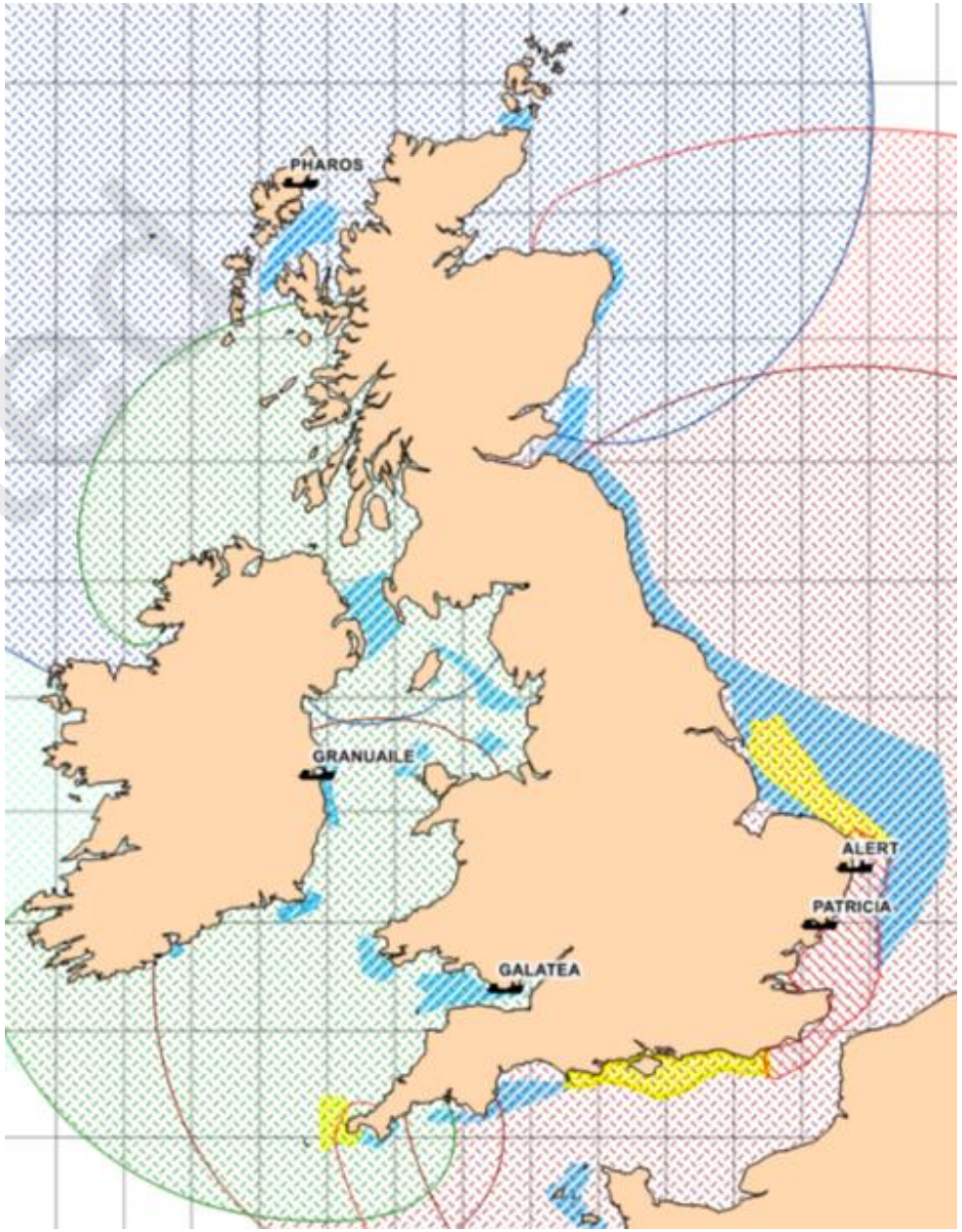
ALERT - LOWESTOFT
GALATEA - BARRY
GRANUAILE - DUN LAOGHAIRE
PATRICIA - HARWICH
PHAROS - STORNOWAY





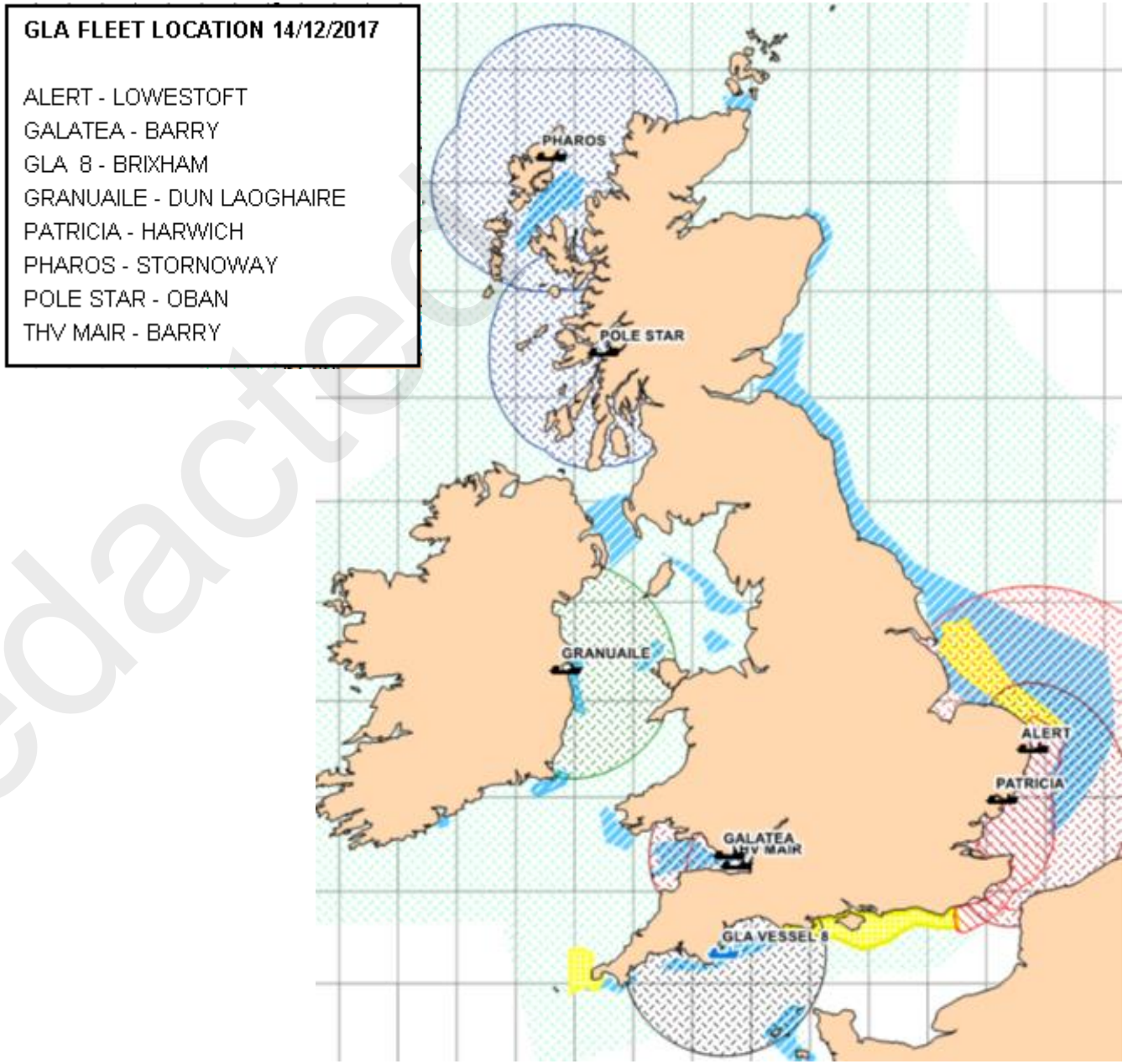
12 Hrs RRC

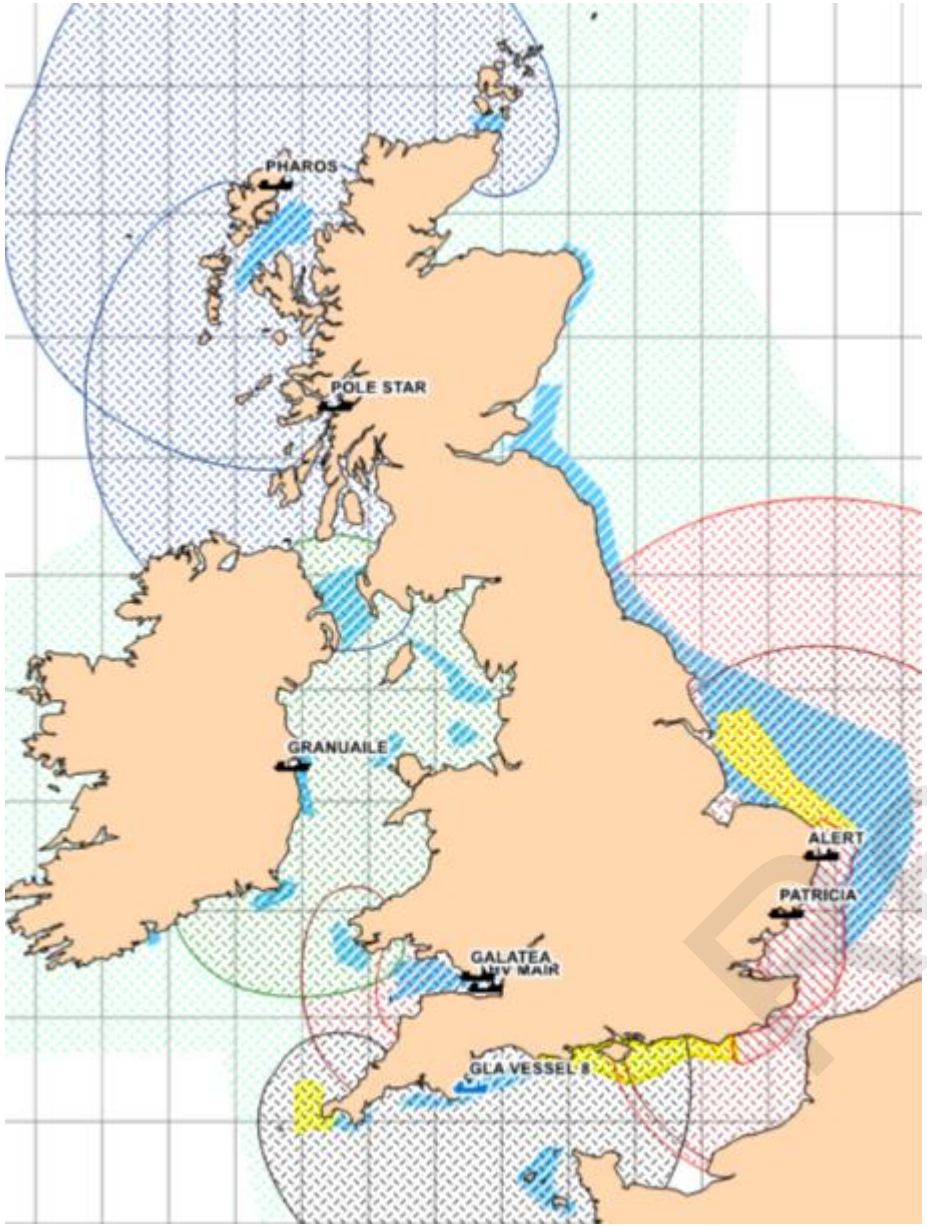
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	69%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS

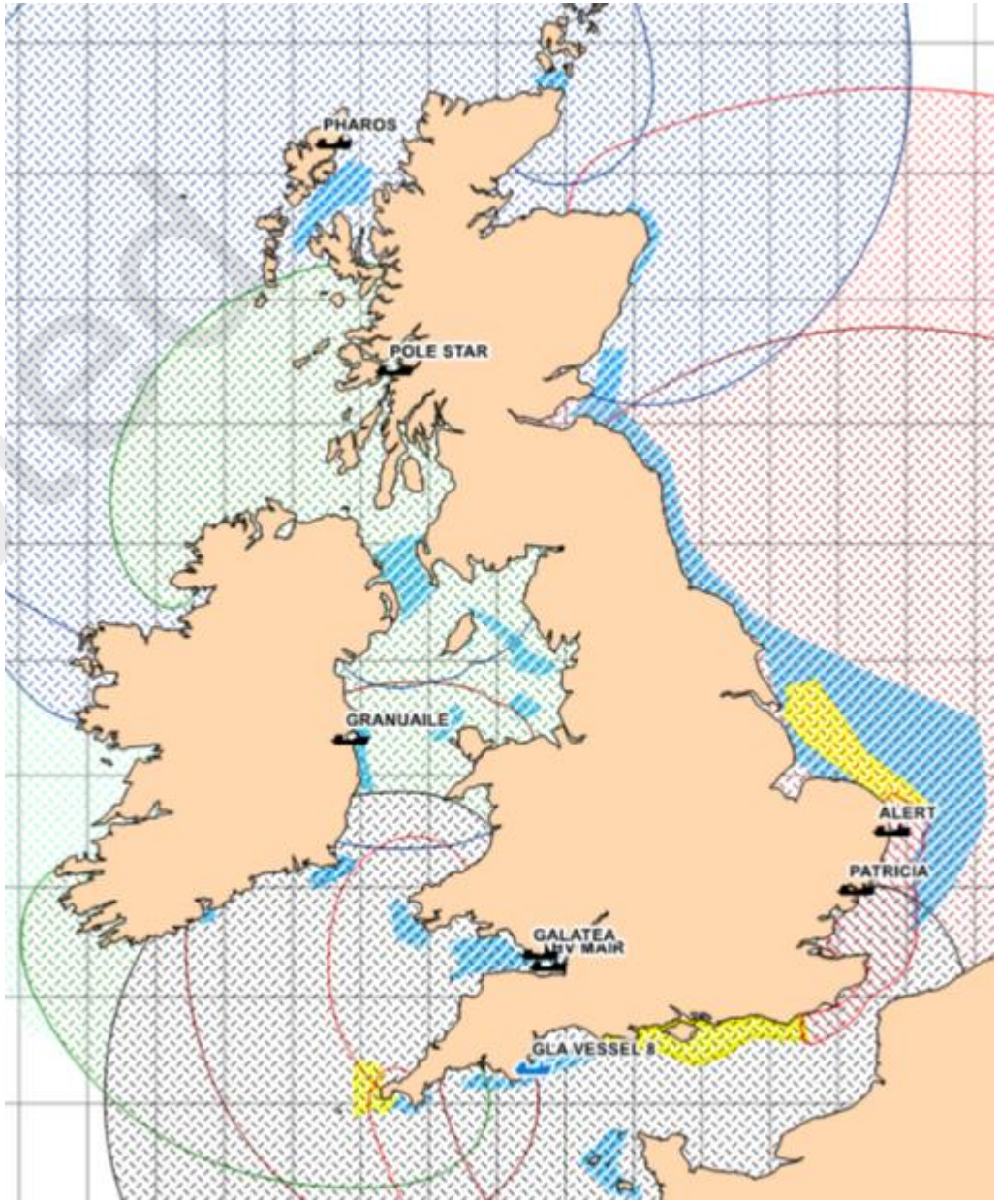
14th Dec 2017	8 Vessel Scenario - Failed
GLA 8	*Brixham*
THV Patricia	*Harwich investigating crane fault*
THV Galatea	*Barry area weatherbound*
THV Alert	*Lowestoft weatherbound*
MV Mair	*Barry weatherbound – bowthruster investigations*
NLV Pharos	*Stornoway- masters changeover*
NLV Pole Star	*Oban Masters Changeover*
ILV Granuaile	*Dun Laoghaire loading & discharging*





12 Hrs RRC

24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	93%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GLA VESSEL 8
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GLA VESSEL 8, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, POLE STAR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GLA VESSEL 8, GRANUAILE
20	SE IRISH COAST	24	Yes	100%	GALATEA, GLA VESSEL 8, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GLA VESSEL 8, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GLA VESSEL 8, GRANUAILE, PATRICIA, PHAR...

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

Work Package 2 – Coordinated Planning

Phase 3 – Evaluate, refine centralise planning model and build coordinated plan

GLA Fleet Six In-depth Scenarios

GLA Fleet Scenarios 2017-18

Six dates (shown below) taken from Live Data collated for further analysis.

13th April: 2nd June: 6th July:

25th September: 8th October: 10th December

RRC Risk carried:

Taking into account the level of risk acceptance identified above the 6, 12 and 24 areas have differing minimum acceptable coverage requirements.

These are defined as :

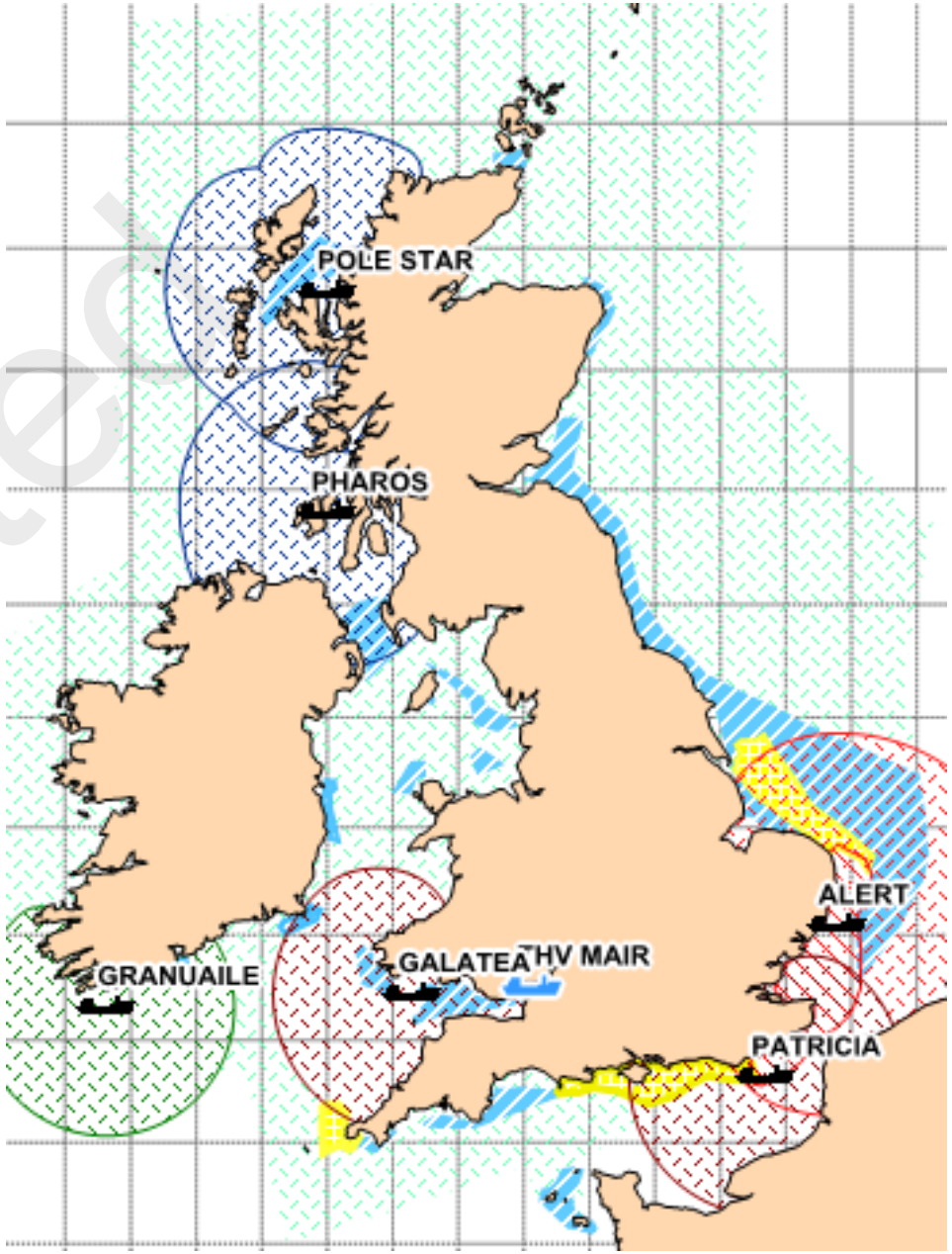
Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24 hrs	1@ 15%	2 hrs

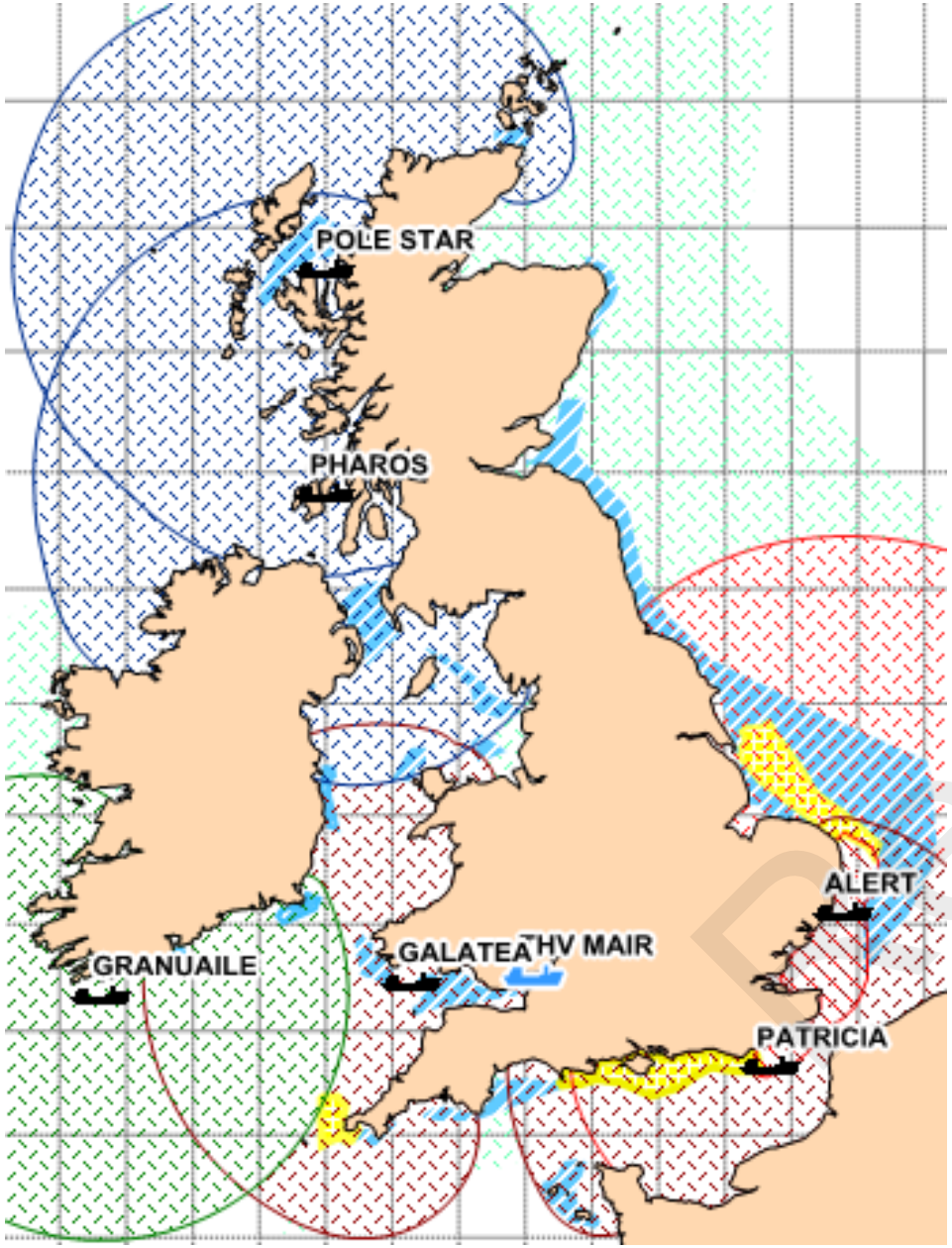
Hence if any area falls below the thresholds of 6 Hrs = 95% ; 12 Hrs = 90% ; 24 Hrs = 85%

and or

More than one RRC area falls below 100% then the scenario has failed the acceptable level of RRC Risk

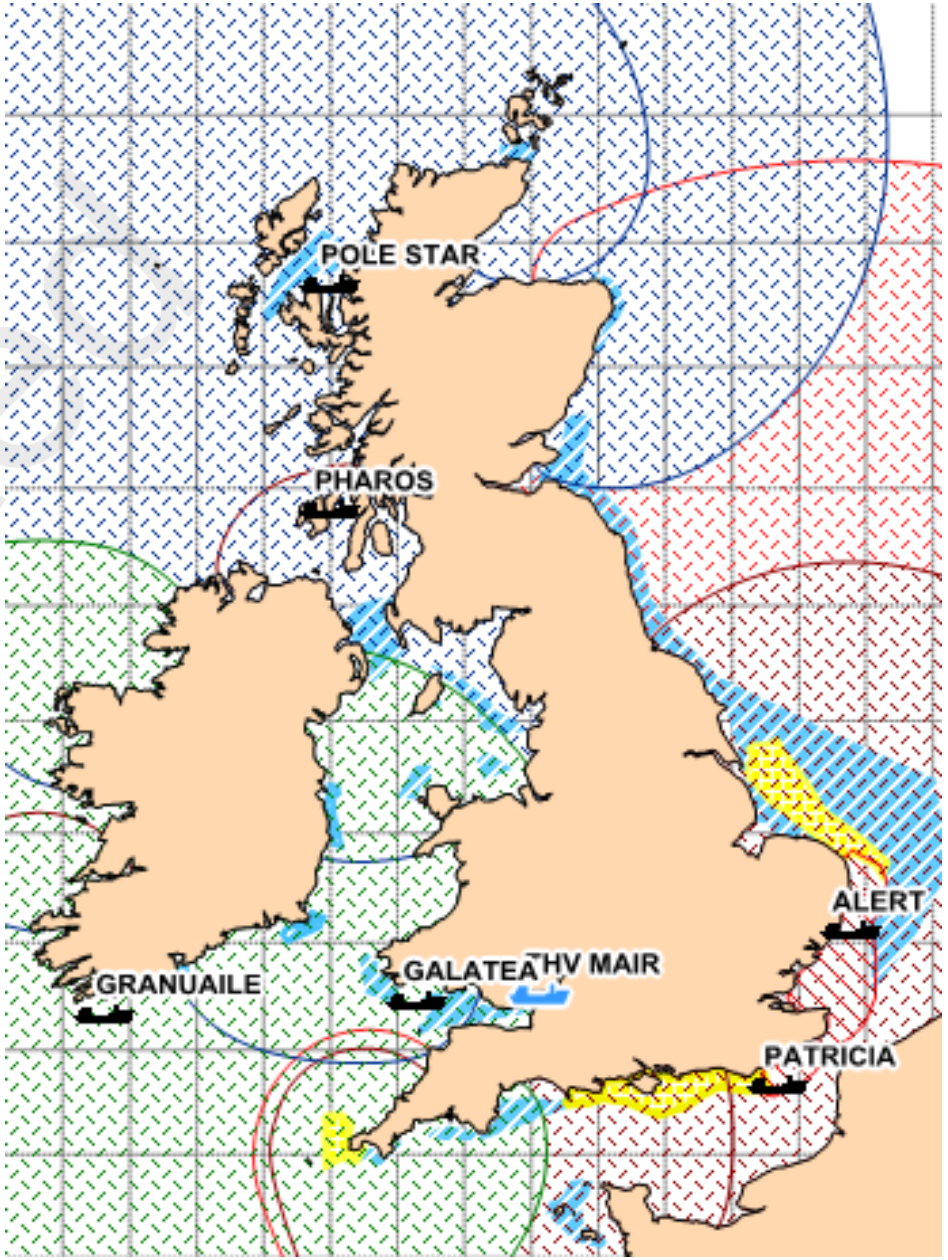
13th Apr 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Greenwich MFA Tow*
THV Galatea(12)	*Bristol Channel Buoywork*
THV Alert(16)	*Yarmouth Hydro Survey work*
MV Mair(10)	*Gloucester DD&R*
NLV Pharos(12)	*McArthurs Head Heli-Ops*
NLV Pole Star(11)	*Inner Hebrides buoywork*
ILV Granuaile(12)	*SW Coast Area 21*





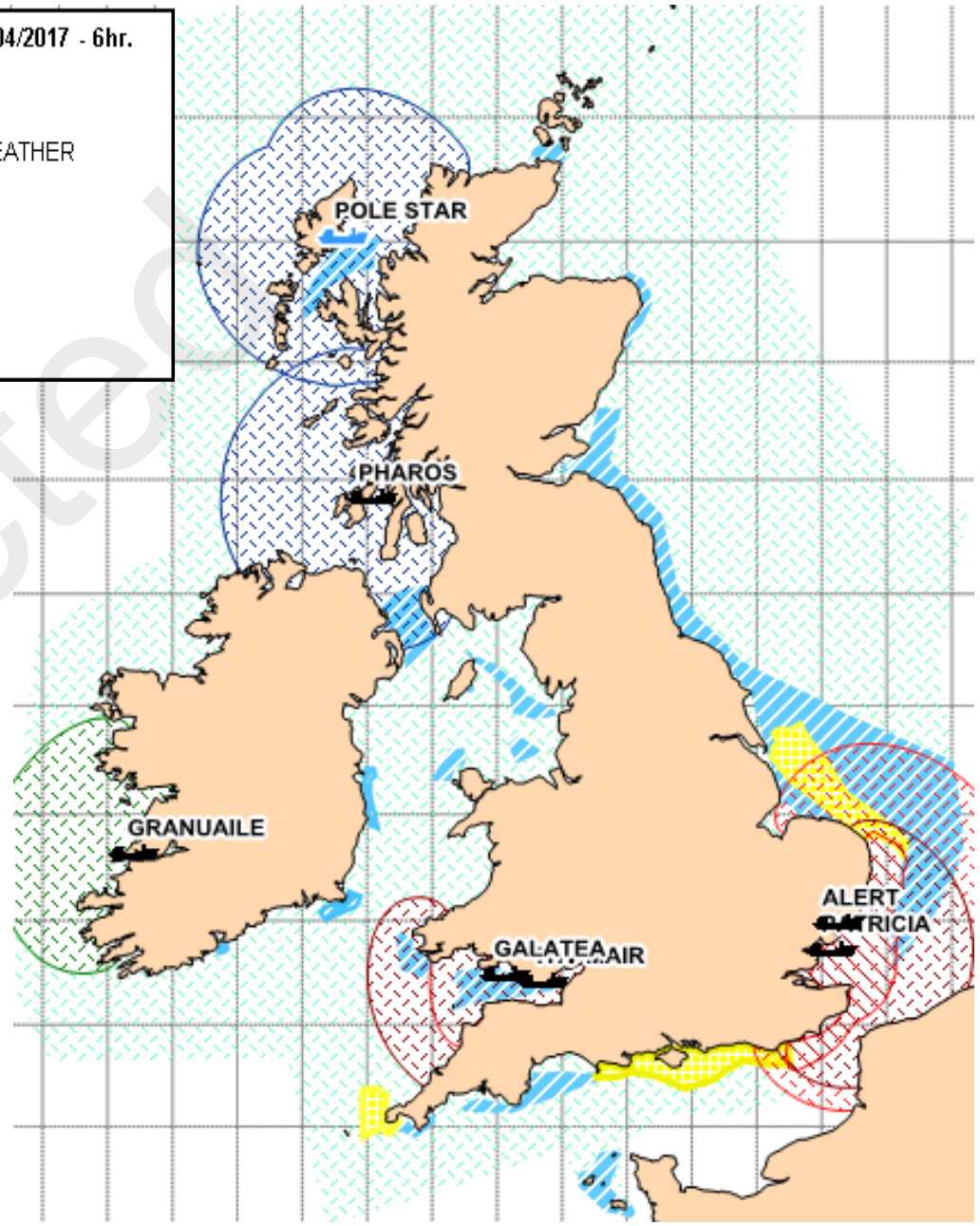
12 Hrs RRC

24 Hrs RRC

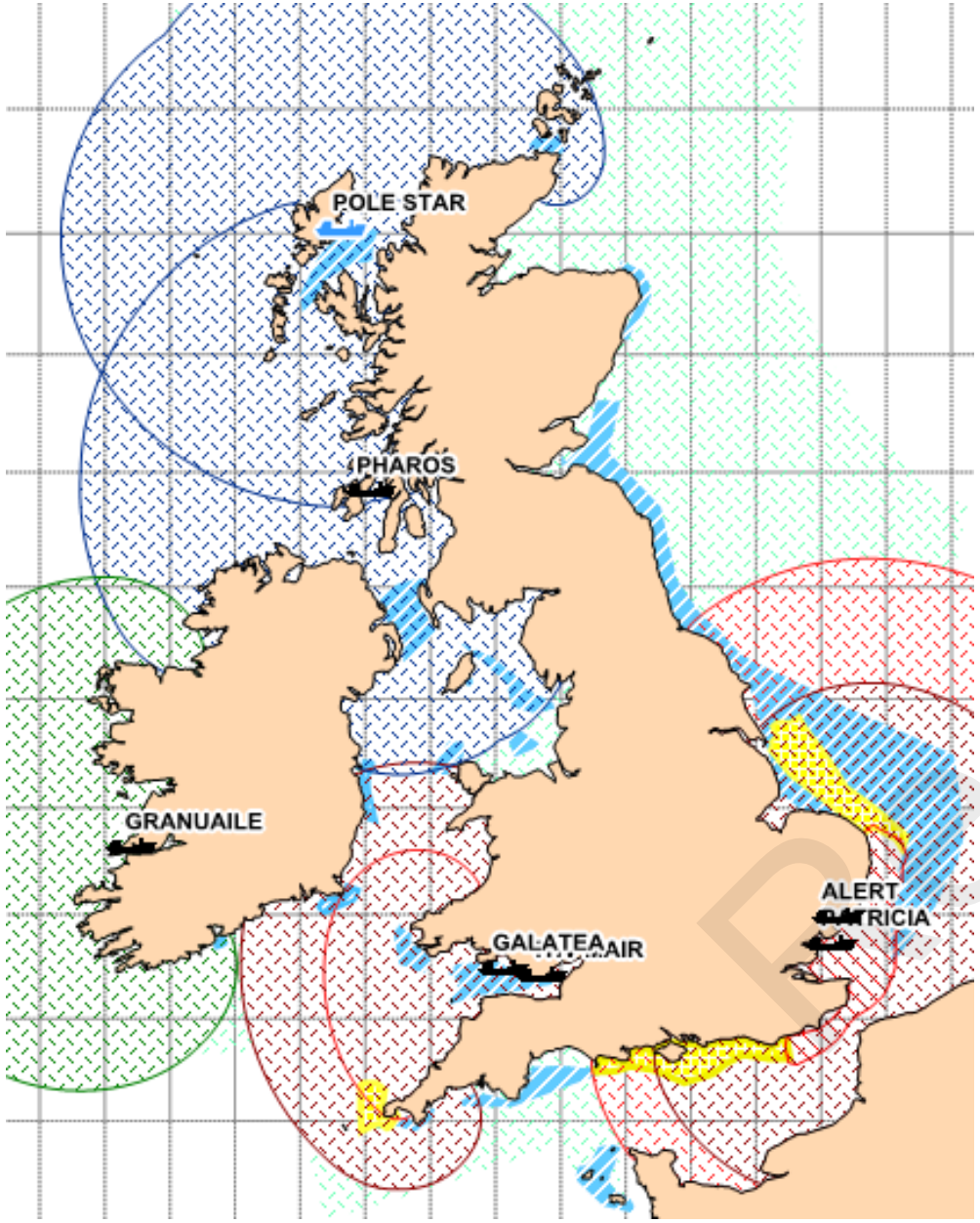


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, GRANUAILE
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

13th Apr 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea(12)	*Bristol Channel Buoywork*
THV Alert(16)	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair(10)	*Made passage to Barry*
NLV Pharos(12)	*McArthur's Head Helicopter Operations*
NLV Pole Star(11)	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile(12)	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*

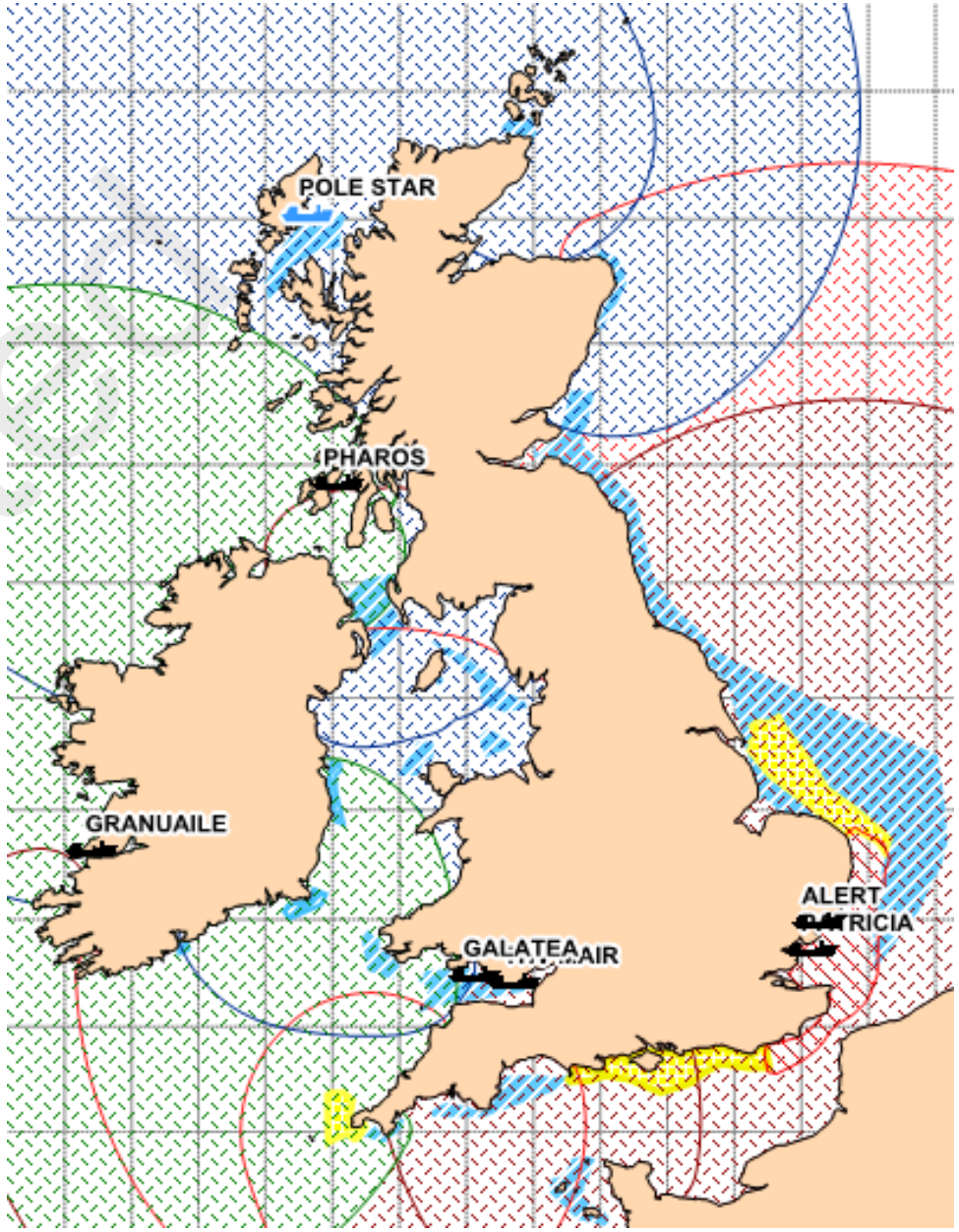


Wreck, AtoN Casualty, RRC Incidents	
Patricia Buoy moves following shoaling	
Alert generator repairs	*Incident Report No.17*
Portland to Beachy Head 12 Hrs RRC	*100% coverage*
Cromer to Dover 6 Hrs RRC	*100% coverage*



12 Hrs RRC

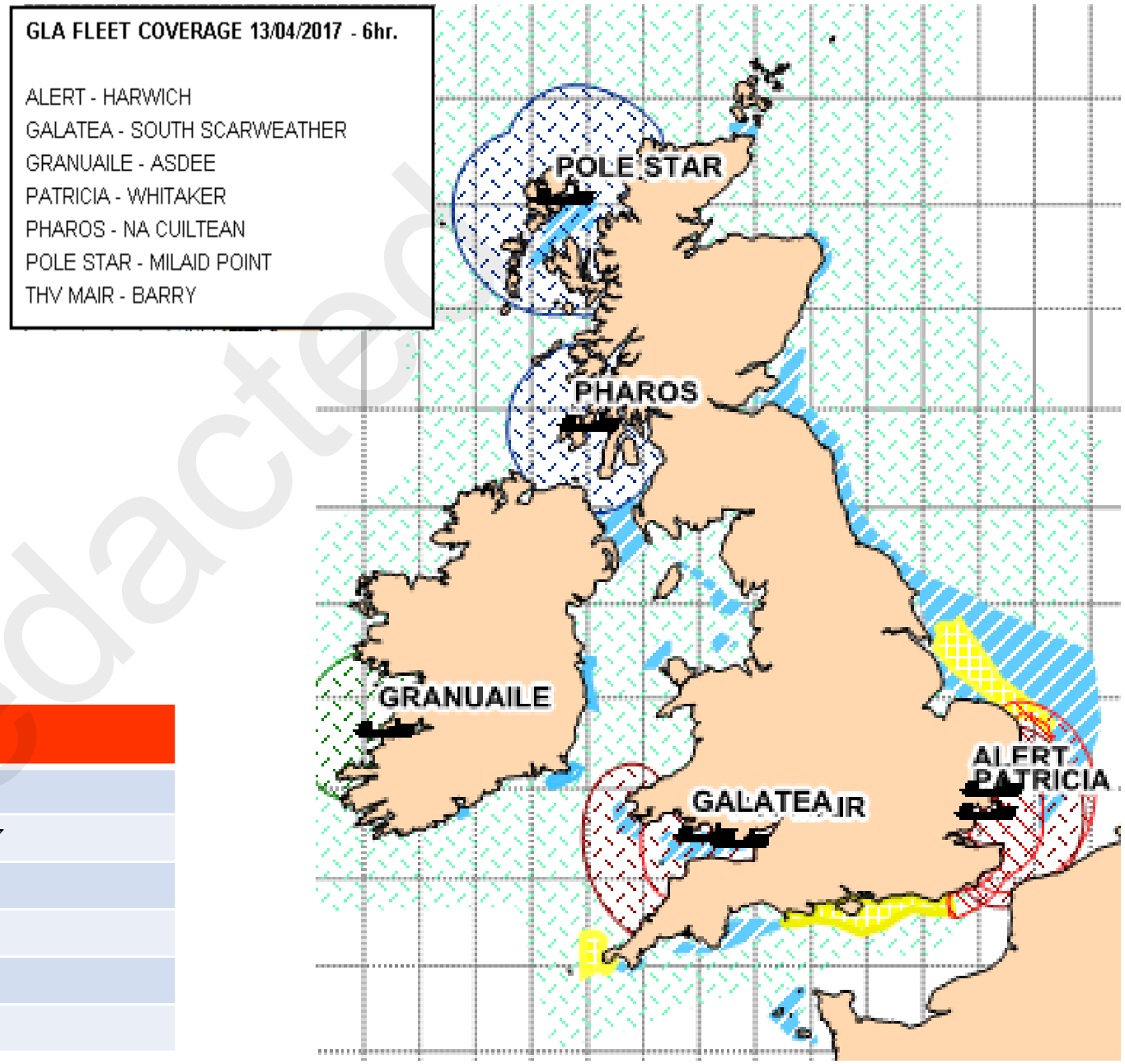
24 Hrs RRC

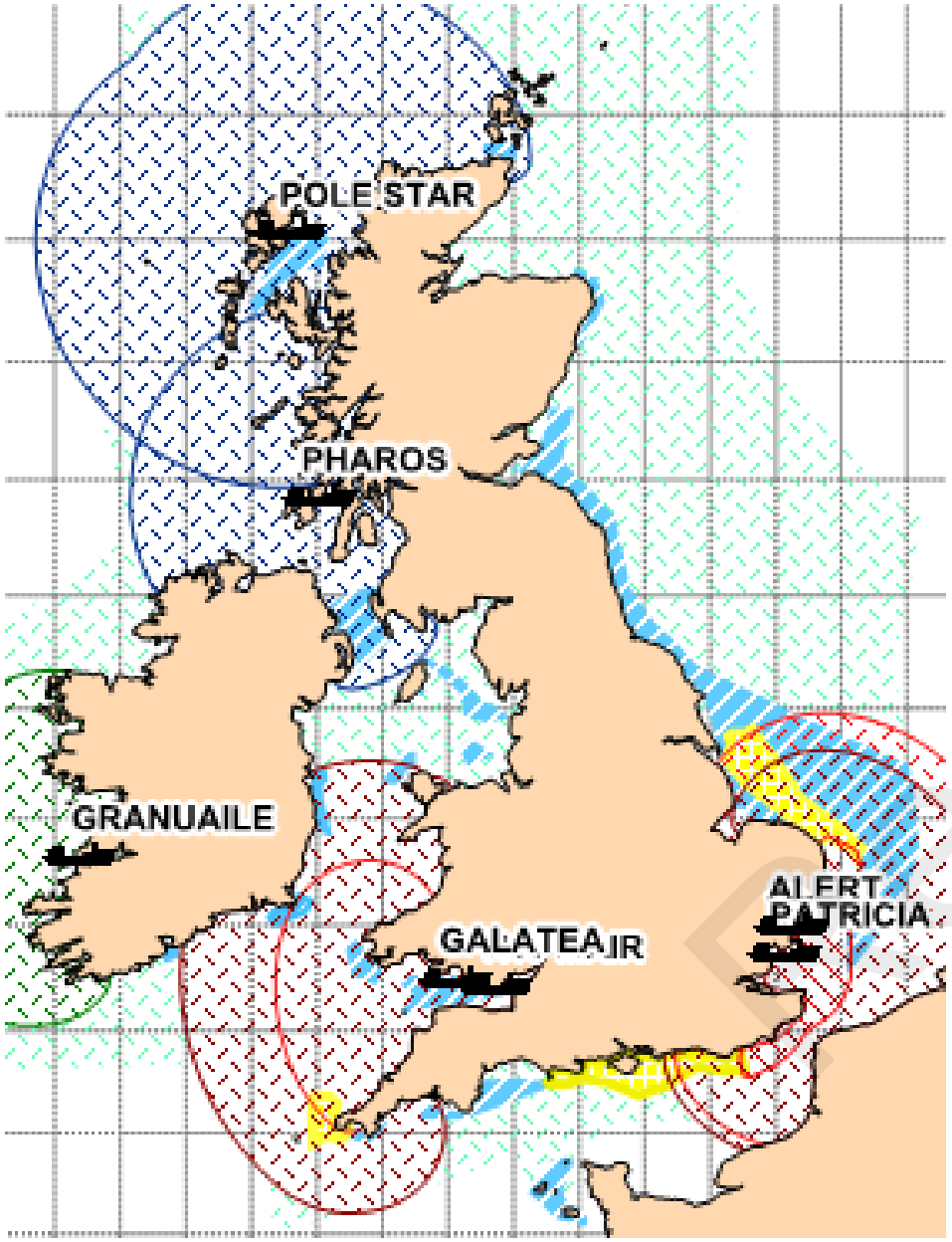


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

13th Apr 2017	7 Vessel Scenario - Actual
Vessel Name (Speed Kts)	
THV Patricia(9.5)	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea(12.5)	*Bristol Channel Buoywork*
THV Alert(10)	*Harwich; new generator on deck for testing; hence risk response cover*
MV Mair(10)	*Made passage to Barry*
NLV Pharos(8)	*McArthur's Head Helicopter Operations*
NLV Pole Star(10)	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile(8.5)	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*

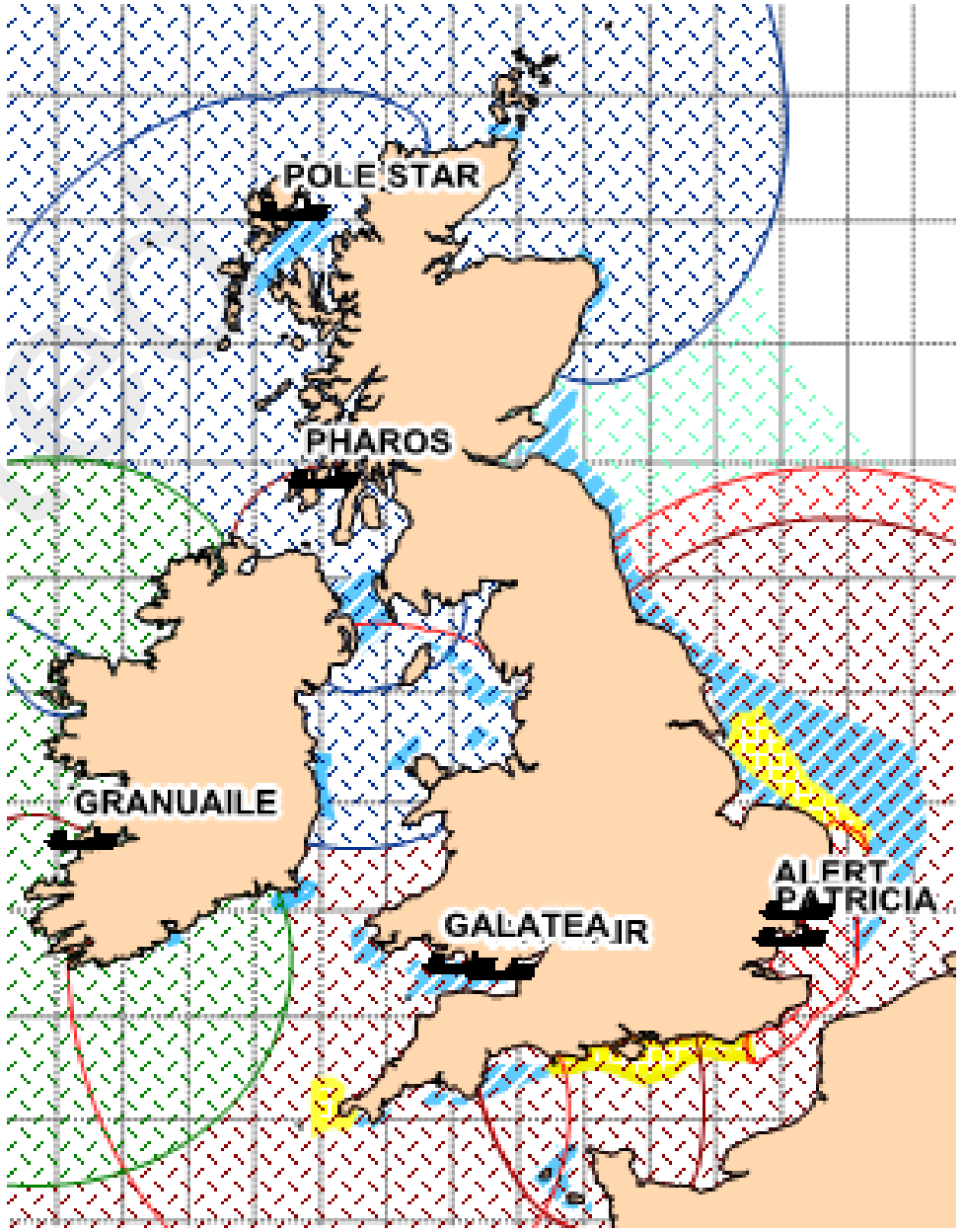
Wreck, AtoN Casualty, RRC Incidents	
Patricia Buoy moves following shoaling	
Alert generator repairs	*Incident Report No.17*
Portland to Beachy Head 12 Hrs RRC	*36% coverage*
Cromer to Dover 6 Hrs RRC	*92% coverage*
Humber to Cromer 12 Hrs RRC	*95% coverage*
S. North Sea to Tay 24 Hrs RRC	*89% coverage*





12 Hrs RRC

24 Hrs RRC



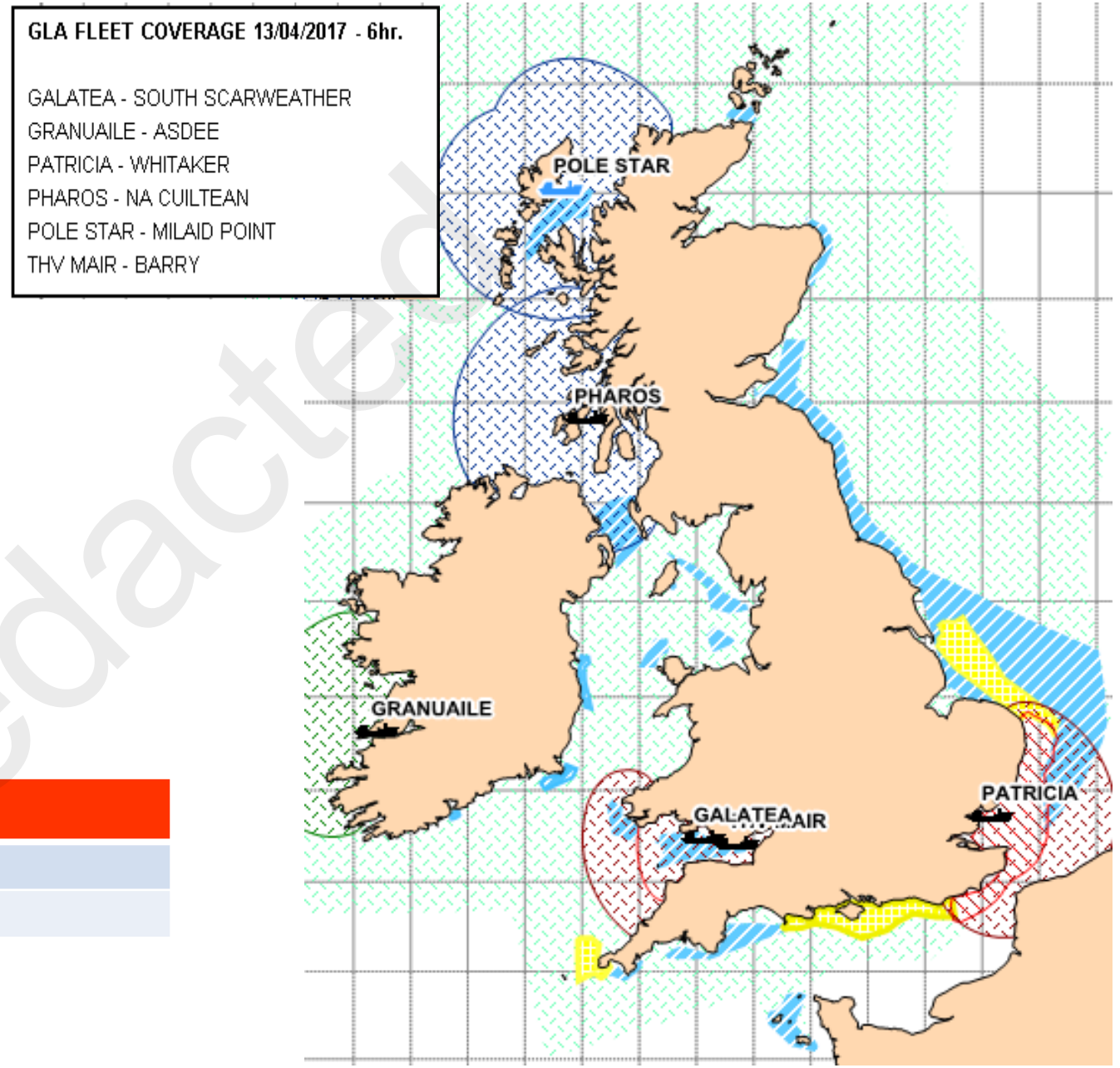
Response Region Coverage

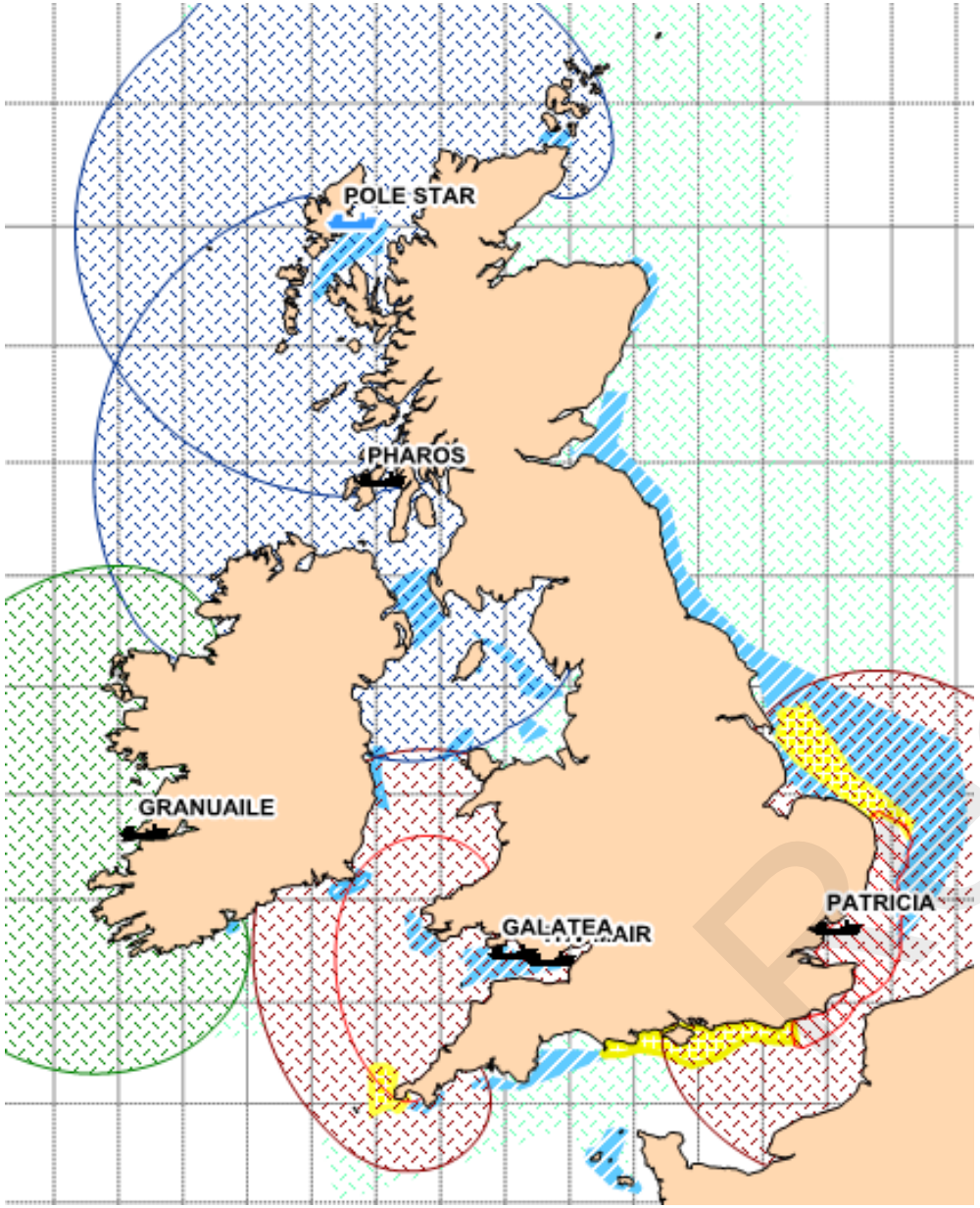
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	92%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	36%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	No	95%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	89%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ...

13th Apr 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea(12)	*Bristol Channel Buoywork*
THV Alert(16)	***REMOVED***
MV Mair(10)	*Made passage to Barry*
NLV Pharos(12)	*McArthur's Head Helicopter Operations*
NLV Pole Star(11)	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile(12)	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*

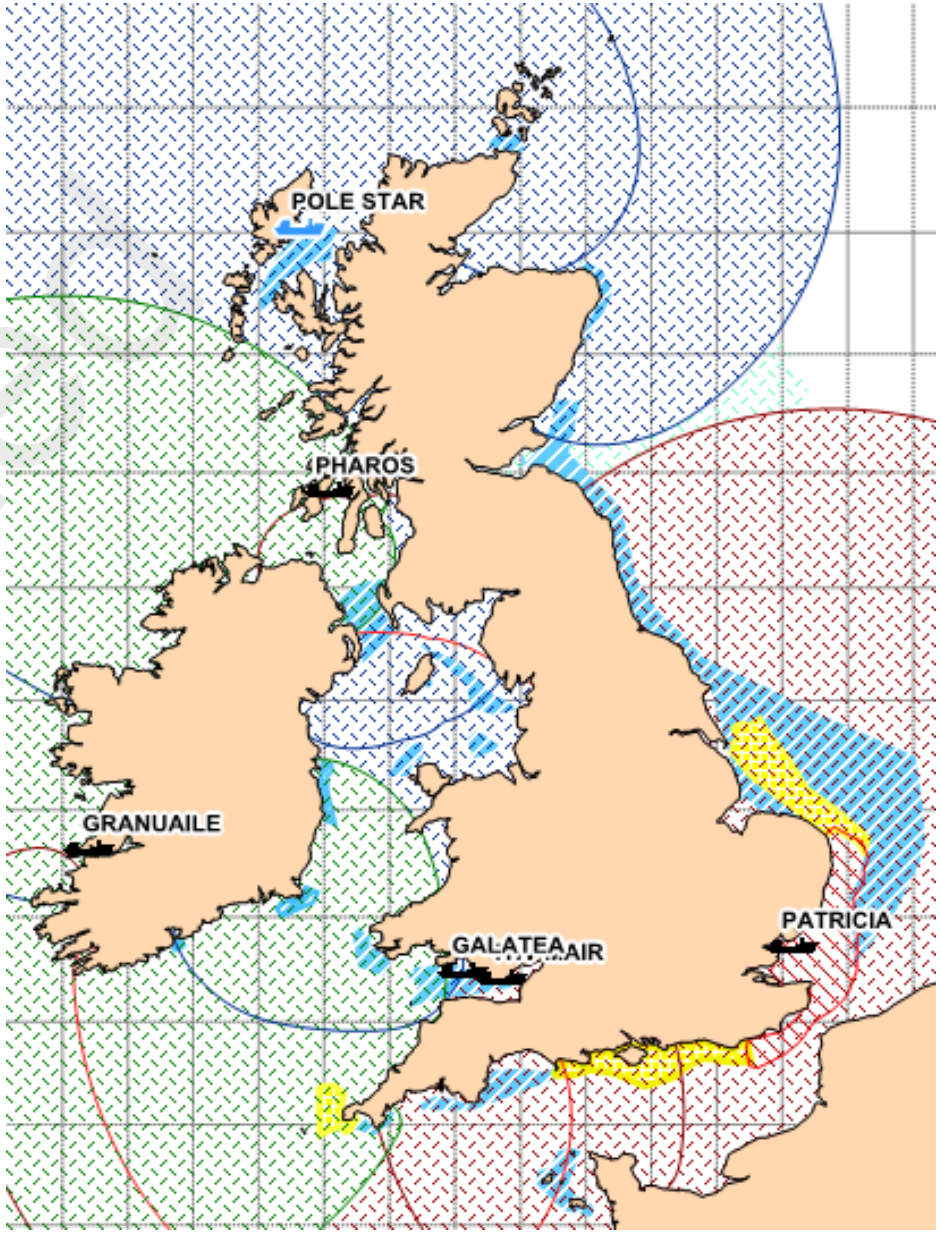
Wreck, AtoN Casualty, RRC Incidents	
Portland to Beachy Head 12 Hrs RRC	*79% coverage*
S. North Sea to Tay 24 Hrs RRC	*95% coverage*





12 Hrs RRC

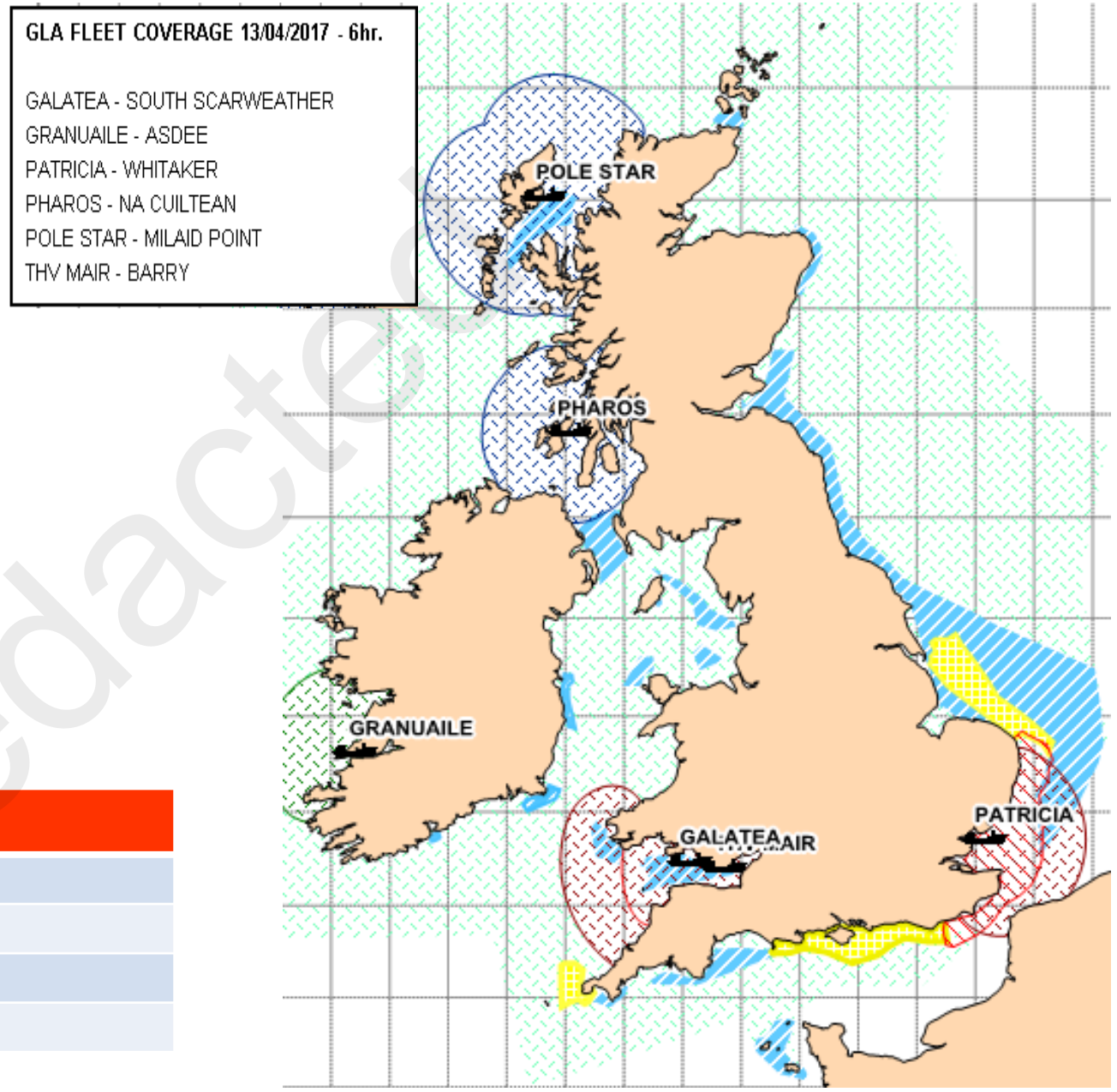
24 Hrs RRC

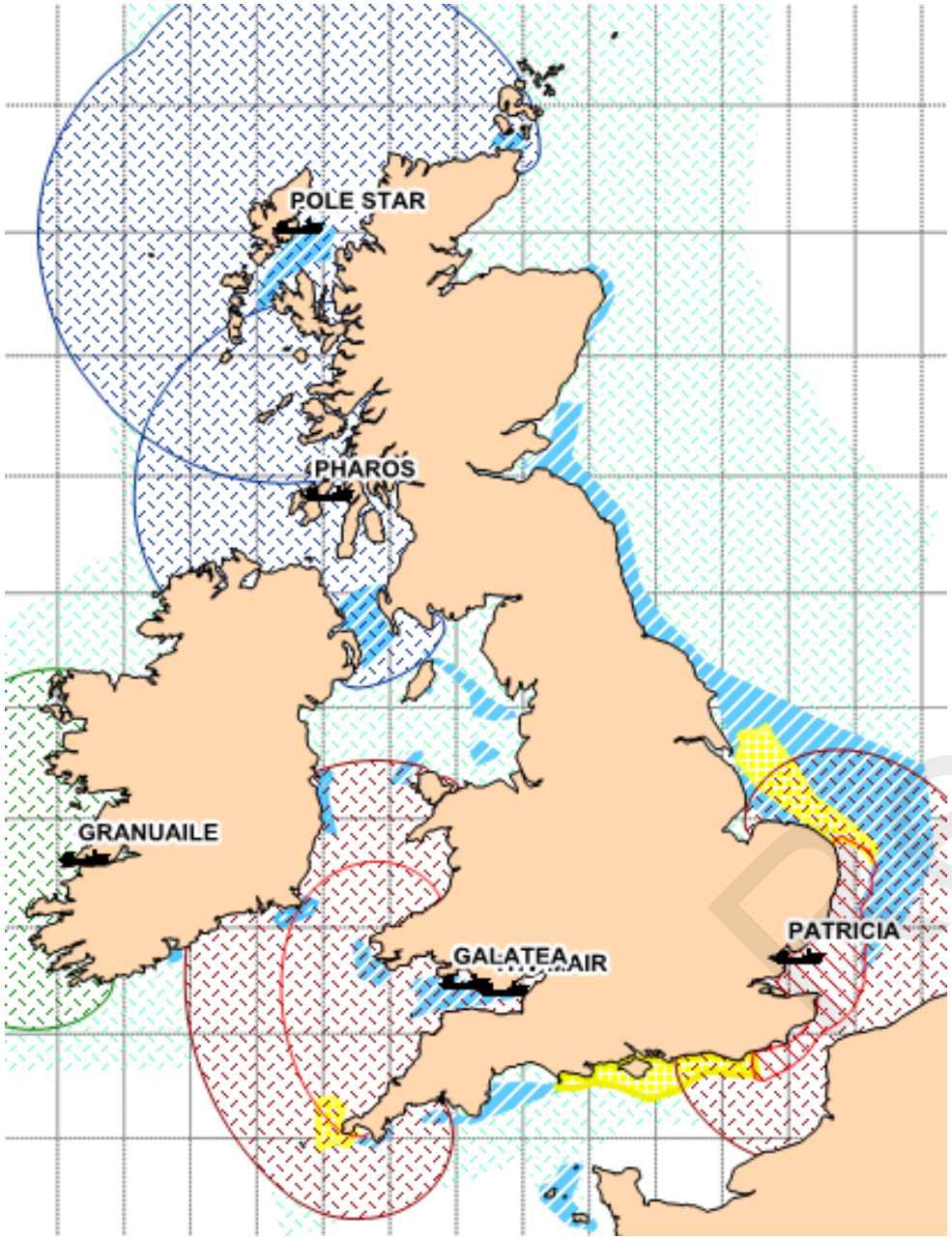


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	100%	PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	79%	PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	95%	PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE STAR, TH...

13th Apr 2017	6 Vessel Scenario – Actual
Vessel Name (Speed Kts)	
THV Patricia(9.5)	*Barrow 8 & 10 buoy moves; THNM- passage to Harwich area for wreck work*
THV Galatea(12.5)	*Bristol Channel Buoywork*
THV Alert(10)	***REMOVED***
MV Mair(10)	*Made passage to Barry*
NLV Pharos(8)	*McArthur's Head Helicopter Operations*
NLV Pole Star(10)	*Sgeir Inoe buoy work, then passage to Stornoway*
ILV Granuaile(8.5)	*Attended drifting buoy (Canadian) then Letter Point casualty; returned to AP; passage to Smart Bay test site*

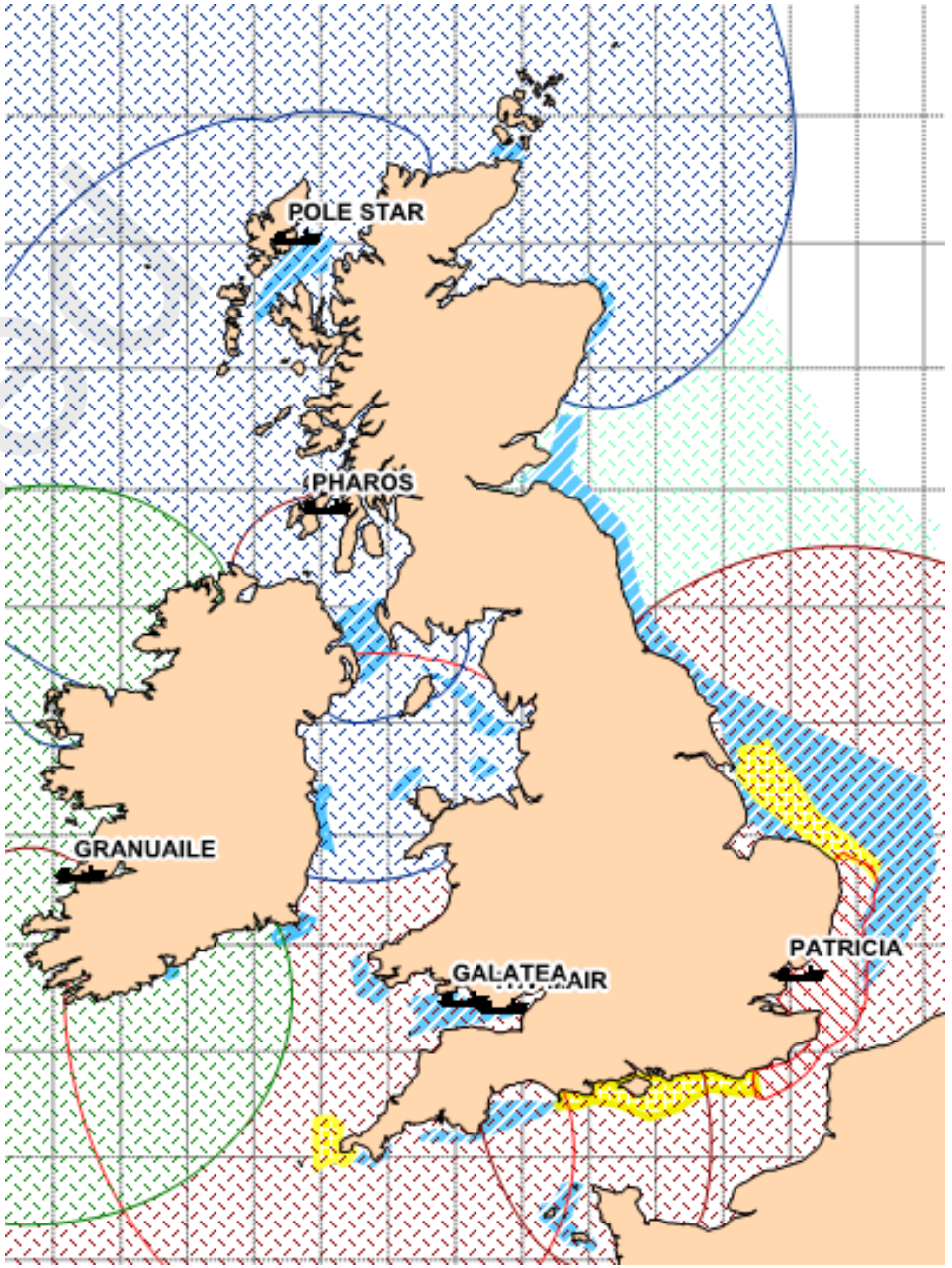
Wreck, AtoN Casualty, RRC Incidents	
Portland to Beachy Head 12 Hrs RRC	*36% coverage*
Cromer to Dover 6 Hrs RRC	*86% coverage*
Humber to Cromer 12 Hrs RRC	*64% coverage*
S. North Sea to Tay 24 Hrs RRC	*87% coverage*





12 Hrs RRC

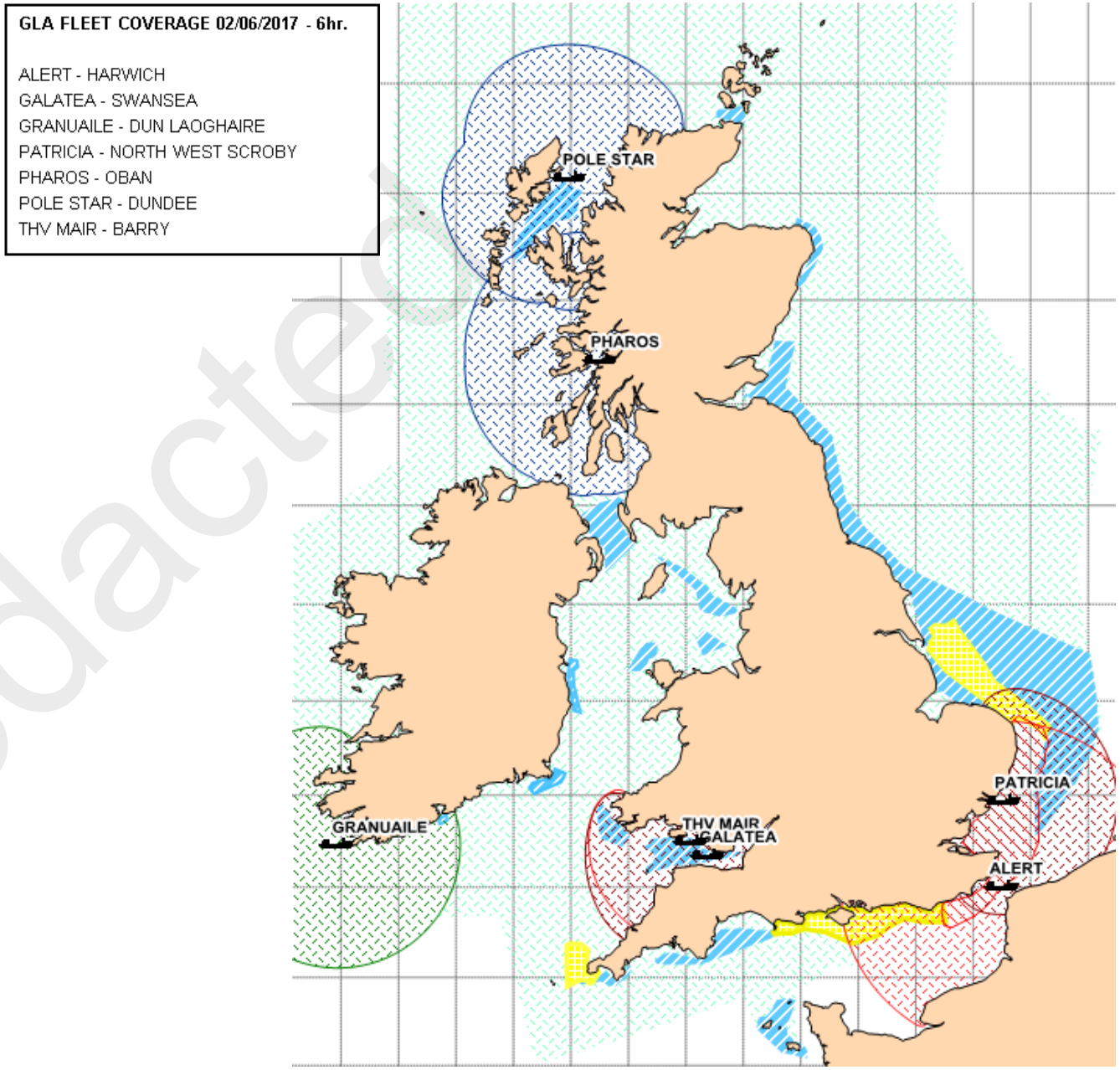
24 Hrs RRC

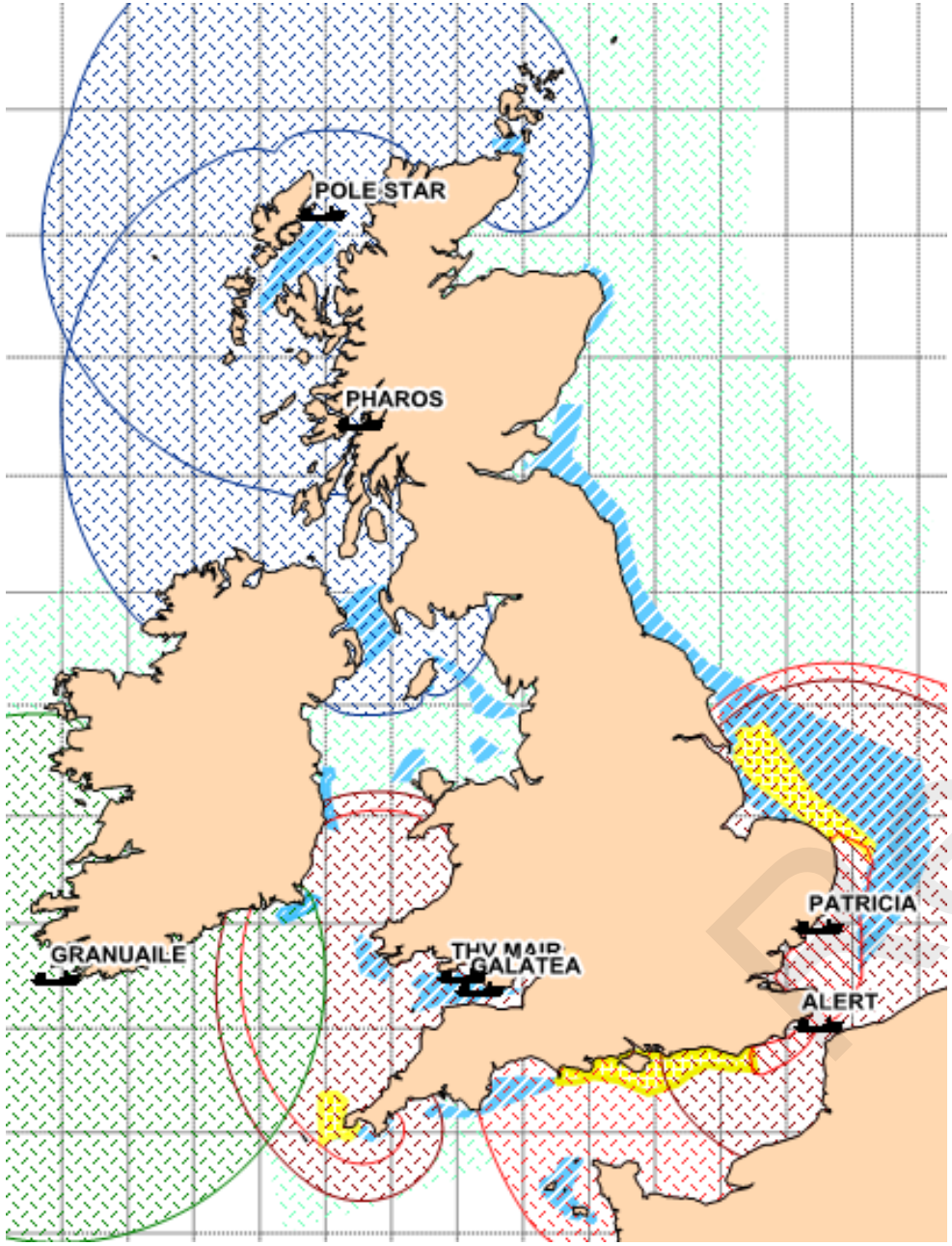


File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	86%	PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	36%	PATRICIA
3	HUMBER TO CROMER	12	No	64%	PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	No	87%	PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE STAR, TH...

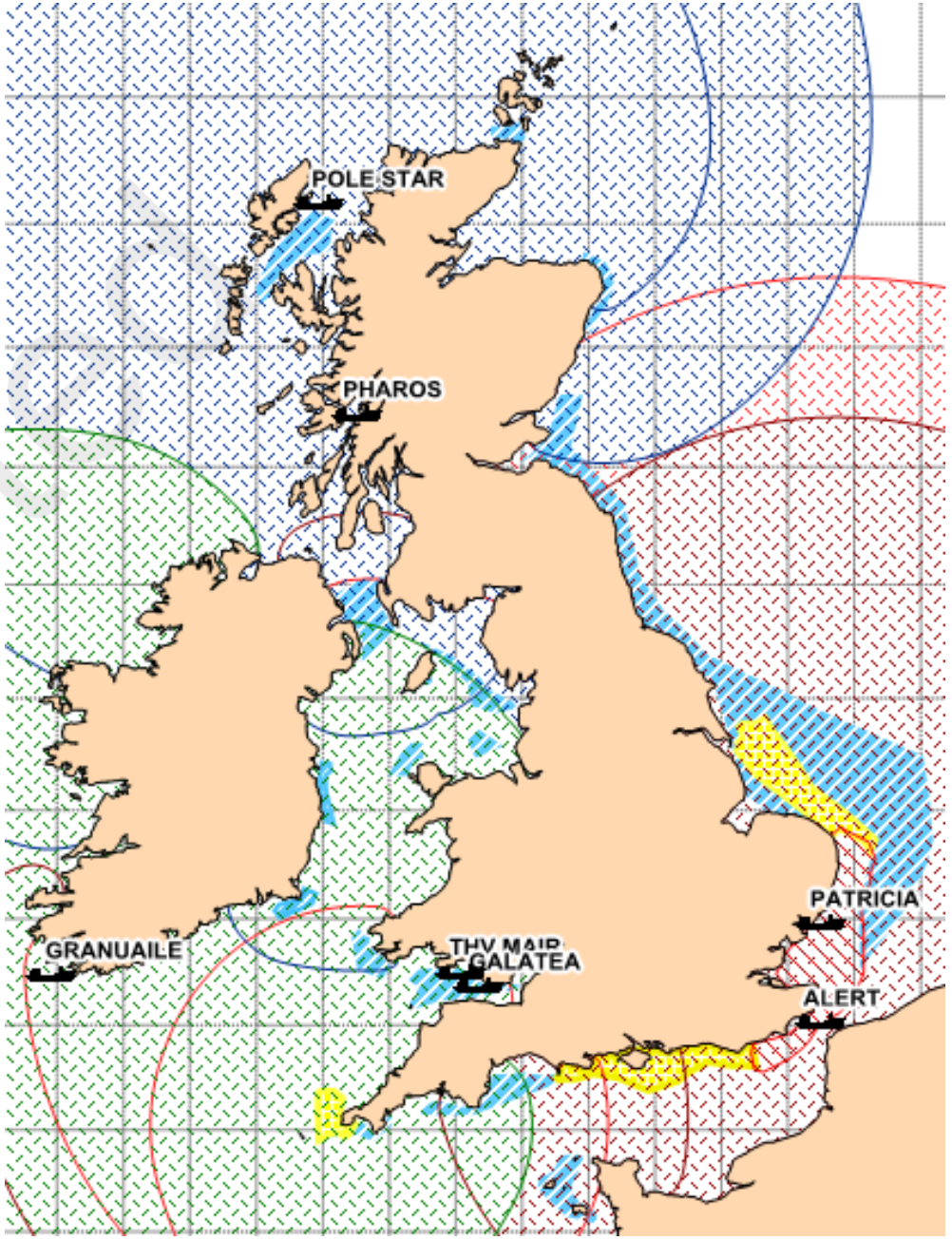
2nd June 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Harwich – Commence MFA tow to DD&R*
THV Galatea(12)	*Swansea / Cardiff Areas buoy work*
THV Alert(16)	*Dover area RRC*
MV Mair(10)	*Hugo Bank Hydrographic Survey*
NLV Pharos(12)	*Oban Loading/ Discharging*
NLV Pole Star(11)	*Outer Hebrides buoy work*
ILV Granuaile(12)	*Area 21 SW Coast - Lighthouses*





12 Hrs RRC

24 Hrs RRC



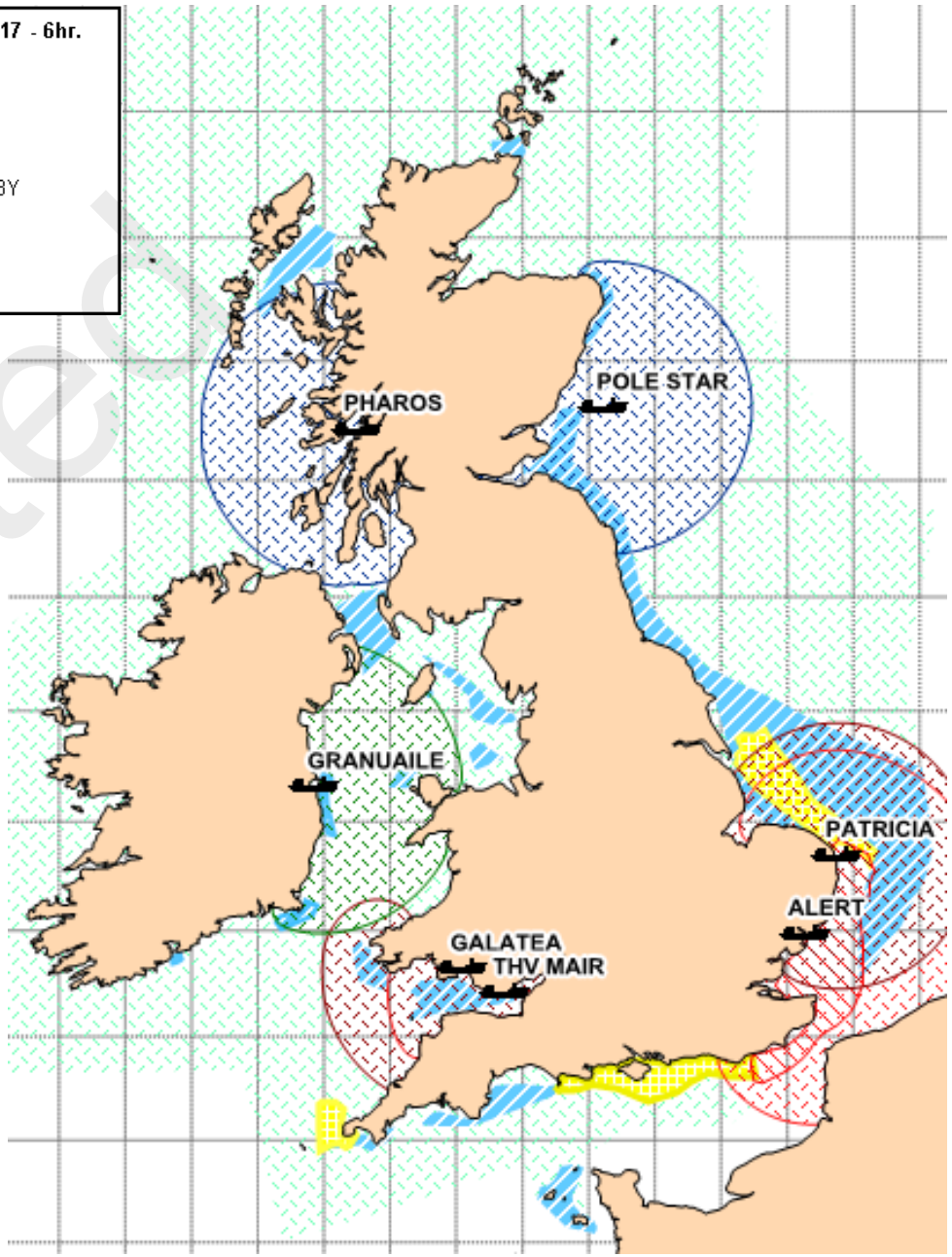
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

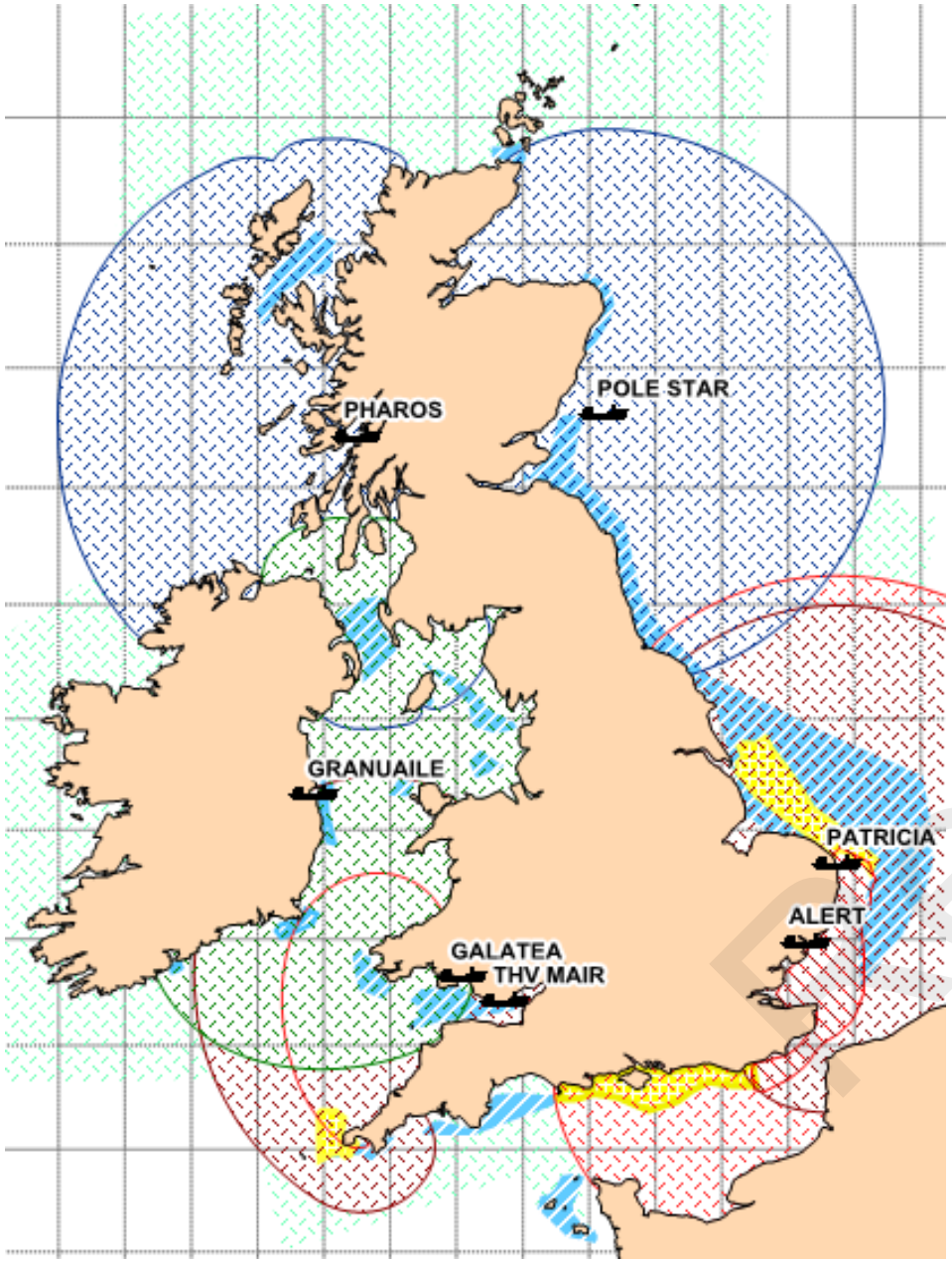
2nd Jun 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Yarmouth area buoy work, made passage to Cork anchorage off Harwich*
THV Galatea(12)	*Depart Swansea towards SW Wave Hub and carried out local Light inspections*
THV Alert(16)	*Harwich; shifted LF03 down the quay into the SW berth on TH Pier; removed solar panels from LV05 on stream mooring.*
MV Mair(10)	*Barry. Risk response cover. ISO advisor on board.*
NLV Pharos(12)	*Oban repairs*
NLV Pole Star(11)	*Made passage to Lidar buoy, fit new diesel generator; passage to Bell Rock pm*
ILV Granuaile(12)	*Dun Laoghaire discharging*

Wreck, AtoN Casualty, RRC Incidents	
None	

GLA FLEET COVERAGE 02/06/2017 - 6hr.

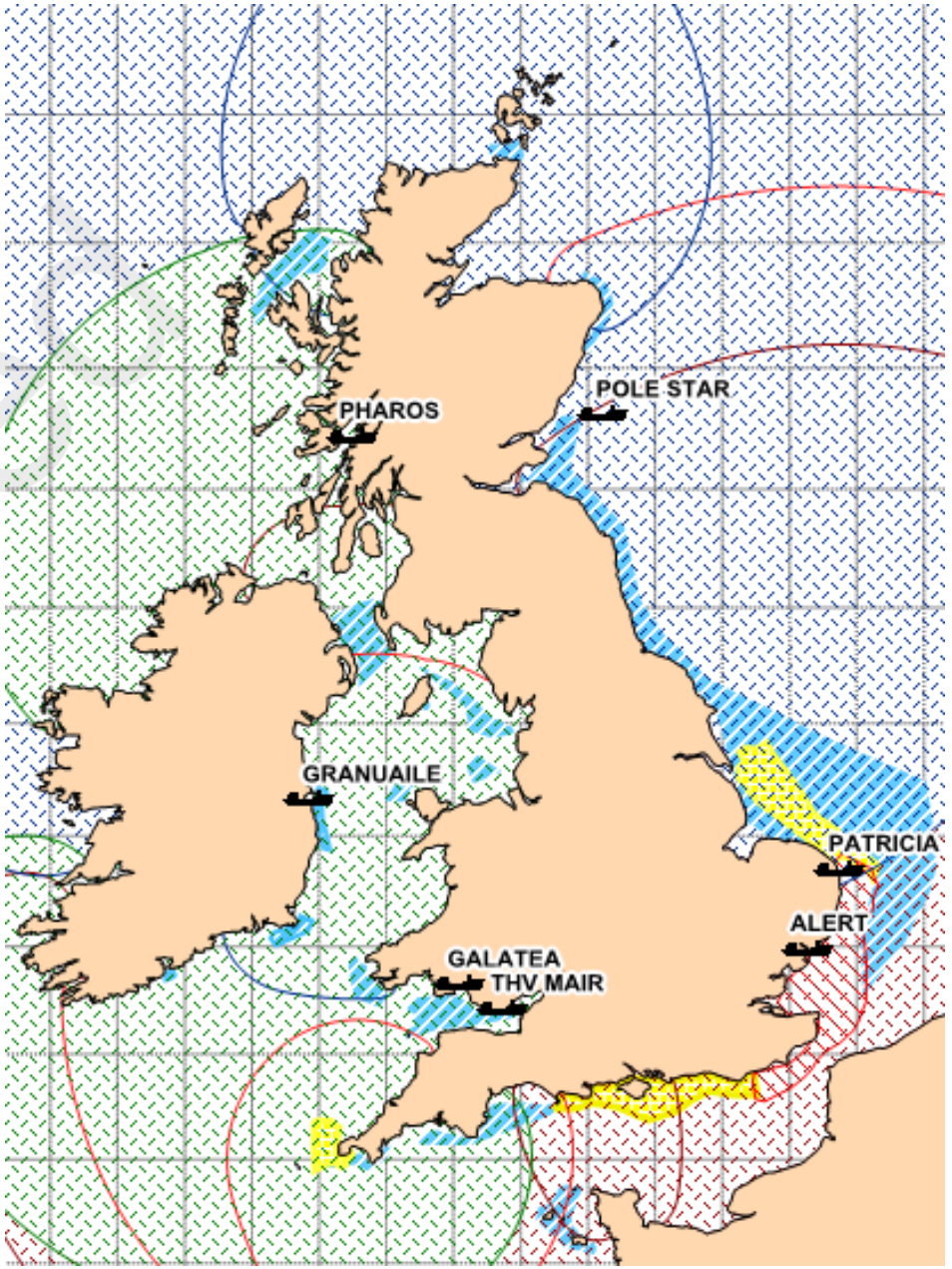
ALERT - HARWICH
GALATEA - SWANSEA
GRANUAILE - DUN LAOGHAIRE
PATRICIA - NORTH WEST SCROBY
PHAROS - OBAN
POLE STAR - DUNDEE
THV MAIR - BARRY





12 Hrs RRC

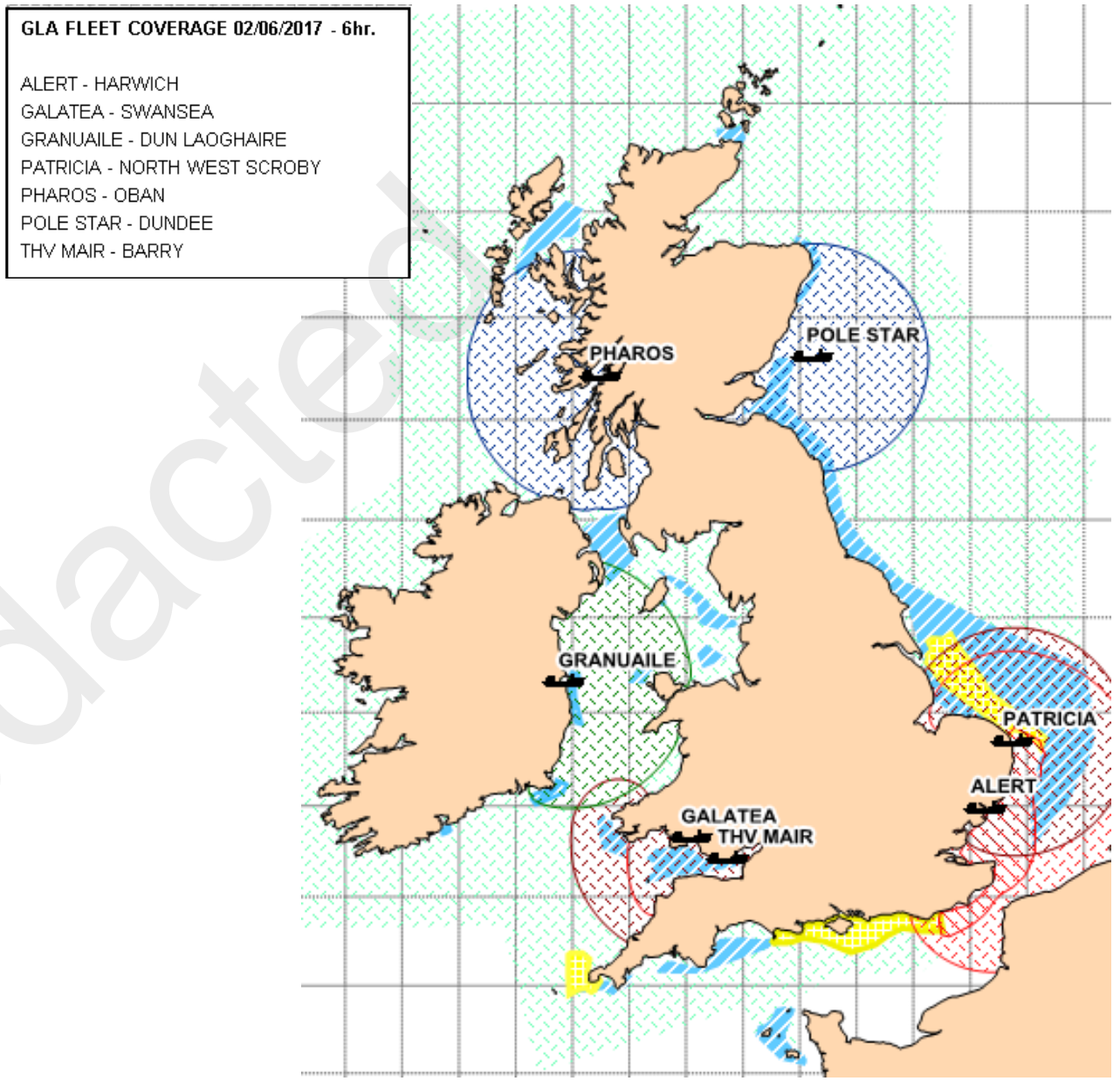
24 Hrs RRC

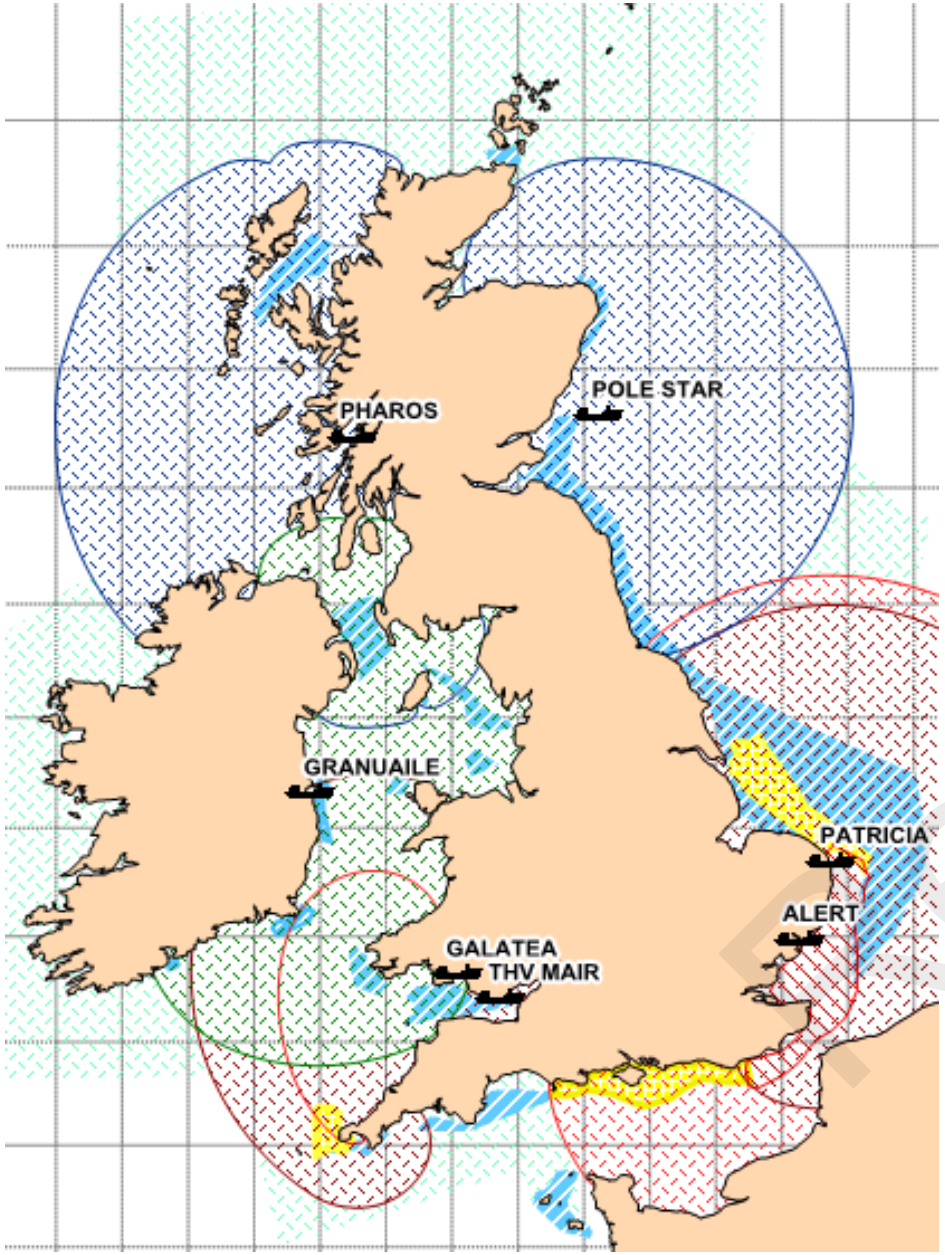


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

2nd Jun 2017	7 Vessel Scenario – Actual Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Yarmouth area buoy work, made passage to Cork anchorage off Harwich*
THV Galatea(12)	*Depart Swansea towards SW Wave Hub and carried out local Light inspections*
THV Alert(16)	*Harwich; shifted LF03 down the quay into the SW berth on TH Pier; removed solar panels from LV05 on stream mooring.*
MV Mair(10)	*Barry. Risk response cover. ISO advisor on board.*
NLV Pharos(12)	*Oban repairs*
NLV Pole Star(10)	*Made passage to Lidar buoy, fit new diesel generator; passage to Bell Rock pm*
ILV Granuaile(12)	*Dun Laoghaire discharging*

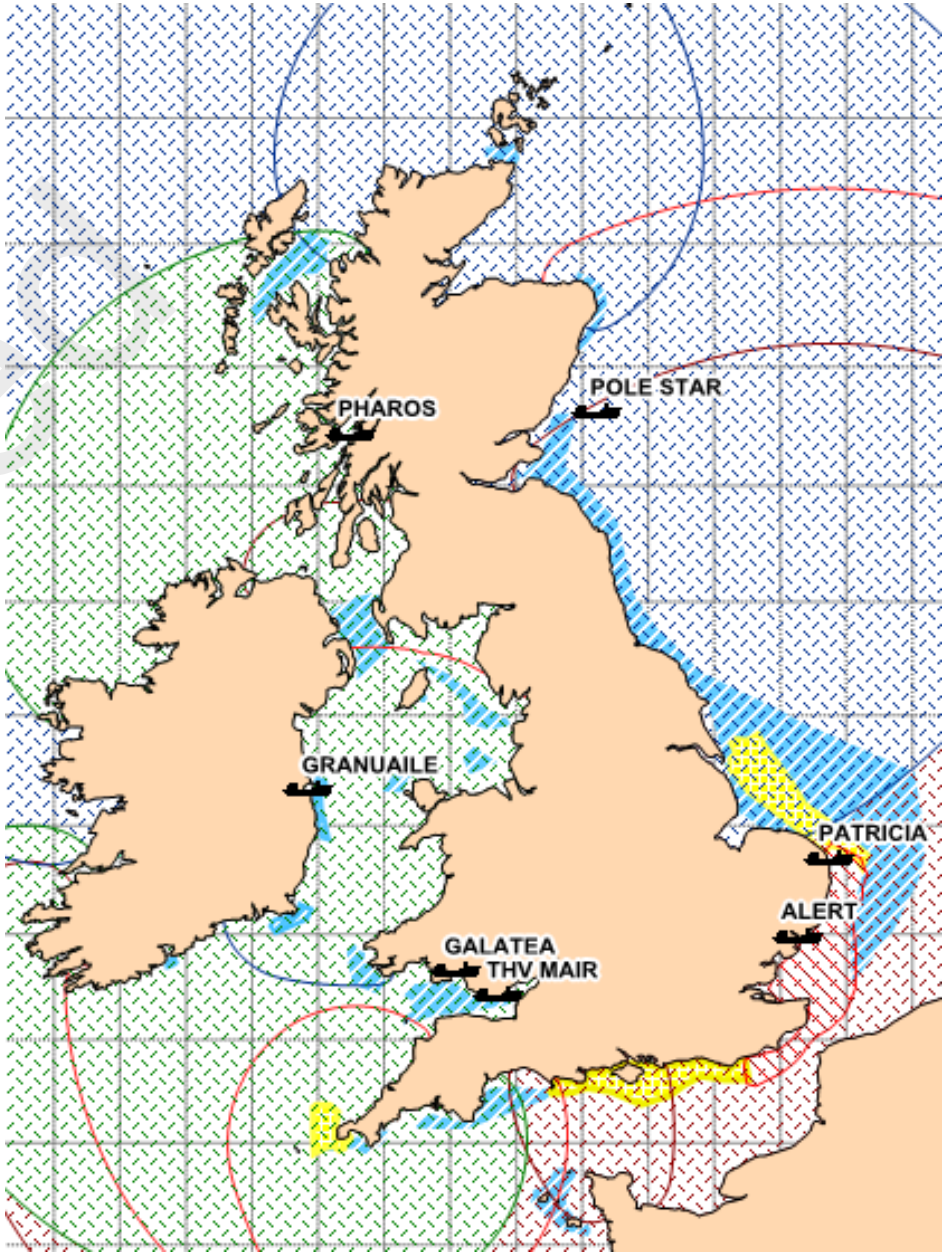
Wreck, AtoN Casualty, RRC Incidents	
None	





12 Hrs RRC

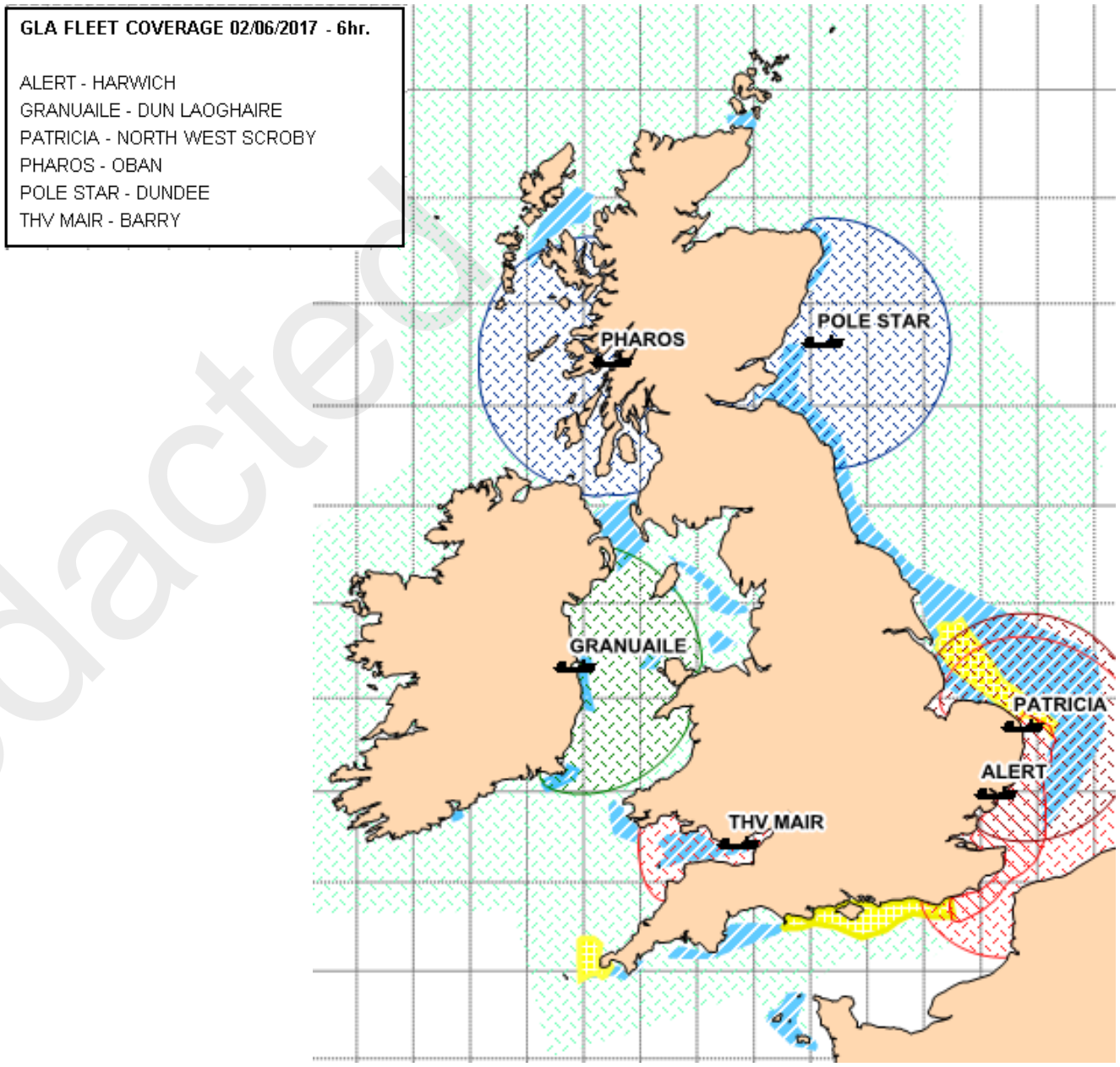
24 Hrs RRC

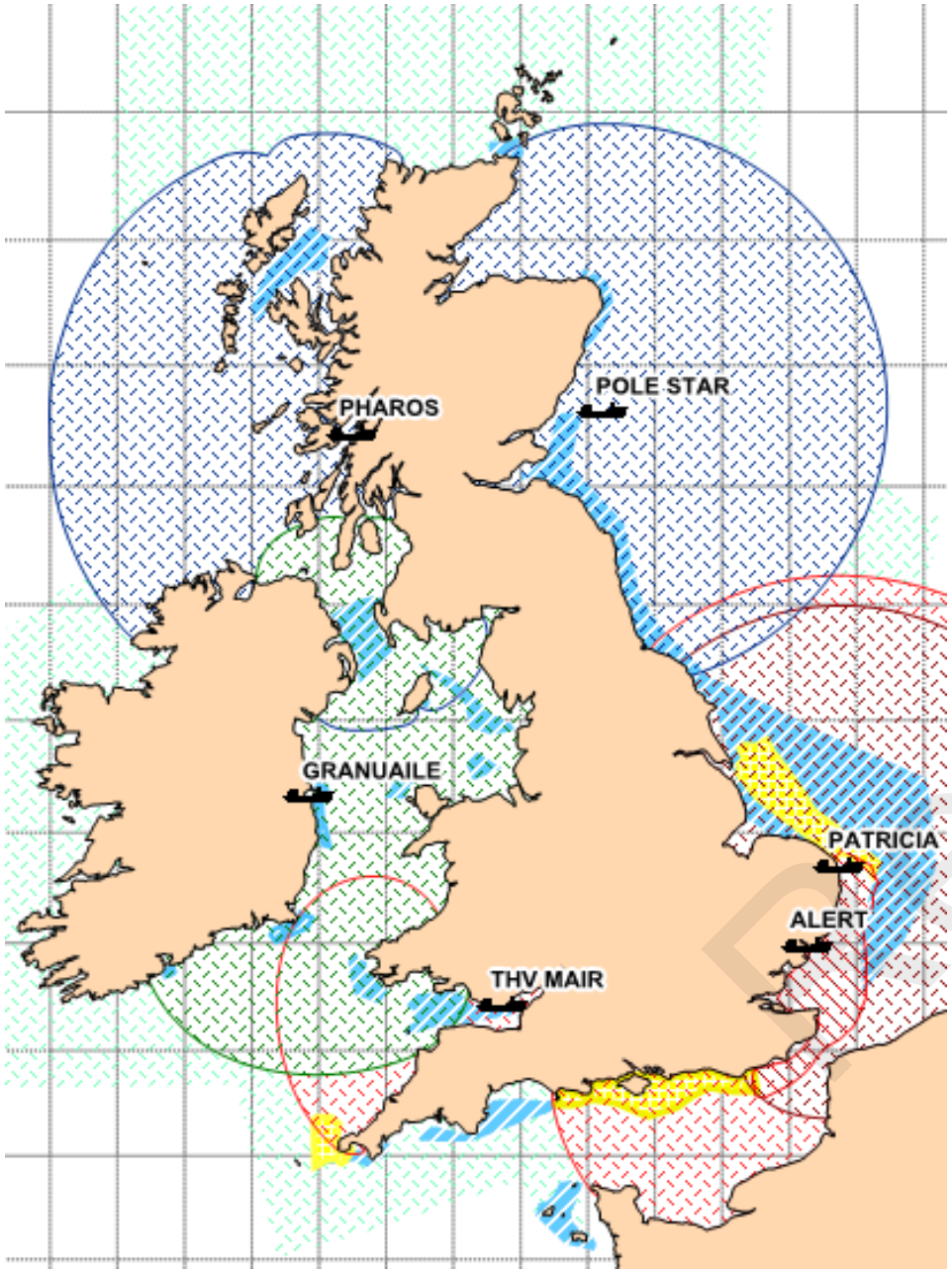


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

2nd Jun 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Yarmouth area buoy work, made passage to Cork anchorage off Harwich*
THV Galatea(12)	***REMOVE***
THV Alert(16)	*Harwich; shifted LF03 down the quay into the SW berth on TH Pier; removed solar panels from LV05 on stream mooring.*
MV Mair(10)	*Barry. Risk response cover. ISO advisor on board.*
NLV Pharos(12)	*Oban repairs*
NLV Pole Star(11)	*Made passage to Lidar buoy, fit new diesel generator; passage to Bell Rock pm*
ILV Granuaile(12)	*Dun Laoghaire discharging*

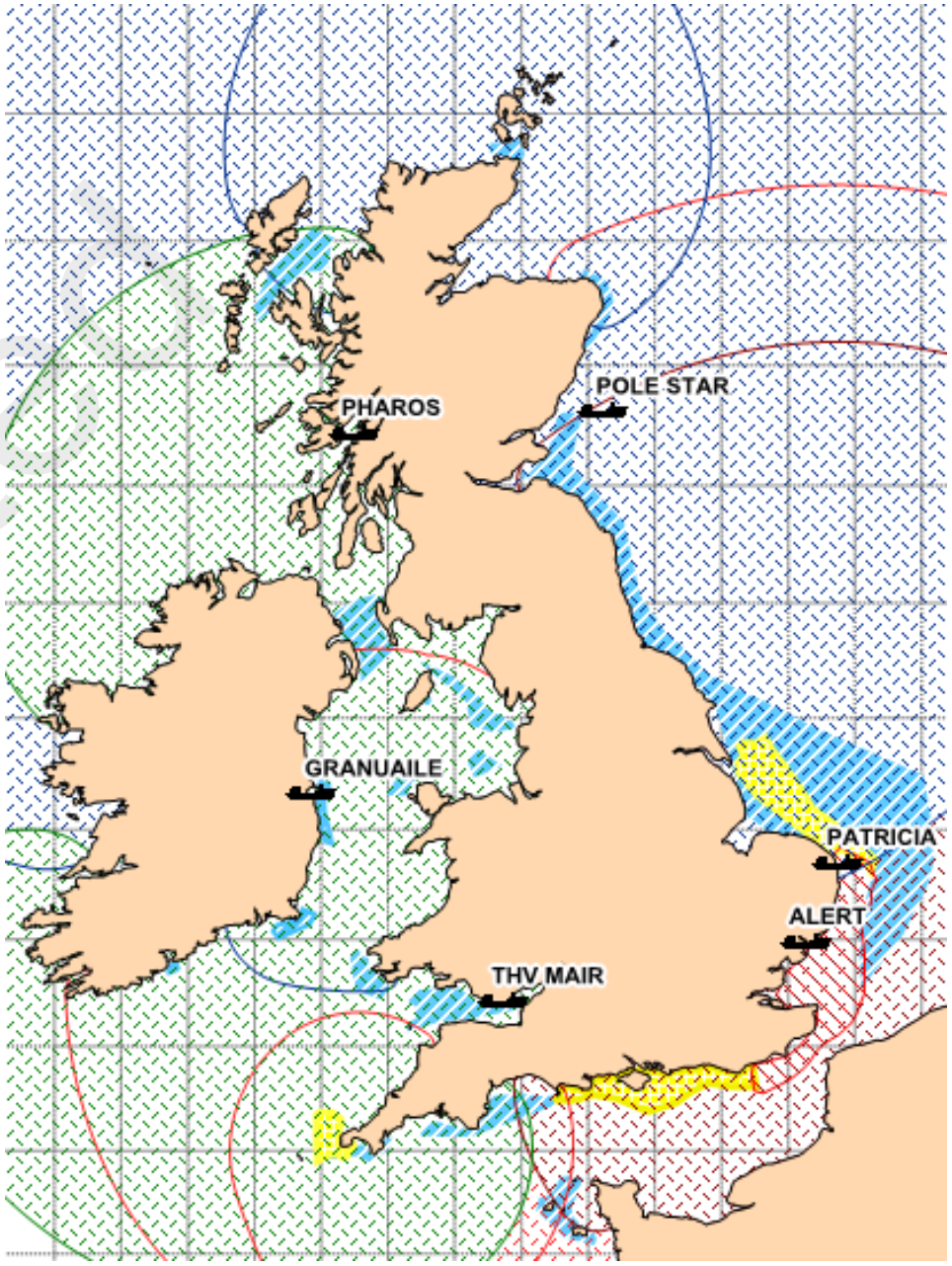
Wreck, AtoN Casualty, RRC Incidents	
Land's End 12 Hrs RRC Area	*44% Coverage*





12 Hrs RRC

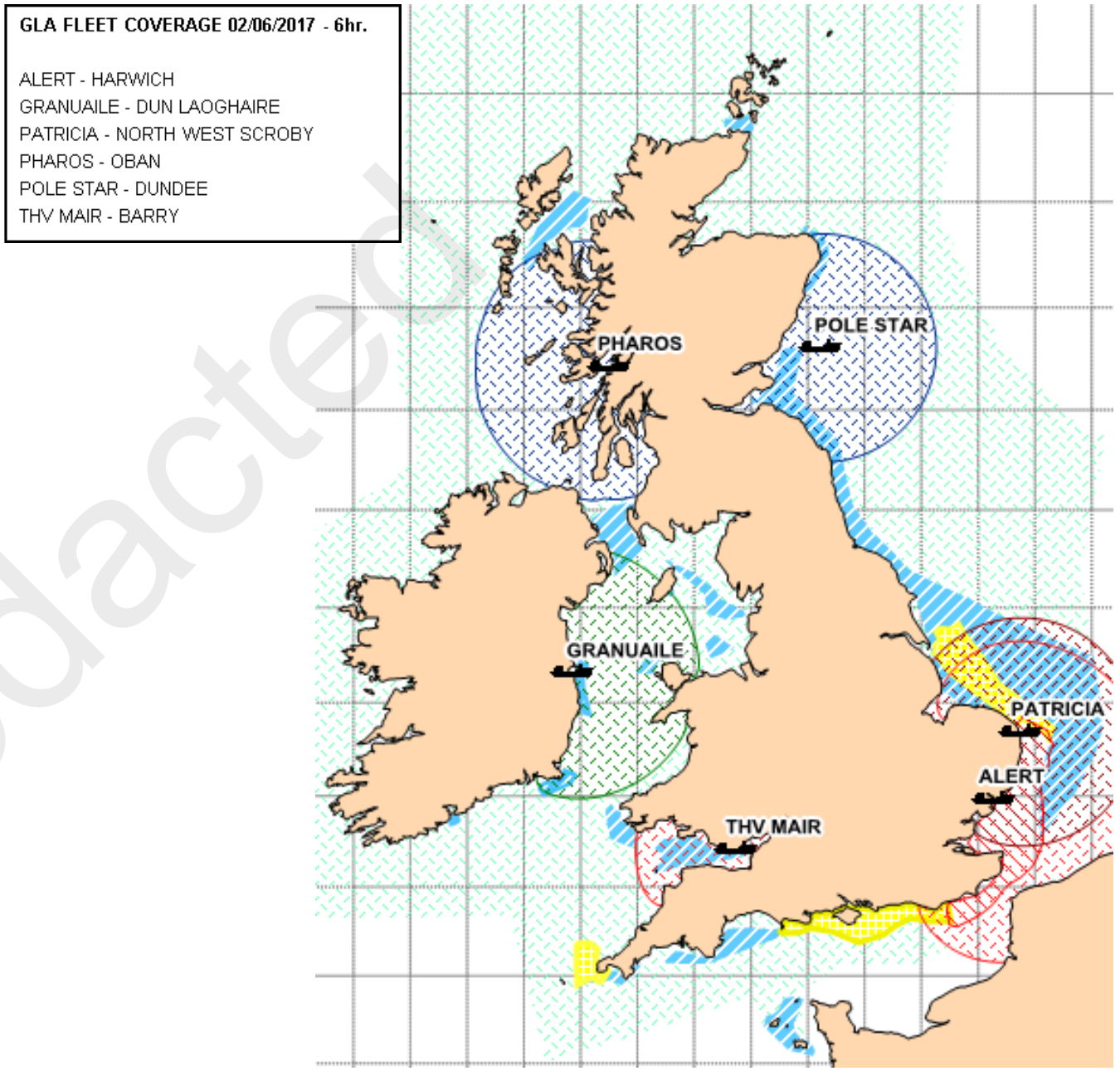
24 Hrs RRC

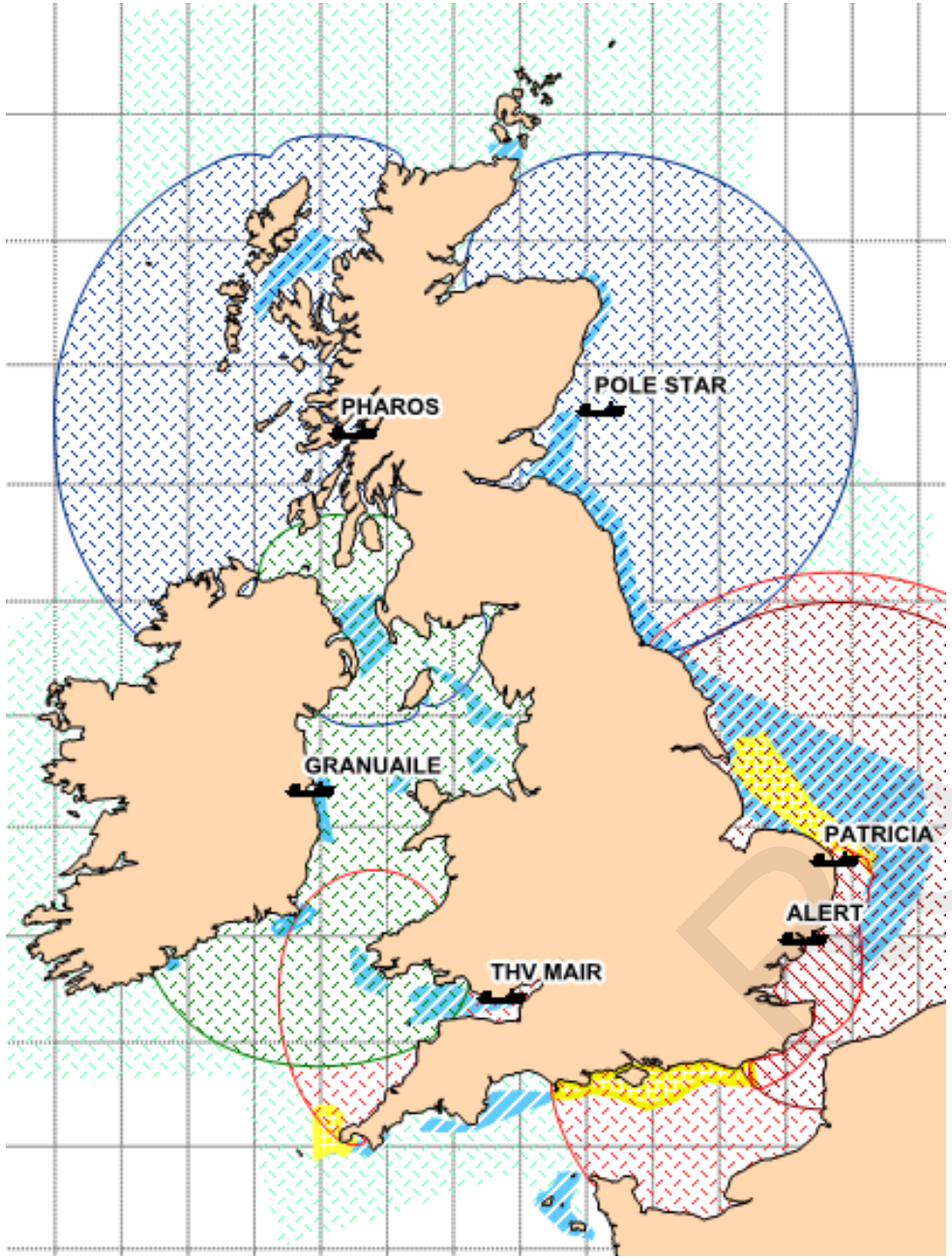


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	44%	THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV M...

2nd Jun 2017	6 Vessel Scenario – Actual Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Yarmouth area buoy work, made passage to Cork anchorage off Harwich*
THV Galatea(12)	***REMOVE***
THV Alert(16)	*Harwich; shifted LF03 down the quay into the SW berth on TH Pier; removed solar panels from LV05 on stream mooring.*
MV Mair(10)	*Barry. Risk response cover. ISO advisor on board.*
NLV Pharos(12)	*Oban repairs*
NLV Pole Star(11)	*Made passage to Lidar buoy, fit new diesel generator; passage to Bell Rock pm*
ILV Granuaile(12)	*Dun Laoghaire discharging*

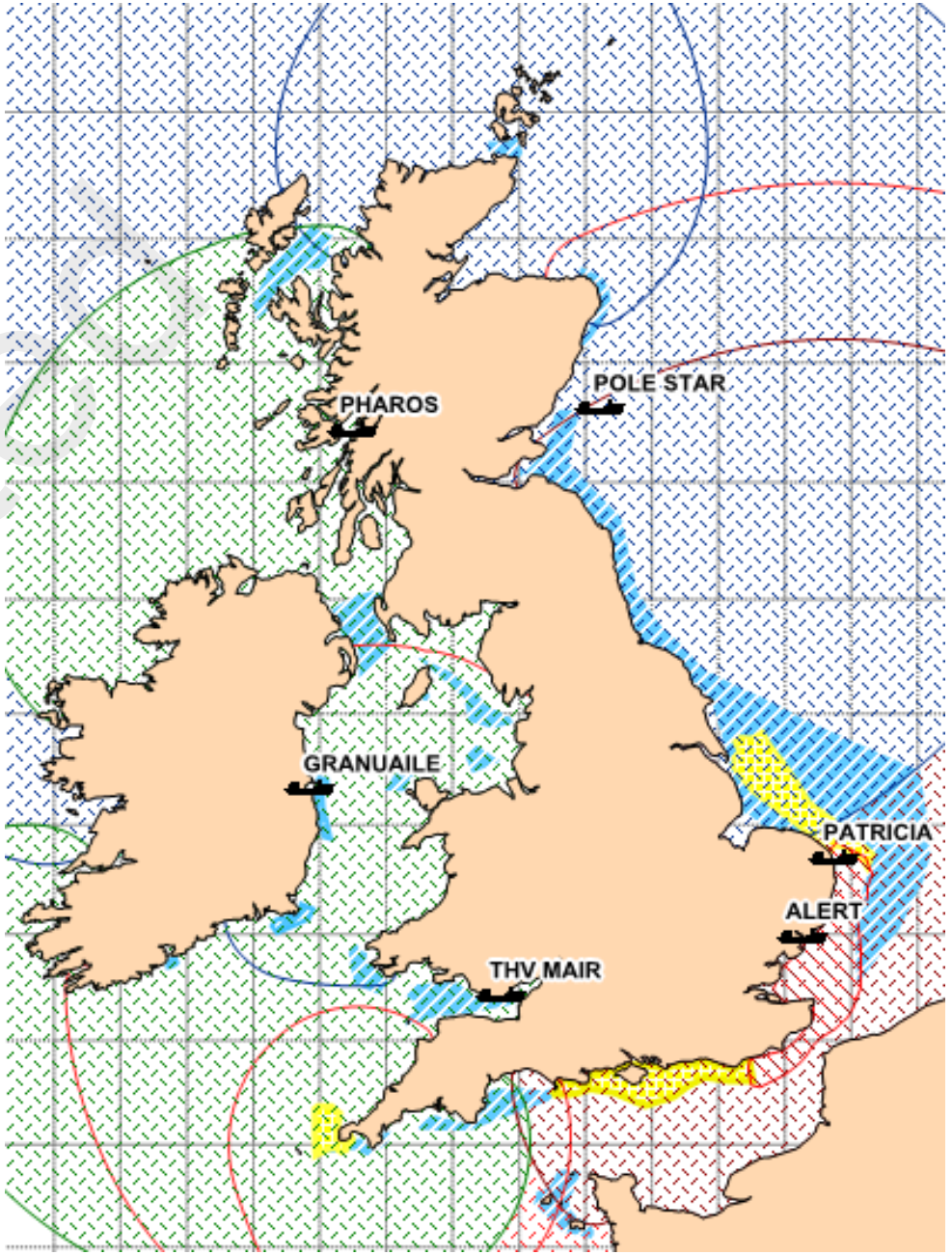
Wreck, AtoN Casualty, RRC Incidents	
Land's End 12 Hrs RRC Area	*44% Coverage*





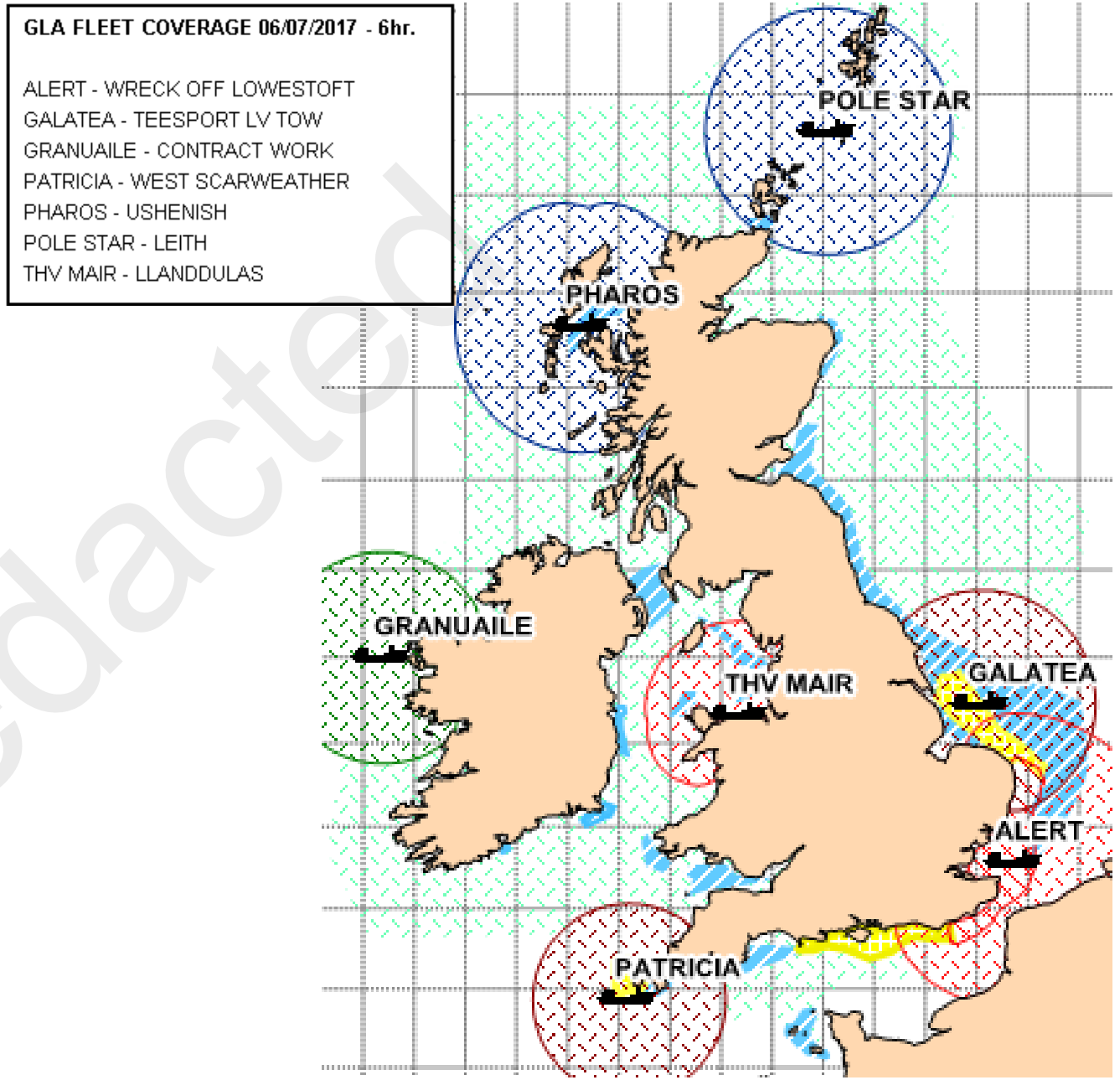
12 Hrs RRC

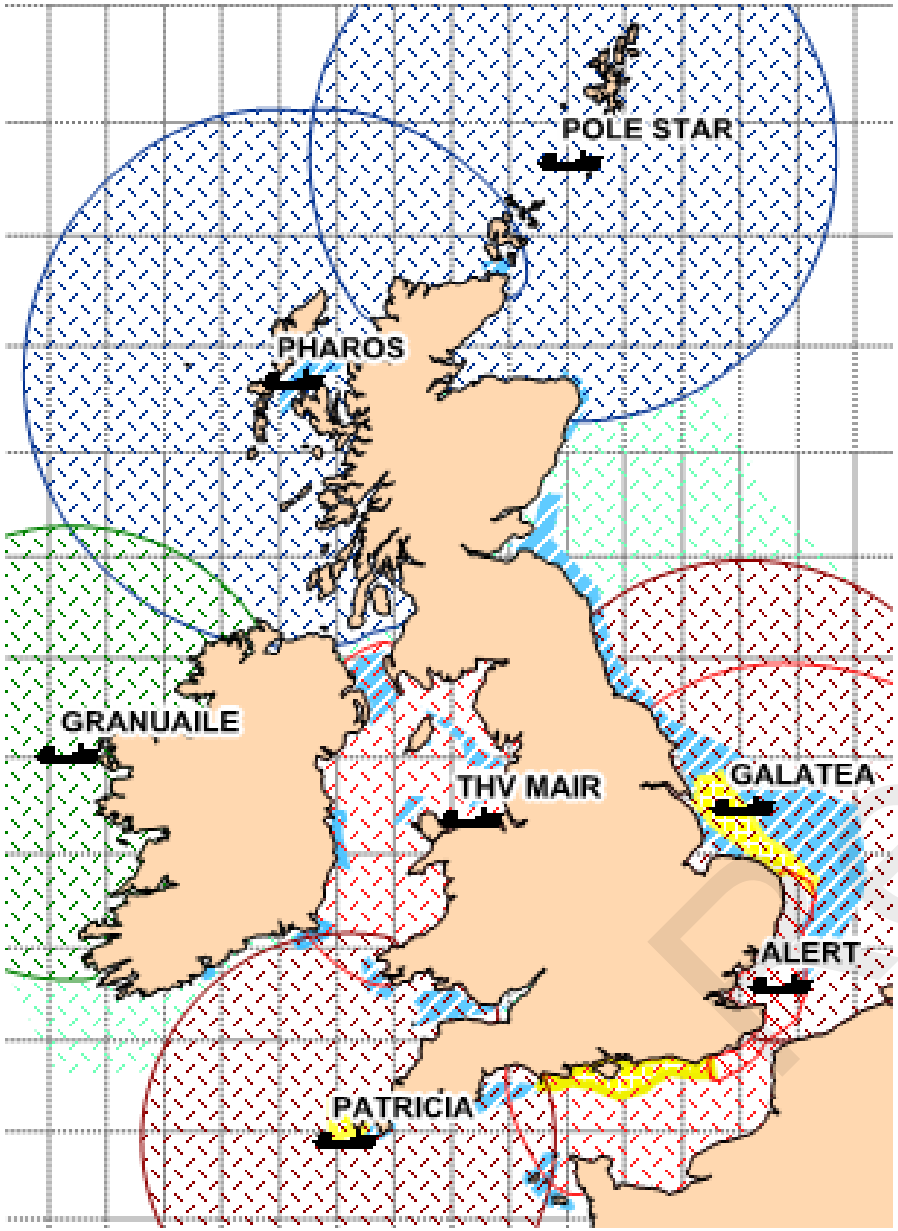
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	44%	THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, POLE STAR, THV M...

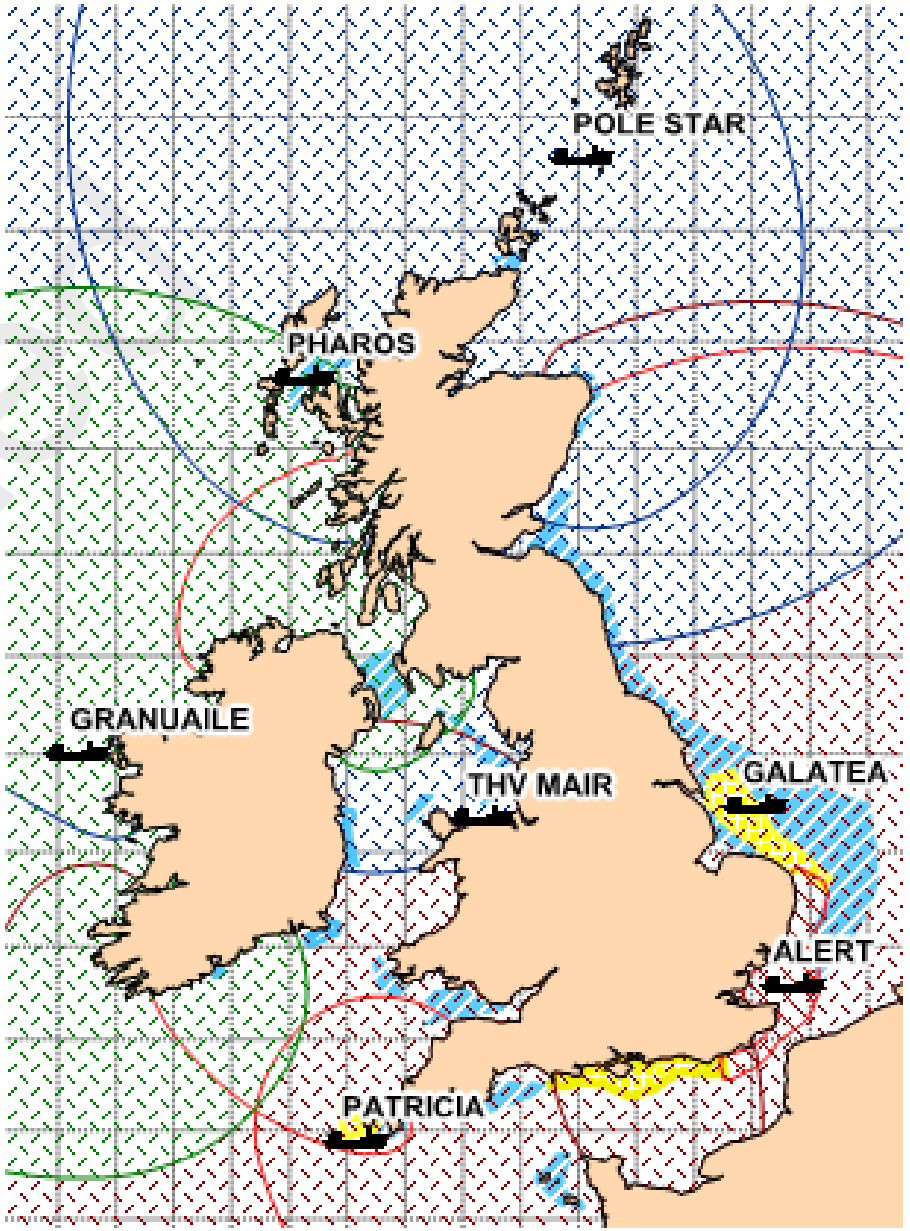
6th July 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Penzance Buoywork*
THV Galatea(12)	*Wash Area- MFA Tow*
THV Alert(16)	*Dover / Estuary Buoywork*
MV Mair(10)	*North Wales Coast buoywork*
NLV Pharos(12)	*Ushenish Heli-ops*
NLV Pole Star(11)	*Orkney & Shetland Buoywork*
ILV Granuaile(12)	*West Coast Buoy Work*





12 Hrs RRC

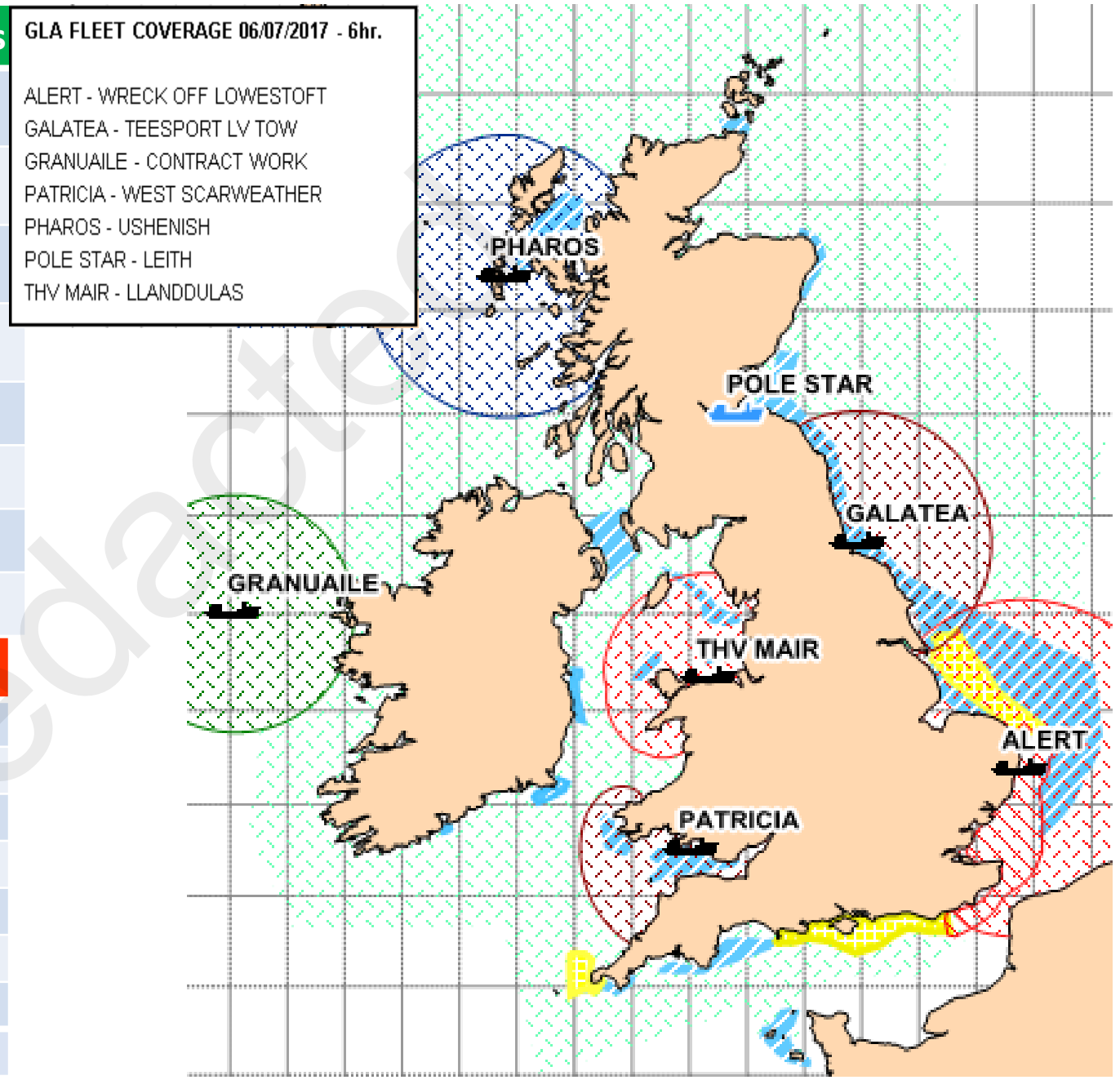
24 Hrs RRC

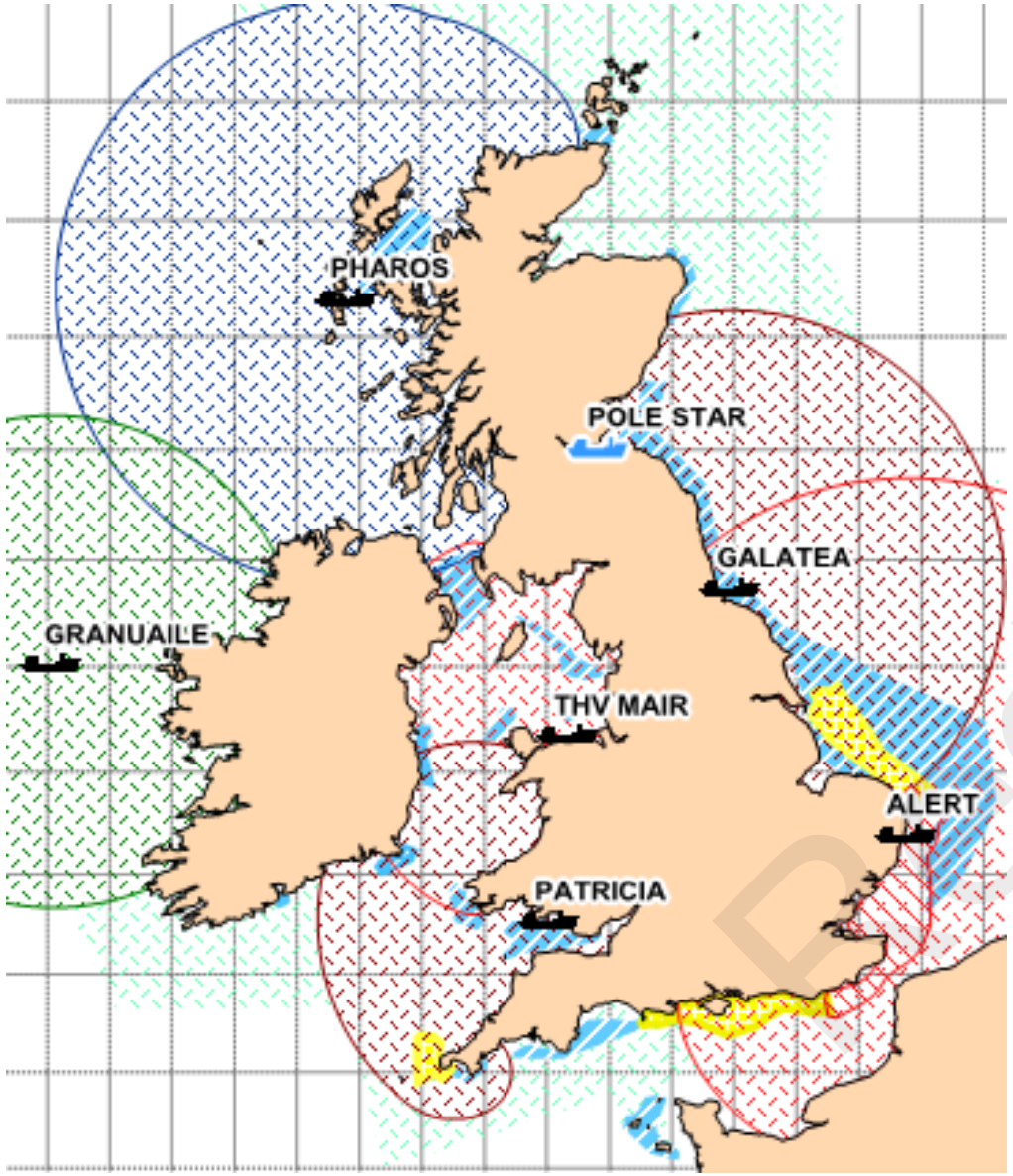


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, GALATEA, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

6th Jul 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea(12)	*Tees; commenced tow of LV05 towards Harwich*
THV Alert(16)	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair(10)	*N Wales;* [redacted] *contract work*
NLV Pharos(12)	*Heli-Ops Ushenish LH*
NLV Pole Star(11)	*Alongside Leith for UMS alarm works*
ILV Granuaile(12)	[redacted] *Contract work*

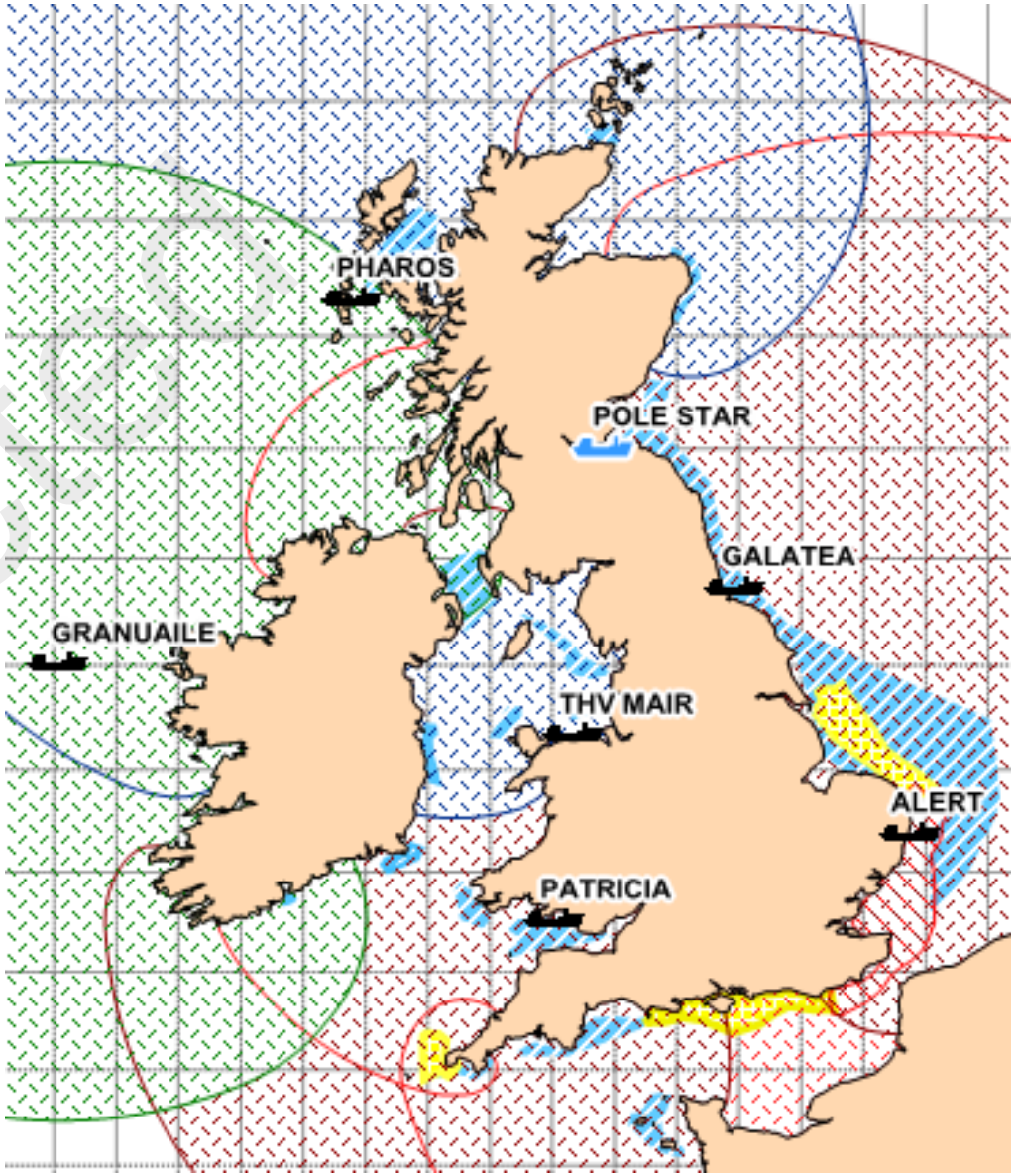
Wreck, AtoN Casualty, RRC Incidents	
Pole Star Praxis UMS change out	*Incident Report No.65*
Ella Wreck	*Incident Report No.69*
Cromer to Dover 6 Hrs RRC	*95% Coverage*
Portland to Beachy 12 Hrs RRC	*90% Coverage*
LV05 Tow	*Incident Report No.70*
Humber to Cromer 12 Hrs RRC	*100% Coverage*
Southern North Sea to Tay 24 Hrs RRC	*100% coverage*
Sevenstones AIS outage	Incident Report No.67





12 Hrs RRC

24 Hrs RRC

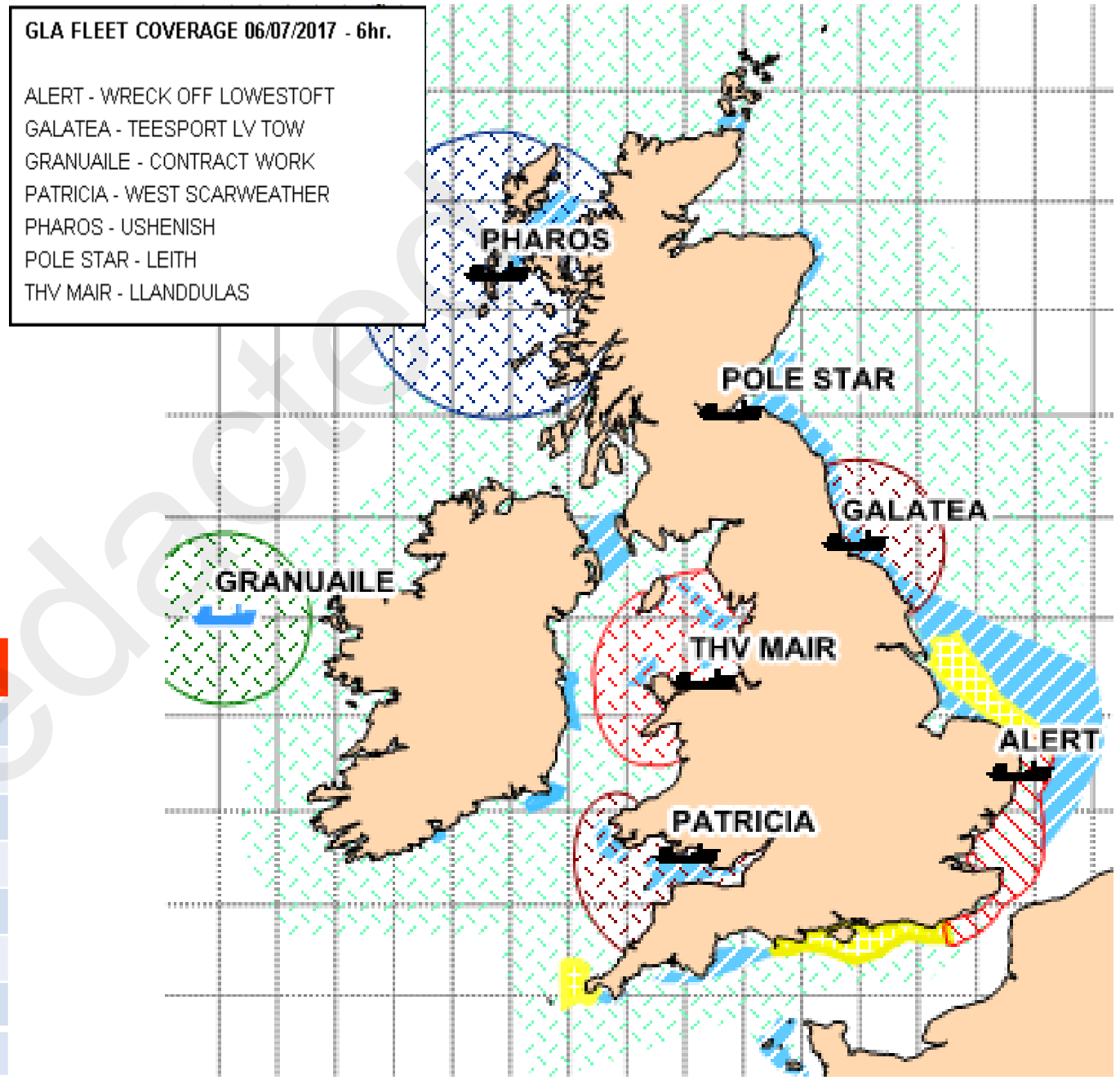


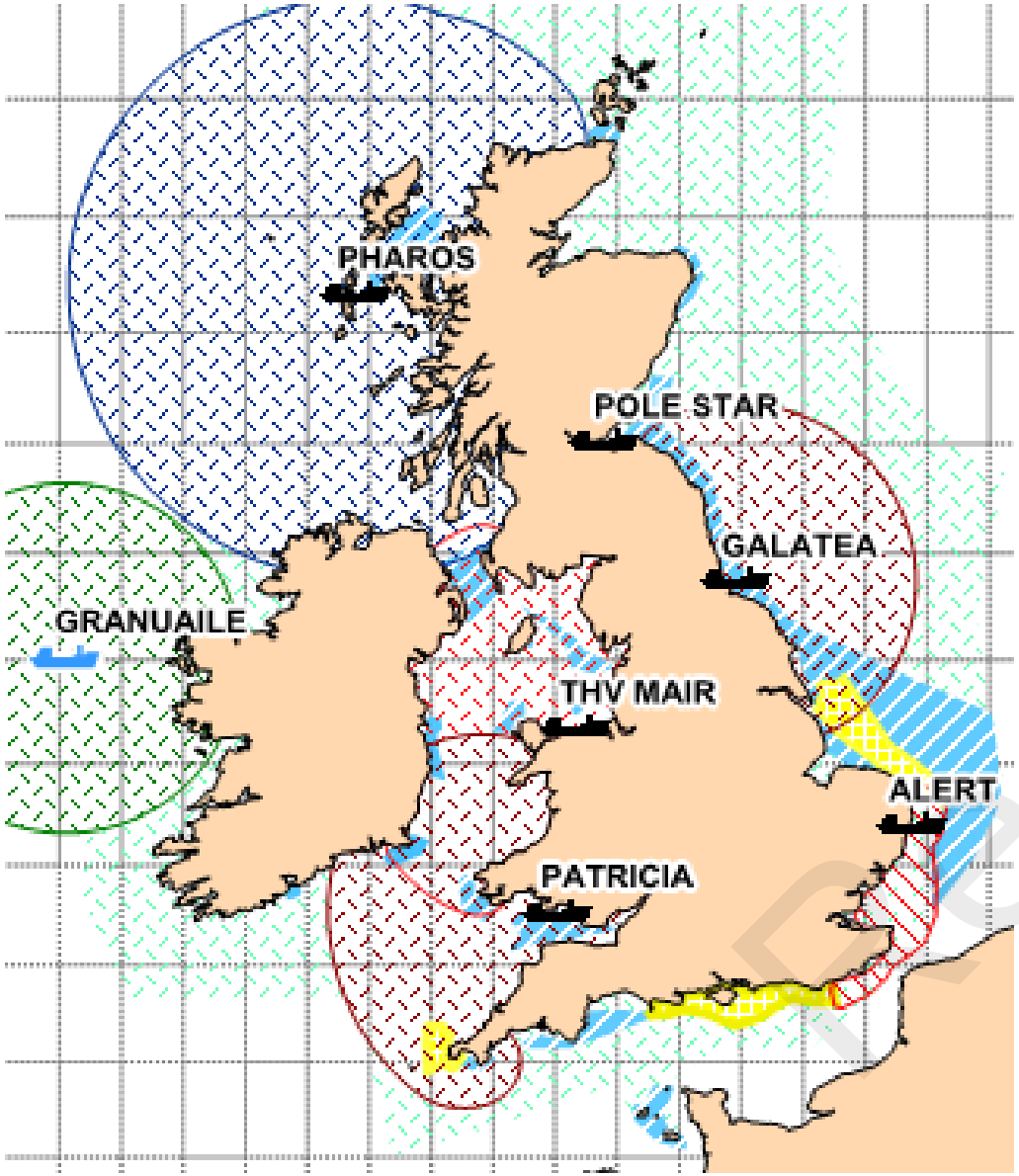
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	95%	ALERT
2	PORTLAND BILL TO BEACHY HEAD	12	No	90%	ALERT
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, GALATEA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	GALATEA, PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

6th Jul 2017	7 Vessel Scenario - Actual
Vessel Name (Speed Kts)	
THV Patricia (12)	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea (8)	*Tees; commenced tow of LV05 towards Harwich*
THV Alert (0)	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair (10)	*N Wales;* [redacted] *contract work*
NLV Pharos (12)	*Heli-Ops Ushenish LH*
NLV Pole Star (0)	*Alongside Leith for UMS alarm works*
ILV Granuaile (8)	[redacted] *Contract work*

Wreck, AtoN Casualty, RRC Incidents

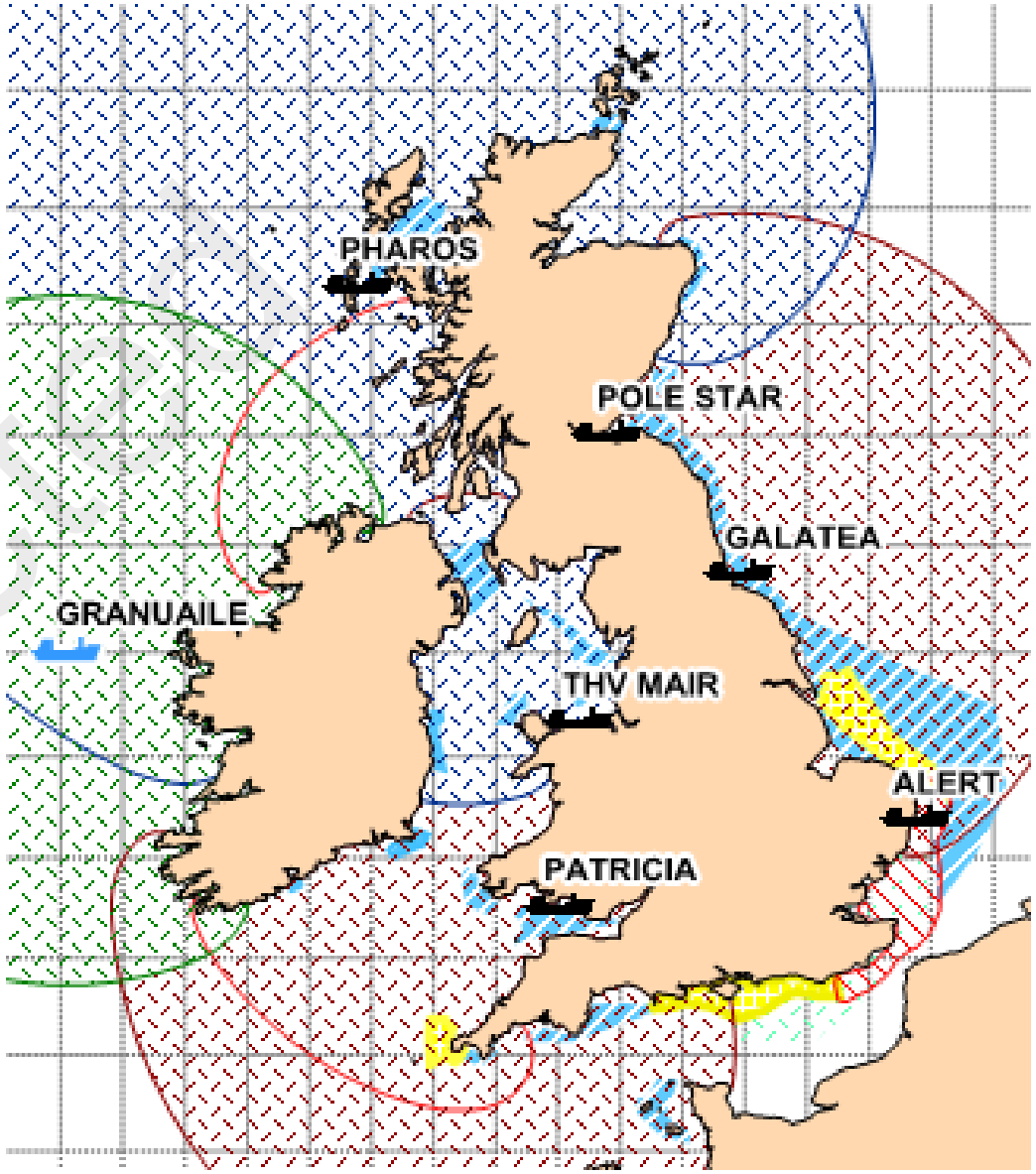
Pole Star Praxis UMS change out	*Incident Report No.65*
Ella Wreck	*Incident Report No.69*
Cromer to Dover 6 Hrs RRC	*0% Coverage*
Portland to Beachy 12 Hrs RRC	*0% Coverage*
Humber to Cromer 12 Hrs RRC	*34% Coverage*
Southern North Sea to Tay 24 Hrs RRC	*93% coverage*
LV05 Tow	*Incident Report No.70*
Sevenstones AIS outage	Incident Report No.67





12 Hrs RRC

24 Hrs RRC



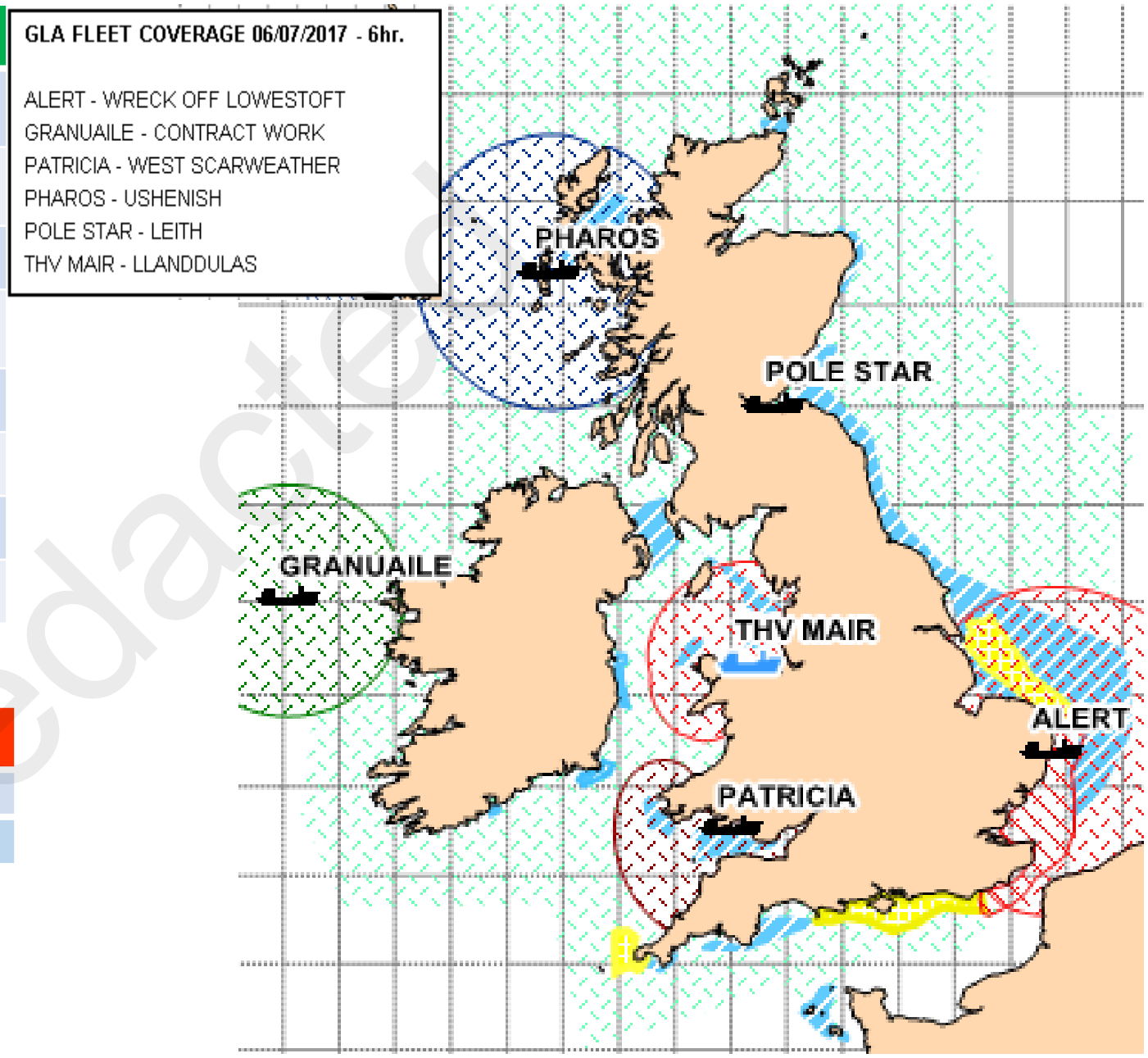
Response Region Coverage

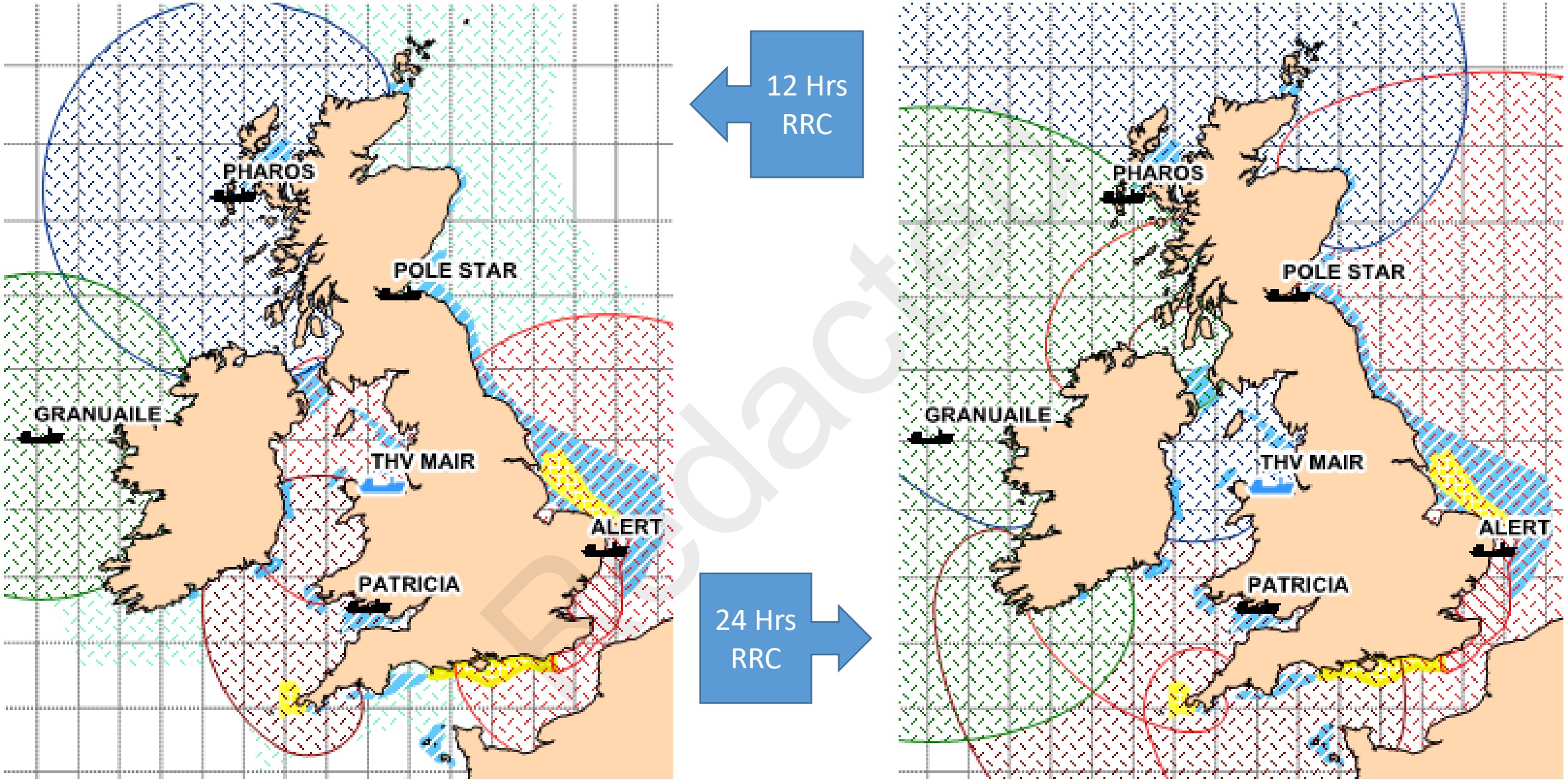
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	0%	
2	PORTLAND BILL TO BEACHY HEAD	12	No	0%	
3	HUMBER TO CROMER	12	No	34%	GALATEA
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	93%	GALATEA
7	ABERDEEN AND NE COAST	24	Yes	100%	GALATEA, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	PATRICIA
22	BRITISH ISLES	48	Yes	100%	GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

6th Jul 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea(12)	***REMOVED***
THV Alert(16)	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair(10)	*N Wales;* [redacted] *contract work*
NLV Pharos(12)	*Heli-Ops Ushenish LH*
NLV Pole Star(11)	*Alongside Leith for UMS alarm works*
ILV Granuaile(12)	[redacted] *Contract work*

Wreck, AtoN Casualty, RRC Incidents	
Cromer to Dover 6 Hrs RRC	*95% Coverage*
Portland to Beachy 12 Hrs RRC	*90% Coverage*

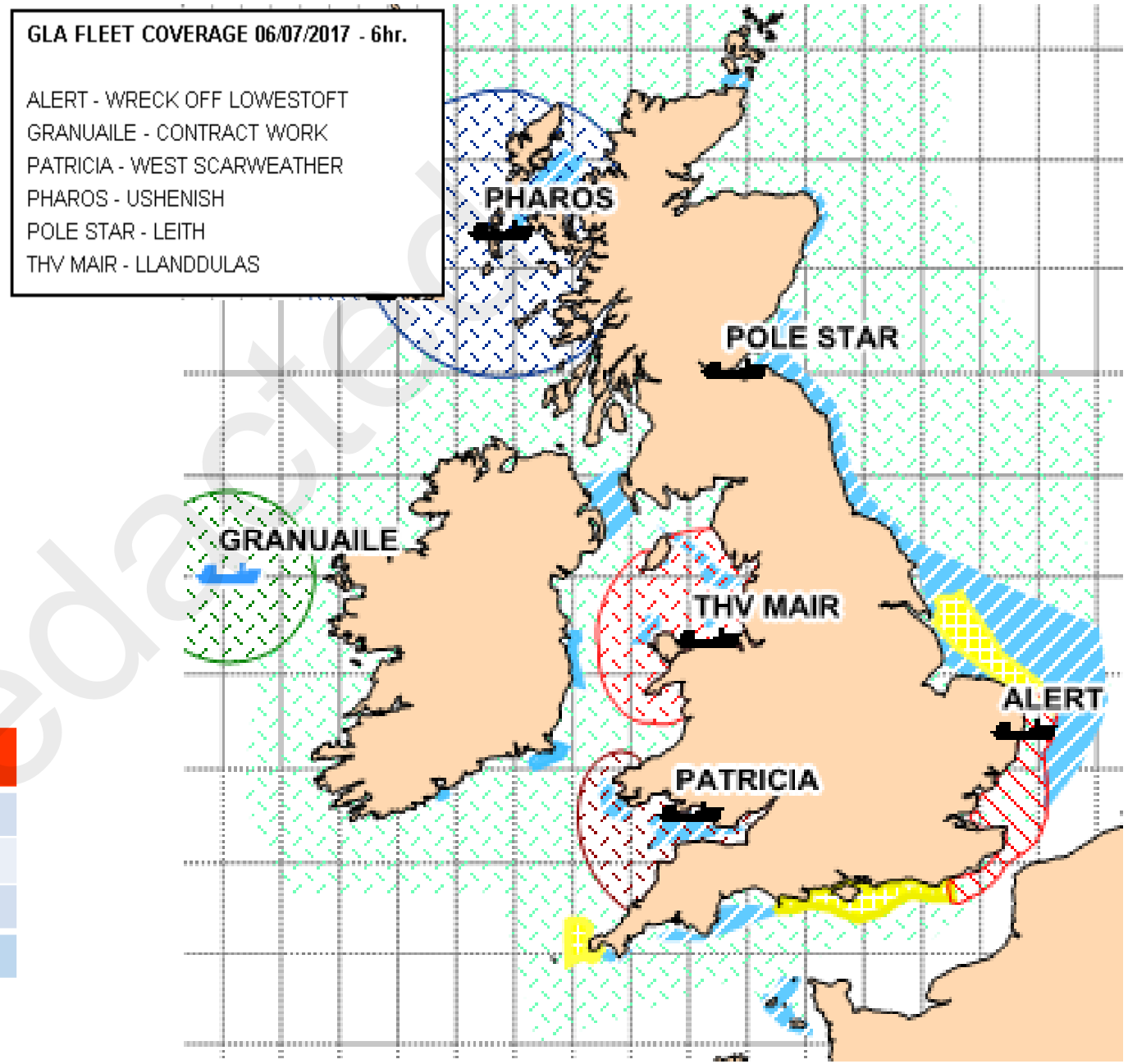


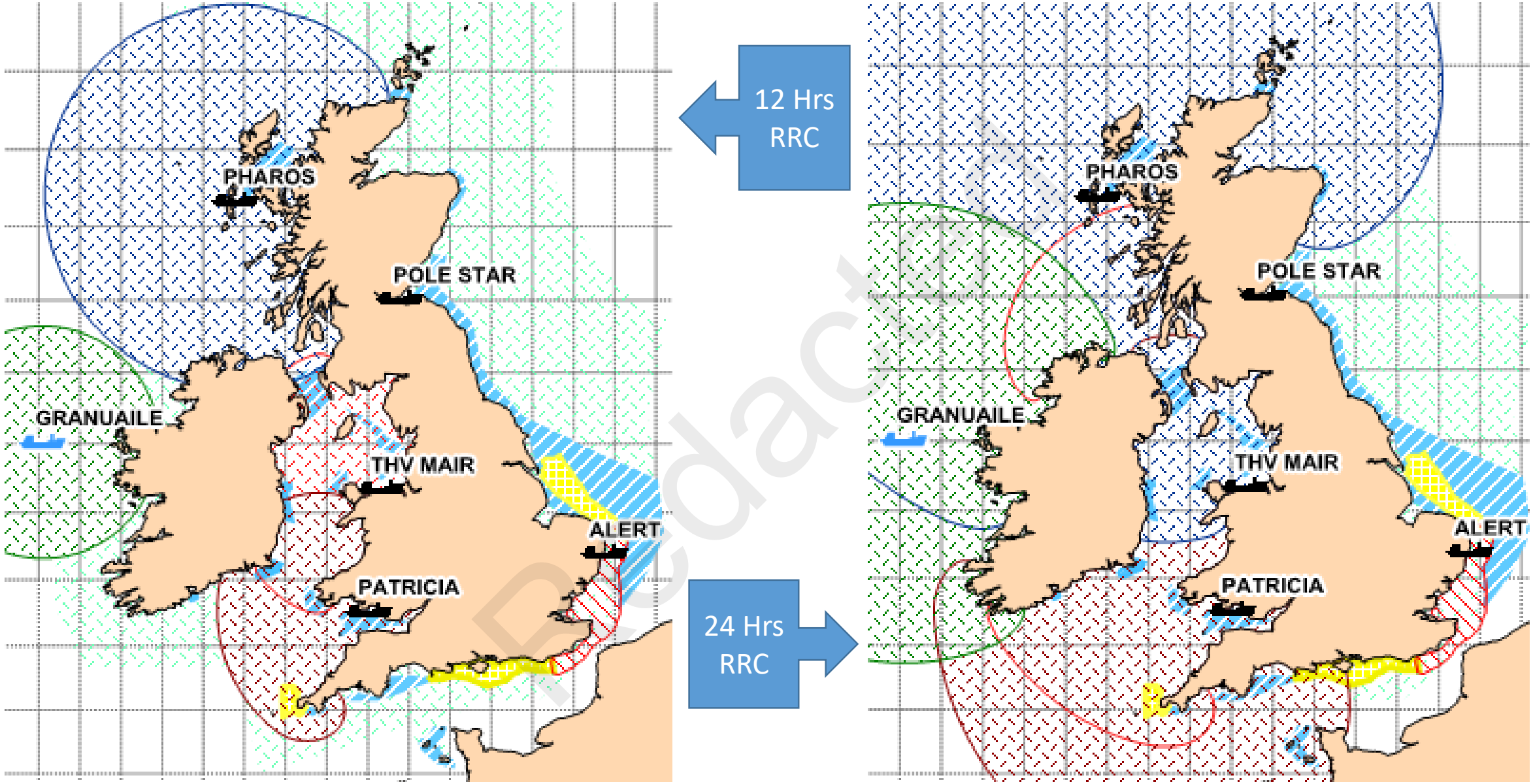

12 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA
24 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	95%	ALERT
2	PORTLAND BILL TO BEACHY HEAD	12	No	90%	ALERT
3	HUMBER TO CROMER	12	Yes	100%	ALERT
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GRANUAILE, PATRICIA, PHAROS, THV MAIR

6th Jul 2017	6 Vessel Scenario - Actual
Vessel Name (Speed Kts)	
THV Patricia (12)	*Mumbles; Technicians transferred to Mumbles LH for main light repairs*
THV Galatea (8)	***REMOVED***
THV Alert (0)	*Proceed to 'Ella' Wreck site to carry out wreck survey; laid 2 x EWMB's*
MV Mair (10)	*N Wales;* [redacted] *contract work*
NLV Pharos (12)	*Heli-Ops Ushenish LH*
NLV Pole Star (0)	*Alongside Leith for UMS alarm works*
ILV Granuaile (8)	[redacted] *Contract work*

Wreck, AtoN Casualty, RRC Incidents	
Cromer to Dover 6 Hrs RRC	*0% Coverage*
Portland to Beachy 12 Hrs RRC	*0% Coverage*
Humber to Cromer 12 Hrs RRC	*0% Coverage*
S. North Sea to Tay 24 Hrs RRC	*0% Coverage*




12 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA
24 Hrs
RRC
PHAROS
POLE STAR
GRANUAILE
THV MAIR
ALERT
PATRICIA

Response Region Coverage

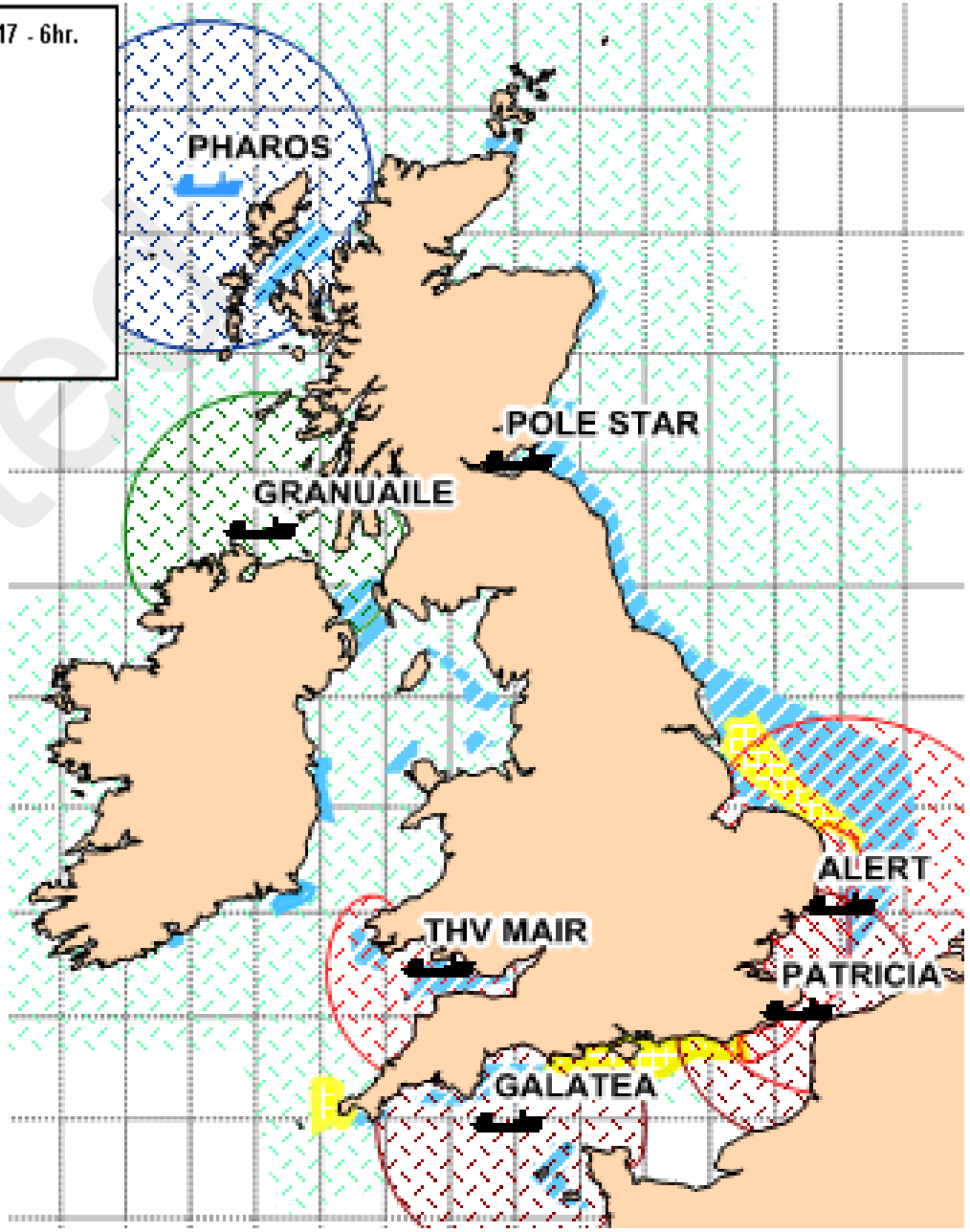
File Edit

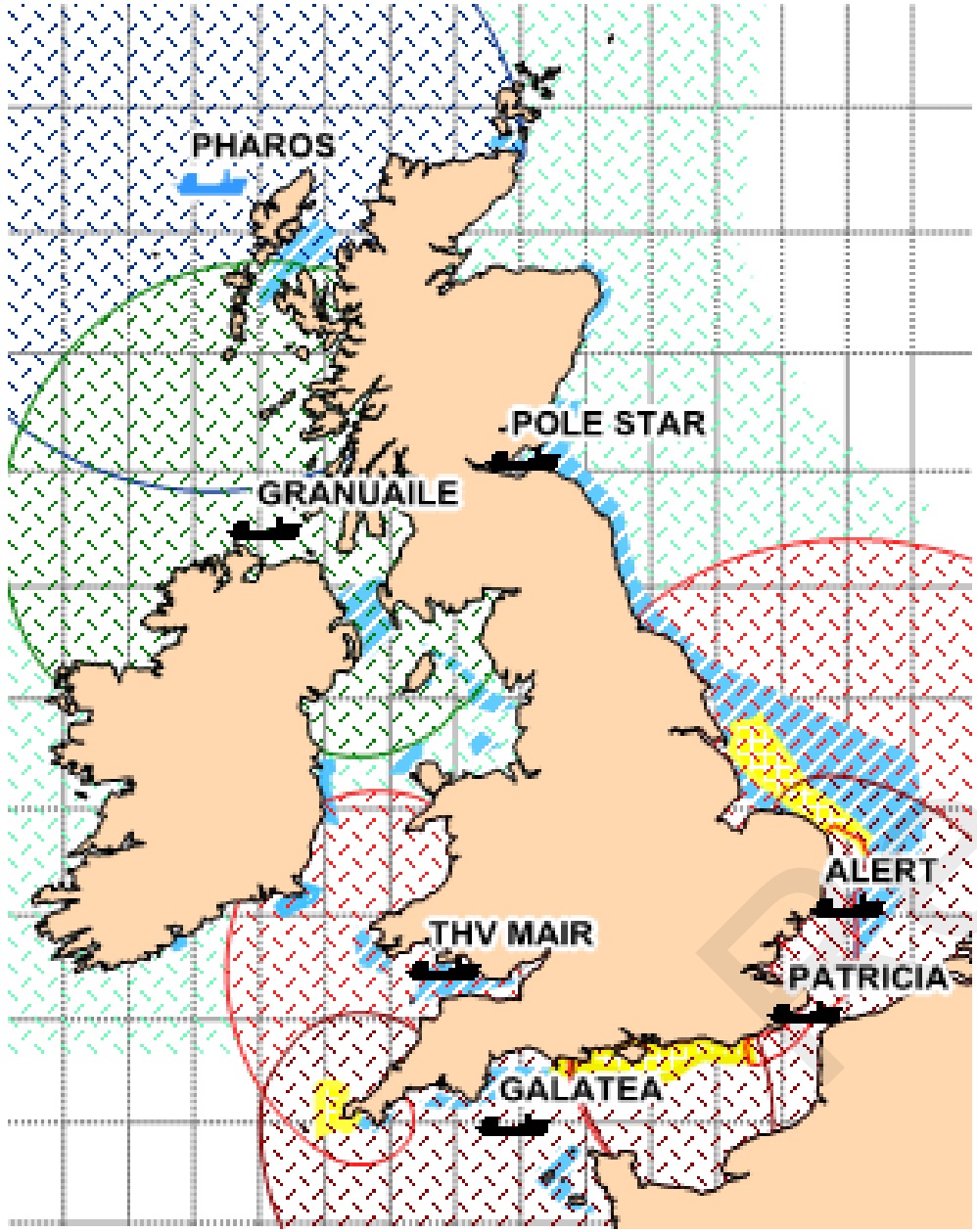
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	0%	
2	PORTLAND BILL TO BEACHY HEAD	12	No	0%	
3	HUMBER TO CROMER	12	No	0%	
4	LAND'S END	12	Yes	100%	PATRICIA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	No	0%	
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	PATRICIA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PATRICIA, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	PATRICIA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	PATRICIA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	PATRICIA
22	BRITISH ISLES	48	Yes	100%	GRANUAILE, PATRICIA, PHAROS, THV MAIR

25th Sept 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Dover Area – MFA Servicing*
THV Galatea(12)	*Channel LV – MFA Servicing*
THV Alert(16)	*Harwich Yarmouth Area - RRC*
MV Mair(10)	*Bristol Channel Survey work*
NLV Pharos(12)	*Flannans Heli-Ops*
NLV Pole Star(11)	*East Coast Self Refit*
ILV Granuaile(12)	*North Coast Buoy work*

GLA FLEET COVERAGE 25/09/2017 - 6hr.

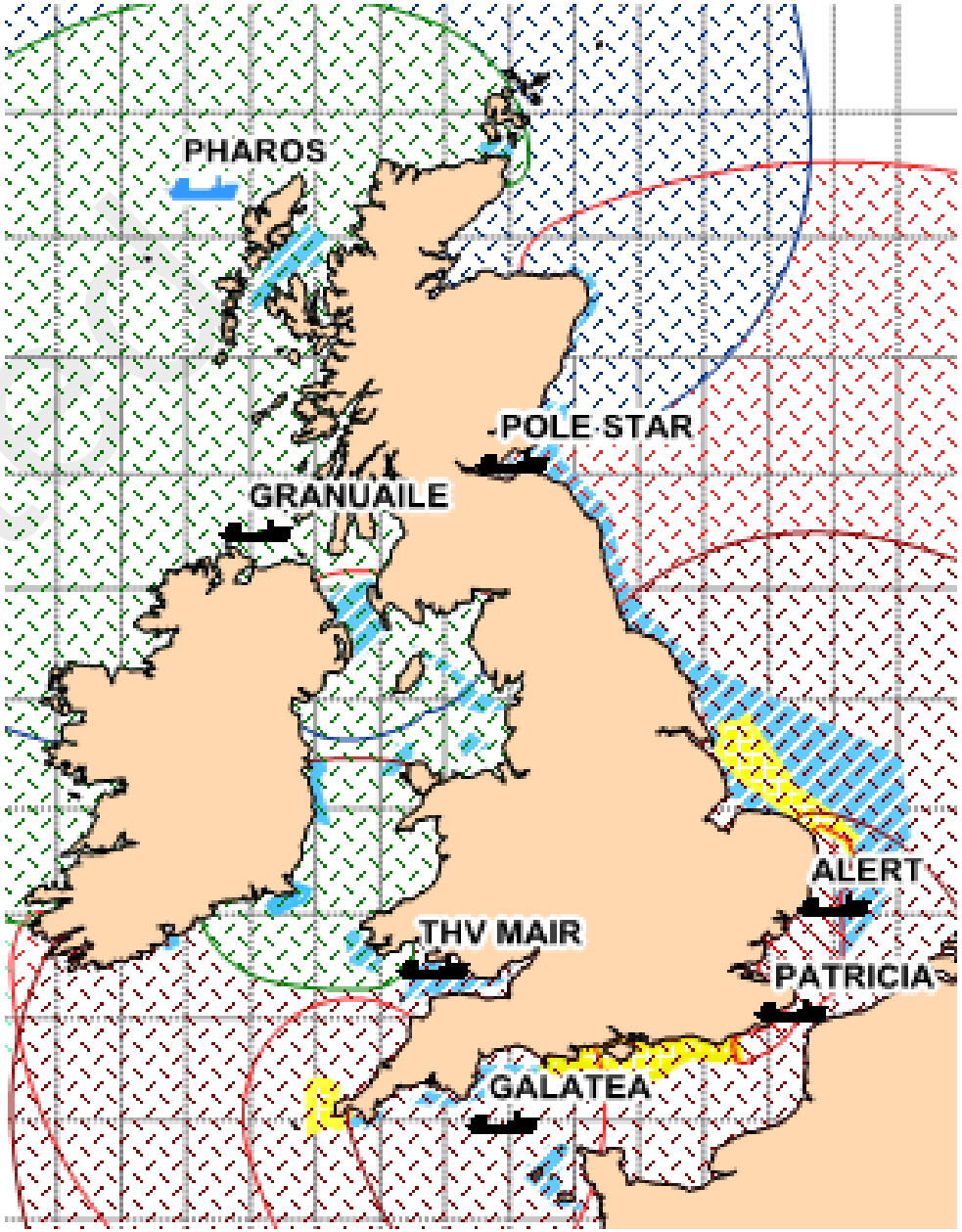
ALERT - HARWICH
GALATEA - PULLAR
GRANUAILE - COBH
PATRICIA - NORTH EAST VARNE
PHAROS - GRUINARD BAY
POLE STAR - LEITH - SELF REFIT
THV MAIR - EAST CULVER





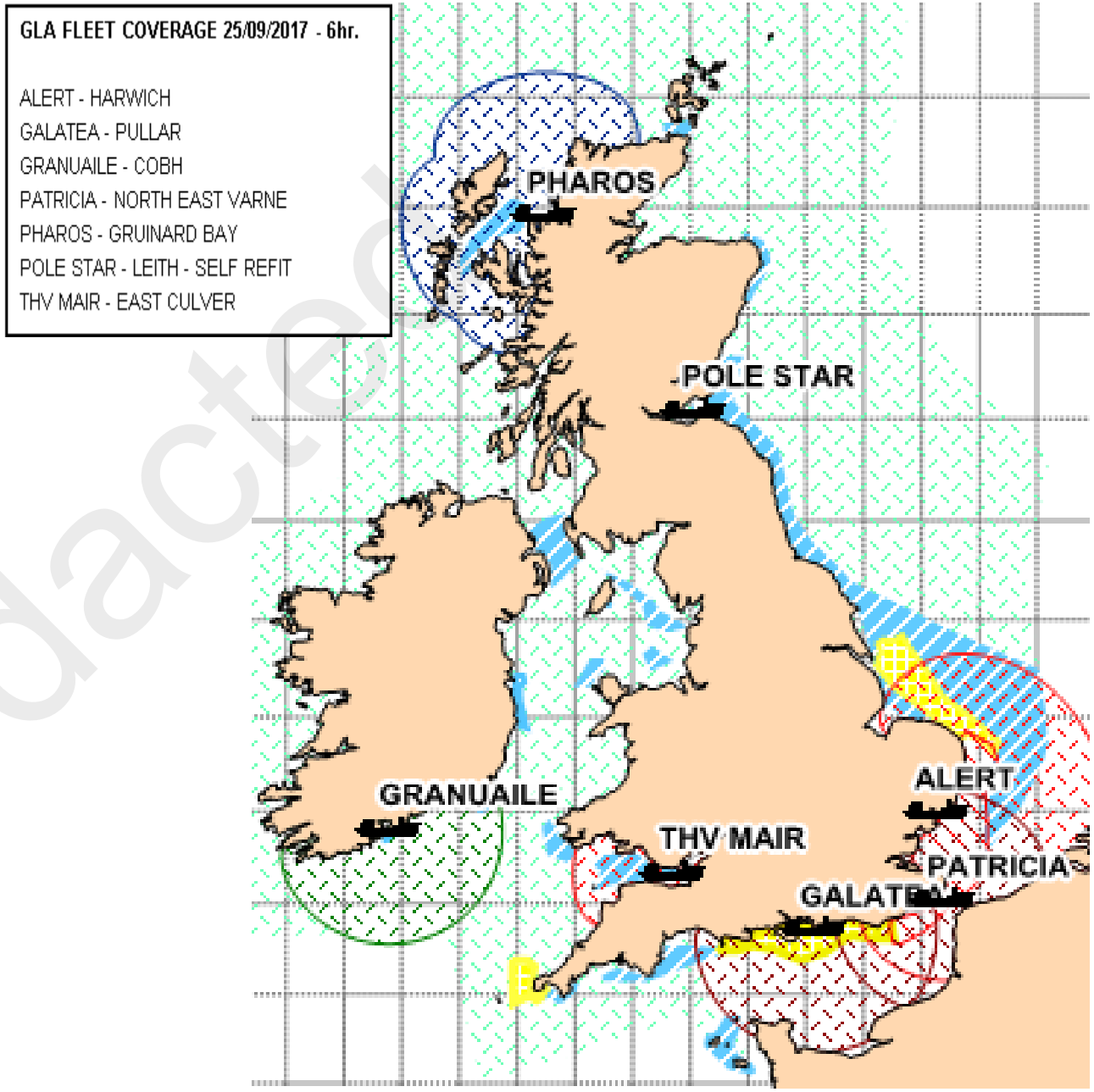
12 Hrs RRC

24 Hrs RRC

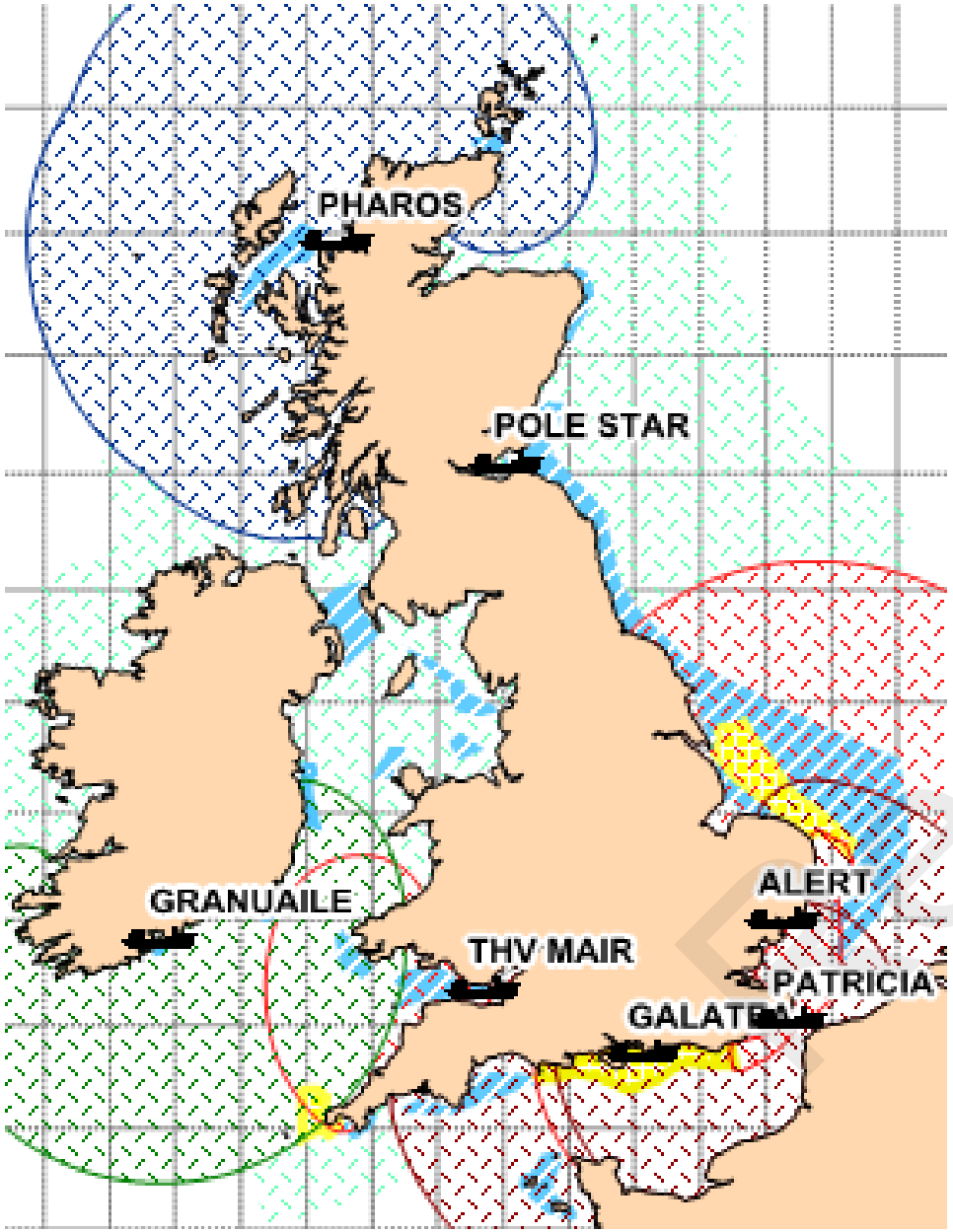


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	GRANUAILE, PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

25th Sept 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Dover area MFA & buoy work*
THV Galatea(12)	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert(16)	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair(10)	*Culver Sands Survey;*
NLV Pharos(12)	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star(11)	*Leith Self Refit*
ILV Granuaile(12)	*Cork for windlass repairs*

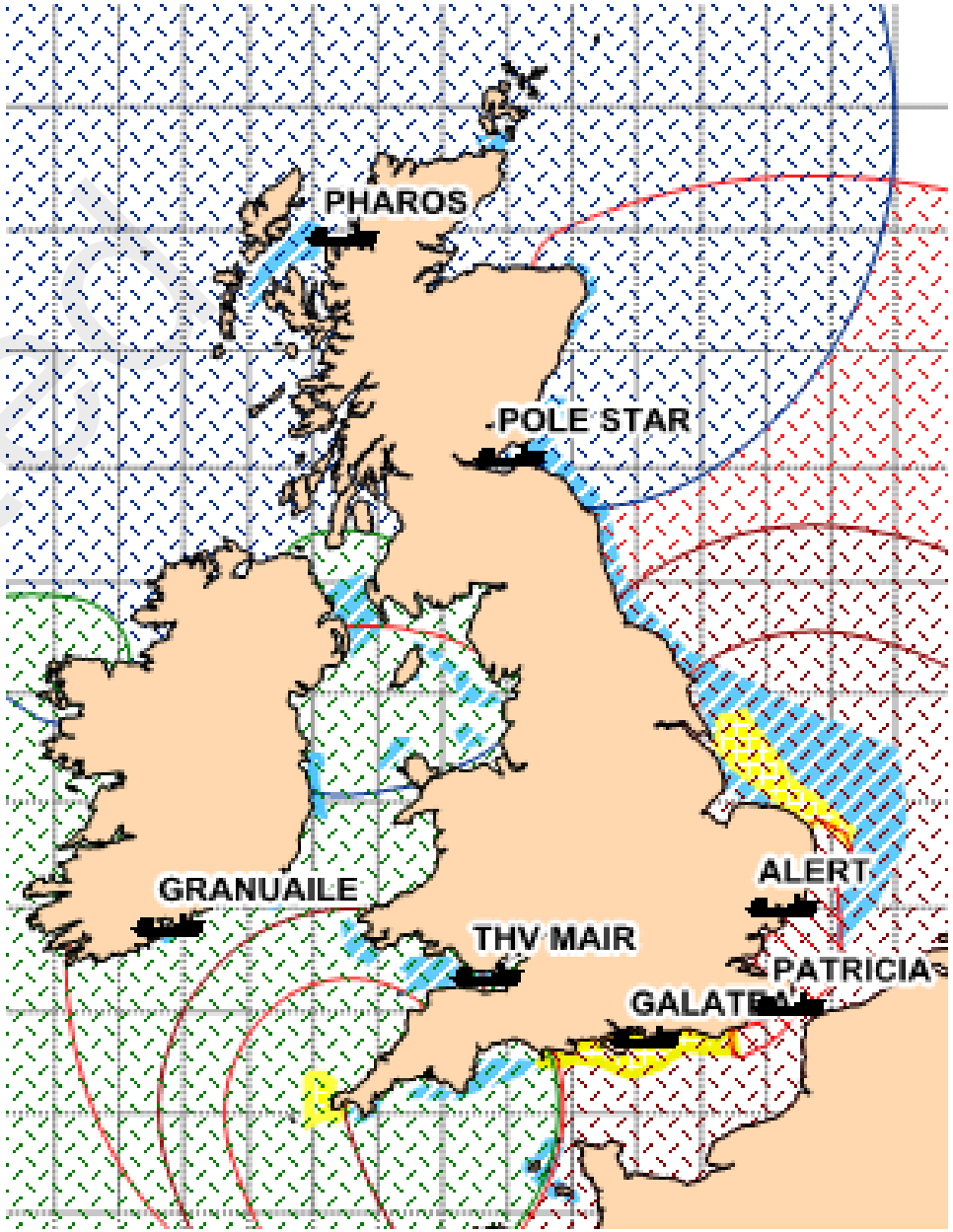


Wreck, AtoN Casualty, RRC Incidents	
Barry Coverage Limits	*Incident Report No.99*
Land's End 12 Hrs	*67 % coverage*
Land's End Coverage Limits	*Incident Report No.107*



12 Hrs RRC

24 Hrs RRC



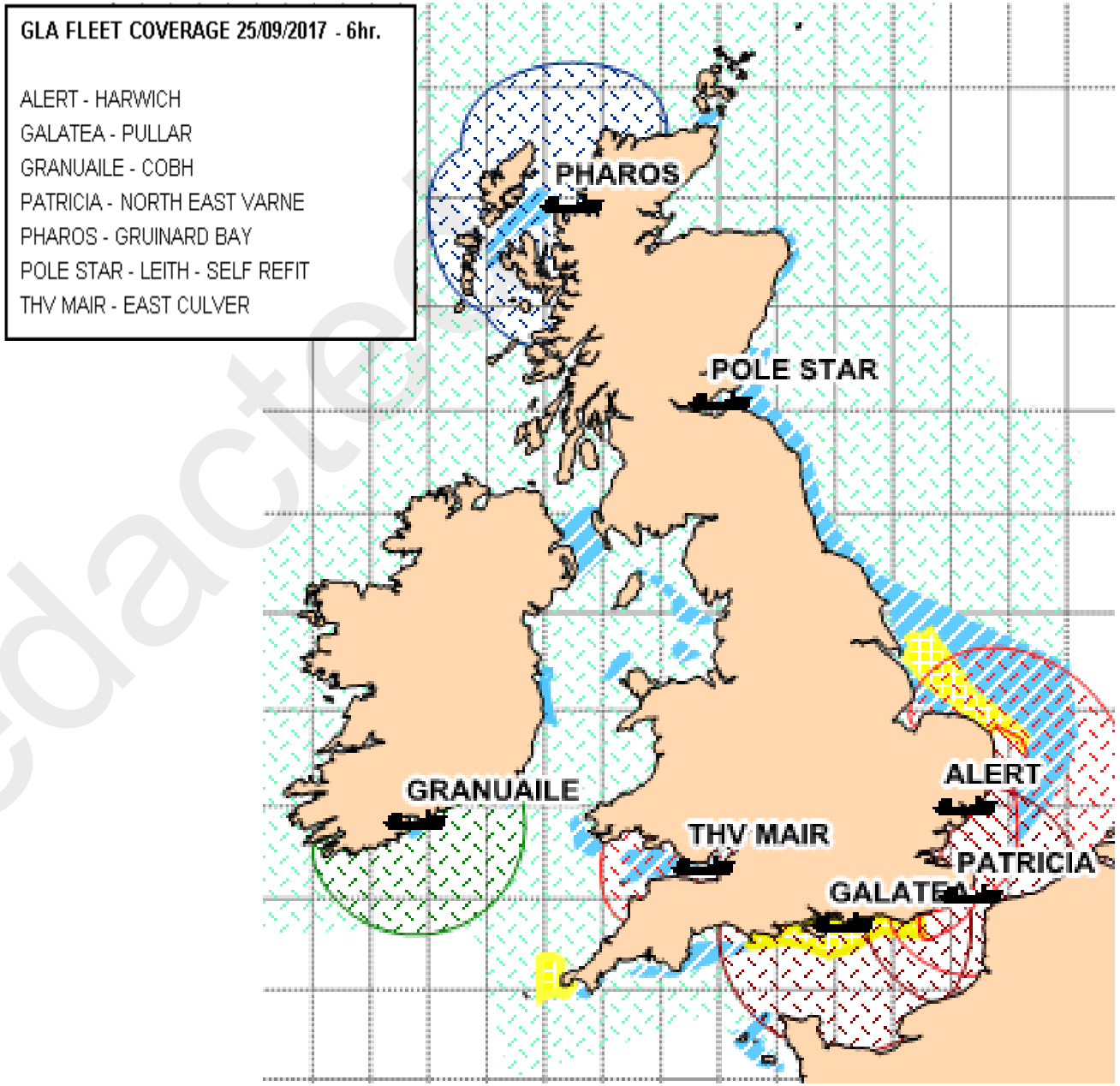
Response Region Coverage

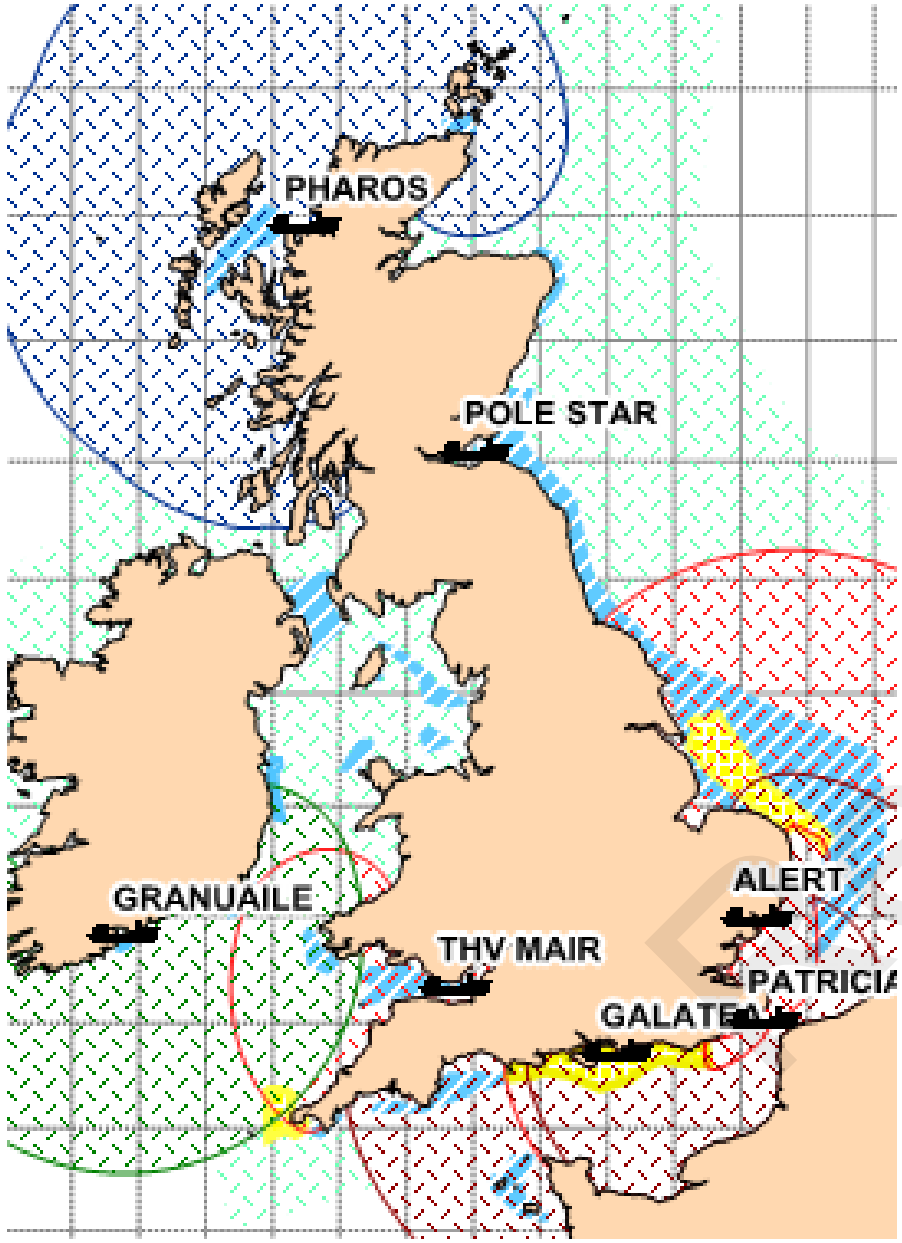
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	87%	GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

25th Sept 2017	7 Vessel Scenario - Actual
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	*Cork for windlass repairs*

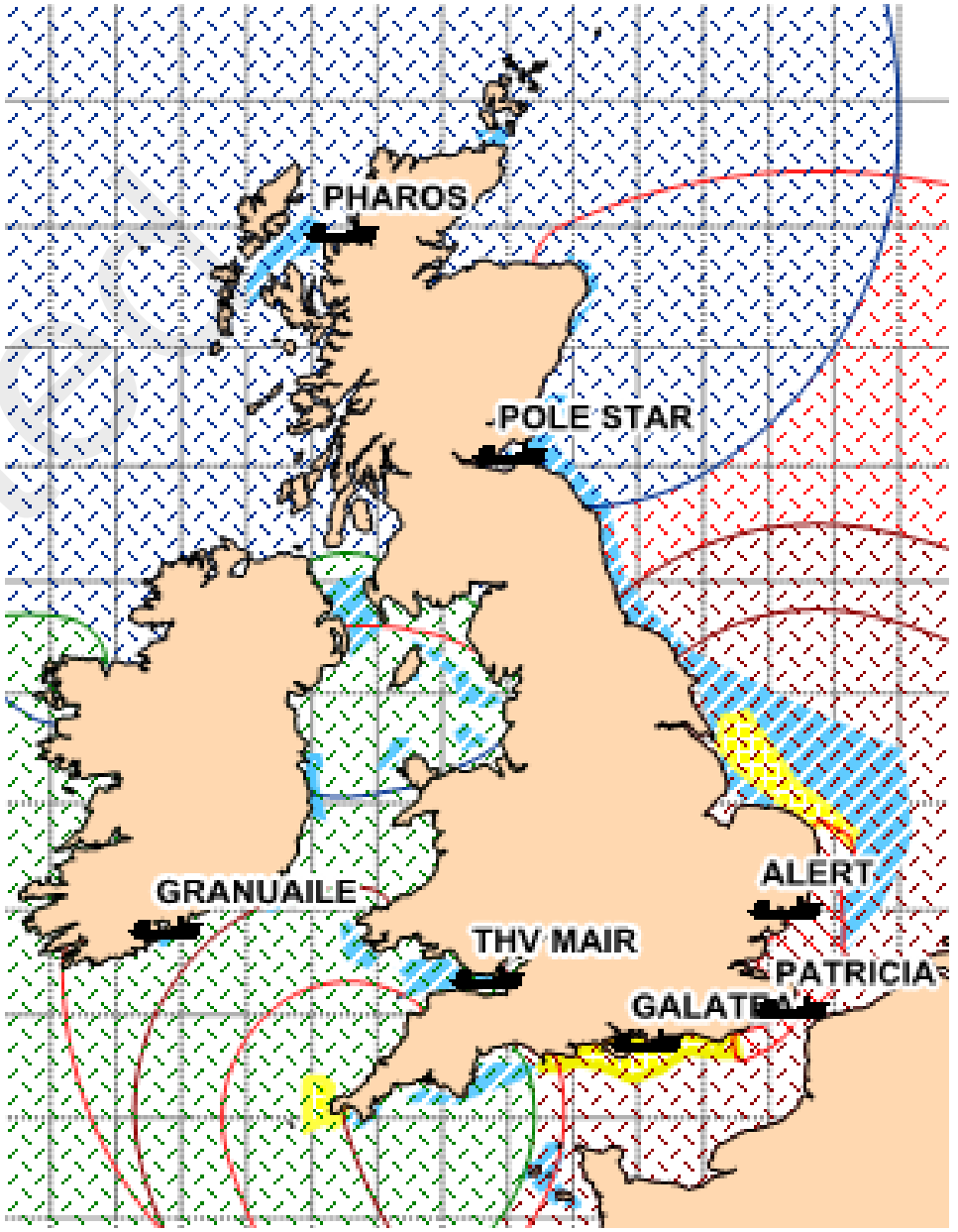
Wreck, AtoN Casualty, RRC Incidents	
Barry Coverage Limits	*Incident Report No.99*
Land's End 12 Hrs	*67 % coverage*
Land's End Coverage Limits	*Incident Report No.107*





12 Hrs RRC

24 Hrs RRC

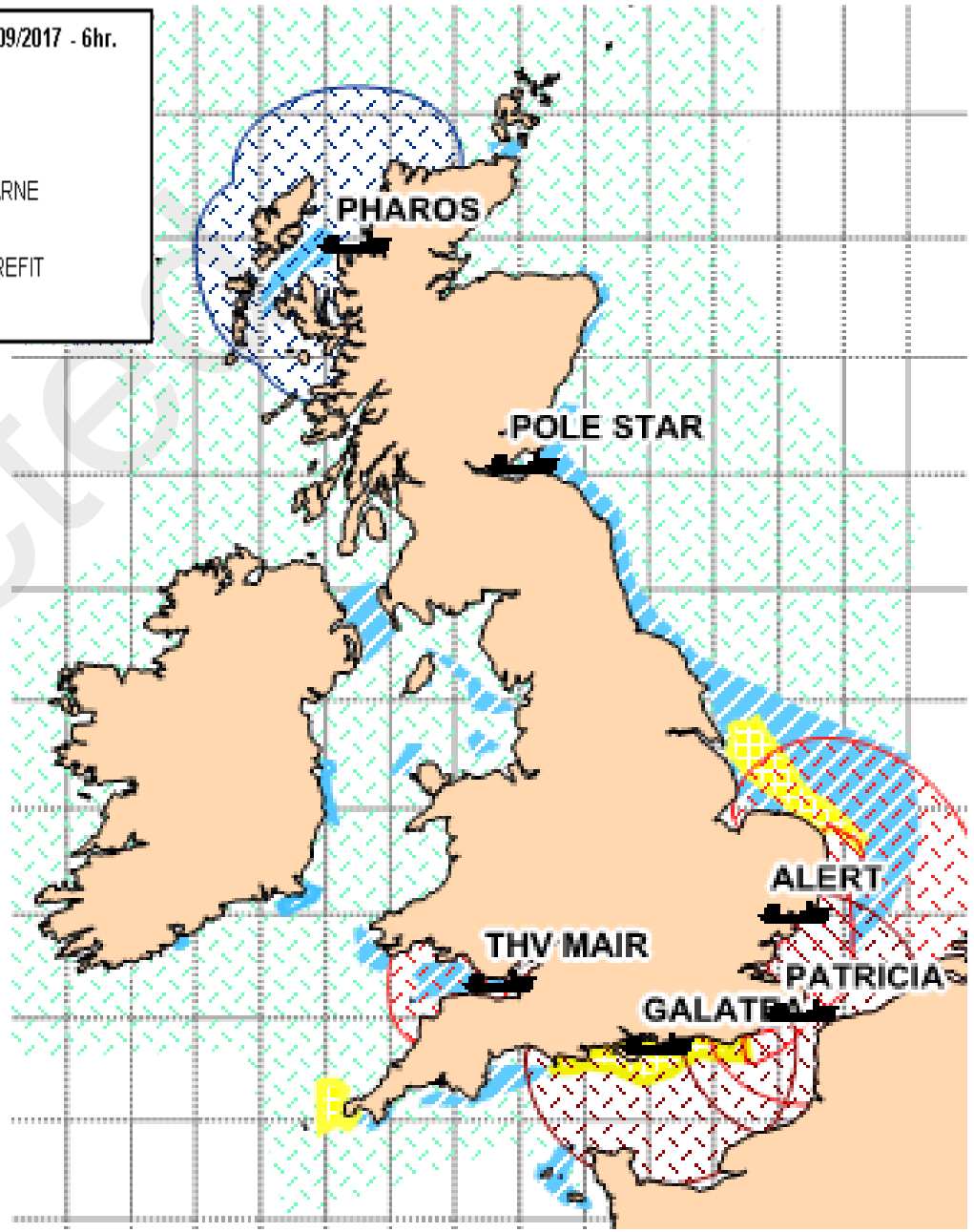


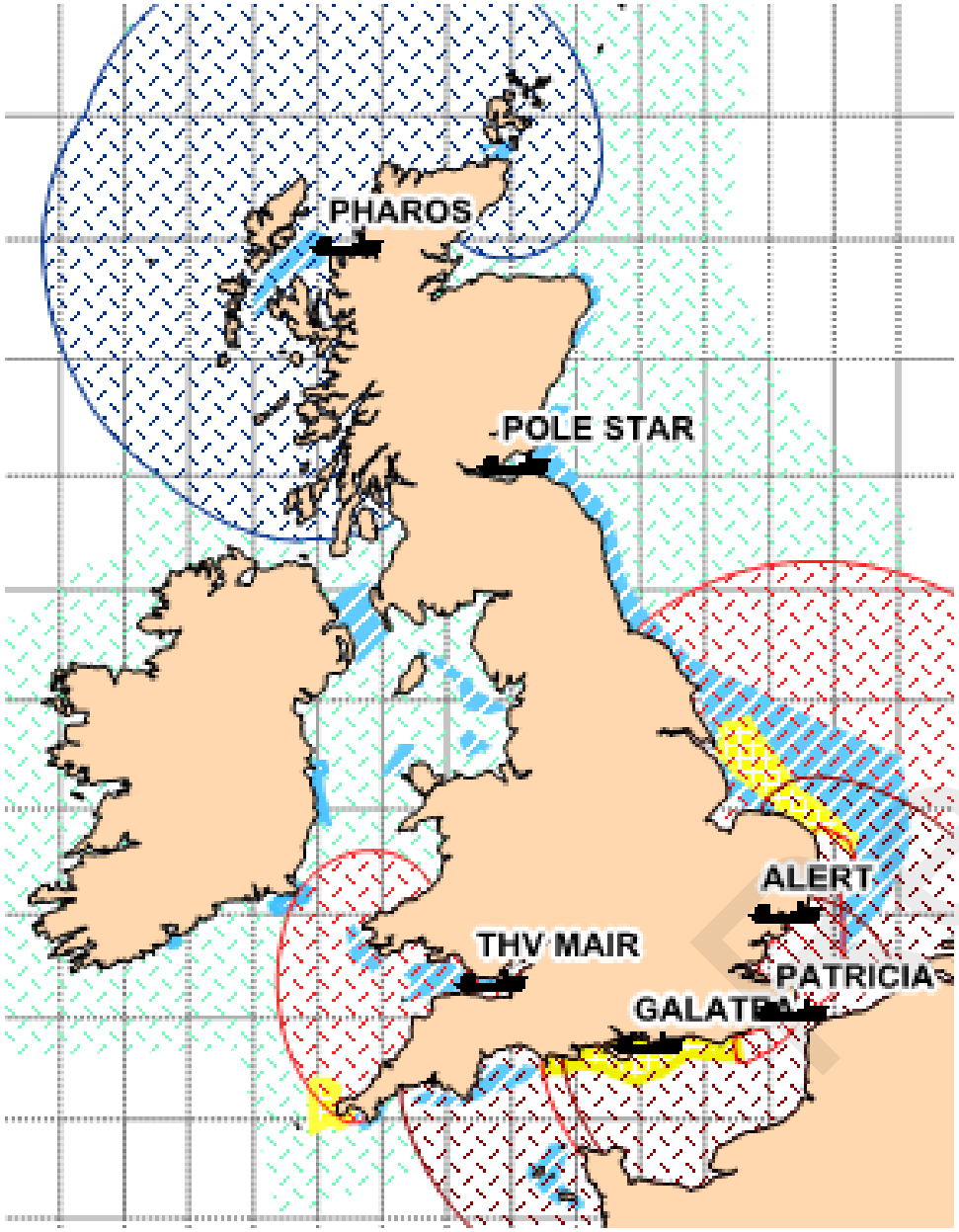
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	67%	GRANUAILE, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

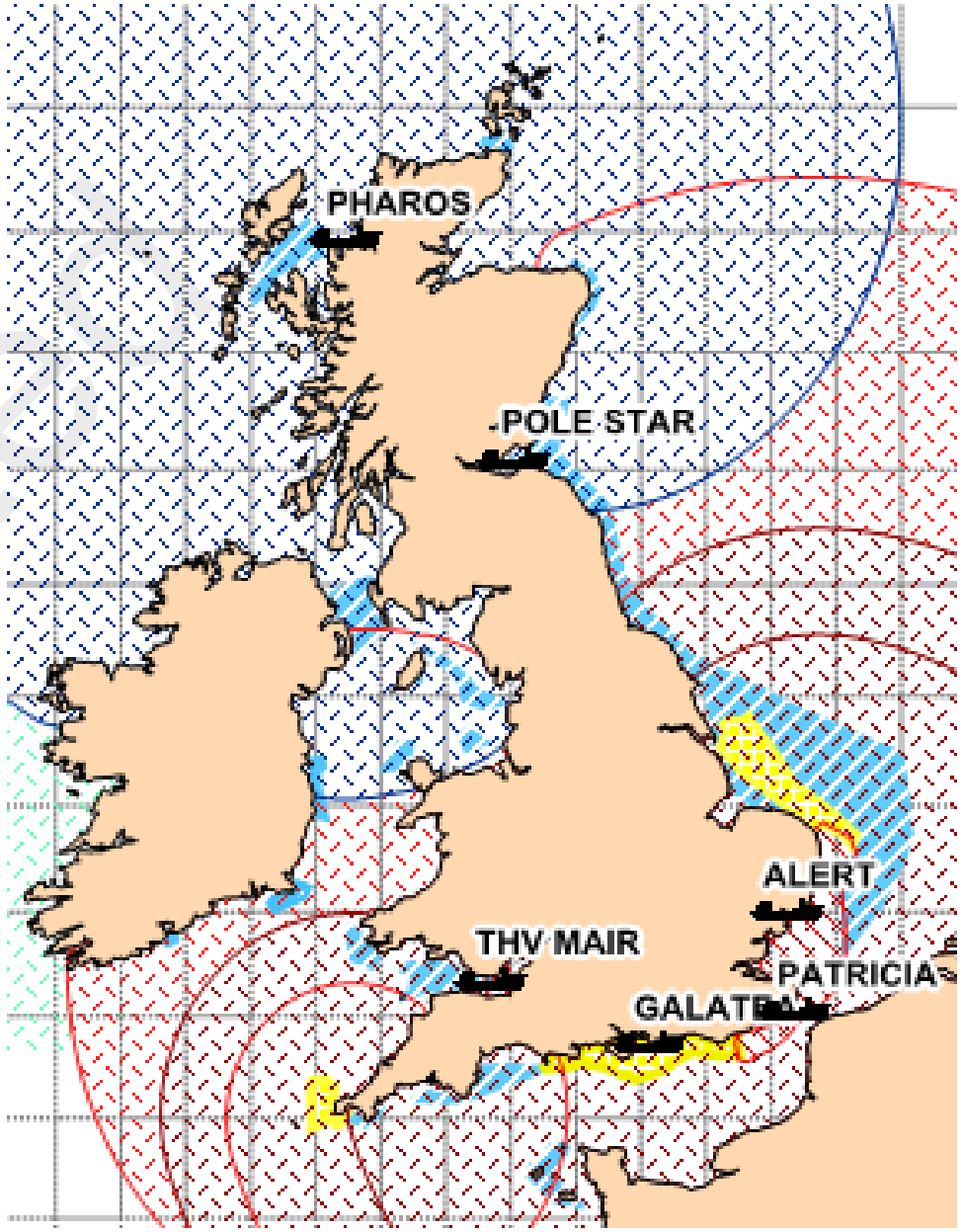
25th Sept 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Dover area MFA & buoy work*
THV Galatea(12)	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert(16)	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair(10)	*Culver Sands Survey;*
NLV Pharos(12)	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star(11)	*Leith Self Refit*
ILV Granuaile(12)	***REMOVE***





12 Hrs RRC

24 Hrs RRC

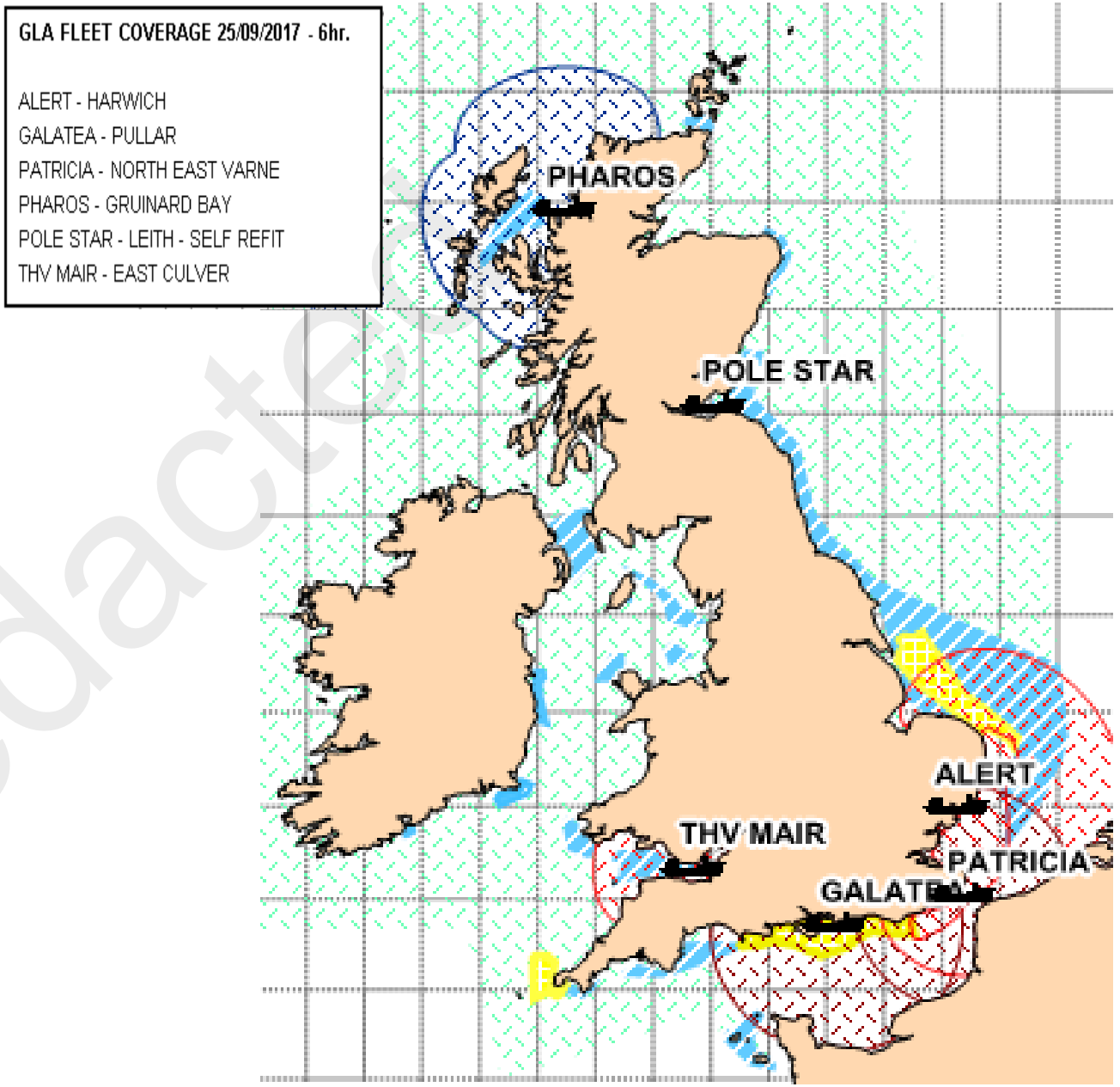


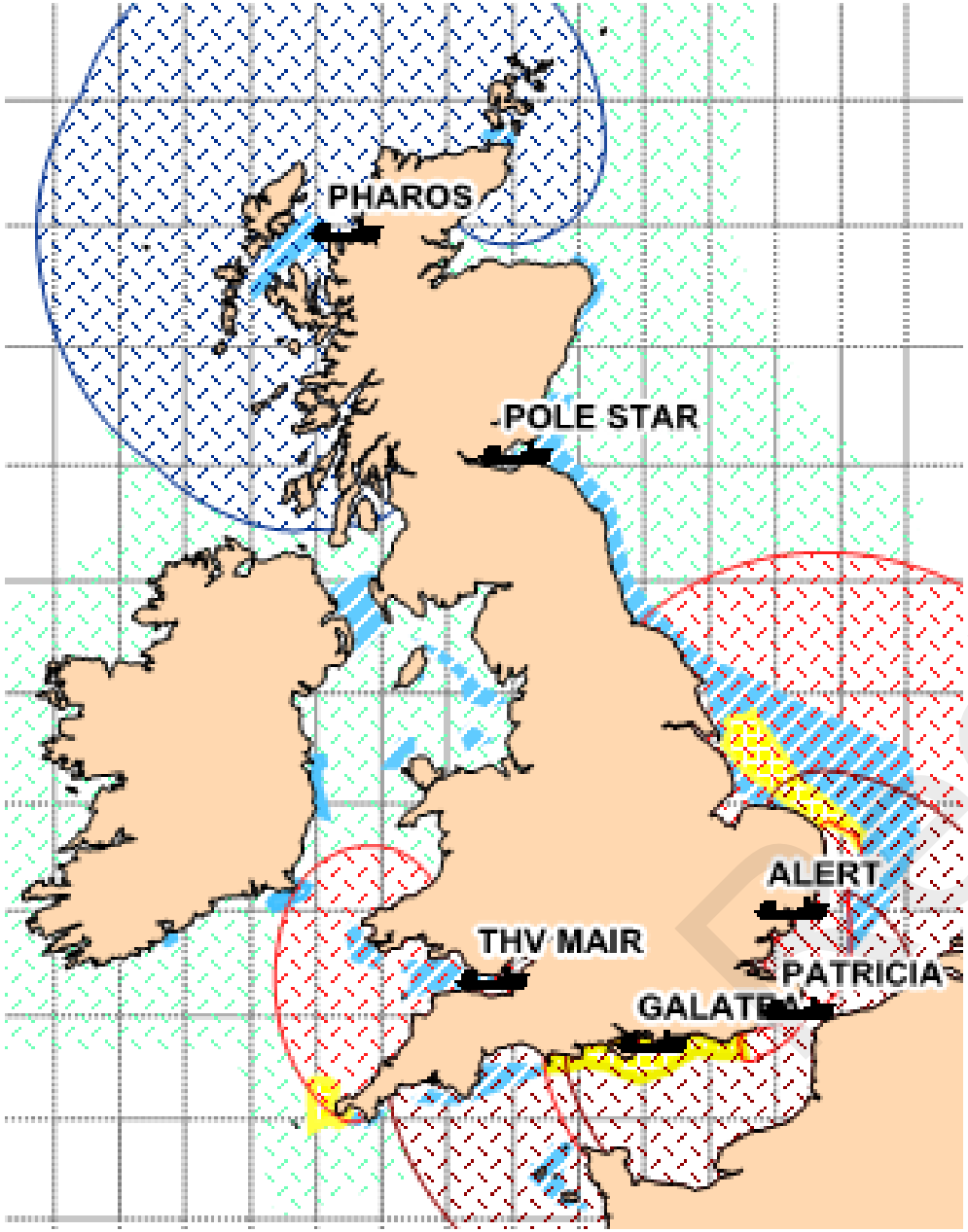
Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	54%	THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, THV MAIR

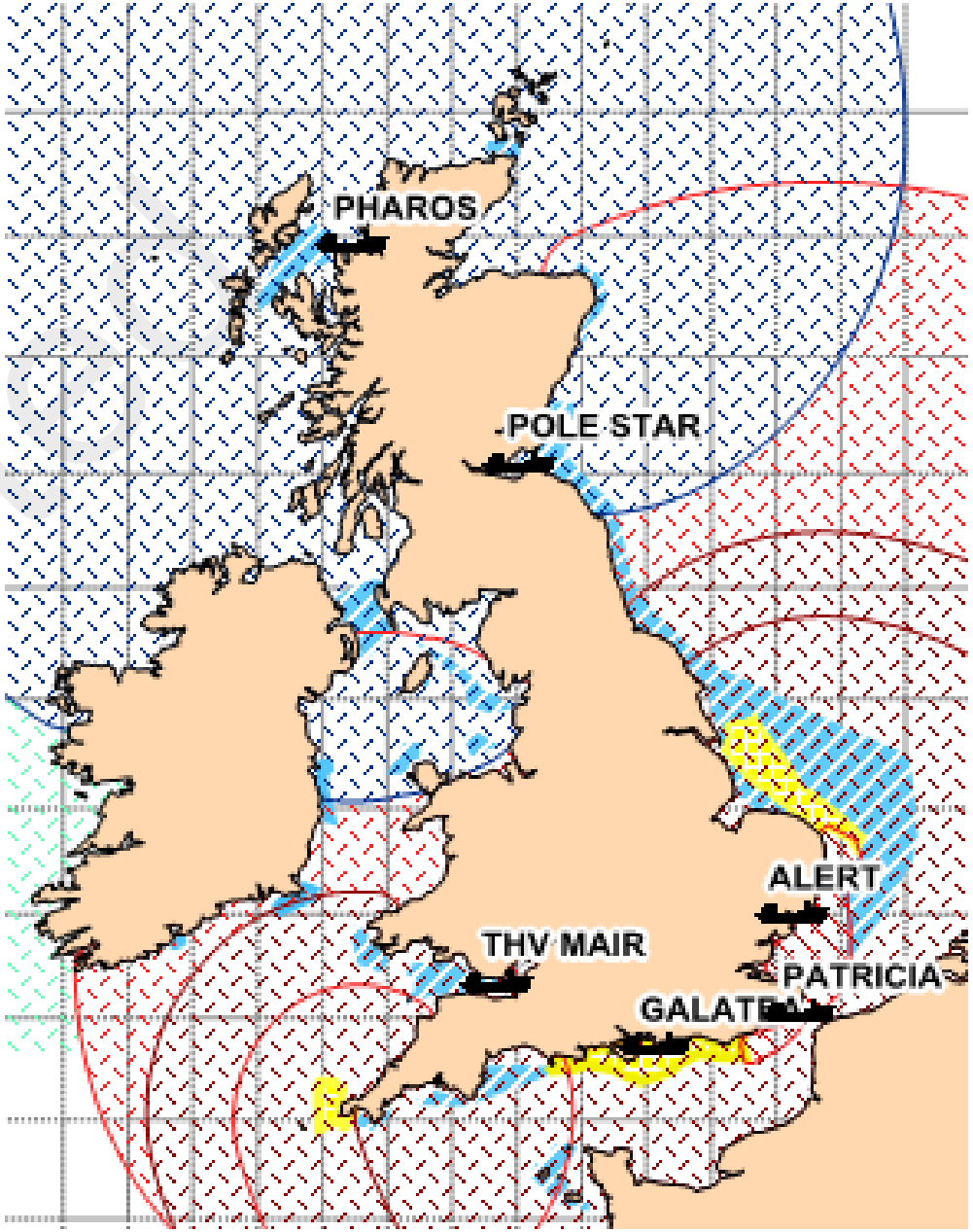
25th Sept 2017	6 Vessel Scenario – Actual
THV Patricia	*Dover area MFA & buoy work*
THV Galatea	*Attend Pullar L/B casualty; passage to Cowes to embark Met Office staff*
THV Alert	*Move LF03 from Stream Mooring to TH Pier SW berth*
MV Mair	*Culver Sands Survey;*
NLV Pharos	*Passage to Loch Maddy local lights inspections en route*
NLV Pole Star	*Leith Self Refit*
ILV Granuaile	***REMOVE***





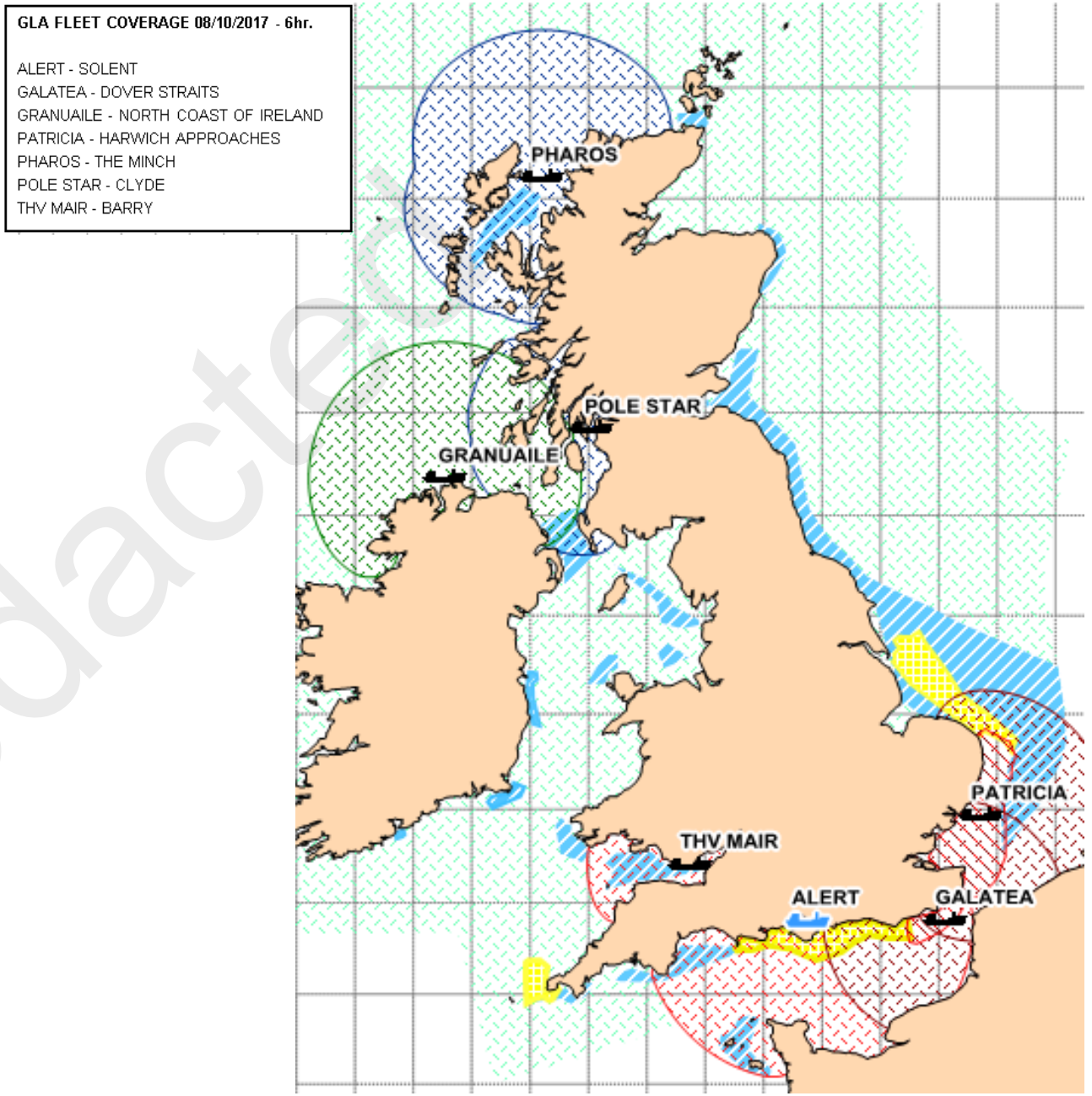
12 Hrs RRC

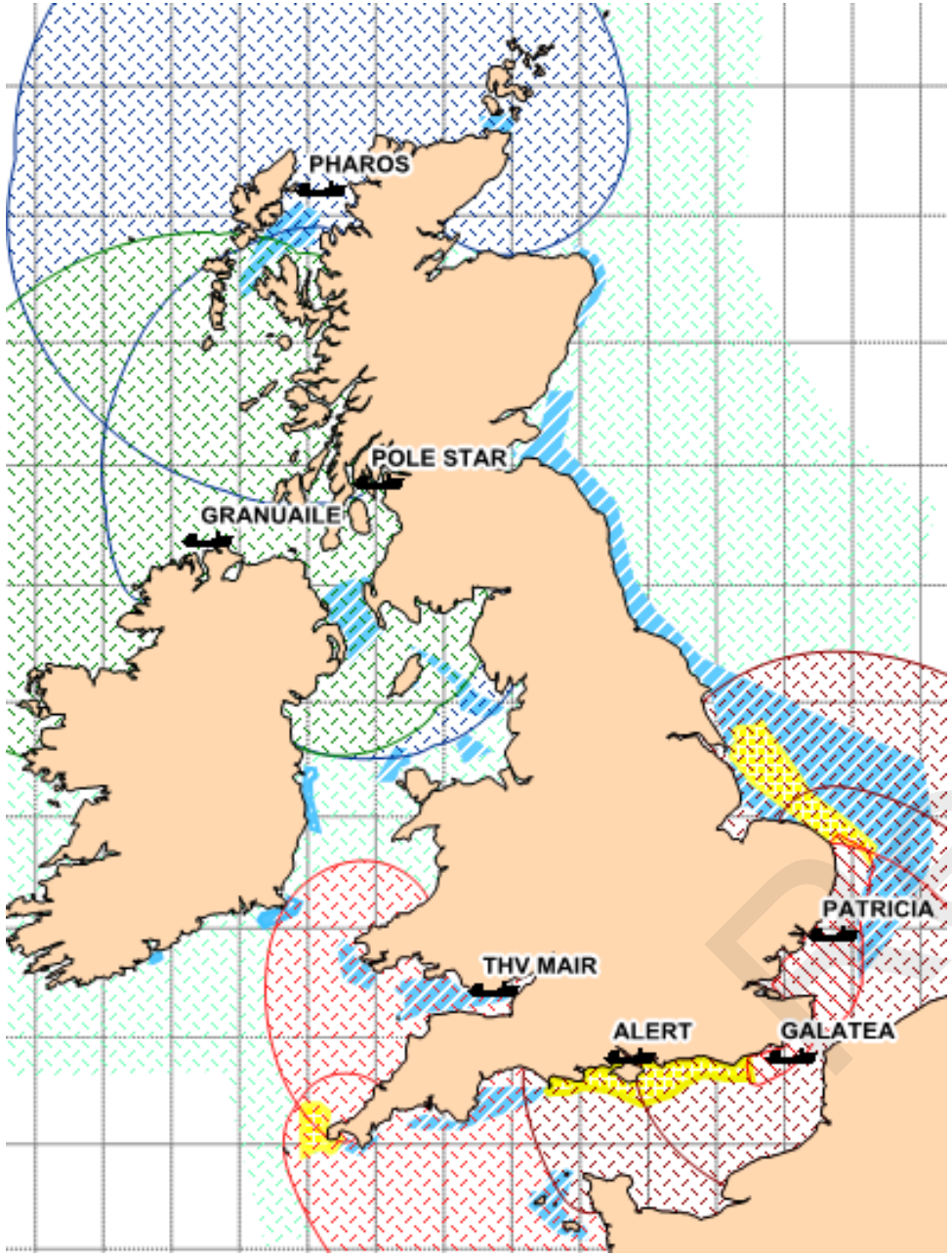
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	54%	THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, THV MAIR

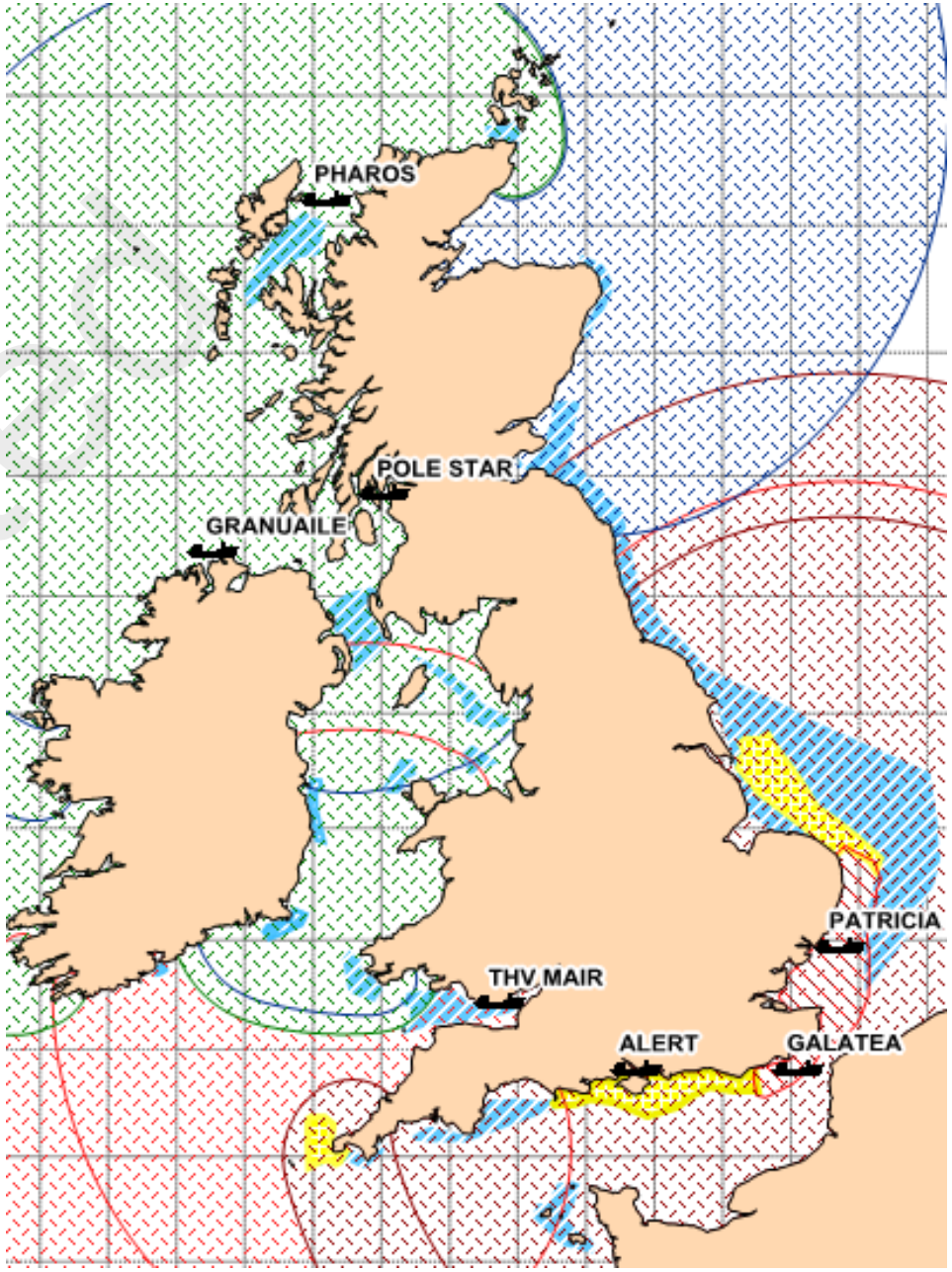
8th Oct 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Harwich Area Buoy work*
THV Galatea(12)	*Dover Area Buoy work*
THV Alert(16)	*Wight Area buoy work*
MV Mair(10)	*Barry Risk Response*
NLV Pharos(12)	*On passage (west coast) Oban to Shetland*
NLV Pole Star(11)	*Clyde Area Buoy work*
ILV Granuaile(12)	*Area 19 North Coast - Lighthouses*





12 Hrs RRC

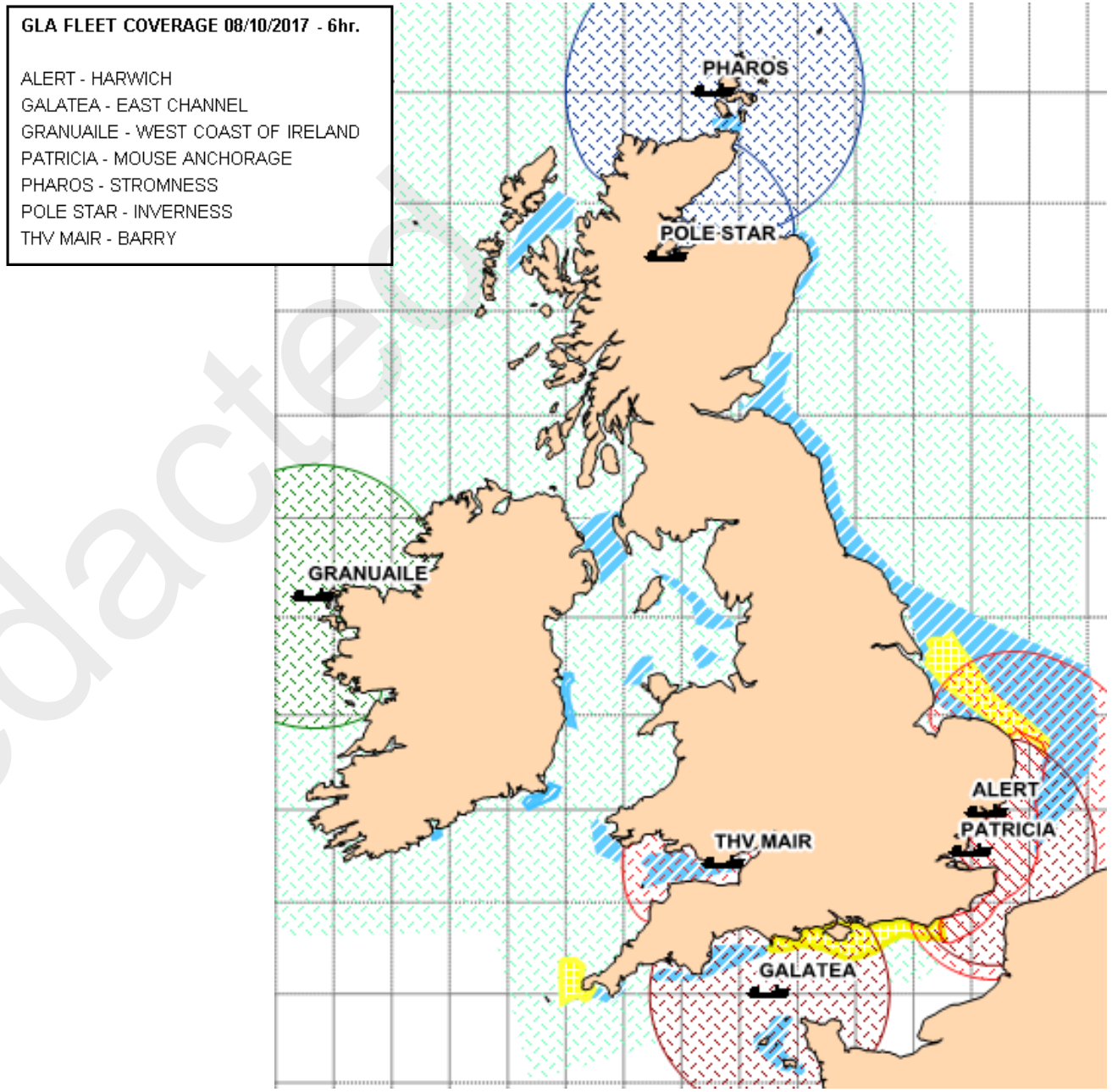
24 Hrs RRC

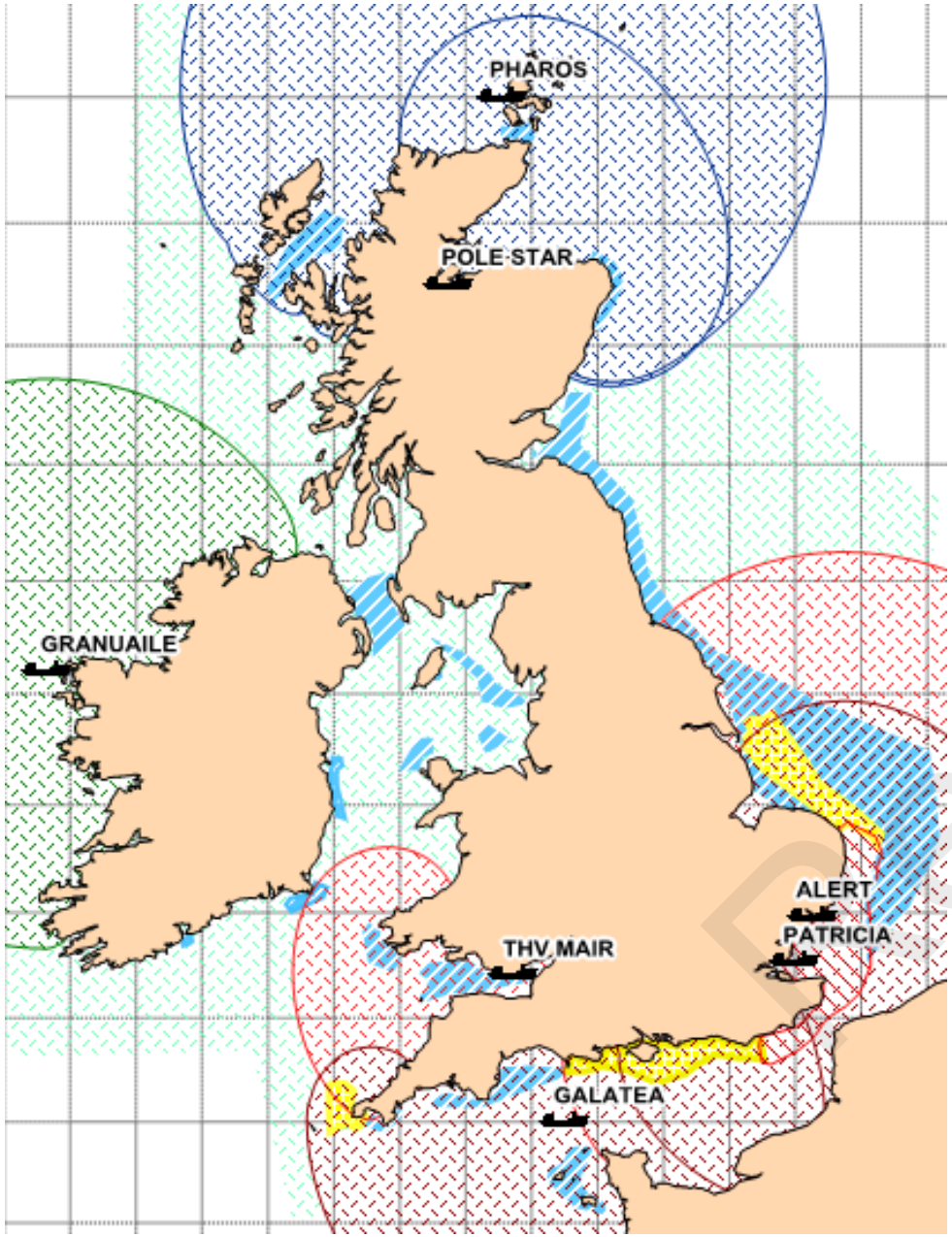


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, GALATEA, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, GALATEA, PATRICIA
4	LAND'S END	12	Yes	100%	ALERT, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS
7	ABERDEEN AND NE COAST	24	Yes	100%	PHAROS
8	PENTLAND FIRTH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	ALERT, GRANUAILE, PHAROS, POLE STAR, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, PHAROS, POLE STAR, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	ALERT, GRANUAILE, POLE STAR, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GRANUAILE, POLE STAR, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	ALERT, GRANUAILE, PHAROS, POLE STAR, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR, THV MAIR
18	CORK APPROACHES	24	Yes	100%	ALERT, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	ALERT, GRANUAILE, POLE STAR, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

8th Oct 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Thames Estuary Buoywork*
THV Galatea(12)	*Channel Area buoy work*
THV Alert(16)	*Harwich area buoy work; Harwich overnight.*
MV Mair(10)	*Barry RRC*
NLV Pharos(12)	*Passage to Lerwick; remained overnight*
NLV Pole Star(11)	*Passage to Arbroath pm*
ILV Granuaile(12)	*Area 21 buoy inspections*

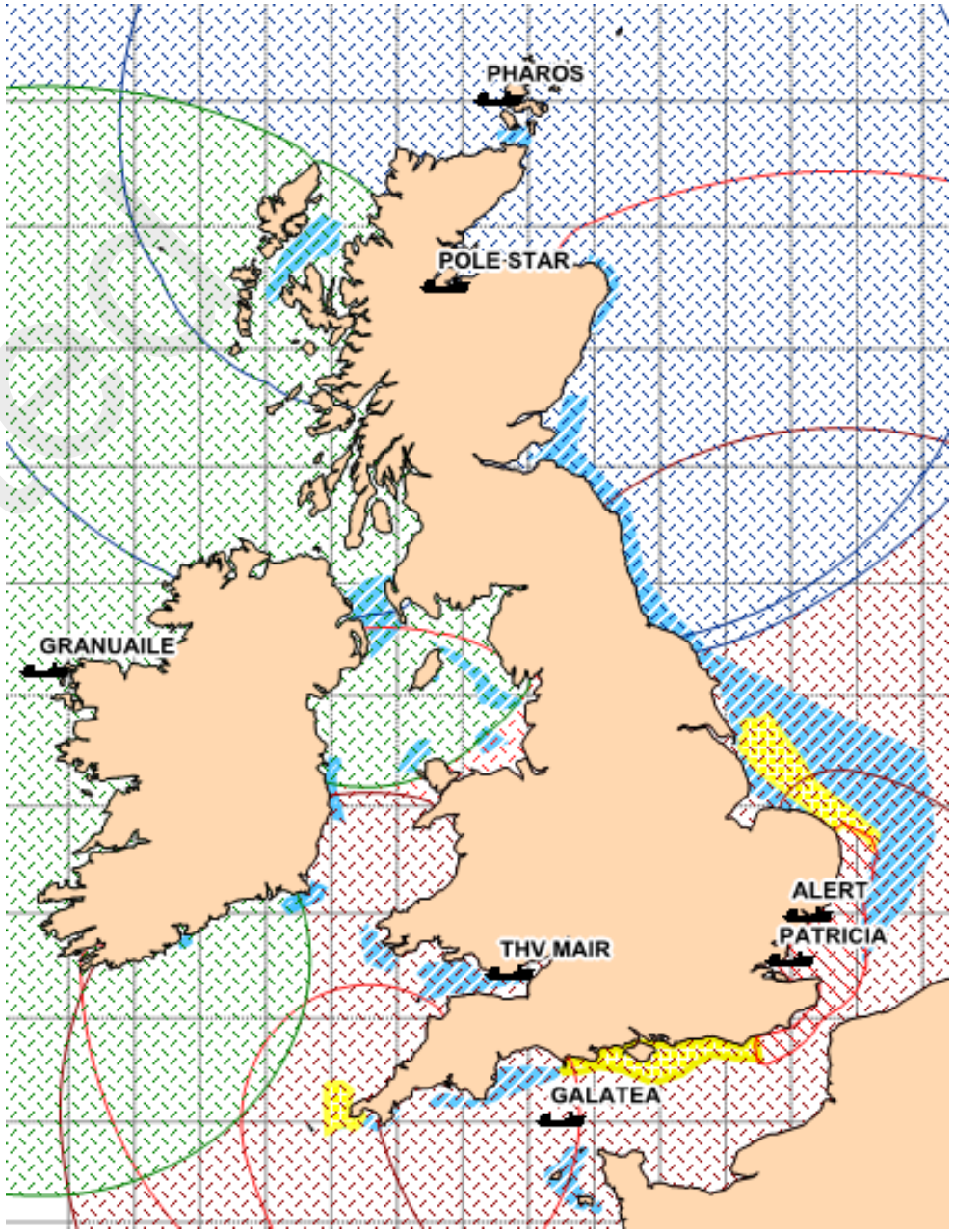
Wreck, AtoN Casualty, RRC Incidents	
None	





12 Hrs RRC

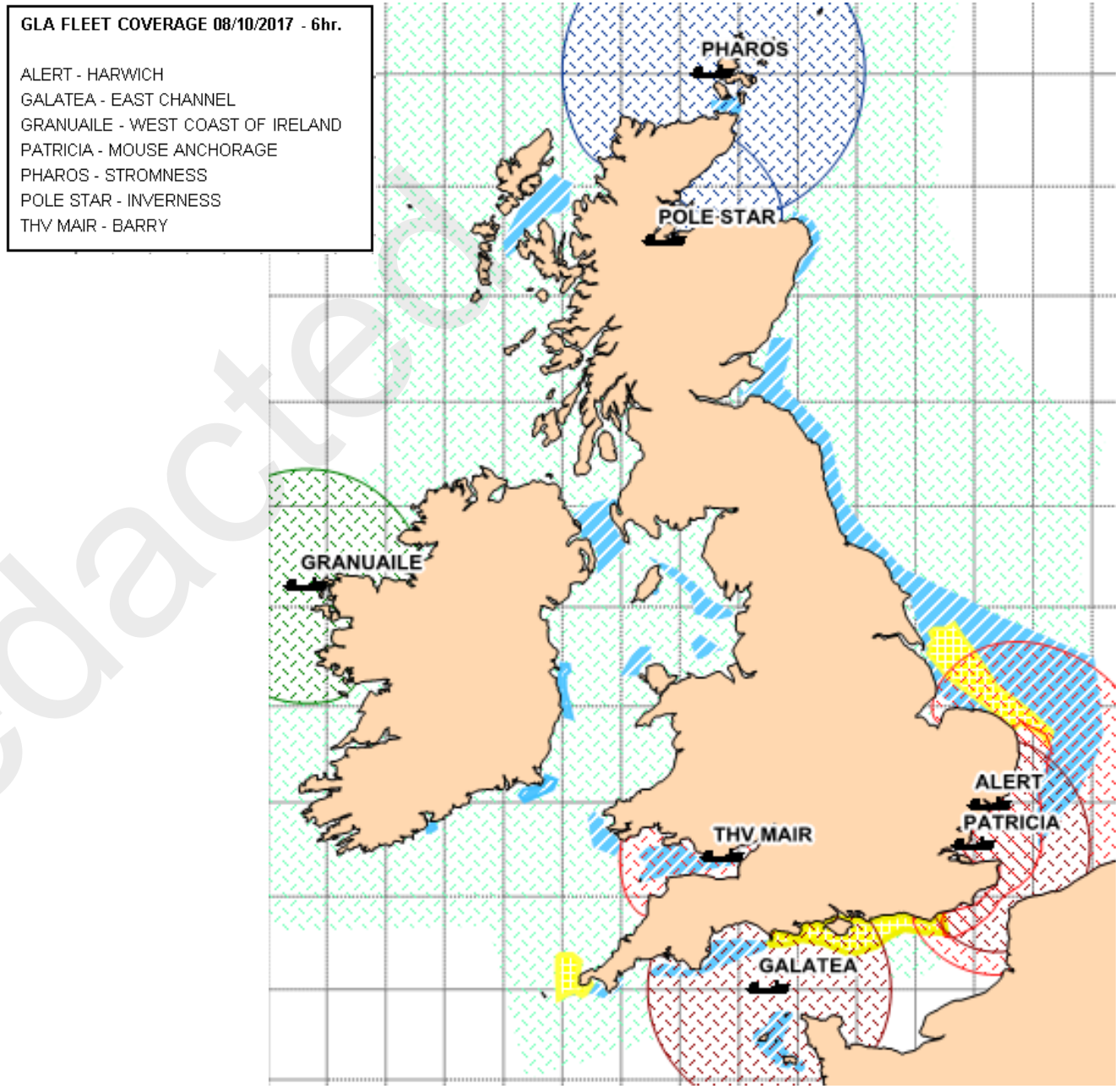
24 Hrs RRC

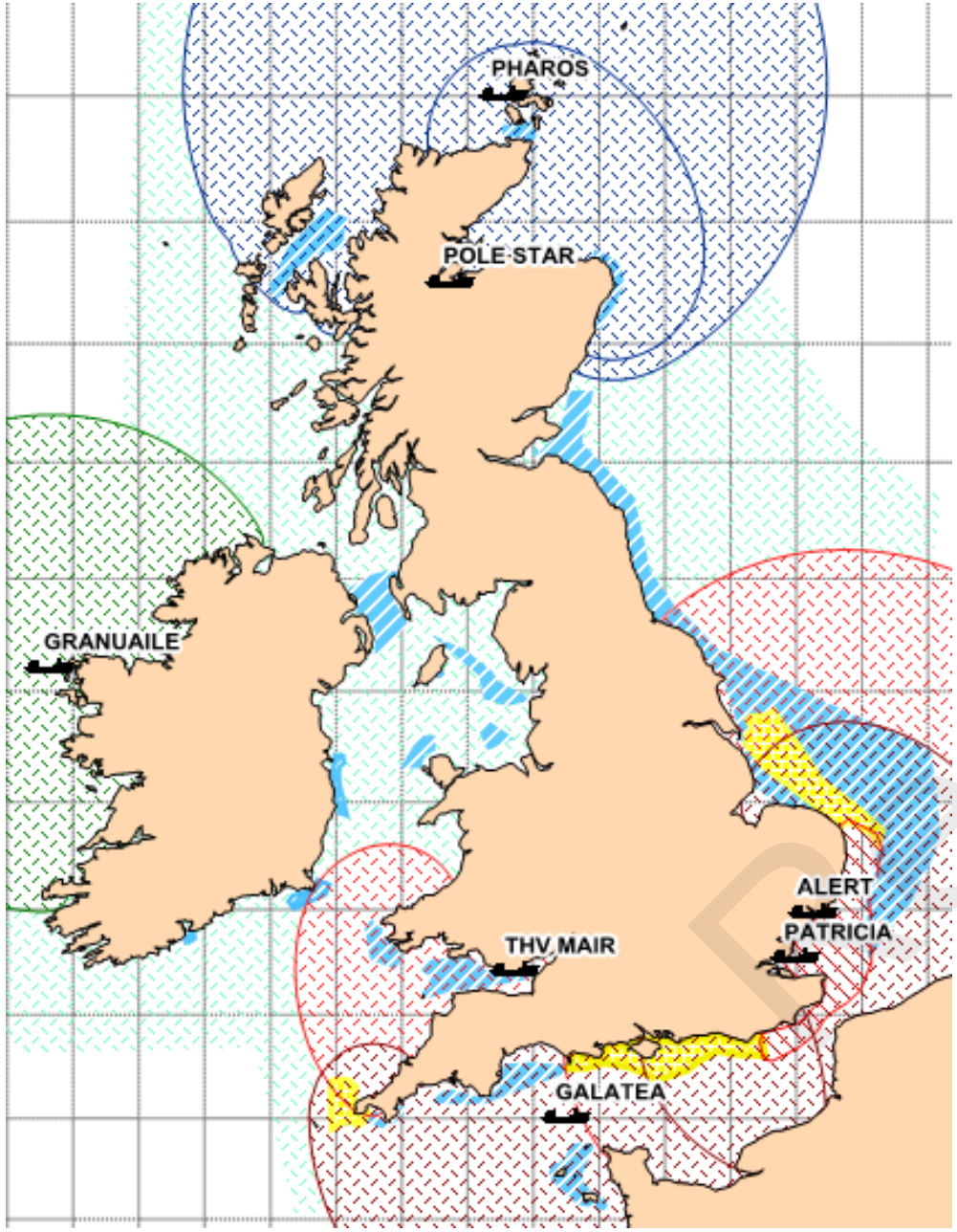


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

8th Oct 2017	7 Vessel Scenario – Actual Speeds
Vessel Name (Speed Kts)	
THV Patricia(11)	*Thames Estuary Buoywork*
THV Galatea(12)	*Channel Area buoy work*
THV Alert(16)	*Harwich area buoy work; Harwich overnight.*
MV Mair(10)	*Barry RRC*
NLV Pharos(12)	*Passage to Lerwick; remained overnight*
NLV Pole Star(10)	*Passage to Arbroath pm*
ILV Granuaile(10.5)	*Area 21 buoy inspections*

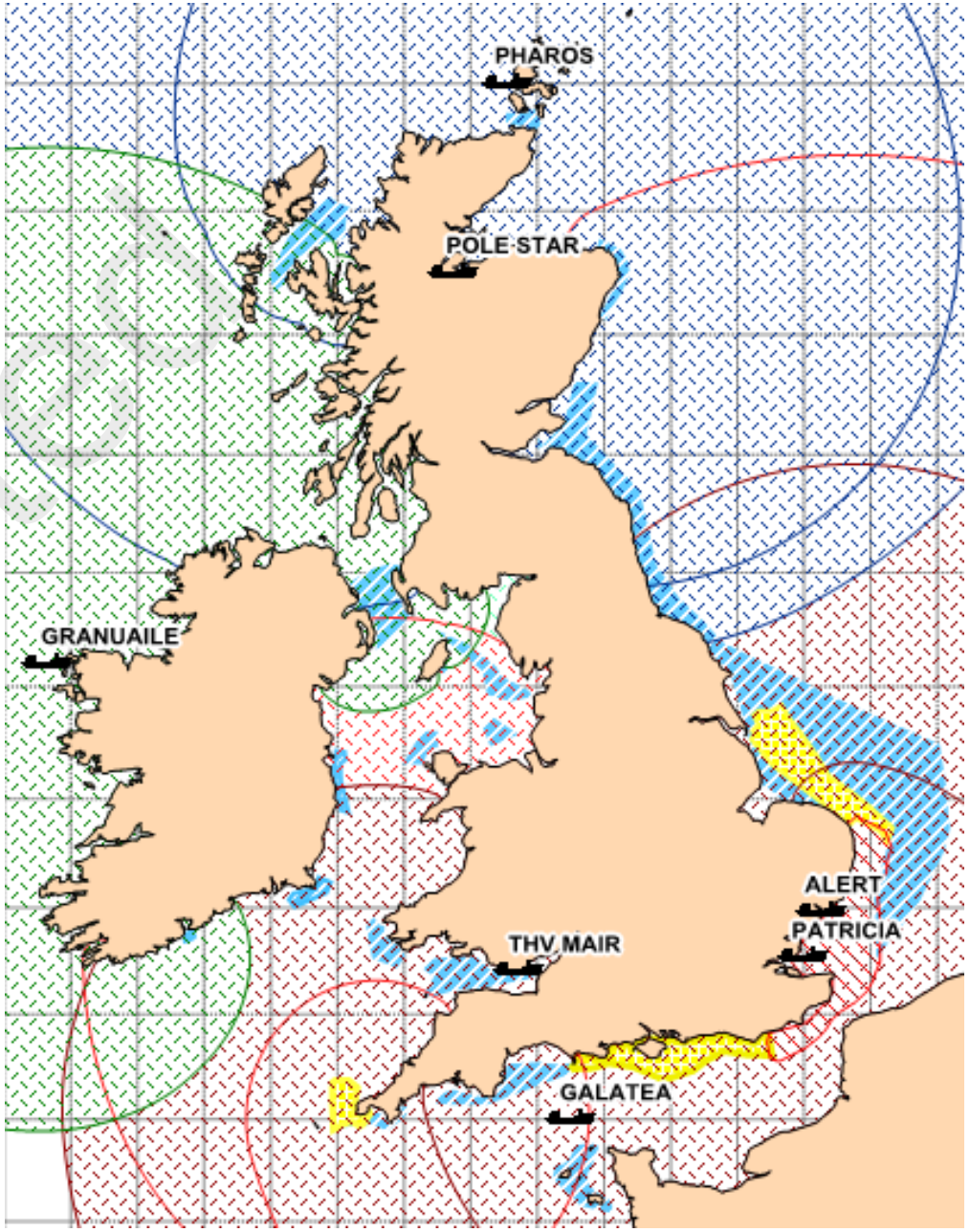
Wreck, AtoN Casualty, RRC Incidents	
None	





12 Hrs RRC

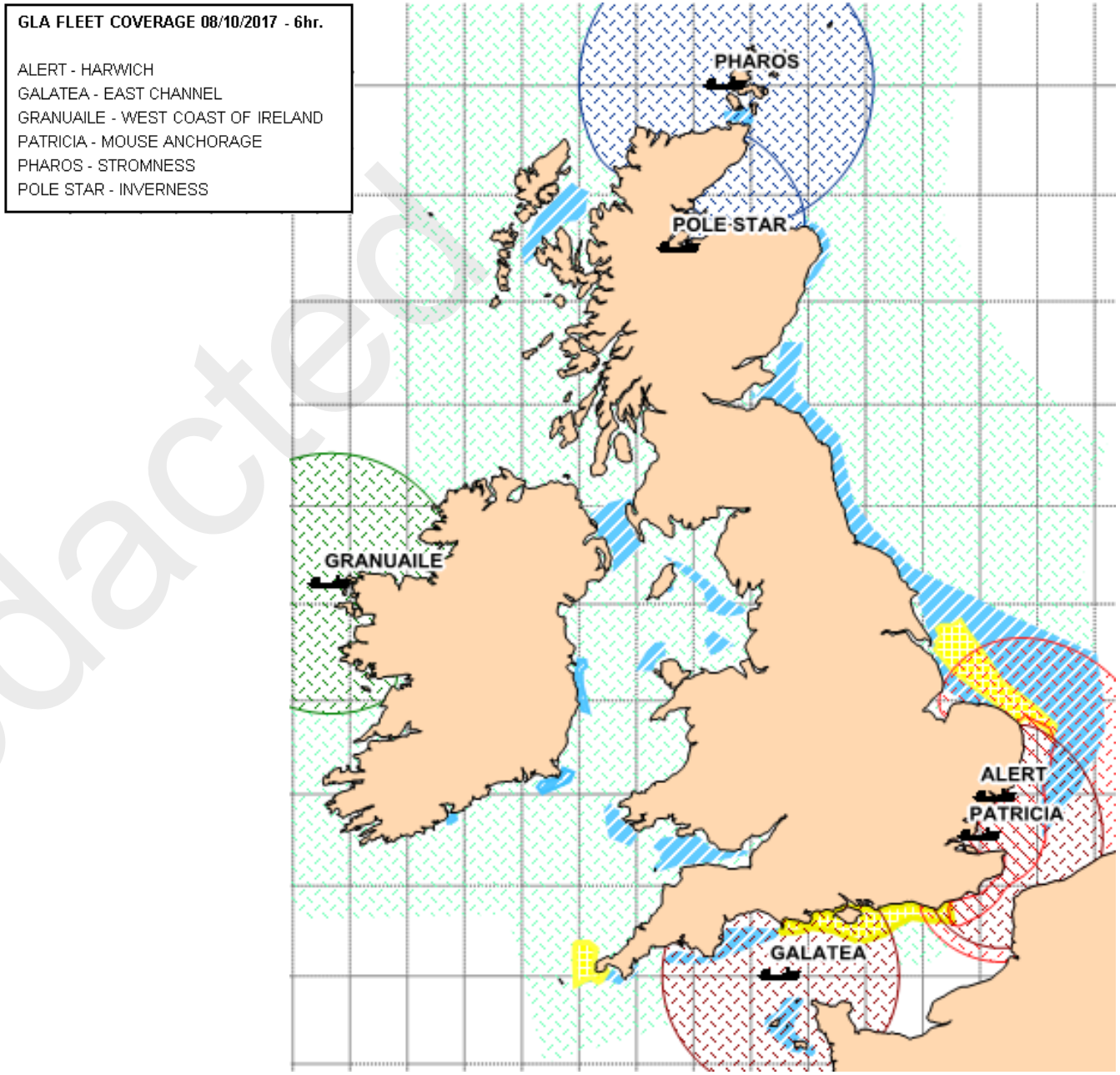
24 Hrs RRC

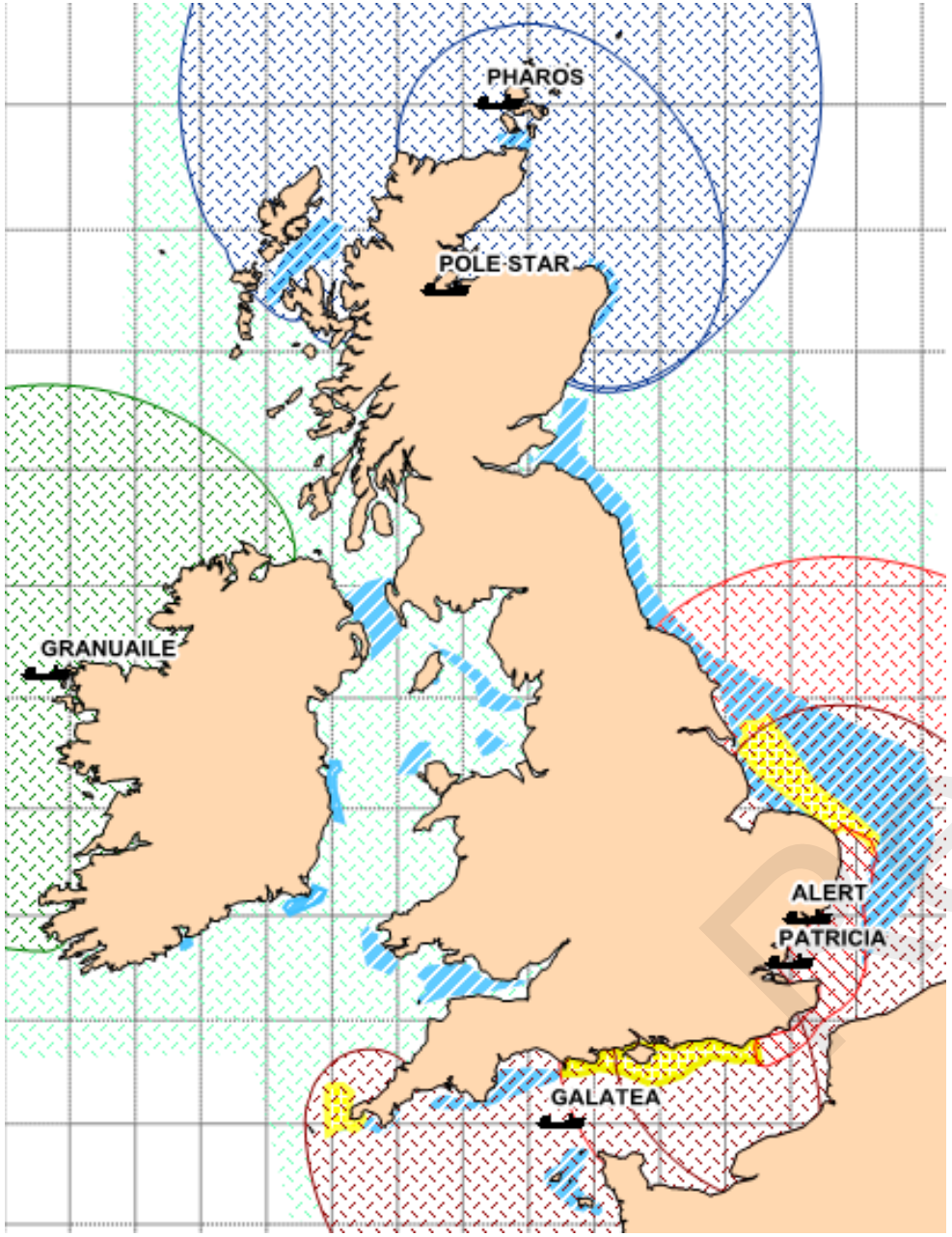


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

8th Oct 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Thames Estuary Buoywork*
THV Galatea(12)	*Channel Area buoy work*
THV Alert(16)	*Harwich area buoy work; Harwich overnight.*
MV Mair(10)	***REMOVE***
NLV Pharos(12)	*Passage to Lerwick; remained overnight*
NLV Pole Star(11)	*Passage to Arbroath pm*
ILV Granuaile(12)	*Area 21 buoy inspections*

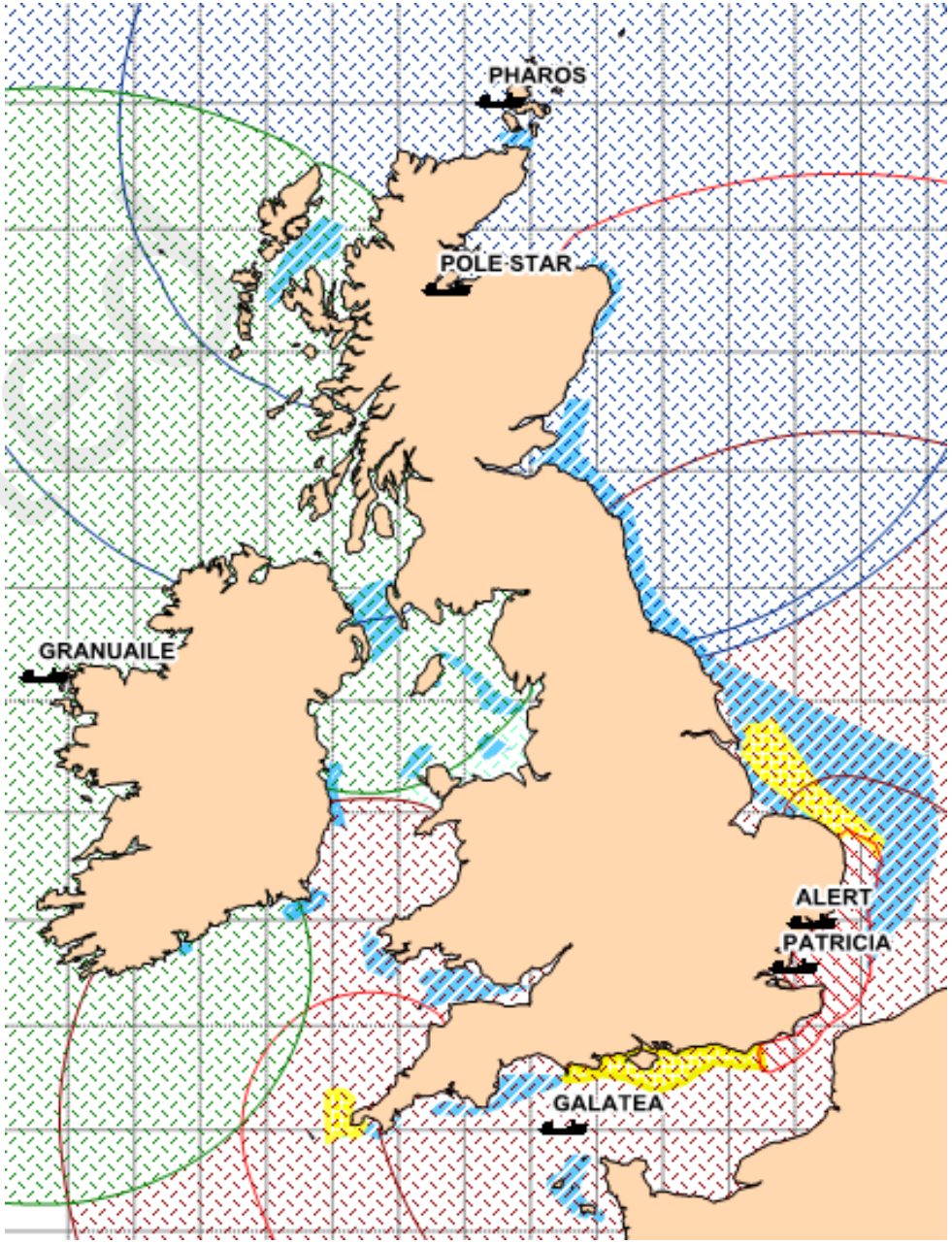
Wreck, AtoN Casualty, RRC Incidents	
Liverpool Bay	*21% Coverage*
Morecambe Bay	*98% Coverage*
Dublin Bay & East Irish Coast	*85% Coverage*





12 Hrs RRC

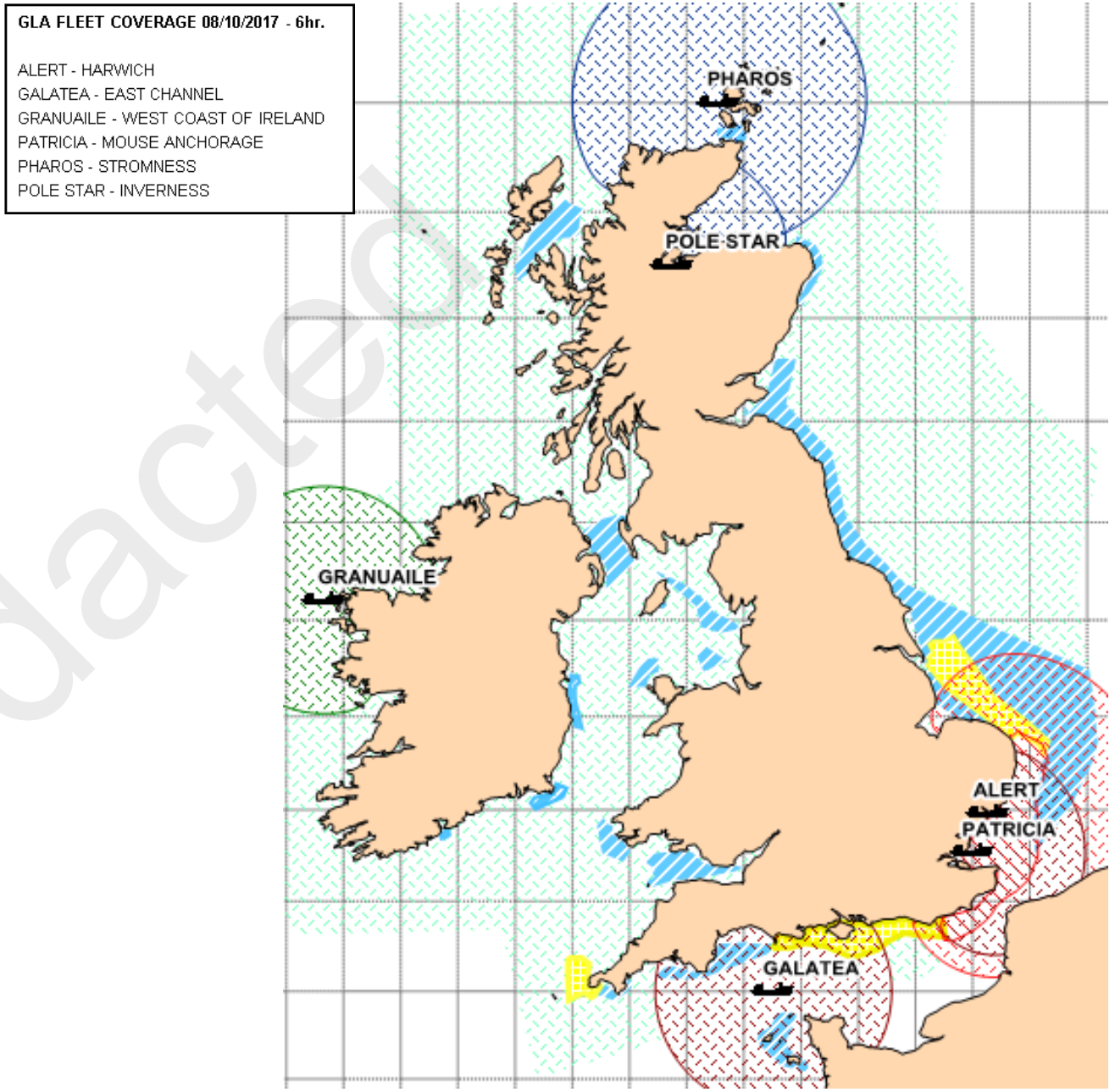
24 Hrs RRC

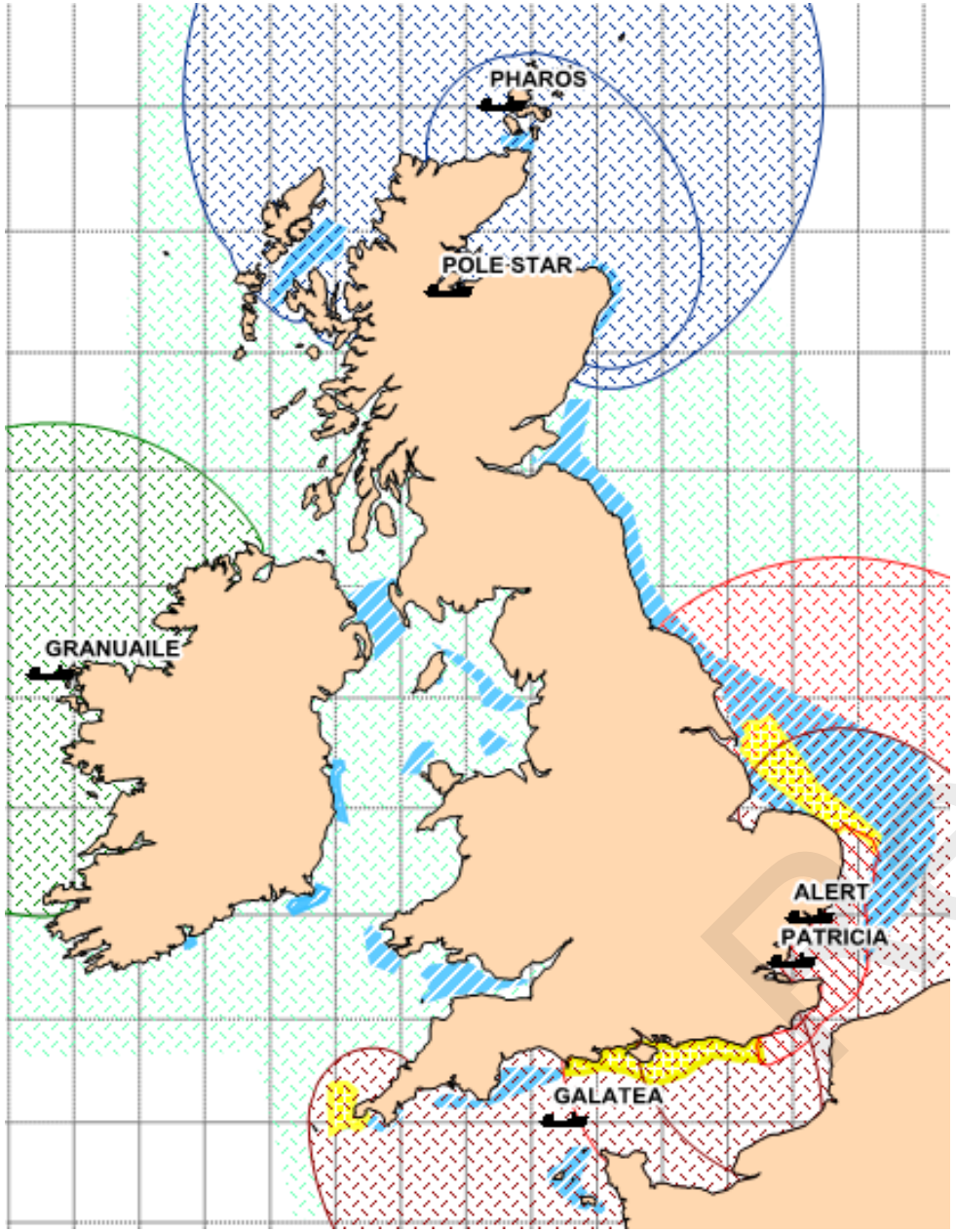


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE
11	DUBLIN BAY AND EAST IRISH COAST	24	No	85%	GALATEA, GRANUAILE
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	No	98%	GRANUAILE
16	LIVERPOOL BAY	24	No	21%	GRANUAILE
17	ISLE OF MAN	24	Yes	100%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, PATRICIA
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

8th Oct 2017	6 Vessel Scenario – Actual Speeds
Vessel Name (Speed Kts)	
THV Patricia(11)	*Thames Estuary Buoywork*
THV Galatea(12)	*Channel Area buoy work*
THV Alert(16)	*Harwich area buoy work; Harwich overnight.*
MV Mair(10)	***REMOVE***
NLV Pharos(12)	*Passage to Lerwick; remained overnight*
NLV Pole Star(10)	*Passage to Arbroath pm*
ILV Granuaile(10.5)	*Area 21 buoy inspections*

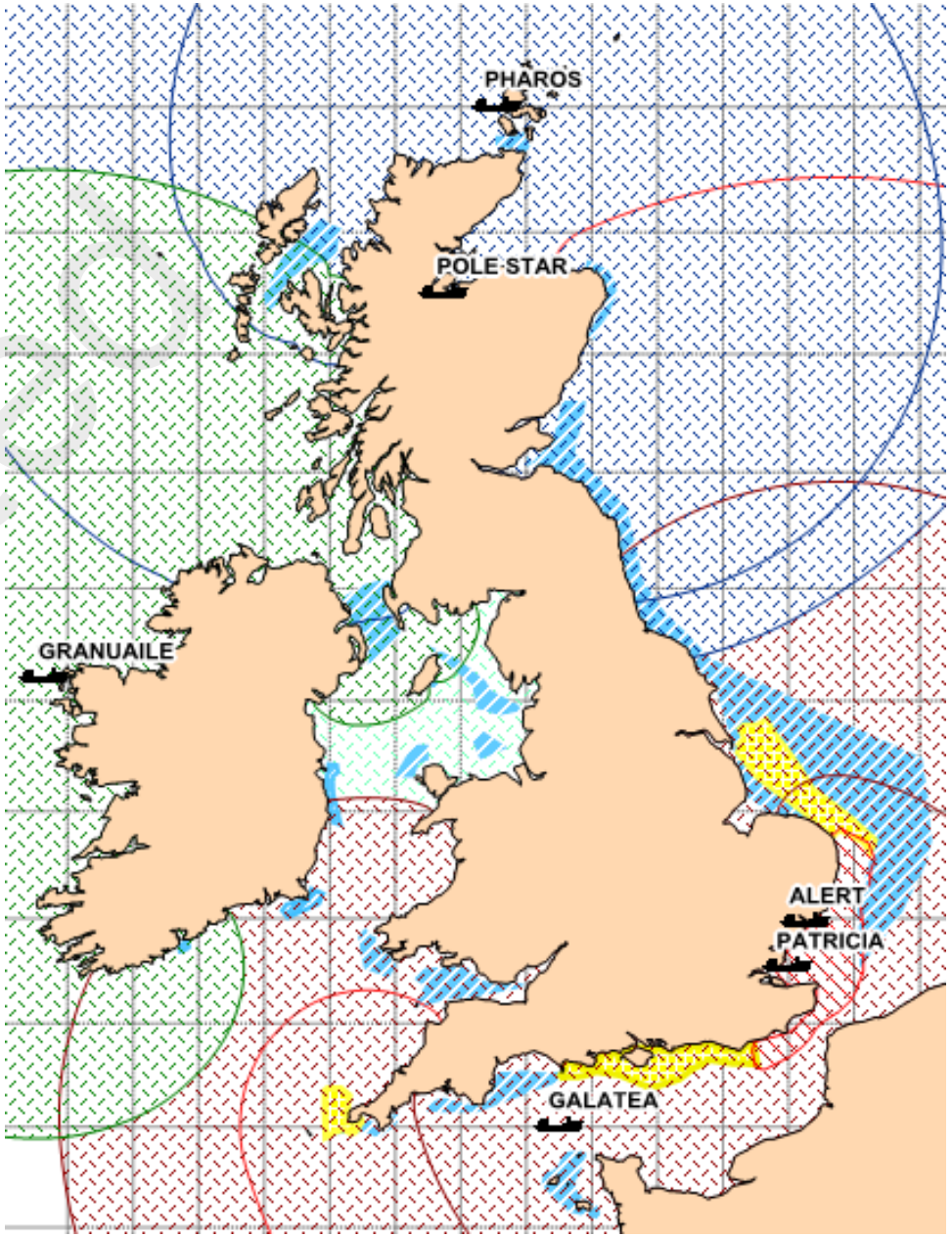
Wreck, AtoN Casualty, RRC Incidents	
Holyhead Bay	*0 % Coverage*
Liverpool Bay	*0 % Coverage*
Morecambe bay	*18 % Coverage*
Dublin Bay & East Irish Coast	*39 % Coverage*





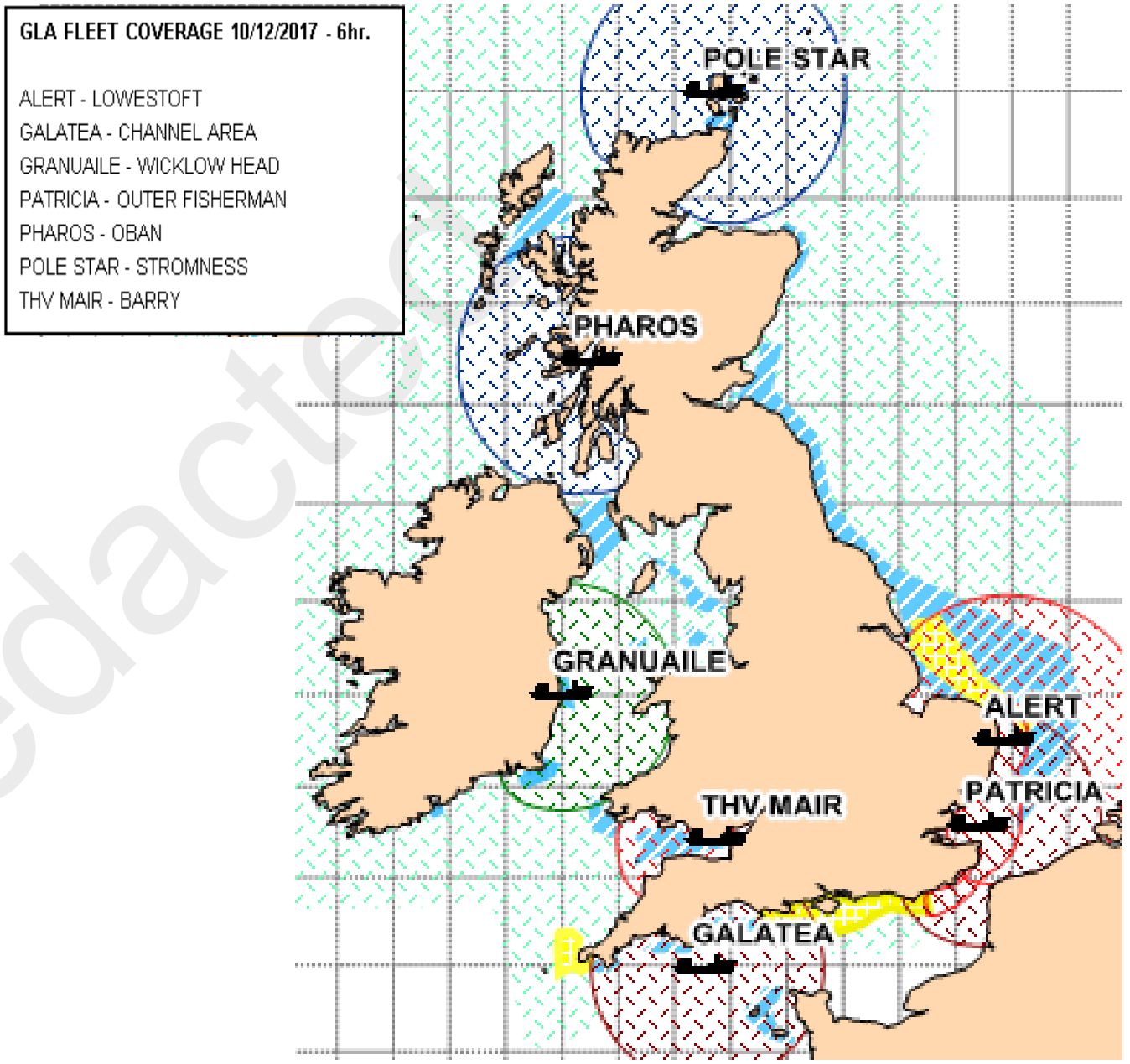
12 Hrs RRC

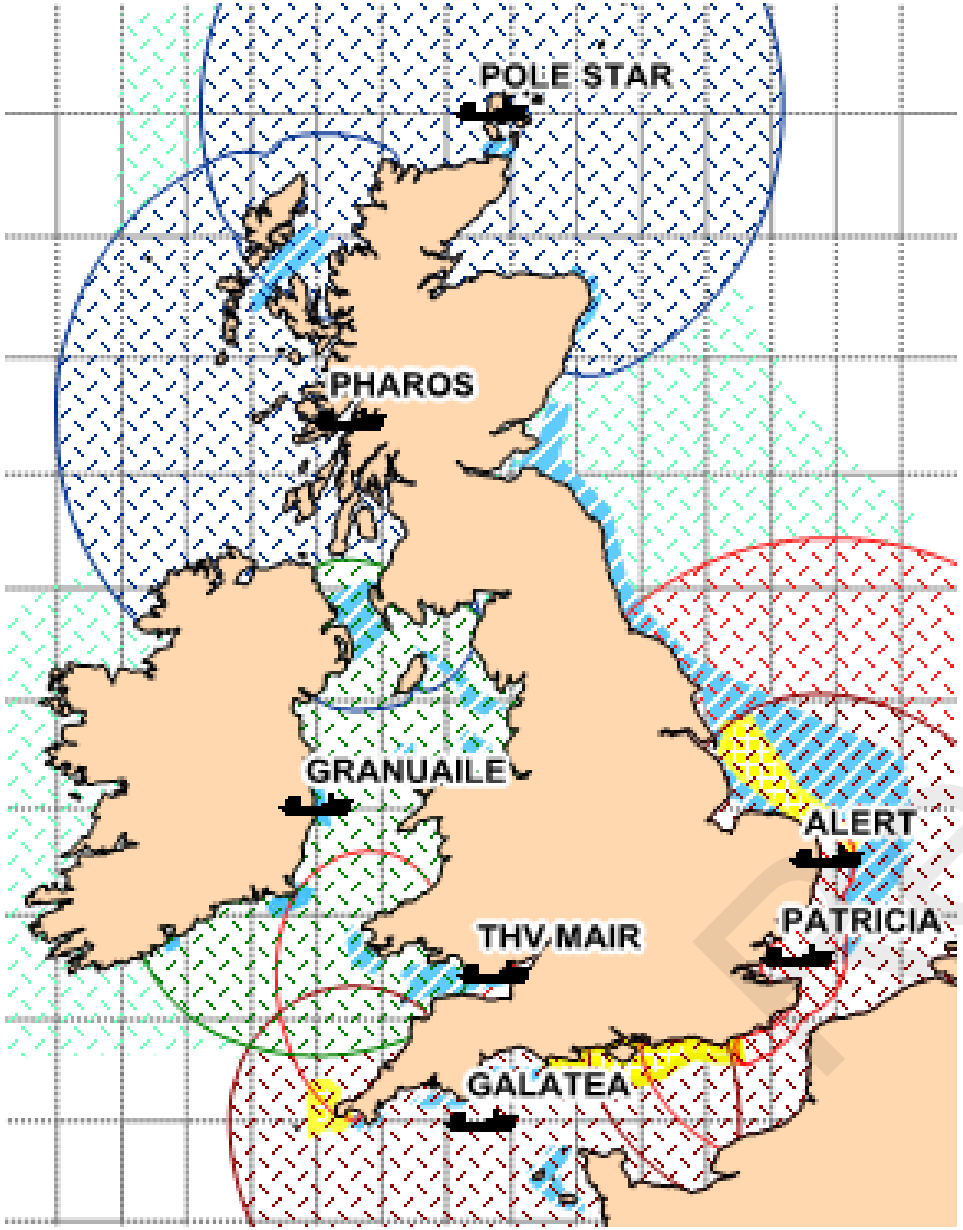
24 Hrs RRC



Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	Yes	100%	GRANUAILE, PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, PHAROS, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	No	0%	
11	DUBLIN BAY AND EAST IRISH COAST	24	No	39%	GALATEA
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA
13	BRISTOL CHANNEL	24	Yes	100%	ALERT, GALATEA
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, PATRICIA
15	MORECAMBE BAY	24	No	18%	GRANUAILE
16	LIVERPOOL BAY	24	No	0%	
17	ISLE OF MAN	24	No	12%	GRANUAILE
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA
20	SE IRISH COAST	24	Yes	100%	GALATEA
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

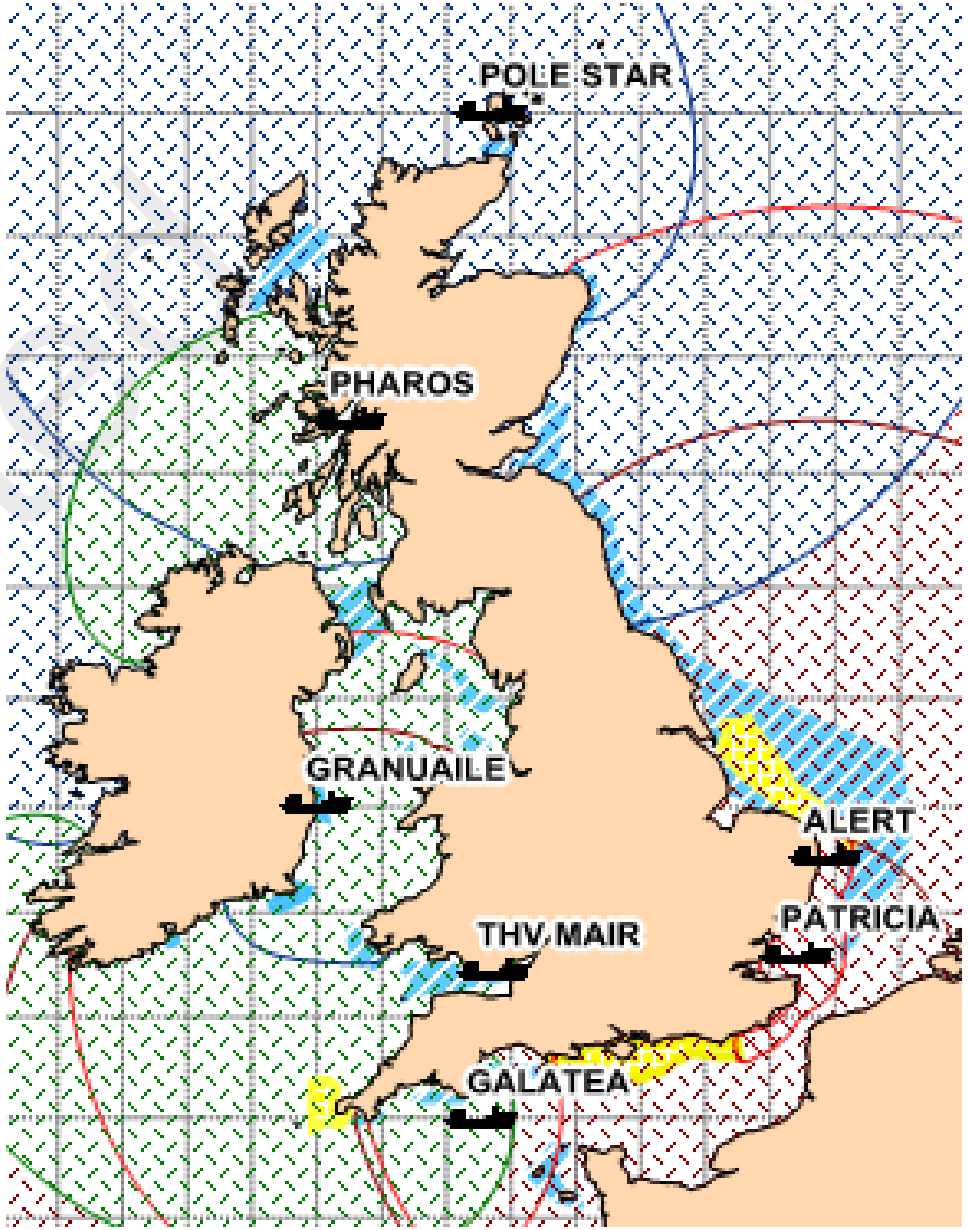
10th Dec 2017	7 Vessel Scenario – Baseline Plan
Vessel Name (Speed Kts)	
THV Patricia(12)	*Thames Estuary Buoy work*
THV Galatea(12)	*Channel – Penzance Buoy work*
THV Alert(16)	*Yarmouth RRC*
MV Mair(10)	*Barry RRC*
NLV Pharos(12)	*On Passage to Neist Point for Heli-Ops*
NLV Pole Star(11)	*North & East Coast Local Light Inspections*
ILV Granuaile(12)	*Ireland East Coast RRC*





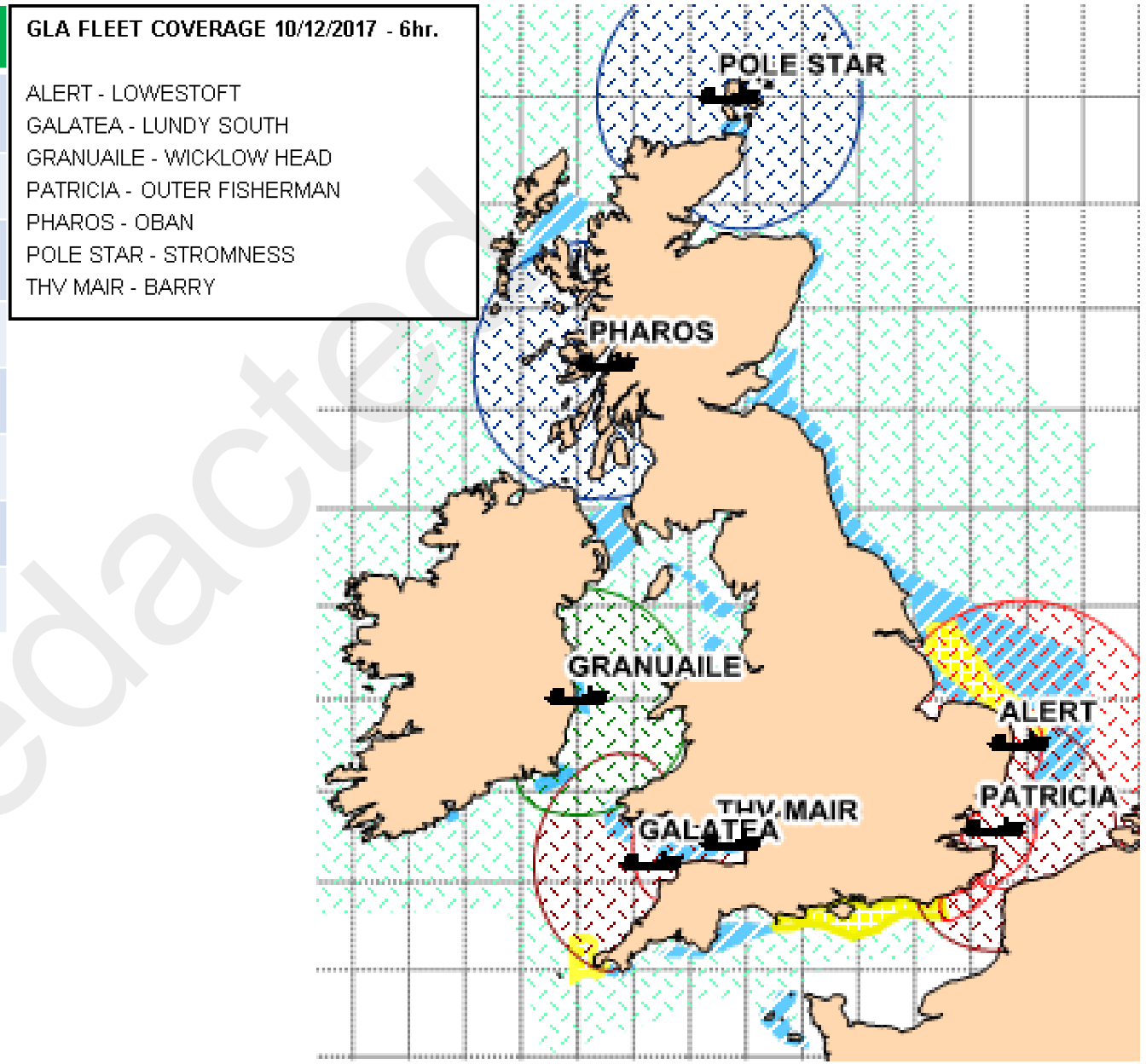
12 Hrs RRC

24 Hrs RRC

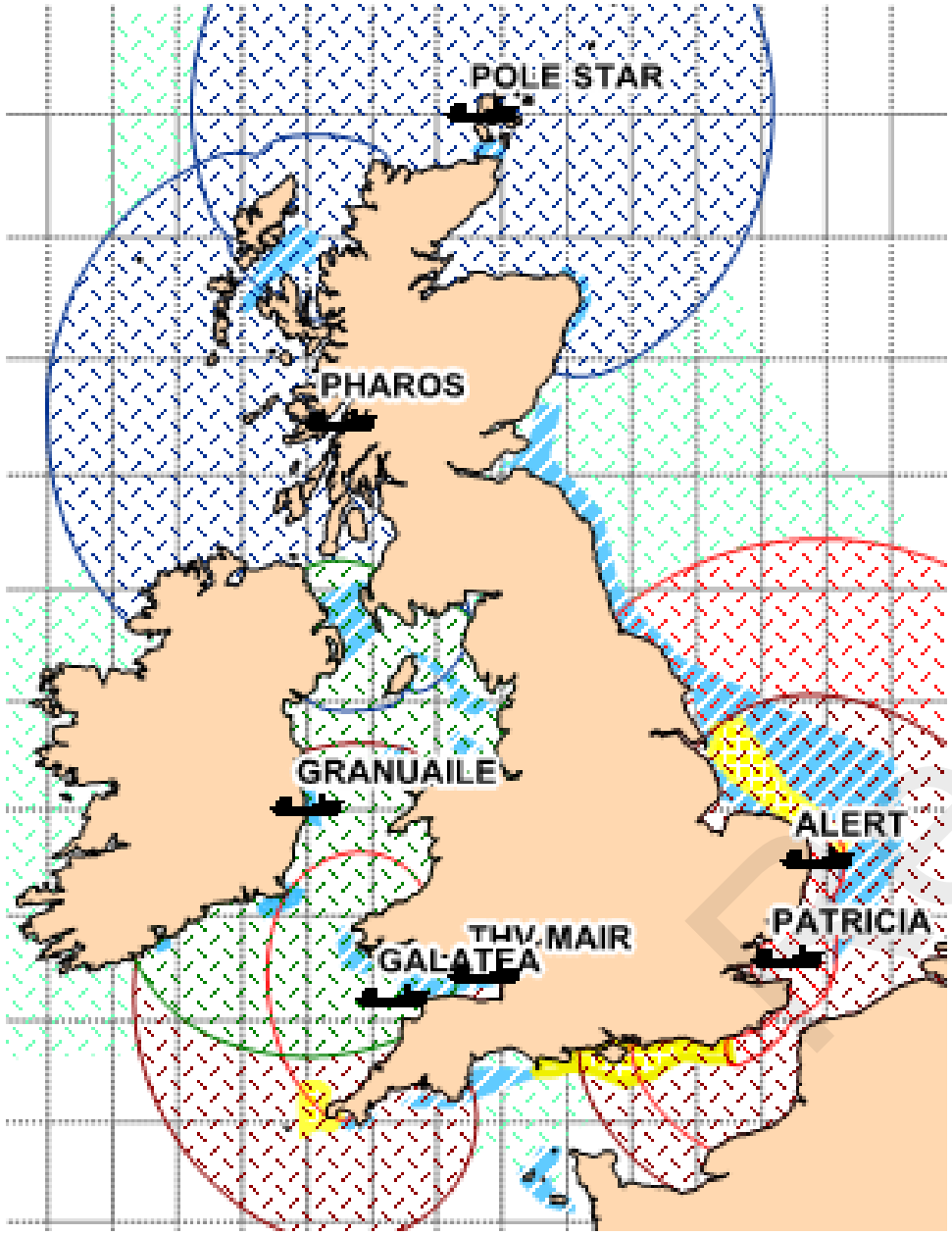


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	Yes	100%	ALERT, GALATEA, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, GALATEA, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

10th Dec 2017	7 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Made passage to Deal for Shelter*
THV Galatea(12)	*Made passage to Lundy for Light inspections*
THV Alert(16)	*Lowestoft; Fire Pump repairs*
MV Mair(10)	*Barry RRC*
NLV Pharos(12)	*Passage from Oban to Neist Point*
NLV Pole Star(11)	*Made passage from Stromness to Shetlands*
ILV Granuaile(12)	*Dublin Bay weatherbound*

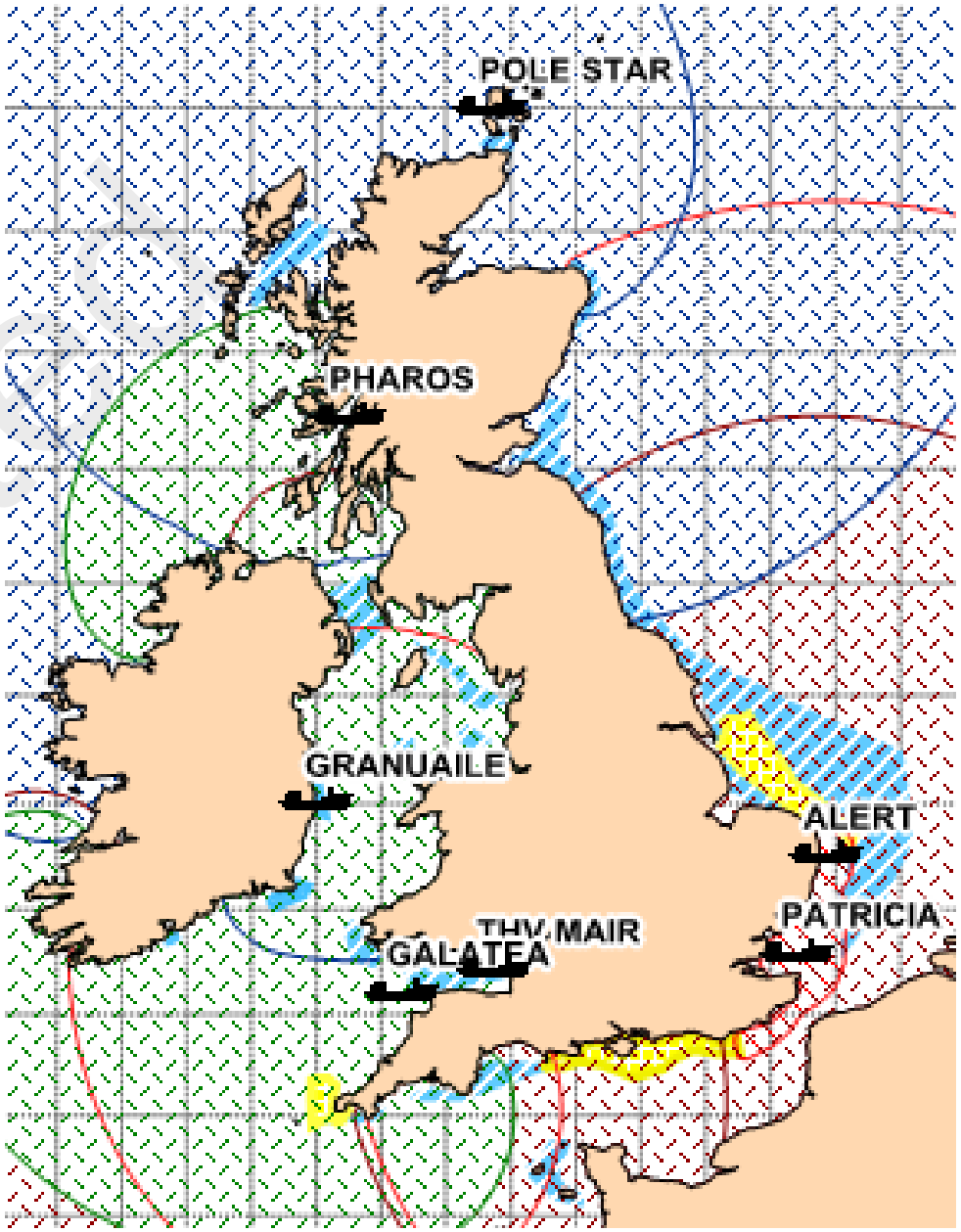


Wreck, AtoN Casualty, RRC Incidents	
Portland to Beachy 12 Hrs RRC	*87%*



12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

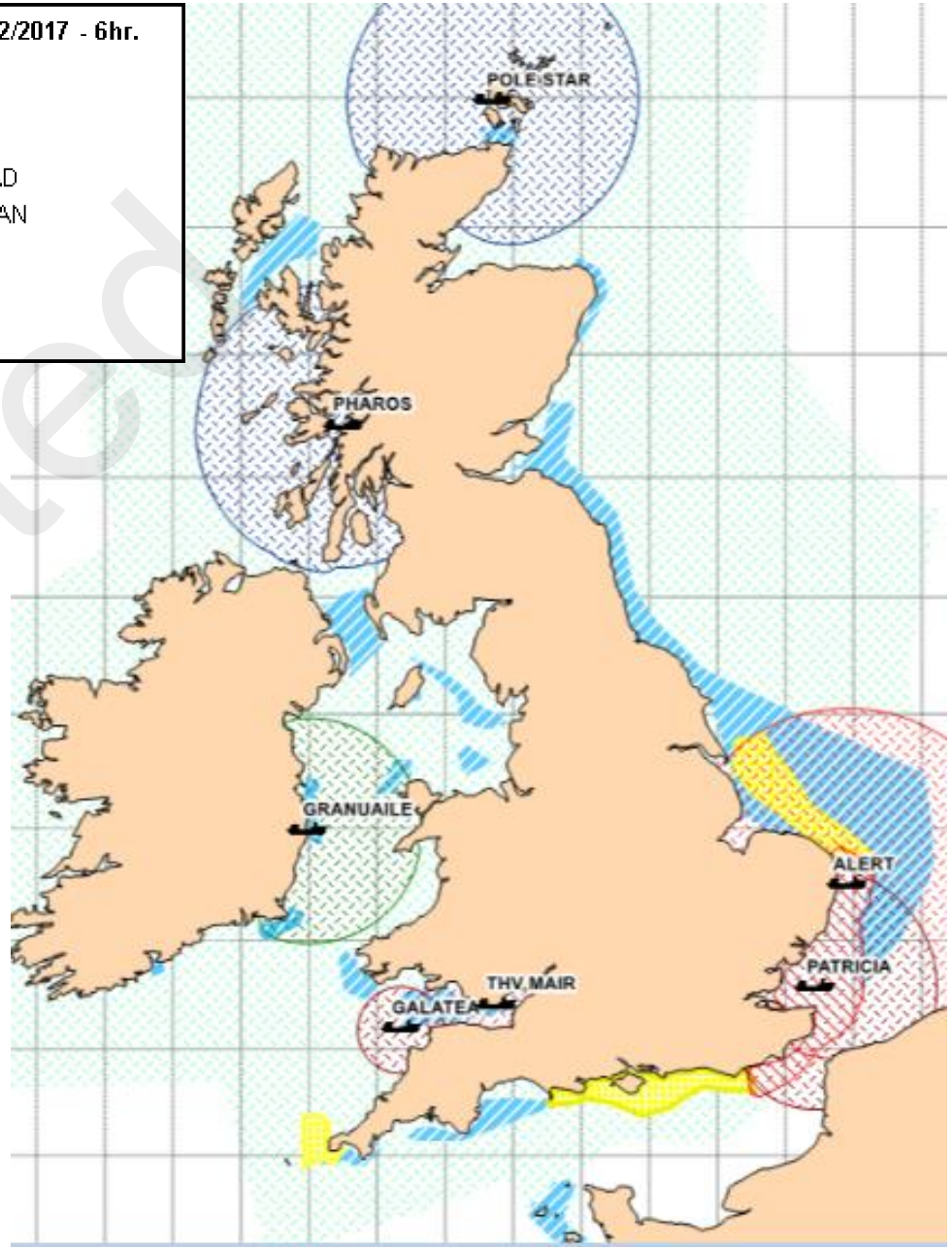
Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	87%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA, THV MAIR
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA, THV MAIR
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE ST...

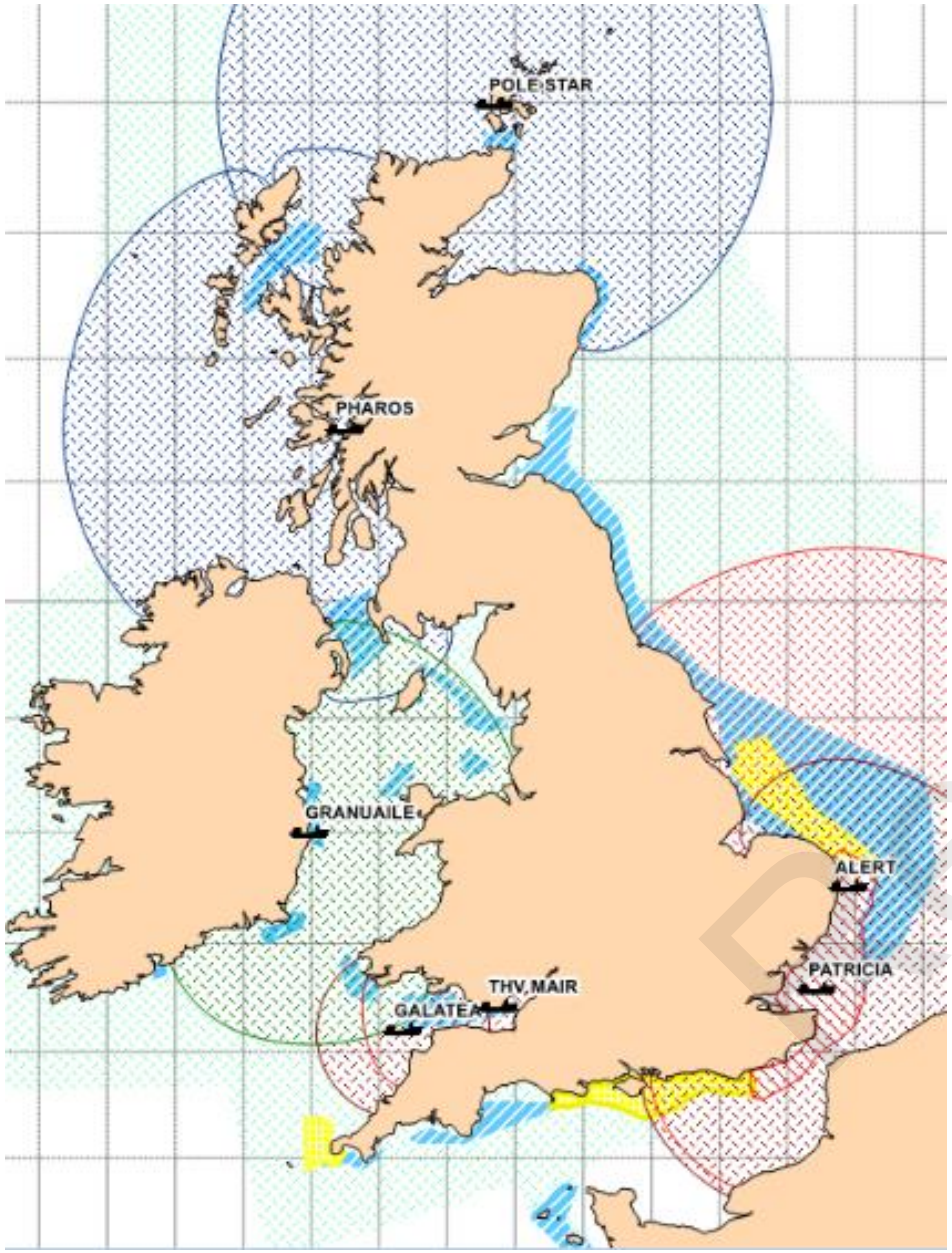
10th Dec 2017	7 Vessel Scenario - Actual
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	*Made passage to Lundy for Light inspections*
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	*Made passage from Stromness to Shetlands*
ILV Granuaile	*Dublin Bay weatherbound*

Wreck, AtoN Casualty, RRC Incidents	
Weatherbound	*Incident 164*
Land's End 12 Hrs RRC	*0% Coverage*
Portland to Beachy 12 Hrs RRC	*60% Coverage*
Cromer to Dover 6 Hrs RRC	*99% Coverage*

GLA FLEET COVERAGE 10/12/2017 - 6hr.

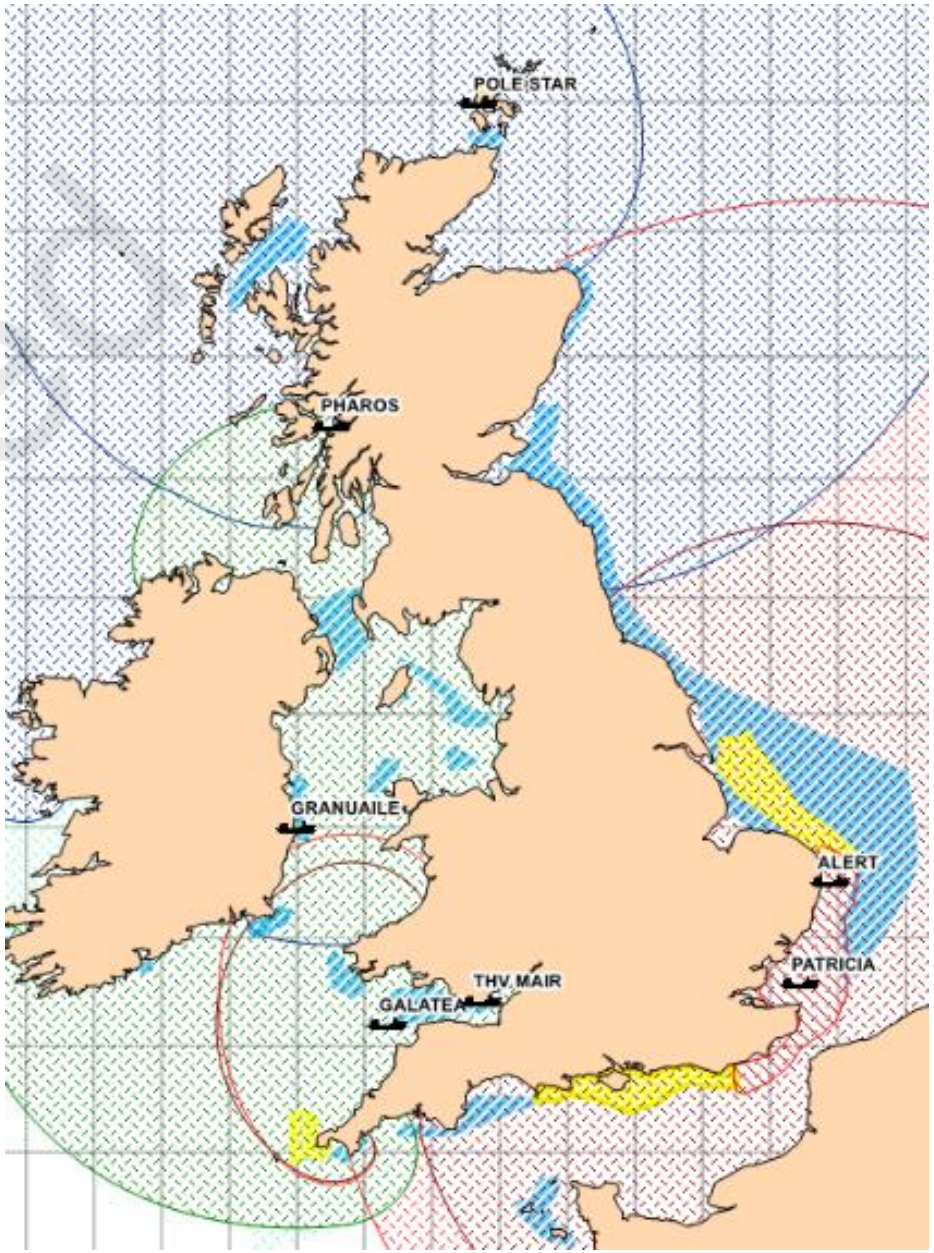
ALERT - LOWESTOFT
GALATEA - LUNDY SOUTH
GRANUAILE - WICKLOW HEAD
PATRICIA - OUTER FISHERMAN
PHAROS - OBAN
POLE STAR - STROMNESS
THV MAIR - BARRY





12 Hrs RRC

24 Hrs RRC

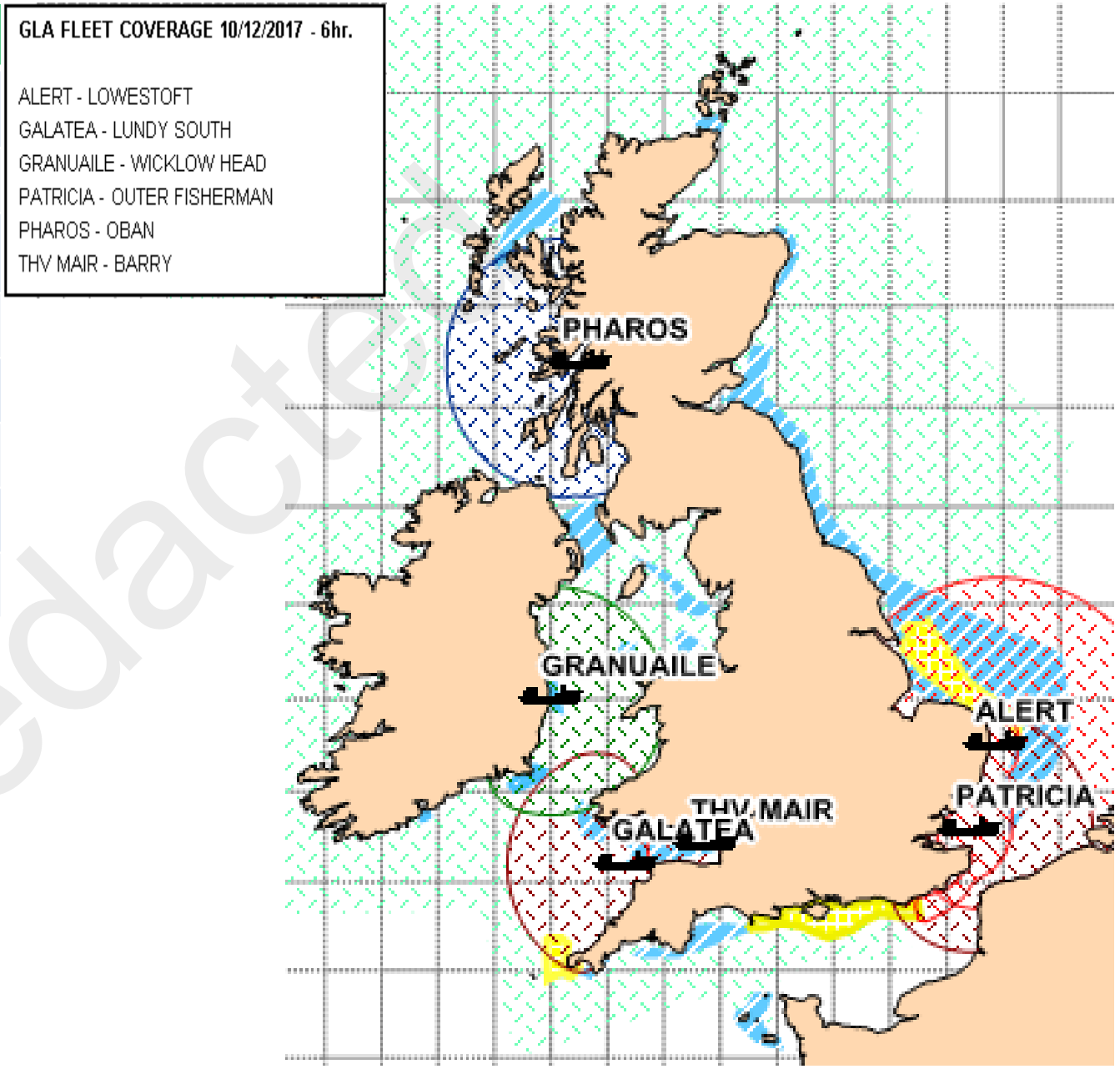


Response Region Coverage

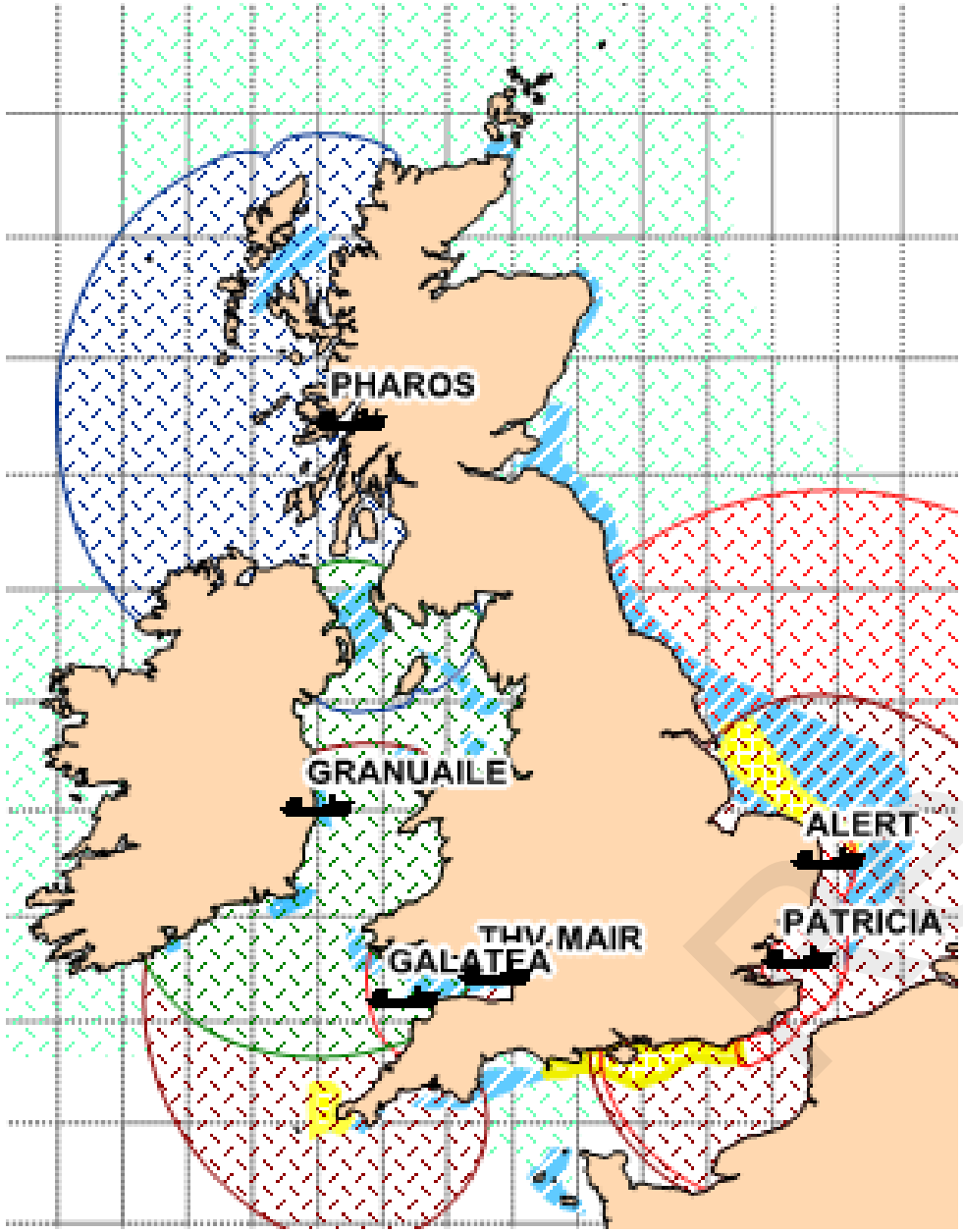
File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	60%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS, POLE STAR
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA, POLE STAR
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS, POLE STAR
8	PENTLAND FIRTH	24	Yes	100%	PHAROS, POLE STAR
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, POLE STAR, T...

10th Dec 2017	6 Vessel Scenario – Service Speeds
Vessel Name (Speed Kts)	
THV Patricia(12)	*Made passage to Deal for Shelter*
THV Galatea(12)	*Made passage to Lundy for Light inspections*
THV Alert(16)	*Lowestoft; Fire Pump repairs*
MV Mair(10)	*Barry RRC*
NLV Pharos(12)	*Passage from Oban to Neist Point*
NLV Pole Star(11)	***REMOVE***
ILV Granuaile(12)	*Dublin Bay weatherbound*

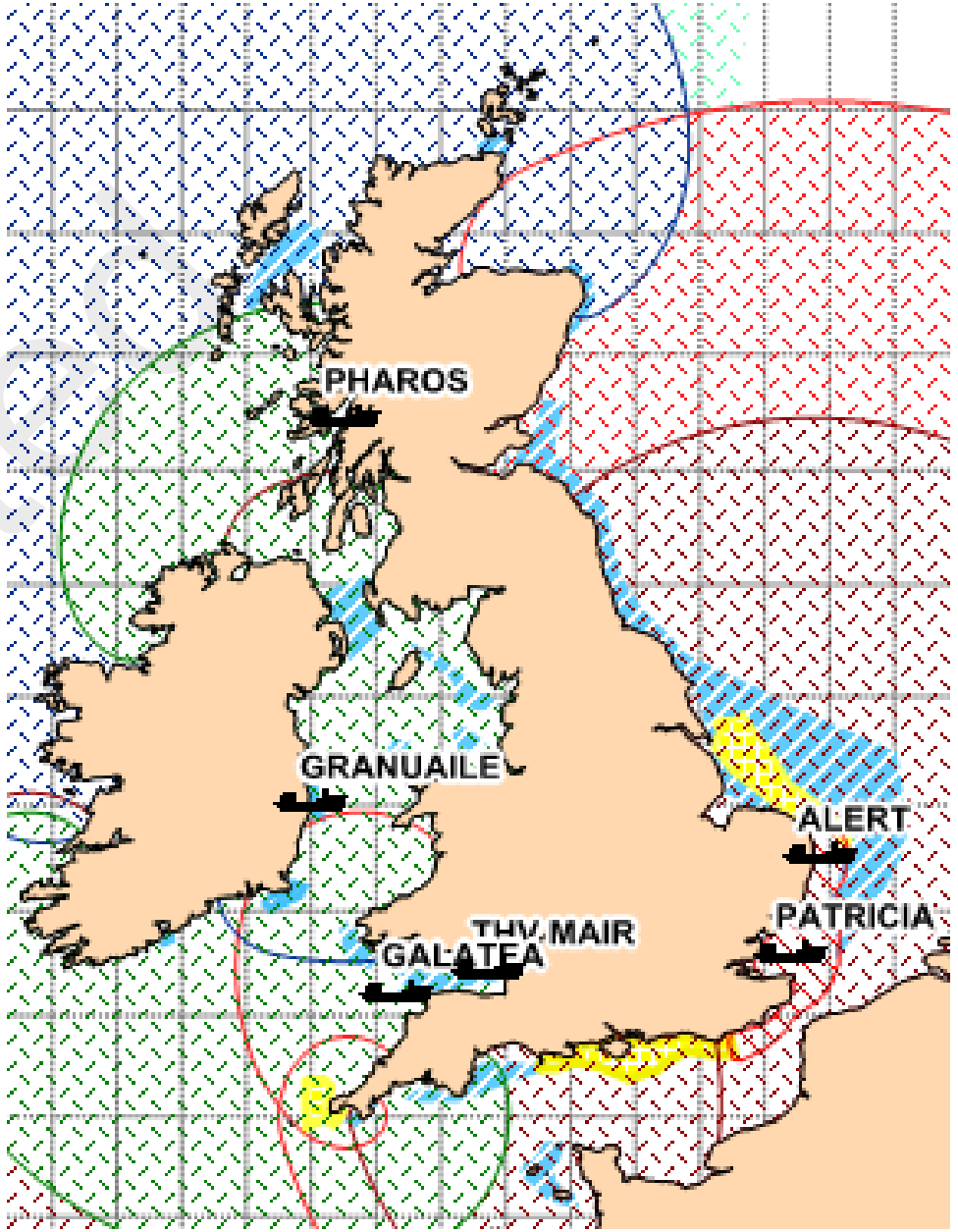


Wreck, AtoN Casualty, RRC Incidents	
Weatherbound	*Incident 164*
Portland to Beachy	*87%*



12 Hrs RRC

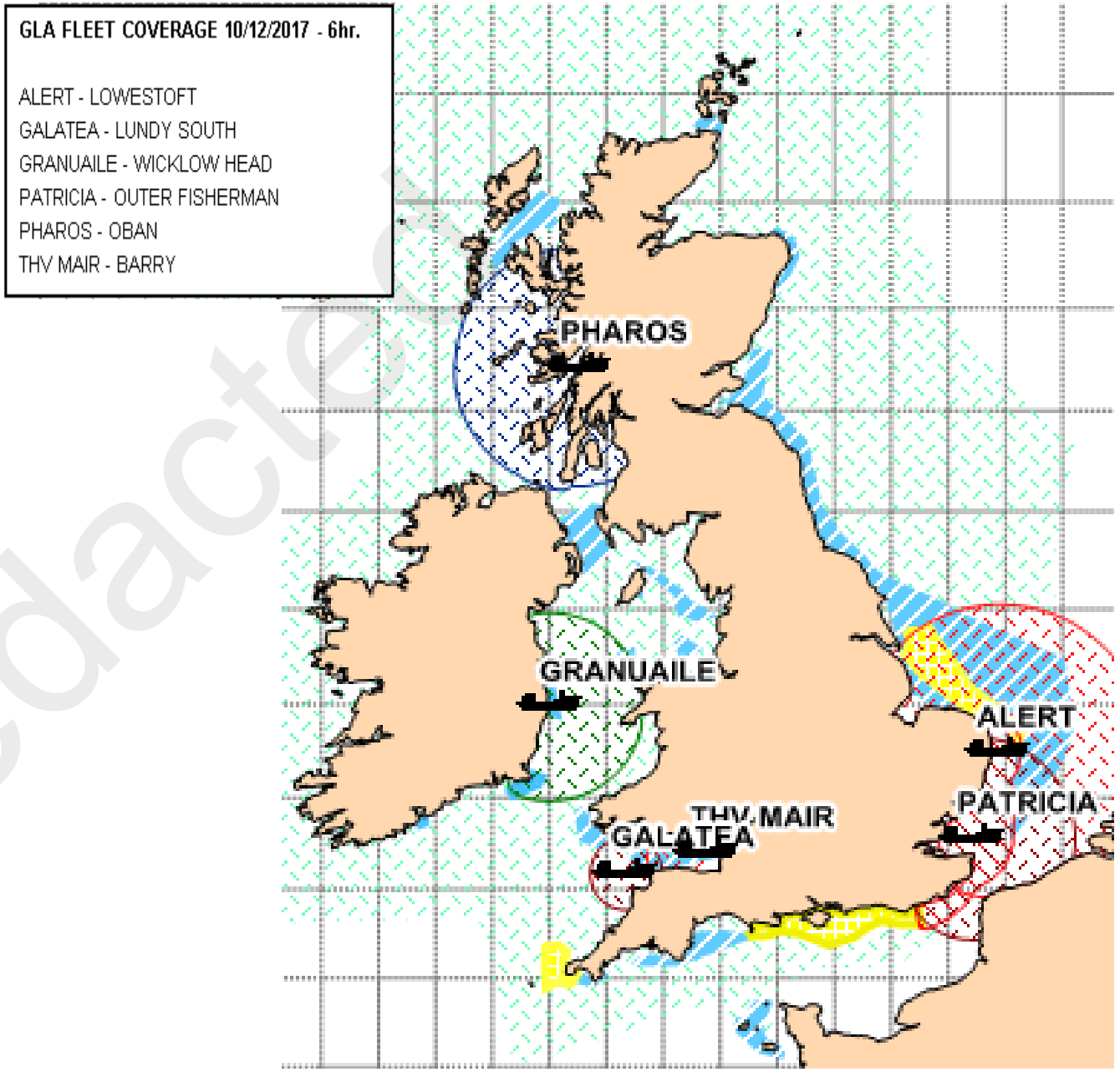
24 Hrs RRC

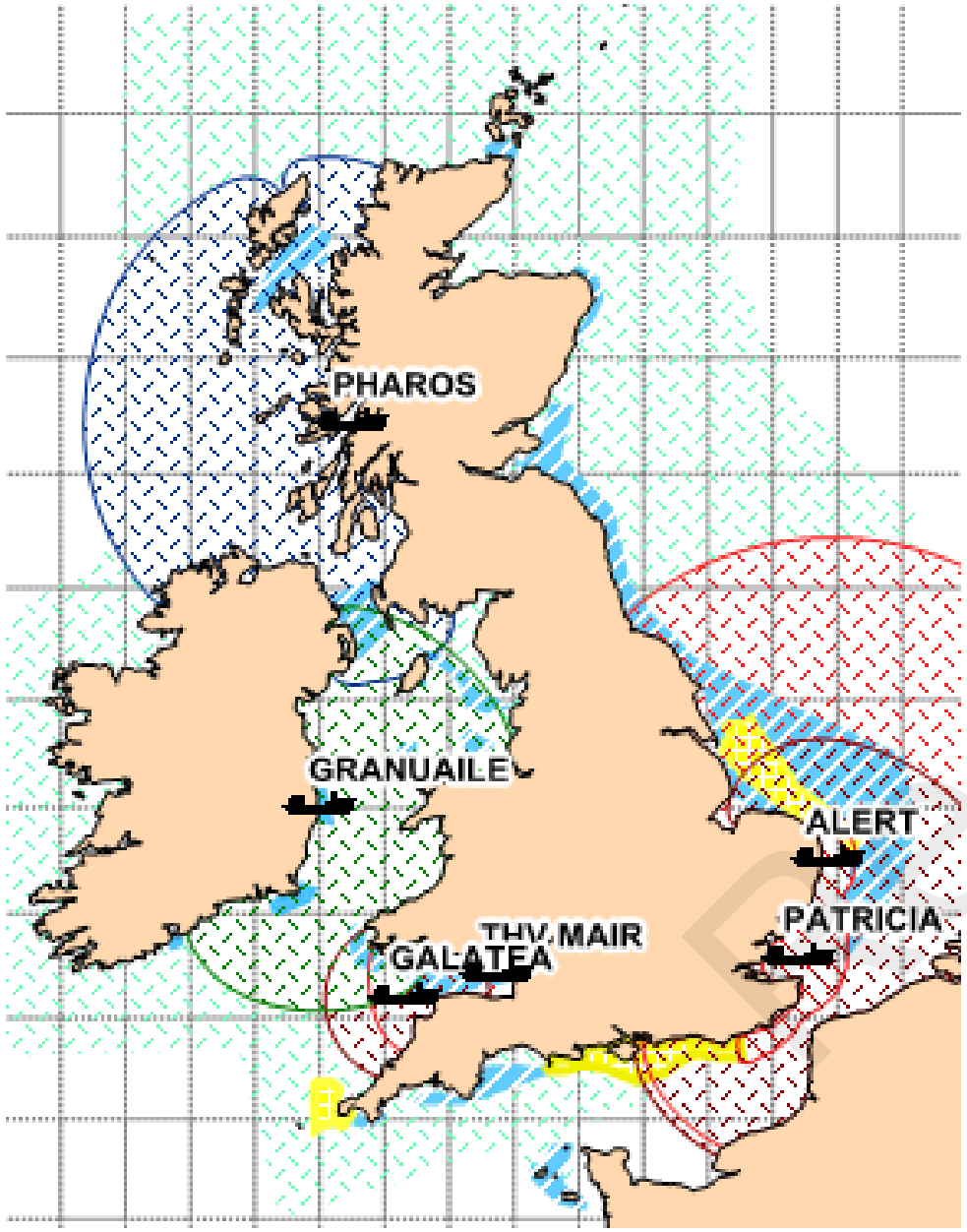


Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	Yes	100%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	87%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	Yes	100%	GALATEA
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GALATEA, GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GALATEA, GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, GALATEA, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

10th Dec 2017	6 Vessel Scenario - Actual
THV Patricia	*Made passage to Deal for Shelter*
THV Galatea	*Made passage to Lundy for Light inspections*
THV Alert	*Lowestoft; Fire Pump repairs*
MV Mair	*Barry RRC*
NLV Pharos	*Passage from Oban to Neist Point*
NLV Pole Star	***REMOVE***
ILV Granuaile	*Dublin Bay weatherbound*

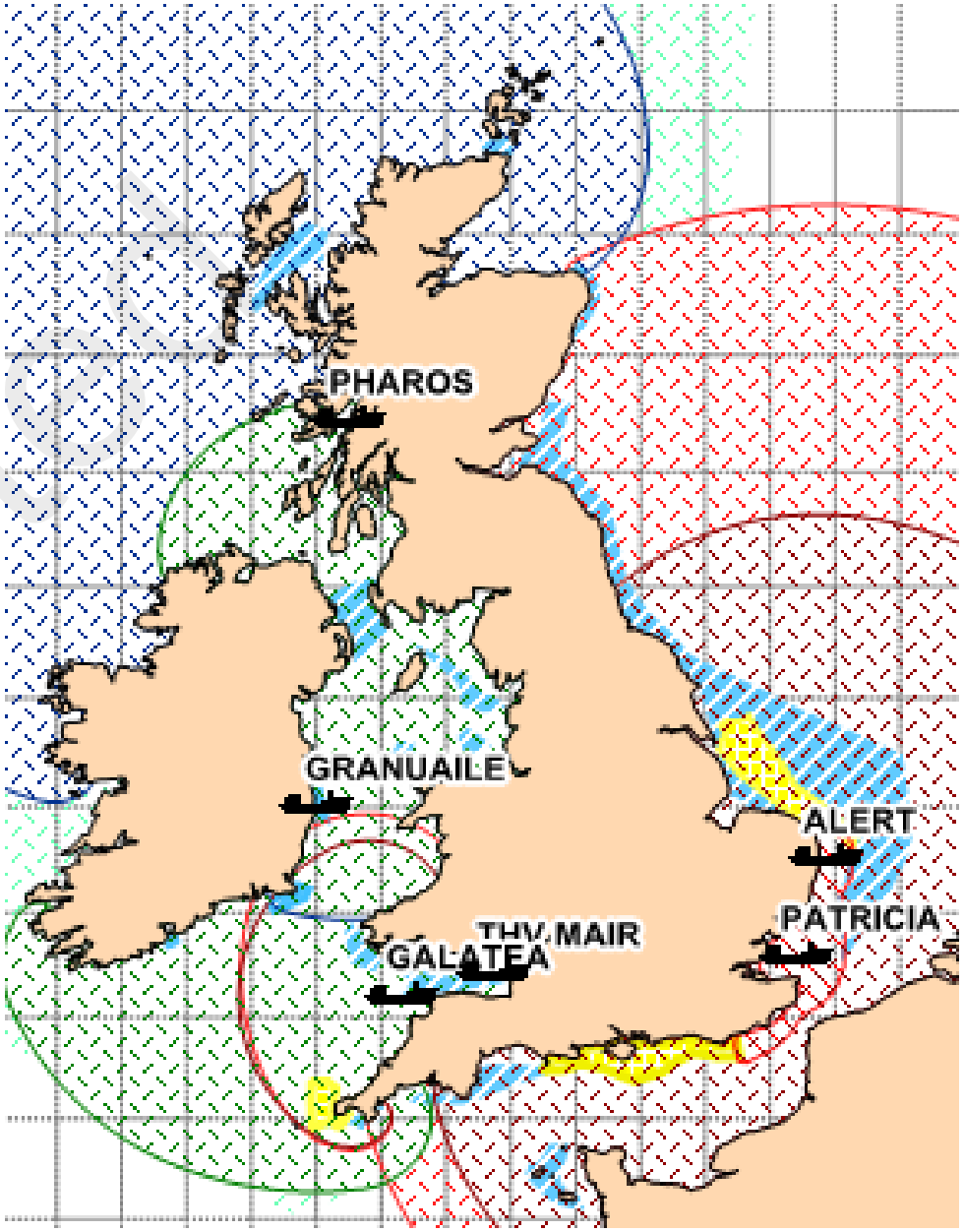
Wreck, AtoN Casualty, RRC Incidents	
Weatherbound	*Incident 164*
Land's End 12 Hrs RRC	*0% Coverage*
Portland to Beachy 12 Hrs RRC	*60% Coverage*
Cromer to Dover 6 Hrs RRC	*99% Coverage*





12 Hrs RRC

24 Hrs RRC



Response Region Coverage

File Edit

Region	Name	Hours	Covered	Percent	Vessels
1	CROMER TO DOVER STRAIT	6	No	99%	ALERT, PATRICIA
2	PORTLAND BILL TO BEACHY HEAD	12	No	60%	ALERT, PATRICIA
3	HUMBER TO CROMER	12	Yes	100%	ALERT, PATRICIA
4	LAND'S END	12	No	0%	
5	THE MINCH	24	Yes	100%	PHAROS
6	SOUTHERN NORTH SEA TO TAY	24	Yes	100%	ALERT, PATRICIA
7	ABERDEEN AND NE COAST	24	Yes	100%	ALERT, PHAROS
8	PENTLAND FIRTH	24	Yes	100%	PHAROS
9	NORTH CHANNEL	24	Yes	100%	GRANUAILE, PHAROS
10	HOLYHEAD APPROACHES	24	Yes	100%	GRANUAILE, PHAROS
11	DUBLIN BAY AND EAST IRISH COAST	24	Yes	100%	GRANUAILE, PHAROS
12	MILFORD HAVEN APPROACHES	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
13	BRISTOL CHANNEL	24	Yes	100%	GALATEA, GRANUAILE, THV MAIR
14	PENZANCE TO PORTLAND BILL	24	Yes	100%	ALERT, GRANUAILE, PATRICIA
15	MORECAMBE BAY	24	Yes	100%	GRANUAILE, PHAROS
16	LIVERPOOL BAY	24	Yes	100%	GRANUAILE, PHAROS
17	ISLE OF MAN	24	Yes	100%	GRANUAILE, PHAROS
18	CORK APPROACHES	24	Yes	100%	GRANUAILE
19	PENZANCE TO SCILLIES	24	Yes	100%	ALERT, GALATEA, GRANUAILE, THV MAIR
20	SE IRISH COAST	24	Yes	100%	GALATEA, GRANUAILE, PHAROS, THV MAIR
21	CHANNEL ISLANDS	24	Yes	100%	ALERT, PATRICIA
22	BRITISH ISLES	48	Yes	100%	ALERT, GALATEA, GRANUAILE, PATRICIA, PHAROS, THV MAIR

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

Work Package 3 – Charter Test and Evaluation

Phase 1 – Engage technical specialist and develop market test framework and consider independent report for WP3

Technical Specialist Report

GLA Fleet Review – Phase 2

Work Package 3 (WP3) – Technical Specialist Report

Author: Project Management Working Group (PMWG)
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Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

1 Introduction

The project set out to test the recommendations of the 2015 Houlder Fleet Review Phase 1 Report that among other things 'proposed improved coordinated fleet planning and that short term / spot market charter vessels could supplement a reduced core fleet'.

Work package (WP3) addressed the second part of this assumption that short term / spot market charter vessels could supplement a reduced core fleet by engaging with a technical specialist within the chartering arena.

Following a sealed-bid tender process compliant with all U.K. and E.U. procurement legislation requiring the publishing of a competitive contract notice Braemar ACM Shipbroking Ltd. were engaged to provide an independent report against the assumption above made within the 2015 Houlder report.

The Braemar report in full follows:

BRAEMAR

CHARTER TEST EVALUATION FOR GLA FLEET REVIEW
TENDER REFERENCE: T0340/SEPTEMBER 2016

IOTH NOVEMBER 2017

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

This report has been prepared on behalf of Braemar ACM Shipbroking Ltd, in accordance with the ITT - THE ENGAGEMENT OF A TECHNICAL SPECIALIST FOR CHARTER TEST EVALUATION FOR GLA FLEET REVIEW, tender reference number: T0340/September 2016

Signed: .....

Designation:.....

Date:.....

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Appendix 8 – Gilbert versus Trinity House Judgment
Appendix 9 – Kingdom of Fife Specification

List of Abbreviations

AHT	Anchor Handling Tug
AHTS	Anchor Handling Tug Supply (Vessel)
AIS	Automatic Identification System
AtoN	Aids to Navigation
Bimco	Baltic and International Maritime Council
BST 2005	Bimco Supplytime 2005
BST 2017	Bimco Supplytime 2017
CAPEX	Capital Expenditure
CAST	Coastguard Agreement for Salvage and Towage
CFMG	Coordinated Fleet Management Group
CIG	Commercial Income Generation
CIL	Commissioners of Irish Lights
CMID	Common Marine Inspection Document
C/P	Charter Party
DfT	UK Department for Transport
DGPS	Differential Global Positioning System
DP	Dynamic Positioning
ECDIS	Electronic Chart Display & Information System
ETV	Emergency Tow Vessel
GLA	General Lighthouse Authority
GLF	General Lighthouse Fund
GPS	Global Positioning System
GRT	Gross Registered Tonnage
[redacted]	[redacted]
GVCM	General Vessel Charter Market
IALA	International Association of Marine Aids to Navigation and Lighthouse Authorities
ILDF	Independent Light Due Forum
ILV	Irish Lights Vessel
IMO	International Maritime Organisation
ITT	Invitation to Tender
JUDR	Jack up drilling rig
LAC	Lights Advisory Committee
LAS	Lightweight Aluminium Structures
LD	Light Dues
MAIB	Marine Accident Investigation Branch
MANT	Medium Aid to Navigation Tender
MCA	Maritime and Coastguard Agency
MSA	Merchant Shipping Acts
MFT	Multi-Function Tender
MoD	Ministry of Defence
MOU	Memorandum of Understanding
NLB	Northern Lighthouse Board
NLV	Northern Lighthouse Vessel
NtM	Notice to Mariners
OPEX	Operating Expenditure
PSV	Platform Supply Vessel
RACON	Radar Transponder Beacon

RIB	Rigid Inflatable Boat
RIV	Rapid Intervention Vessel
ROV	Remote Operated Vehicle
RRC	Risk Response Criteria
SANT	Small Aid to Navigation Tender
SOSREP	Secretary of State's Representative
SSDR	Semi - submersible drilling rig
TEZ	Temporary Exclusion Zone
TH	Trinity House
THV	Trinity House Vessel
TPV	Third Party Vessel

1 INTRODUCTION

1.1 Purpose of the report

Trinity House issued an ITT on behalf of the three GLAs – tender reference T0340/September 2016 – Engagement of a technical specialist for charter test evaluation for GLA Fleet review.

The ITT was divided into two phases. The first phase was to engage a technical specialist to produce a report on the feasibility and risk of utilising the charter market to deliver the elements of GLA responsibility and in conjunction with the GLAs develop a means of testing the market.

The second phase (if required) will be to implement theoretical and practical test scenarios and responses to real world events in accordance with market testing methodology.

Braemar ACM Shipbroking Ltd together with Braemar Technical Services responded to the ITT and were subsequently awarded the contract to produce the report.

1.2 GLA responsibilities

The GLAs primary responsibilities are set out in parts VIII and IX of the UK Merchant Shipping Act 1995 and in the case of Irish Lights Statutory undertakings in respect of Ireland, Part XI of the Merchant Shipping Act (MSA) 1894 and the Merchant Shipping (Salvage and Wrecks) Act 1993. These responsibilities include but are not limited to:

- Provision of Aids to Navigation (AtoN) for general navigation purposes.
- Superintendence and management of all AtoN within their respective areas.
- Marking, removal and/or dispersal of wrecks considered to be a danger to navigation outside harbour areas.

1.3 Report Deliverables

Vessel Visits

To fully understand the operational capabilities of the GLA vessels, visits were conducted to four of the vessels as well as the Trinity House 's operational headquarters in Harwich.
The vessels visited were THV Galatea, (Galatea) THV Alert, (Alert) NLV Pole Star (Pole Star) and the ILV Granuaile (Granuaile).

Vessel Capabilities

The capabilities of the GLA vessels needed to perform the statutory undertakings are described to determine whether vessels from the General Vessel Charter Market (GVCM) are capable of performing the same duties on both a spot (emergency) or on a long-term charter basis.

Extensive conversations were also held with the Masters of both NLV Pole Star and ILV Granuaile. Helicopter operations were not observed but were discussed with the Master of the Granuaile. In addition, an operational video was provided by the Northern Lighthouse Board showing some of the duties carried out during helicopter operations.

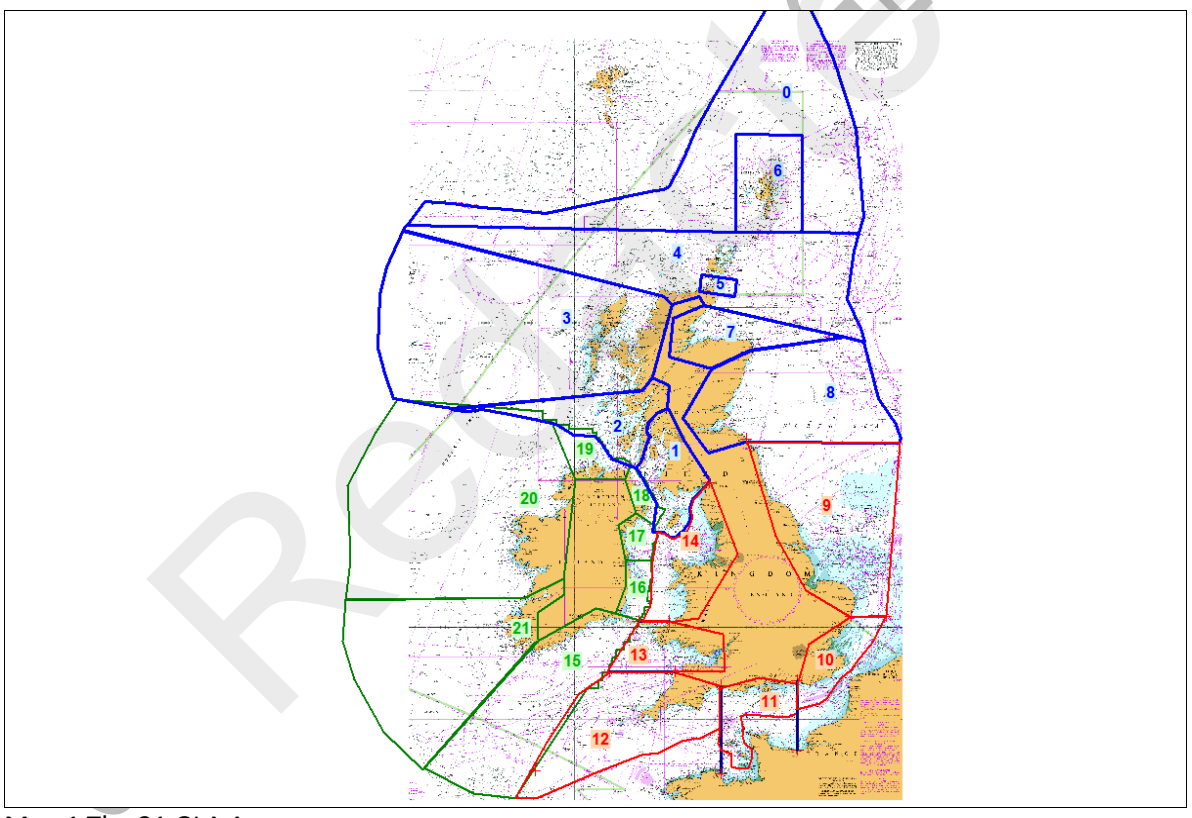
2. METHODOLOGY

2.1 Previous reports and Shared Data Portal

As was done for the Houlder Report, a shared online data portal was established by the Project Board to provide us with necessary information and communication. Parts of the Houlder Report were also provided. Parts 6, 7 and 8 as well as Appendices 1 - 5, Appendix 7 and Appendices 10 - 14 in the Houlder Report were not provided so that we would be able to produce a report uninfluenced by the conclusions reached in that report.

2.2 GLA Geographical Areas

The three GLAs are responsible for AtoN in the waters around the United Kingdom and the Republic of Ireland. The waters have been divided into 21 geographical sea areas. Areas 1 – 8 cover the waters off the coast of Scotland and are shown bordered in blue on Map 1 below. Areas 9 – 14 bordered in red cover the waters off the coast of England, Wales and the Channel Islands whilst areas 9 – 15 bordered in green on Map 1 cover the waters off the coast of Northern Ireland and the Republic of Ireland.



Map 1 The 21 GLA Areas.

2.3 Response Times to an AtoN Casualty

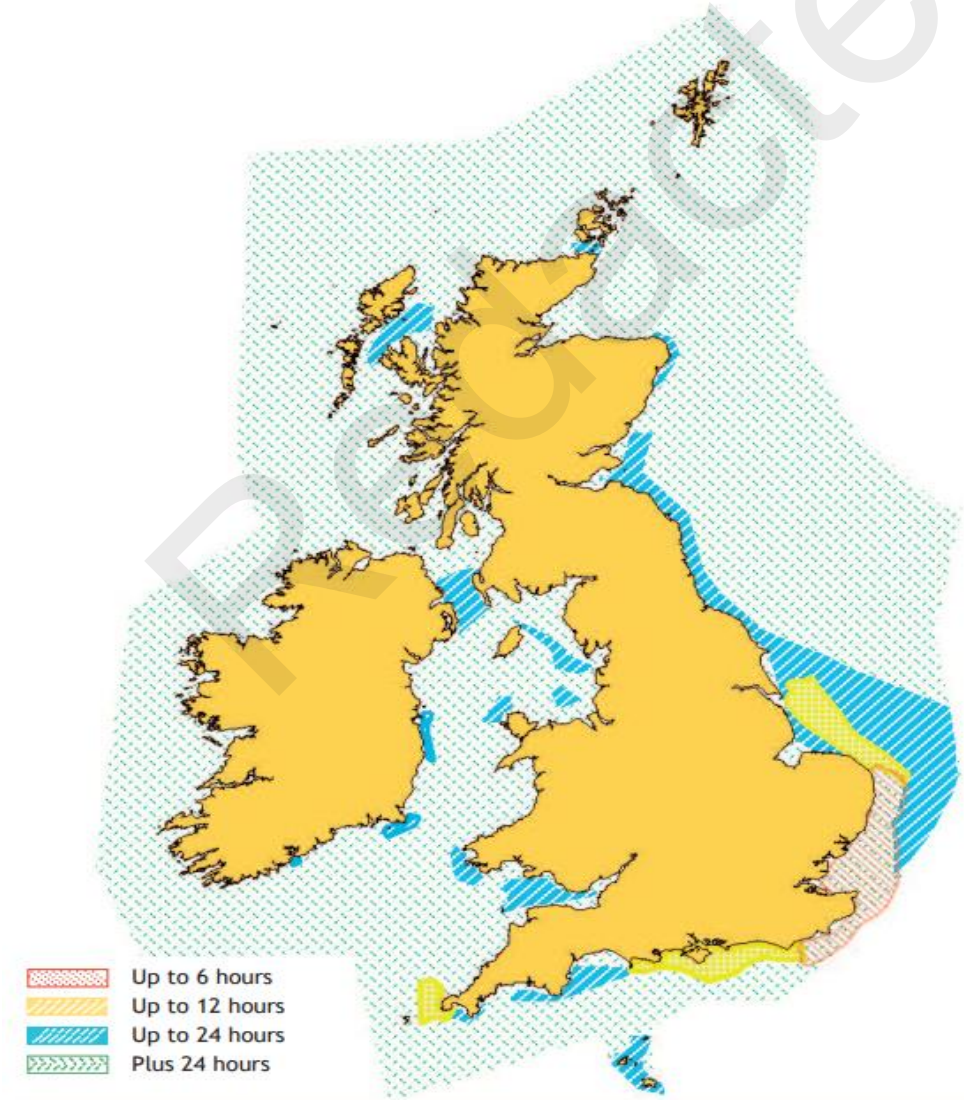
Section 2 of the GLA Risk Response Criteria document (RRC), which is a supporting document of the GLAs Strategy 2025 and beyond, covers the performance targets for the availability of AtoN. The International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) recognises that no AtoN can be available 100% of the time but nonetheless lays down performance targets for AtoN 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” (From IALA Navguide).

Category 1 Aids considered to be of primary navigational significance. With availability of at least 98%.
Category 2 Aids considered to be of navigational significance. With availability of at least 99%.
Category 3 Aids considered to be of less navigational significance than Categories 1 and 2. With availability of at least 97%.
The GLAs exceed these performance targets and expect to continue to do so.

2.4 GLA Response Times to Wrecks and New Dangers

Section 5 of the RRC specifies the speed of response criteria to Wrecks and New Dangers.
These response time areas are shown on Map 2 below. The response time areas are split into 4 distinct time zones reflecting the various quantified risk scores – up to six hours to be on site shown in pink, up to 12 hours to be on site shown in yellow, up to 24 hours to be on site shown in blue and 24 hours plus shown in green.



Map 2 Showing the GLA risk response criteria Areas.

From the map, it is apparent that the areas of most rapid response times are all off the coast of England primarily between the Humber to Chesil Beach and off Land's End, with the six-hour response area being from around Great Yarmouth to just east of Beachy Head.

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

It should be clearly understood that the time of response for AtoN Casualties is separate to and unrelated to the response times for Wrecks and New Dangers.

3. VISITS CONDUCTED AND VESSEL CAPABILITIES

3.1 THV Galatea

Galatea is a British Flag 2007 purpose built Multi-Function Tender (MFT) vessel specifically designed to perform buoy handling, wreck marking, helicopter support and additionally, she is equipped to perform both multibeam and side scan hydrographic surveying. Galatea is 84.2 m long with a moulded breadth of 16.5 m, a light draft of 4.3 m and has a top speed of 12 knots whilst her economic speed is 10 knots. She has accommodation for 40 persons and has a Kongsberg Dynamic positioning system (IMO DP Class 2). Her main crane is Liebherr with an offshore lift capacity of 30 tonnes at 22 m. She has purpose built buoy storage pods to accommodate the tail tubes of the Type 1 buoys built into the vessel and considerable hold storage space below deck. In addition, she has a towing winch, a Palfinger knuckle boom crane and a small stores crane. She has a helicopter deck with refuelling facility and hydrographic surveying capability.

At the time of the visit, Galatea had a crew of 22 on board including cadets – her normal crew is 17. A fuller specification is attached as Appendix 1.

Photo 1 Galatea off Barry Island on the 12th April 2017.

Galatea was the first vessel visited off Barry Island on the 12th April 2017 with the purpose of the visit to see Galatea in operation first hand, to understand the capabilities of the equipment on board and to see her handling a Type 1 buoy – the Breaksea buoy (Photo 2). We were taken to the Galatea on the Galatea's steel work boat which was hoisted on board quickly, efficiently and safely. Whilst on board, we saw the recovery, cleaning and maintenance of the Breaksea buoy (Photo 3) as well as the redeployment of the buoy (Photo 6). During the operation, there were 7 crew members working

on deck. The buoy was cleaned by a jet hose and an Electrical Technician climbed onto and harnessed himself to the buoy to carry out the maintenance of the electronics. During the raising of the chain, it was found that some of the mooring chain was damaged and this was cut out and replaced with chain that was already on board thereby causing the operation to take somewhat longer than anticipated. It was very apparent how critical the DP was for maintaining position during the operation and it was equally apparent how competent, safety conscious and familiar the vessel's crew were with all facets of buoy handling during the retrieval, cleaning, maintenance and redeployment of the buoy.

Photo 2 Breaksea Type 1 buoy.


Photo 3 The Breaksea Buoy being lifted on board over the side of the vessel. The marine growth though not extensive is clearly apparent. The 100 m of chain and 8 tonne sinker were brought on board over the bolster with the chain being held in the shark jaws and then loaded into the chain lockers utilising the gypsies. The open pod for placing the buoy tail tube is bottom left in the photo.

Photo 4 Buoy chain being retrieved with chain going around the gypsy and into the chain locker in the centre.

Photo 5 The Breaksea buoy safely in the pod having been partly cleaned.

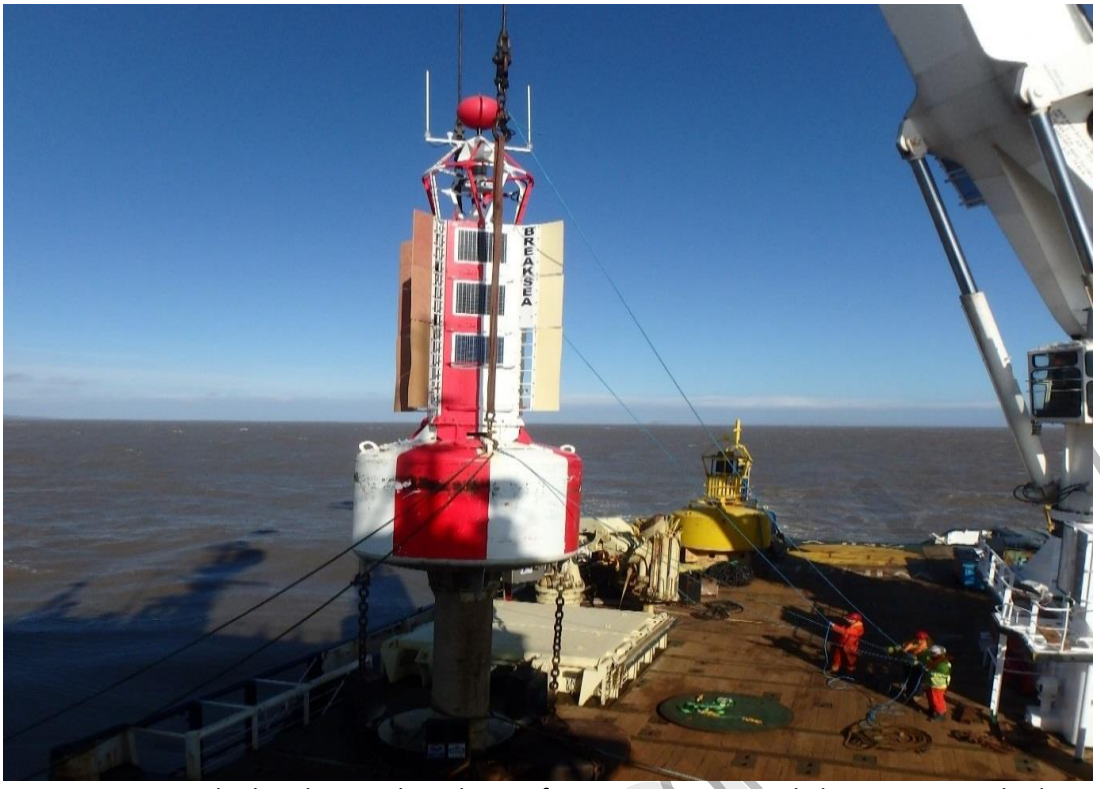


Photo 6 Starting to redeploy the Breaksea buoy after maintenance and cleaning. Once the buoy had been put back in the water, it was very noticeable that the buoy was moving about considerably and the crew on Galatea were very aware of the potential dangers of damage to the buoy which would not necessarily be the case if a TPV was chartered.

After the buoy had been cleaned and repositioned, we were then shown around the Galatea starting on the large aft deck.

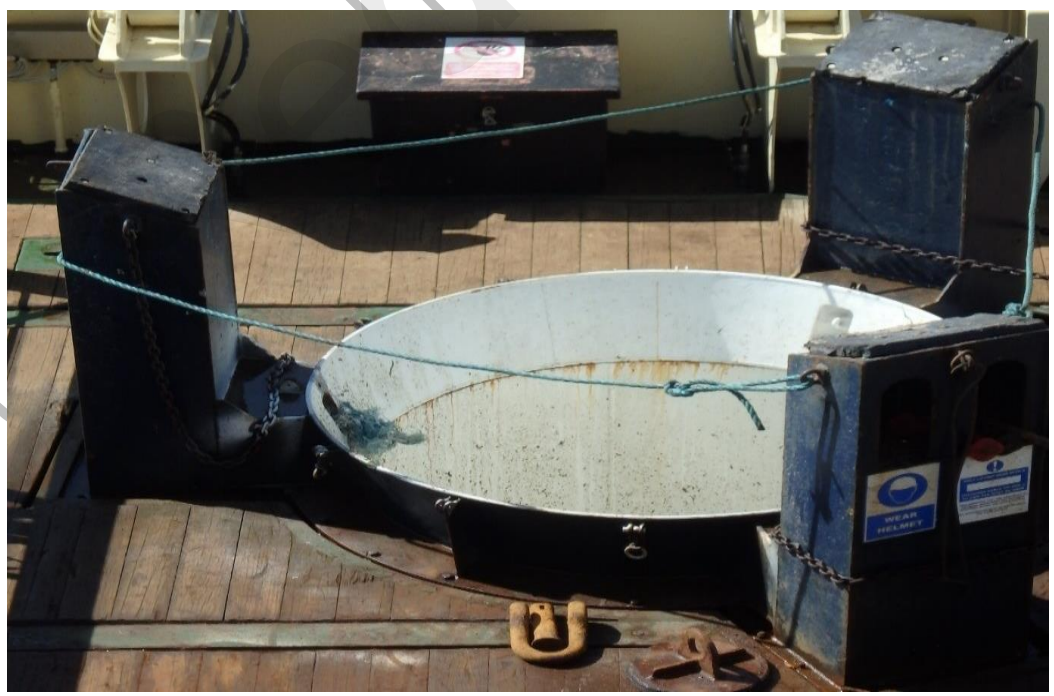


Photo 7 Close up view of the open pod showing the three buoy supports. Talking with some of the crew, they said that having four supports for the buoys as were on Patricia was better than having only three as on Galatea as it made for easier positioning of the buoys especially for a Type 2 buoy

Photo 8 Closed pod with spare buoy sinker safely fastened down. The bolster (arrowed) can be seen in the top left.

Photo 9 The bolster (arrowed) with safety chain above and closed chain locker hatches with the yellow 'X'. A spare Type 2 buoy can be seen in the background.

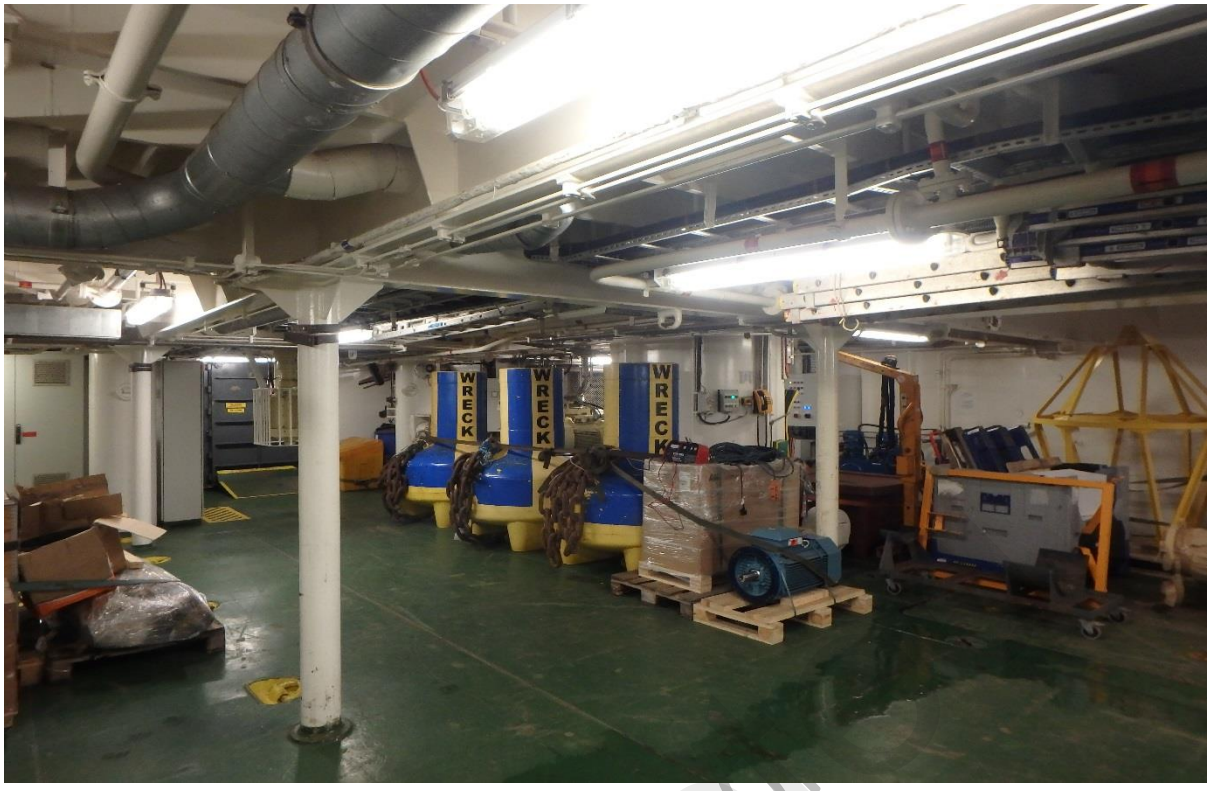


Photo 10 Large under deck storage hold with three Type 3 wreck marking buoys stored. Note that everything is neatly stowed and arranged. Most vessels such as AHTS on the GVCM would not have this large under deck storage area and would need spare buoys loaded on deck.

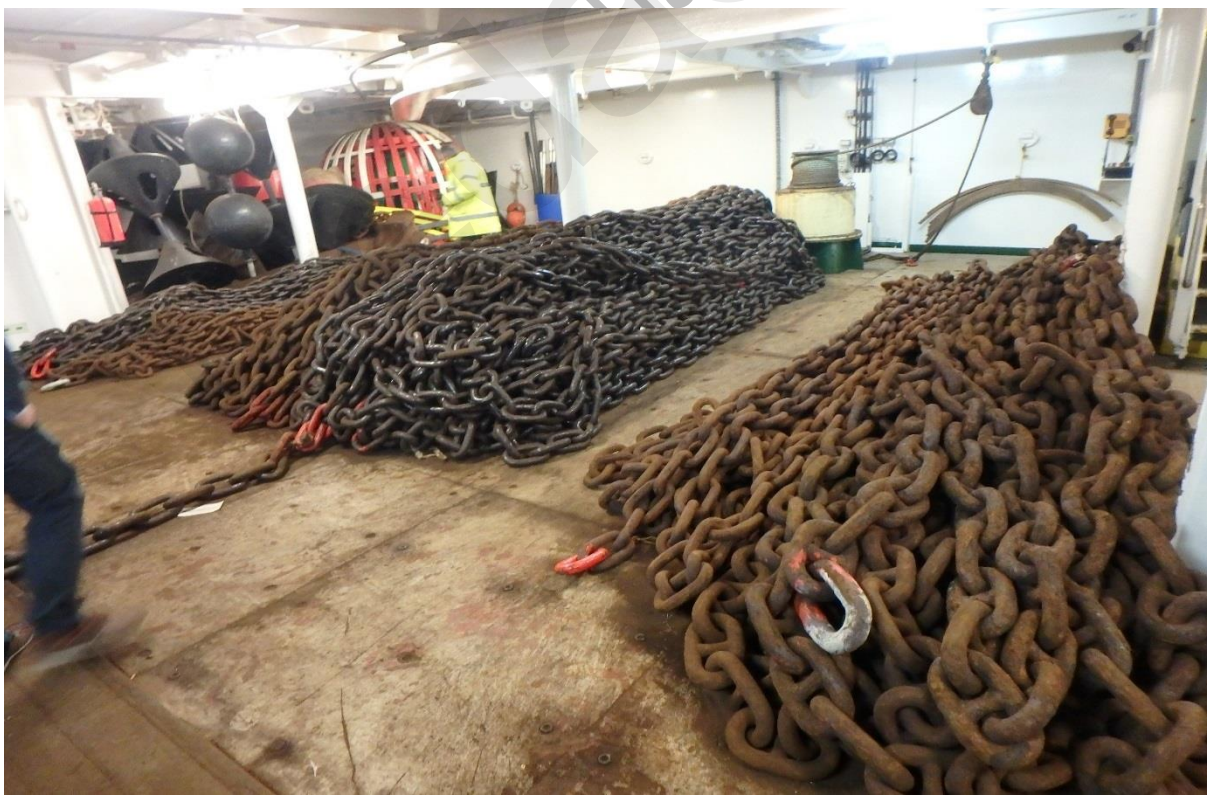


Photo 11 Substantial amount of neatly stowed chain in the storage hold. TPVs such as an AHTS are equipped with chain lockers for storage but the chain link size of 38 mm now uniformly used by the GLAs is not compatible with the much larger gypsies normally carried on board of these vessels. TPVs would also not carry spare amounts of this size of chain

3.2 THV Alert

Alert is a British flagged 2005 purpose built rapid intervention vessel (RIV) specifically designed for buoy handling, wreck marking with both multibeam and side scan hydrographic surveying capability. Alert is 39.3 m long with a moulded breadth of 8 m, a light draft of 2.7 m and a top speed of 17 knots. She has accommodation for 4 additional persons and has a Kongsberg Dynamic positioning system (IMO DP Class 1). Her main crane is a Palfinger knuckle boom crane with an offshore lift capacity of 3.5 tonnes at 10 m meaning she can lift Type 3 and Type 4 buoys only. In very calm weather, Alert could go alongside a Type 1 or Type 2 buoy and do emergency repairs by way of the vessel crew jumping or climbing onto the buoy which has been common practice over the years but modern health and safety concerns make this practice less acceptable. Alert has reasonable hold storage space below deck. A fuller specification is attached as Appendix 2.

Photo 12 Aft deck of Alert with Type 3 buoys on board. The Palfinger crane is seen on the Starboard side. The very small available deck space is apparent in the photo.

The Alert was visited in Dover on the 18th April 2017 and we saw the recovery, cleaning, maintenance and redeployment of a wreck marking buoy as well as being shown around the vessel. Although the Alert has a top speed of 17 knots, this is substantially reduced in heavy weather. The DP system allows the Master to keep an eye on deck operations rather than solely focussing attention on holding position which is of particular importance as the Alert only has a 6-man crew. The Master also demonstrated the survey capabilities of the vessel by undertaking a survey of two known wrecks outside of Dover.

The operation started with the grabbing of the buoy using the 'Happy Hooker' (this was also witnessed being utilised on the Galatea) which is a US Coast Guard invented tool for the safe grabbing of a buoy. This has meant that crew members are no longer required to jump on the buoy greatly enhancing the safety of the operation. Like with the Galatea, the buoy was brought on board

over the side of the vessel with the chain and sinker coming over the bolster and once again the chain was deployed in the lockers.

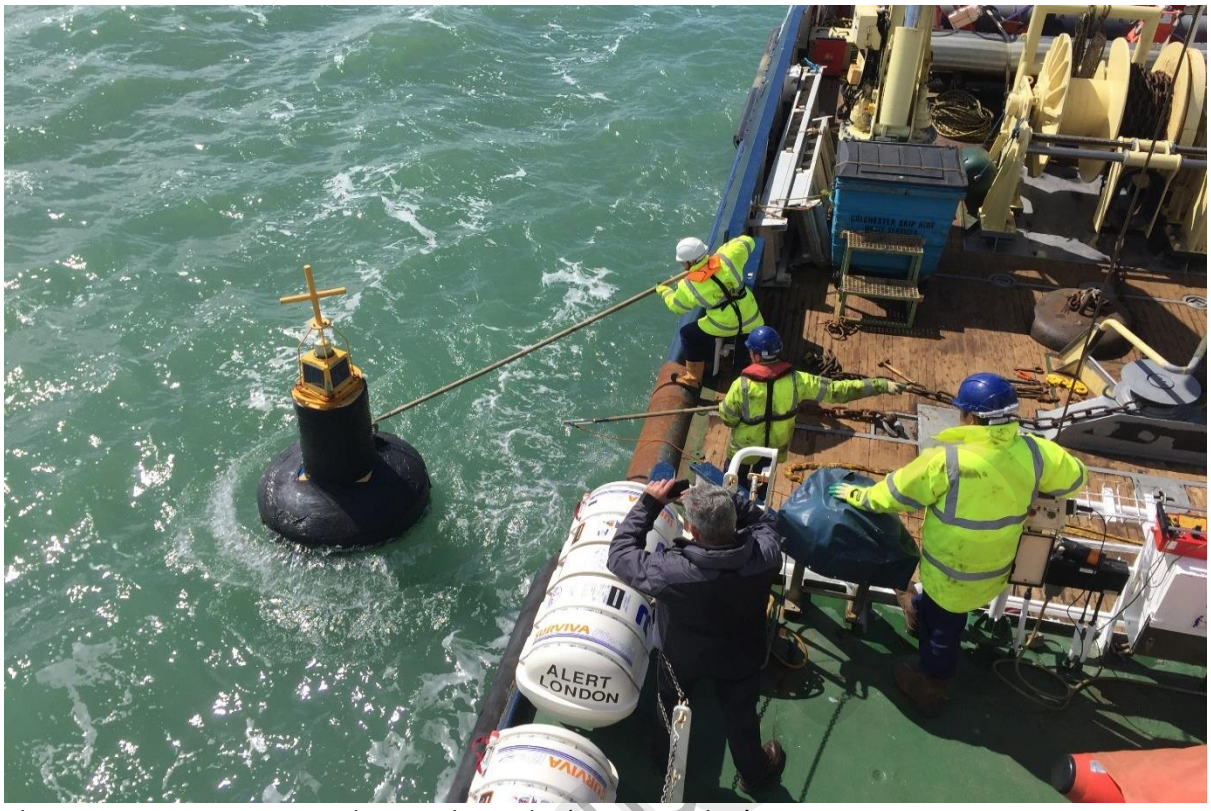


Photo 13 Retrieving a Type 3 buoy utilising the 'Happy Hooker'.


Photo 14 Bringing the Type 3 buoy on board together with the first section of mooring chain. Although this buoy was very much smaller and lighter than the Type 1 buoy, having only one lifting point made the buoy swing much more when out of the water than with the retrieval of the Breaksea buoy.

Photo 15 Sinker on deck about to be lifted over the bolster (arrowed).

Photo 16 Various other Type 3 buoys on board with chain from the buoy around the gypsy.

Photo 17 Chain around the Gypsy.

Survey capability of the Alert

A discussion was also had with the Master who was involved in locating and marking the wreck of the Fluvius Tamar. She sank on the 14th January 2017 some 35 nm north east of Ramsgate in the south west shipping lane whilst on route from Eemshaven in the Netherlands to Pasajes in Spain. After the survey was done, it was apparent that the vessel wreck was sitting upright on the seabed in approximately 30 m of water. The vessel's accommodation was about 15 m high in an area where vessels of 22 m draft regularly sail and was therefore deemed a hazard to navigation. Alert initially acted as a guard vessel until a dedicated guard vessel was arranged by the Owner's insurers. This took longer than might have been expected and the Master of the chartered guard vessel then decided that he should seek shelter from the weather during storm Doris.

The wreck had a Temporary Exclusion Zone (TEZ) of 250 m radius imposed by SOSREP which was marked by four emergency wreck marking lighted buoys, one of which was fitted with RACON with a nominal range of 10 miles. The TH Notice to Mariners (NtM) number 2/2017 was issued on the 17th January 2017 detailing the exact positions of the four buoys and giving details of the RACON.
A subsequent TH NtM number 14/2017 was issued on the 18th April 2017 which increased the TEZ imposed by SOSREP around the wreck to a 1000 m radius of the wreck's actual position and four emergency wreck marking buoys were moved out to a radius of 800 m around the wreck position.
After monitoring the traffic via AIS over a period of 28 days, it was proven that a number of vessels with a draft of 16 m or more were regularly sailing within close proximity to the wreck and therefore a decision was taken to salvage and remove the wreck.

3.3 NLV Pole Star

NLV Pole Star is a British flagged purpose built Medium Aid to Navigation Buoy Tender (MANT) built in 2000. She has a length of 51.52 m, a breadth of 12 m and a low draft of only 3.46 m. Pole Star is DP Class 1 and has accommodation for additional persons in one 4-man cabin and one 2-man cabin. She has a relatively small working deck of 90 m2 which is adequate for buoy recovery and re-laying purposes, an 18-tonne crane and hydrographic survey equipment. A fuller specification is attached as Appendix 3.

The Pole Star was visited in Leith docks on the 20th April 2017 having been repositioned at short notice from Oban. It was a crew change day so we could spend several hours discussing with the Master the duties that the vessel undertakes as well as operational parameters.

Photo 18 Pole Star alongside in Leith on the 20th April 2017.

Pole Star had a crew of 17 on board including 2 extra engineers although her normal crewing level is 15. Crew changes are staggered so that not all crew change out at the same time – the Master was not changing for another two weeks. Crew change rotas are on a 4 week on, 4 week off basis which is the same as for the Granuaile. TH still change out crews on a three week on, three week off basis. The Master advised that there was crossover between the crews of Pharos and Pole Star with crews spending roughly 3 years on each vessel which has the benefit of bringing change to the work for the crews.

The Master stated that he felt that the Pole Star was quicker at handling buoys than the Pharos as the crane on Pole Star was smaller and quicker to use and the crew on the vessel were more used to buoy work whereas Pharos was more involved in helicopter operations. From experience, the

Master on the Pole Star expected that the time taken to work a buoy was between 1.5 to 2 hours. The Master also said that the vessel was 'lively in heavy seas' and that heavy seas were her biggest challenge.

It was discussed what improvements the Master would suggest to Pole Star when the time came for her to be renewed. His suggestions were:

- the option of working over the stern so the bow could be kept to the wind
- a lengthened deck of 10 m more giving a considerably larger working deck area
- bigger hold storage capacity
- DP Class 2
- the capability to work helicopter cargo
- improved towing capability

The Master commented that the Northern Lighthouse Board, operating rather further north, had different factors to take into account compared with the other GLAs. The principal factor is the need for increased emergency response to AtoN during the winter months when there is insufficient natural light to charge the solar cells on the buoys.

The Master also said that chain wear was more pronounced in parts of the west coast with wear of 4 - 5 mm in places compared to more benign estuary conditions where wear may be as little as 1 mm.

Photo 19 Pole Star alongside in Leith on the 20th April 2017.

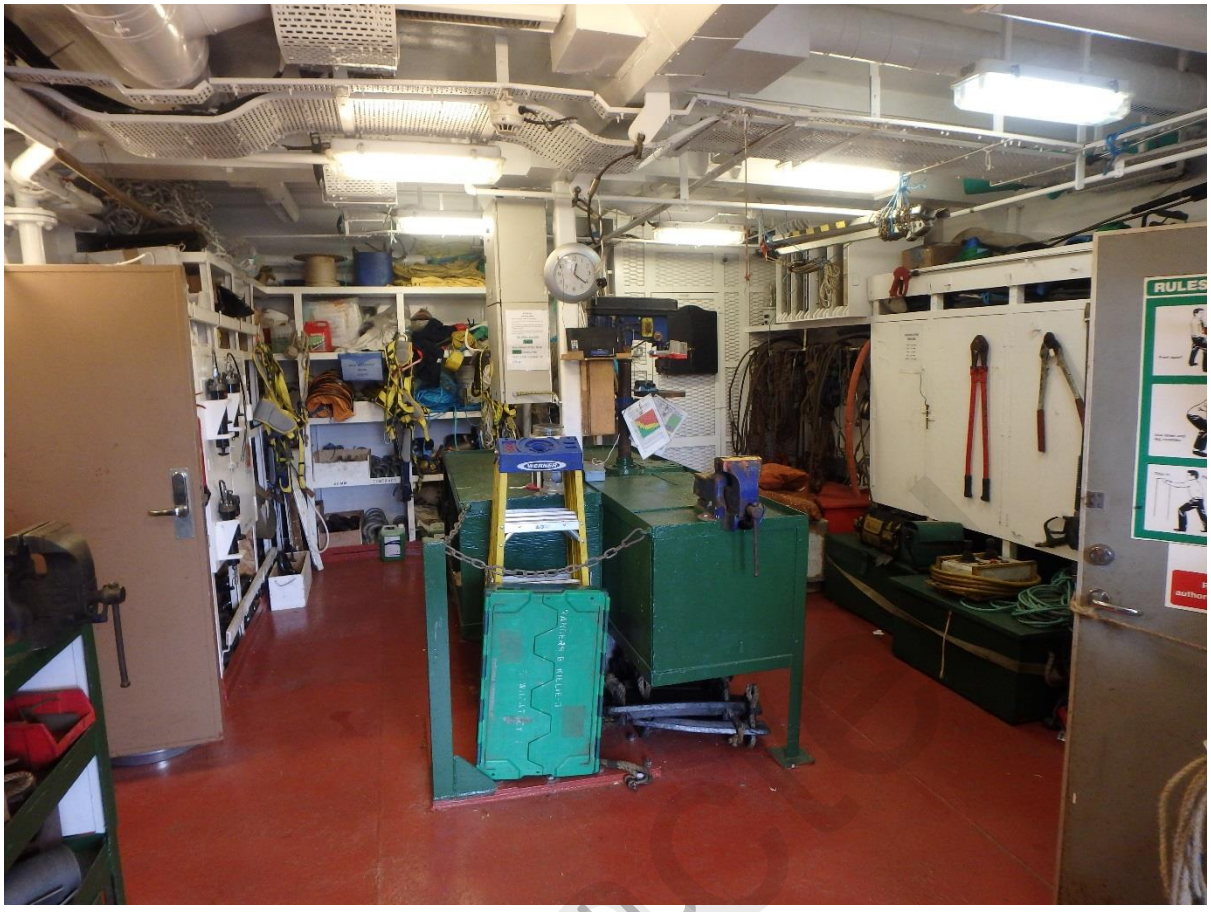


Photo 20 Good sized underdeck work shop.


Photo 21 Roller for bringing the buoy chain on board.

Photo 22 View of aft deck of Pole Star.

3.4 ILV Granuaile

The ILV Granuaile is an Irish flagged 2000 built advanced multifunctional AtoN vessel and was the prototype for the Galatea and Pharos, as well as the Relume which is owned by Middle East Navigation Aids Service MENAS. She is DP Class 1 fitted with dynamic positioning being linked to DGPS which is a satellite based navigation system. She has an LOA of 79.69 m loa, a breadth of 16.10 m and an operational draft of 4.6 m. The vessel has a clear deck of 300 m2, a 20-tonne crane, five buoy pods, a helideck and a moon pool. Underdeck, there is a tween deck and lower hold space with a considerable storage area. She is also equipped for hydrographic (and seismic) surveying and processing and has accommodation for 11 additional personnel. It was apparent that the vessel was maintained to an extremely high standard especially considering her age. A fuller specification is attached as Appendix 4.

The Granuaile was visited in Galway again on a crew change day on the 15th June 2017. The Granuaile was preparing for a commercial charter of about 6 weeks duration which included the use of an ROV which was witnessed being installed. Shortly after completion of the charter, the Granuaile was due to be dry docked for 2-3 weeks in Birkenhead. Several hours of discussion were held with the Master.

We were reminded that there was a legal requirement for the operating authority to be based in Ireland and that it is required to have a vessel owned and registered under the Irish flag.

We had originally planned to see the Granuaile earlier that week in Shannon however she was diverted to attend to a Type 1 buoy whose RACON was not functioning correctly around 12 miles off Rosslare.

Granuaile has a normal crew of 14 with a part time ETO on board which is a smaller crew compared with the Galatea, Pharos, Pole Star or Patricia. The predecessor of the Granuaile had a crew complement of 26 – 28. The crew on the Granuaile are on a 4 week on, 4 week off rotation. There is no technical superintendent for the vessel with necessary works controlled by the chief engineers.

Dry docking costs have come down as the number of items of work to be carried out during a docking has been reduced from over 90 to less than 40. The Master, like those on board the other vessels visited, stressed the importance of local knowledge. Although the crew occasionally jump the buoy, this is only done in very calm weather. Some of the buoys are in open areas where the Atlantic seas can be severe so seakeeping is extremely important. Granuaile was shortly due to go out to the Porcupine basin to change out a met buoy although the water depth precluded all the moorings being changed as the vessel's winch is not big enough. The Master thought it would be an improvement to have a larger capacity mooring winch.

The Master felt that the Granuaile had been quite successfully marketed for employment for commercial income generation (CIG). An early release clause can be invoked in case of emergency when they are performing third party contract work.

The effect of zoning of the vessels had only been really implemented in the last 6 months and the Master felt that the potential to stay in one area to maintain the response time may impinge on being able to perform other statutory duties in adjacent areas especially if the weather was good.

Photo 23 Granuaile alongside in Galway on the 20th June 2017.

One duty which was undertaken more by Granuaile than other vessels in the GLA fleet was the supply of fuel and water to remote locations using the vessel's work boat and floating hoses which would be used to pump the products ashore.

Photo 24 Stern view of Granuaile alongside in Galway.

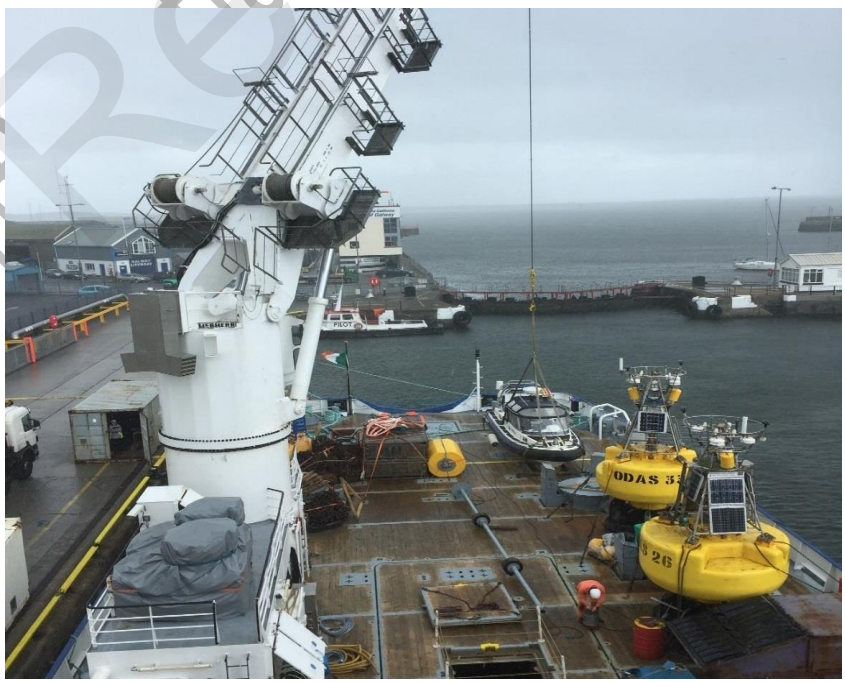


Photo 25 Large aft deck of the Granuaile with crane lifting in operation.

Photo 26 Note the fixed safety cage which the crew use during buoy recovery and laying operations.

Photo 27 Large storage area in the tween deck on Granuaile.

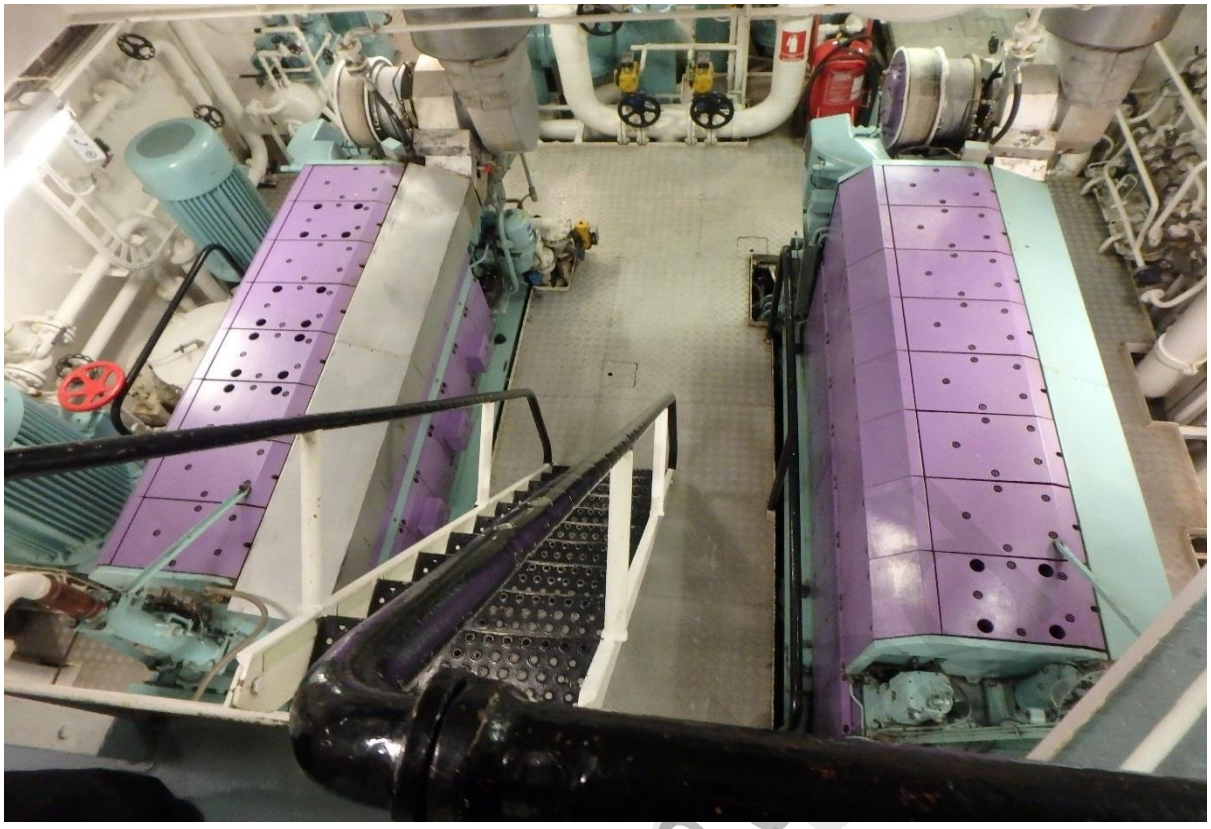


Photo 28 Clean and well-maintained engine room

Photo 29 Water hose for supply to remote locations.

Photo 30 Fuel hose for supply to remote locations.

Photo 31 Helicopter deck

OTHER GLA VESSELS

The following vessels operating in the GLA fleet were not visited:

3.5 PATRICIA

The Patricia is a 1982 built, British flagged vessel with an loa of 86 m, a draft of 4.4 m, a helideck and a 20-tonne main crane derrick. She has a small working deck area of 80 m2 with good work shop facilities and storage in the tween deck. Patricia has side scan sonar for surveying and high standard accommodation for 12 passengers which is used for fare paying passengers during summer months generating revenue for TH. She also maintains her speed better than other GLA vessels but is the oldest vessel in the owned fleet and spare parts are difficult to obtain. Her next special survey is due in 2020 when she will be 38 years old. A fuller specification is attached as Appendix 5.

3.6 PHAROS

Pharos is a 2007 purpose built AtoN vessel very similar to the Galatea and the Granuaile with an loa of 84.25 m, a beam of 16.5 m and a draft of only 4.25 m. She is DP Class 2, has a good working deck area of 300 m2 and a 30-tonne main crane. She has a tween deck with good storage and work shop space, a helideck, full hydrographic surveying capability and additional accommodation for 12 personnel. On deck, she has pods for handling Type 1 buoys although there are no Type 1 buoys in Scottish waters. She supports land based operations by utilisation of helicopters and small workboats in remote areas. A fuller specification is attached as Appendix 6.

3.7 MAIR

Mair is a 1973 built 24.1 m loa, buoy and AtoN vessel able to work with Type 3 and 4 buoys and was originally the RMAS Horning. Mair is on a long-term charter with TH with the overall cost per annum being around [redacted]. She normally works in the Bristol Channel and along the South Wales coast with a 2.4 m operating draft enabling her to reach AtoN in very shallow waters. The Owners also provide a RIB fitted with differential GPS and keel mounted multi beam sonar which is normally based in Barry but can easily be transported around the country.

Photo 32 Mair in Barry Harbour in 2015.

Despite being a TPV, the Owners and the crew have worked closely with TH over many years and are fully versed with the requirements, standards and obligations expected. The Mair is however 44 years old and will eventually need to be replaced, [redacted] Nevertheless, the charter of the Mair seems to offer exceptional value for money considering her capabilities and is a valuable addition to the GLA core fleet.

3.8 HARWICH BASE

The Harwich base was visited on the 23rd June 2017. Discussions were held on problems with locating and marking wrecks including some of the hazards that occur and ways that the GLAs were endeavouring to give more value for money as well as generating income. An informative discussion was also held on Light Dues (LD), how they have reduced over the last five years, the ILDF and the LAC. We were also shown changes in light technology that have been developed and which have led to greater efficiencies and improved light capabilities.

Before being shown around the facilities, we discussed some of the matters that were raised whilst on board the vessels visited. The duties of the GLA vessels are very specialised and require high levels of seamanship. The importance of the expertise, the local knowledge of the crews and the relevant GLA being able to trust the information being relayed back from the vessels cannot be underestimated and is critical to ensuring that decisions are made correctly – trust the person and trust the data.

Geographical variances in requirements for the vessels were discussed, especially the problems with migrating sand banks within the southern North Sea, rocky seabed conditions and water depths off Ireland and the west coast of Scotland.

Virtual Aids to Navigation were also discussed. New technology such as Virtual AtoN is being looked at by the GLAs with deployment already used where appropriate. Further expansion of the technology will be measured carefully against specific user requirements recognising that not all vessels are able to see the electronic AtoN on a suitable display.

The following facilities were seen:

a) Buoy storage yard

Each GLA has buoy storage and maintenance facilities however only the TH base in Harwich was visited. TH also has a Swansea base with technicians and maintenance facilities where four Type 2 emergency wreck marking buoys are stored. TH also has access to a small facility at Barry Island on the south coast of Wales where they are able to store four emergency wreck marker buoys and to maintain a demountable davit. TH is assessing a suitable location to keep a set of four emergency wreck marking buoys in the Dover / Ramsgate area.

Northern Lighthouse Board has a storage and maintenance base at Oban and, like other vessels within the GLA fleet with a hold, both the Pharos and Pole Star carry plastic buoys in their hold. The buoys are relatively easy to transport by road with the transit time from Oban to Aberdeen, for instance, being in the region of four hours.

Irish Lights has a storage and maintenance base at Dun Laoghaire and carries spare buoys on the Granuaile.

Photo 33 Various newly refurbished buoys in the yard ready to be utilised.

Photo 34 New and refurbished buoy and top LAS structure.

b) Painting workshop

Innovation has been brought into the paint room which is now more modern with the automatic mixing system leading to less wastage, more efficiencies and cost savings. For instance, only two coats of paint are required now rather than the four.

Photo 35 Paint mixing system.

Photo 36 Newly painted buoys in the warehouse during repairs and maintenance.

c) Buoy repair, construction and maintenance areas

AtoN are prone to being damaged with the consequential loss of the correct marking and signals. With the advent of improved accuracy of global positioning systems and electronic charting, vessels will often sail close to the buoys, especially if this means potentially saving time. Unfortunately, sometimes they can strike the buoy which can result in extensive damage as shown in Photos 37 and 38. Photo 37 shows the tail tube which has been ripped open by a ship's propeller whilst Photo 38 shows a buoy that has been struck by a ship and severely dented. In both cases, the buoys had to be changed out and the damaged buoys returned to the Harwich base. The GLAs have been able to track vessels via AIS that have struck and damaged buoys and are able to recover the associated costs.

Photo 37 Buoy tail tube damaged by propeller.

Photo 38 Buoy damaged in collision.

Changes in some of the buoy designs have also taken place over the last few years. Most of the new and replacement buoy topside frames are now constructed out of Aluminium - Lightweight Aluminium Structures (LAS) - which are lighter and easier to maintain - see Photos 39 and 40. LAS cost more than the traditional top structures on the buoys so are being phased in over time. LAS have several advantages. Being lighter in weight, LAS can be and are constructed with a larger surface area which means that more solar panels can be attached giving greater power generation and therefore providing a more conspicuous profile for daytime recognition. There is also more room to attach third party equipment which can generate income for the GLA. For instance, Met Office weather monitoring equipment has been placed on some of the buoys and communication equipment for mobile phone companies can perhaps be integrated going forward.

The other major advantage is that it is relatively easy to climb into the structure to carry out maintenance rather than being positioned on the outside. This is considerably safer for the vessel's crew even when the whole buoy is on deck. A further innovation is that the electronics for the buoys are now being put in their own boxes within the body of the LAS, as below in Photo 40, which again is making repairs and maintenance easier.

Photo 39 New Aluminium (LAS) top structures under construction.

Photo 40 New electronics box inside the buoy top structure.

d) Coordinated Fleet Management Group (CFMG)

The Fleet Management Group is coordinated through the planning centre in Harwich. The Coordinated Planning arrangements currently in place have been designed to meet the GLA Integrated Fleet Deployment and Risk Response arrangements which were recommended by Houlder while still respecting the statutory obligations of the individual GLAs and are in accordance with The GLA Fleet Review – Phase 2 Work Package 2 Memorandum of Understanding dated 8th June 2017. We have been advised that the principal features of this arrangement are:

- The principles of individual GLA statutory responsibility, optimised fleet operations and active risk management are core to these arrangements
- Control and safe management of each ship rests with the GLA holding the Document of Compliance for the vessel
- It is not envisaged that Alert or Mair will be utilised out with TH waters
- Statutory responsibilities are as set out in the Merchant Shipping Act and ultimate responsibility rests with individual GLA Boards
- As accepted by Houlder, the arrangements will be largely manpower neutral with the benefits arising from improved fleet operations

Each GLA has a planner who feeds into CFMG. The planners try to arrange well in advance what work is required although rush coverage (ie an urgent required rectification) can and does impact on planned maintenance of the AtoN. Weather can also have considerable effects on the maintenance programmes, two thirds of which is planned during the summer months of May to October. Between the winter months of November to April, the weather is worse, the days are shorter giving a smaller working daily window and there are more incidents requiring a rapid response. For the Northern Lighthouse Board, the shorter hours of daylight bring additional problems as it causes problems with the solar charging necessitating additional unplanned intervention visits. The planners also coordinate the positioning of the vessels on a geographical basis to ensure that the wreck response times can be met.

Local attendants living in close proximity to some of the lighthouses are retained as a first point of investigation for alarms being triggered, to clean the lenses, glass and to initially carry out an investigation if there was an alarm monitored by Harwich. Depending on the location of the

lighthouse, this is not always possible. For example, an intruder alarm was recently triggered on the Wolf Rock lighthouse and a helicopter had to be sent to investigate.

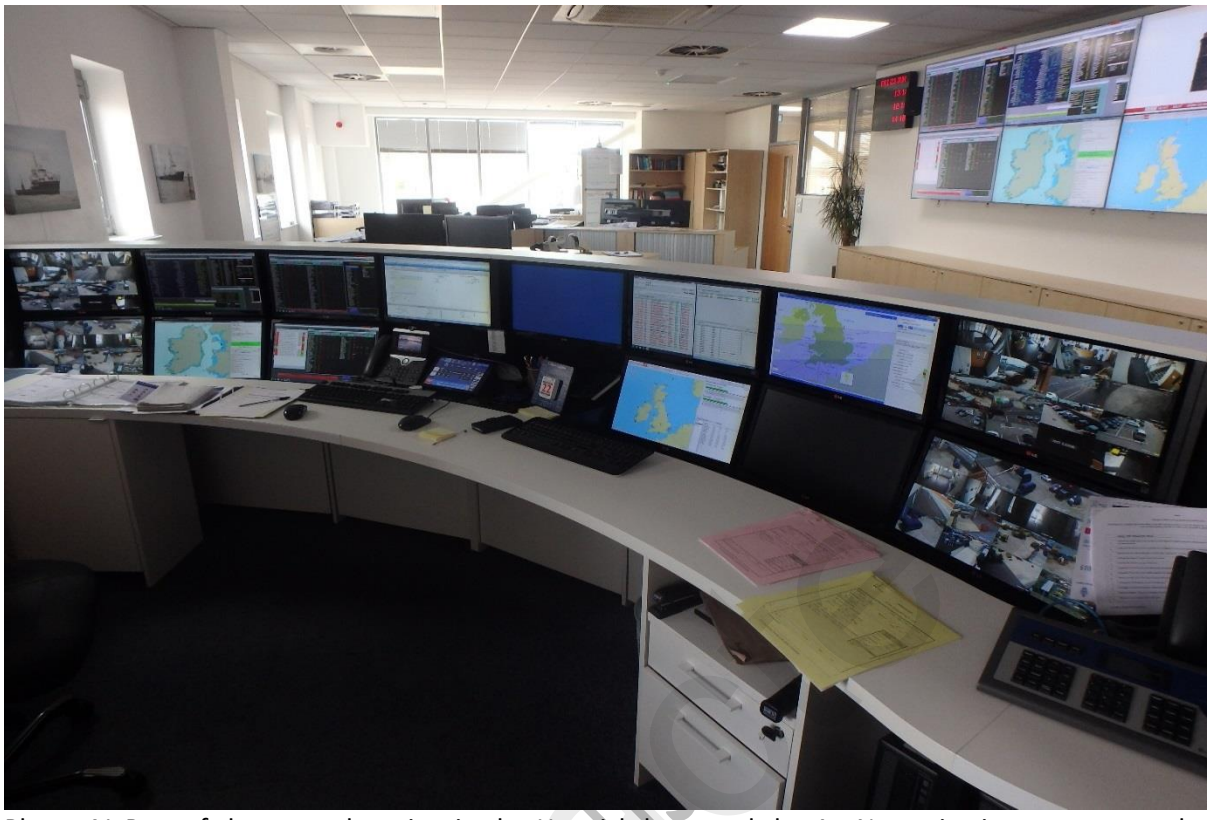


Photo 41 Part of the control station in the Harwich base and the AtoN monitoring screens can be seen on the wall in the background.

Sector checks are done annually on dangerous areas to ensure there are no misalignments and a maintenance information system records all the data including the hours the lamps are used for and when the various AtoN were last checked and maintained.

The three GLAs also look after more than 350 buoys on a commercial basis. This utilises some of the reserve capacity of the fleet and generates a good financial return.

A discussion was held on the effects of the extremely bad weather that occurred in the winter of 2013 /2014 and this is further covered in section 5.5.

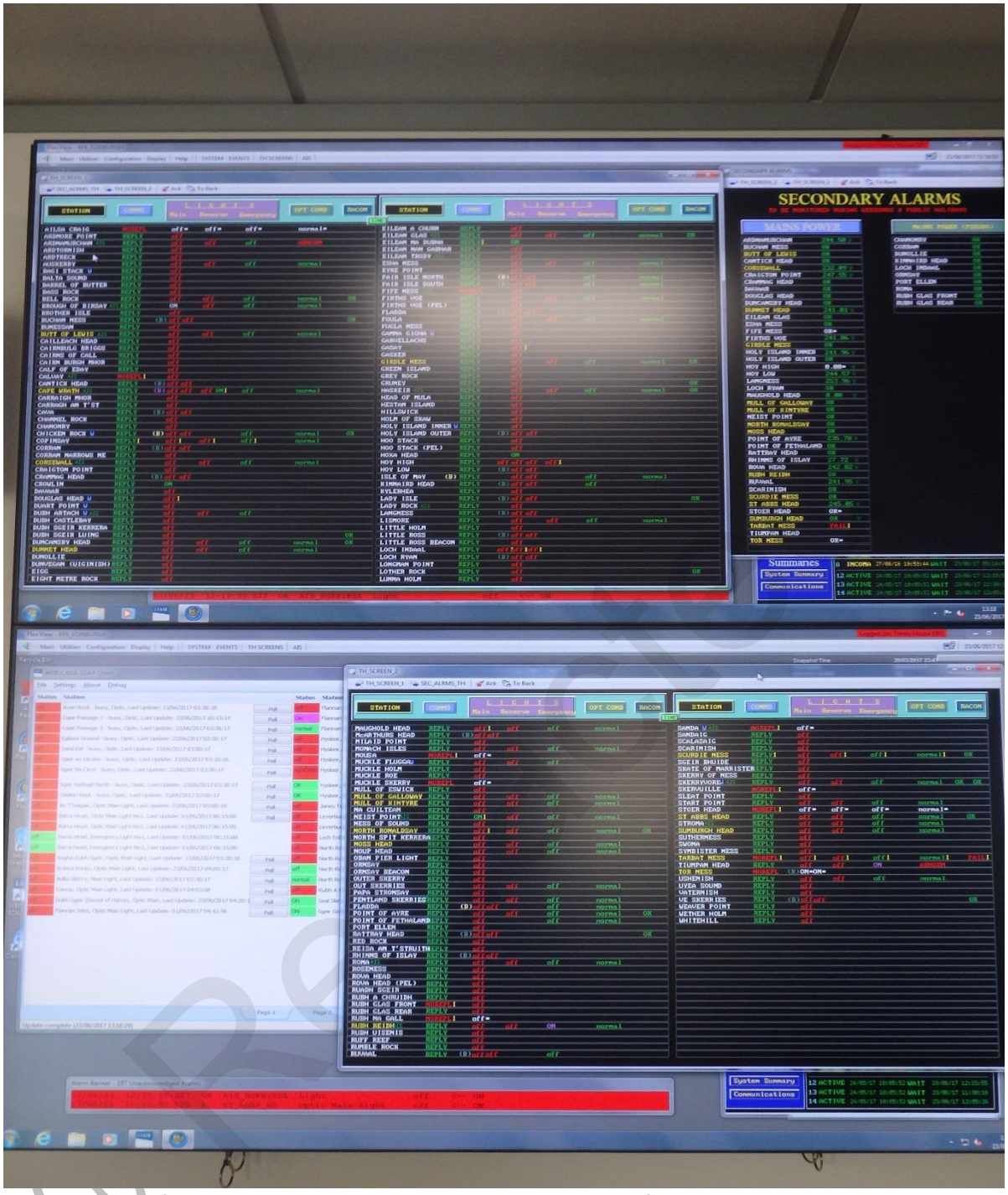


Photo 42 Part of the wall mounted screens showing the status of AtoN on a live response basis.

4. VESSEL CAPABILITY REQUIREMENTS

4.1 GLA Vessel Capability Requirements

The Houlder Report identified four major capabilities required by the GLA vessels to deliver the AtoN service.

These were:

a) Ability to handle Type 1 buoys
b) Capacity to embark and operate a helicopter
c) Seakeeping
d) Speed of response

We have considered whether the GVCM has the necessary capability to be able on a spot basis to provide a suitable vessel at short notice and for a short period of Charter that can cover the requirements and can meet the obligations of the GLAs.

The necessary capabilities include the provision of survey services for the accurate locating and marking (including surveying and speed of response) of a shipwreck, the ability to handle buoys of each of the four main types as well as the cost of available vessels from the GVCM.

We have considered the following:

- Ability to handle Type 1 buoys
- Ability to handle Type 2 buoys
- Ability to handle Type 3 buoys
- Ability to handle Type 4 buoys
- Capacity to embark and operate a helicopter
- Ability of each of above type of vessel to provide suitable survey capabilities
- Vessel seakeeping
- Speed of response
- Wreck search and marking

4.2 GLA Buoys Types

To investigate the capabilities of the vessels, it is necessary to describe the AtoN buoys and to determine suitable vessels. The GLAs have defined four main buoy types based on the height of the installed light's focal plane. These are listed in the GLA Joint Navigation Requirement Policies document 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.

The focal plane height is not necessarily linked to the overall size and weight of the buoy, as this can differ greatly depending on the type of superstructure and AtoN equipment fitted, there is nevertheless a strong correlation between the two. For this report, all references to Type 1, 2, 3 and 4 buoys are based on the typical buoy body metrics provided by TH and reproduced in Table 5.

Although the Type 1 and Type 2 buoys are each sub-divided into Type +1 and Type 1 and Type +2 and Type 2, the general size of each, when considering the vessel's capabilities, means that the two subdivisions can be combined together to refer to only Type 1 and Type 2 buoys respectively in this report.

Buoy Body	Diameter (m)	Height (m)	Total Weight inc. AtoN Fit (max)
Type +1 incl tail tube	3.5	16.8 incl tail tube	12,000
Type 1 incl tail tube	3.05	16.25 incl tail tube	10,500
Type +2	3.05	8.28	6,000
Type 2	3.05	7.78	5,500
Type 3	2.2	3.9	550
Type 4	1.45	3.3	300

Table 1 GLA Buoy Dimensions.

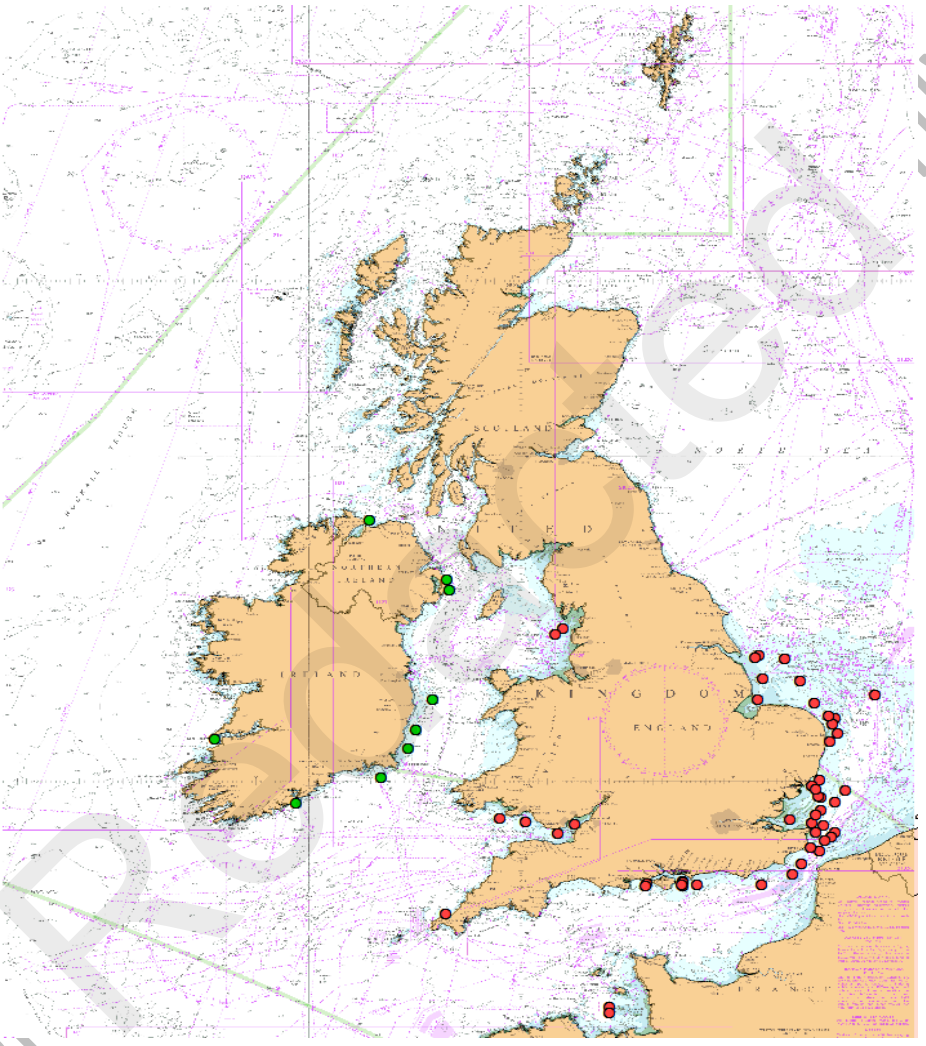
The geographical distribution of the different types of buoy in each sea area is shown in Table 6.

Area	GLA	Type 1	Type 2	Type 3	Type 4	Other	Total
1	Northern Lighthouse Board		24	4			28
2			33	9			42
3			36	24	4		64
4			14				14
5							0
6			4				4
7			11	3			14
8			1				1
9	Trinity House	14	56	10	1	1	82
10		25	140	24	8	3	200
11		10	26	4	1	1	42
12		4	21	3			28
13		5	42	5	6	1	59
14		2	28	12	3		45
15	Irish Lights	2	11	7			20
16		3	27	4			34
17			3	4			7
18		2	4	6			12
19		1	5	6			12
20			8	7			15
21			10	5			15
Total		68	504	137	23	6	738

Table 2 The locations of GLA buoys deployed in each sea area.

4.3 Type 1 Buoy Locations

There are 68 Type 1 buoys deployed around the coastlines of the United Kingdom and the Republic of Ireland and the locations of the Type 1 buoys are illustrated on Map 3. Table 6 shows that the majority (49 of the 68) of the Type 1 buoys are deployed off the south east of England in an area between the Humber around to west of the Isle of Wight in GLA response areas 9, 10 and 11. There are no Type 1 buoys deployed off the coast of Scotland but there are a number deployed in the Bristol Channel, the East Irish Sea, off the coast of Ireland as well as the Channel Islands and around Land's End.



Map 3 Type 1 Buoy locations.

4.3.1 Vessel Capabilities required to handle Type 1 buoys

The size of the Type 1 buoys means that any vessel that is going to launch and recover this type of buoy requires very specific capabilities. The length and weight of the buoys (including the tail tubes) necessitates that any vessel has to have a good crane on board with sufficient outreach to lift the buoy safely on and off the vessel whilst also being able to launch and recover the chains and moorings. The buoy needs to be positioned in a pod (or other suitable support structure) whilst on board any vessel being utilised during cleaning and maintenance and the chains and moorings need to be able to be safely stowed.

The pods on board the GLA vessels have been purpose built with openings in the working deck to accommodate the tail tube and adapted to facilitate the ease of working with Type 1 buoys. Galatea,

Granuaile, Patricia and Pharos are all equipped with these pods. The pod (or other suitable support structure) holds the buoy in position and ensures that the crew on board the vessel is in a safe working environment during said cleaning and maintenance. The pod also minimises the risk of damage (and the subsequent expense of repair) to the buoy. All the four GLA vessels mentioned are equipped with suitable cranes and below deck chain locker space as well as capstans and a bolster for ease of bringing the chain on board. The bolsters and chain handling equipment are positioned amidships which means there is the possibility to recover the buoy on the vessel's lee side giving a safer working environment and additional protection to the buoy during the retrieval and launch operations.

Looking at other types of vessels that could be utilised during launch and recovery operations with a Type 1 buoy, there are several vessels with sufficient crane capability as well as chain handling and locker capacity generally trading on the spot market. These would mostly be relatively large anchor handling tug supply vessels (AHTS) – currently over 90% of AHTS trading in the North Sea are over 200 tonnes bollard pull (circa 18,000 BHP). These vessels are fully familiar with bringing rig buoys on deck where the buoy is either lifted on board via a crane or dragged on board over the vessel's stern roller. The modern AHTS is usually DP Class 2 with a large aft stern deck where a buoy can be laid down. The AHTS would need to bring the buoy over the vessel's stern as they don't have a roller (or bolster) or shark jaws amidships and they are not equipped with pods. Any Type 1 buoy brought on deck would therefore have to be laid down on deck, fastened down to stop it moving and then would require unfastening, moving (rolling) and refastening to ensure all parts of the buoy could be cleaned and maintained. This would be more time consuming, inefficient and involve much more risk for the vessel's crew compared with the current modus operandi on the GLA vessels.

The large AHTS (up to 300 tonnes bollard pull and some more than 25,000 BHP) capable of handling Type 1 buoys are usually based in a North East Scottish Port (primarily Aberdeen or Montrose but occasionally Peterhead) or in Norway (usually Stavanger or Bergen) when trading the North Sea spot market. They are normally used in the deeper waters of the central and northern North Sea working with semi-submersible drilling rigs (SSDR) which also have large anchors and chains for their moorings. The southern North Sea is a rather shallower water working environment where the predominant rig type used is a jack up drilling rig (JUDR) which has legs that sit on and partially penetrate into the seabed and don't therefore require large anchors and chains to stay moored. The types of vessels utilised to move a JUDR tend to be considerably smaller in size with one lead tug of 90 – 120 tonnes bollard pull together with usually two smaller positioning tugs to put the JUDR on her exact location before she jacks down ready to drill. The smaller tugs are generally chartered from the near continent (Belgium, Holland or Germany) but have no capacity to bring buoys on deck. The larger vessel may be a straight anchor handling tug (AHT) which is a shorter vessel of around 45 m loa with no large aft deck or suitable crane and could not handle a Type 1 buoy. Occasionally, there may be suitable vessels looking for work from, for example, Rotterdam, however these are often transient vessels visiting the North Sea between towages. Vessels trading in the southern North Sea would not normally be equipped with a suitable crane for a Type 1 buoy as the lead tug does not need to have a crane or a large deck to move a JUDR.

In times of a tighter market with no suitable vessels in the southern North Sea, vessels are mobilised from Scotland with the vessel charter, by necessity of the sailing time, being done a few days in advance. A vessel that was available on a prompt basis on the continent could conceivably be able to respond quickly – it is about 123 nm from Rotterdam to Harwich and 130 nm to Dover, so 12 – 13 hours passage at 10 knots and 8 – 9 hours at 15 knots which would burn a lot of fuel and be expensive. The large AHTS have an economic fuel consumption of up to 25 tonnes at economic speed of circa 12 knots. Also, the TH vessels have under deck storage carrying a certain amount of spare chain as standard, the correct size of gypsy to handle the 38 mm chain and thus can go straight

to a location if work with a Type 1 buoy is required whereas a TPV from the continent would need to sail to either Dover or Harwich to load the ancillary equipment thus leading to a slower response time and additional costs for hire, fuel and port costs (unless port costs could be waived as the vessel is working for the GLAs).

Large AHTS are relatively deep drafted – some up to nearly 8 m – compared to the GLA vessels which are around 4.4 m draft and specifically designed for shallow water operations. This leads to two additional potential restrictions on their usage.

Firstly, vessels sitting in Montrose particularly have a very restricted tidal access and departure times are dependent on the tide. The channel is dredged to a depth of 5.6 m and the tide is around 4 m on neaps and 5.2 m on springs. Peterhead is affected too, especially with easterly gales due to swell in the channel and waves coming over the breakwater, which restricts the ability to load and discharge cargo on these berths although the port itself is normally accessible. Figures obtained from the Harbour Master in Peterhead show that Berth 13 on the North breakwater was closed for a cumulative total of 122.6 days in 2015 and 166.9 in 2016. Berths 14 and 15 were closed for a cumulative total of 63 days in 2015 and 95.27 days in 2016. The South breakwater was closed for a cumulative total of 135 days in 2015 and 150.26 days in 2016. In summary, a vessel could sail but if required to load a buoy or buoys or other equipment, delays could occur as the number of other working berths would be busy with normal oil exploration duties.

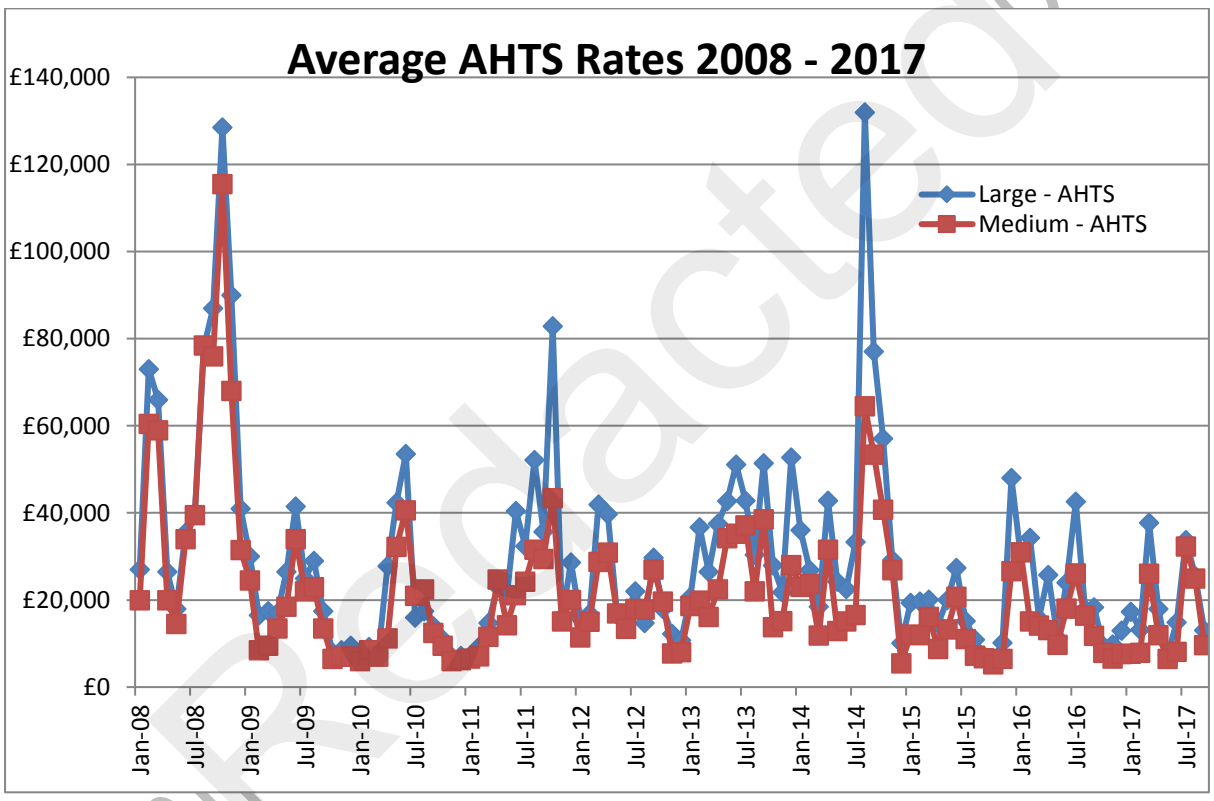
Most AHTS would wait for work in Aberdeen. The Aberdeen Harbour Master advised that the Aberdeen Harbour Board brought in a new Port Management system which went live on the 1st April 2015 which recorded in the 884 days between the 1st April 2015 and the 1st September 2017 that the harbour was closed for 73 hours and 45 minutes mostly due to inclement weather conditions. The predominate inclement weather conditions which can cause the port to close are from an easterly direction when a combination of swell and tide can cause the channel to become hazardous. The closure statistics included the effects of storm Frank in late 2015/16. Less inclement weather conditions lead to certain harbour restrictions particularly on older and larger vessels. Restrictions during this period amounted to 383 hours which would include restrictions for fog, periods of pilotage suspension and other related weather restrictions which have only resulted in restrictions rather than total closure. Their historical data however is not able to be broken down into vessel type or draft.

Secondly, the deeper draft of the AHTS could also restrict the vessel being able to reach some of the buoys especially in the shallow water areas off the south-east coast of England.

It is also worth noting that the GLA vessels carry a certain amount of the requisite chain on board as standard as well as other equipment necessary for the safe handling, repair and maintenance of buoys which would not be on board an AHTS. Furthermore, AHTS do not have underdeck storage, would not carry spare 38 mm chain or have the relevant gypsies. This equipment could of course be loaded before the vessel was to sail but this would add to the hire cost as well as taking extra time before sailing thus potentially affecting a reasonable response time.

There are other types of offshore vessels that wouldn't be suitable for handling Type 1 buoys. The most common type of vessel is a Platform Supply Vessel (PSV) which has no suitable crane, bolster or chain handling equipment and couldn't handle any size of buoy. There are also a number of construction vessels which have the crane capacity but not the bolster, chain handling equipment or pods necessary to deck the buoys. They are generally a whole degree more expensive than the AHTS and are discounted both technically and commercially.

We have checked through our fixture records from the last ten years of large AHTS where we have records of the day rates paid for vessels utilised for rig moves on a month by month basis. This is shown in Graph 1 as the average monthly day rates for the month and demonstrates the volatility of the market over the last five years. Medium AHTS are defined as 12,000 – 18,999 BHP and large as above 19,000 BHP. The higher the day rate, the less vessels available at the time which can be due to spikes in demand because of rig moves coinciding especially after a period of bad weather. It can also be affected by bad weather delaying operations meaning vessels haven't returned in time from on-going work and less vessels are then available for new requirements being tendered. Even during July 2017, which is during an extended period of what has generally been a very slack market for the Owners, day rates have reached GBP 70,000 a day as the market availability has again been restricted due to a bunching of rig moves in the central and northern North Sea combined with summer project activity once again raising the average. These big AHTS have very high horse power and consequently have a very high fuel consumption making them expensive to run and an added expense to consider if they were to be chartered.



Graph 1 The variation in spot market AHTS rates since January 2008.

Despite the variance in rates over the last couple of years, utilisation has been low with intermittent rate spikes and many vessels have been put into lay-up.

The term 'lay-up' refers to the practice of taking a vessel 'out of service' during an economic downturn where the supply of vessels exceeds demand. It is distinct from taking a vessel temporarily out of service for dry docking or for repairs or when a ship is idle between employments (ie awaiting orders on the spot market). Vessels are put into lay-up to reduce daily operating costs and to maintain the safety, security and protection of the vessel and is a reflection of poor trading markets.

The concept of lay-up has been summarised in three different categories by Norton Rose Fulbright.

- **Long term** or **cold lay-up**. Cold lay-up involves taking a ship to a dedicated, secure location where the ship will be deactivated. The aim is to manage the ship during the lay-up period with

minimum personnel and little ongoing maintenance. Dehumidifiers will be employed to reduce moisture in enclosed spaces to prevent or reduce corrosion. All machinery and onboard systems are deactivated and secured. Tanks, cooling systems and pipelines are drained of saltwater and additional sacrificial anodes are deployed on the hull and in ballast tanks for increased cathodic protection of the hull and ship's structure. A specialist shore-side lay-up team will be employed in place of the existing crew to maintain the ship or group of ships.

- **Medium term** or **warm lay-up**. Operating costs are reduced by retaining only a skeleton crew in order to maintain the ship and keep the machinery operative so that the shipowner can quickly mobilise a full crew to prepare the ship for normal trading. A limited number of systems will be deactivated during a warm lay-up period. The reduced number of crew on board will continue with planned maintenance during the lay-up period and will regularly operate deck and engine room machinery to keep the machinery in good working order.
- **Short term** or **hot lay-up**. During a period of short term or hot lay-up, the shipowner will retain a reduced but sufficient crew to save costs so that the ship can be quickly reactivated at short notice with a minimum of cost. The lay-up crew will continue with normal planned maintenance routines to ensure that the ship, its machinery, electrical and electronic systems are kept operative and in good working order ready to trade at short notice.

For Offshore vessels with a crew of around 12, Owners refer to cold or warm lay-up only as they don't differentiate between warm and hot lay-up. Vessels in any form of lay-up are not available to trade on an immediate spot basis as Owners will not break lay-up for a short-term spot job unless the rate is high enough to make it worthwhile financially. The vessel will also need to be fully crewed which will take time and therefore preclude laid-up vessels for short term response.

Figures from January 2016 to September 2017 in Table 7 below show the total number of North Sea AHTS in all degrees of lay-up on a month by month basis.

Month	AHTS
2016	
January	30
February	30
March	31
April	28
May	26
June	28
July	28
August	29
September	30
October	33
November	39
December	44

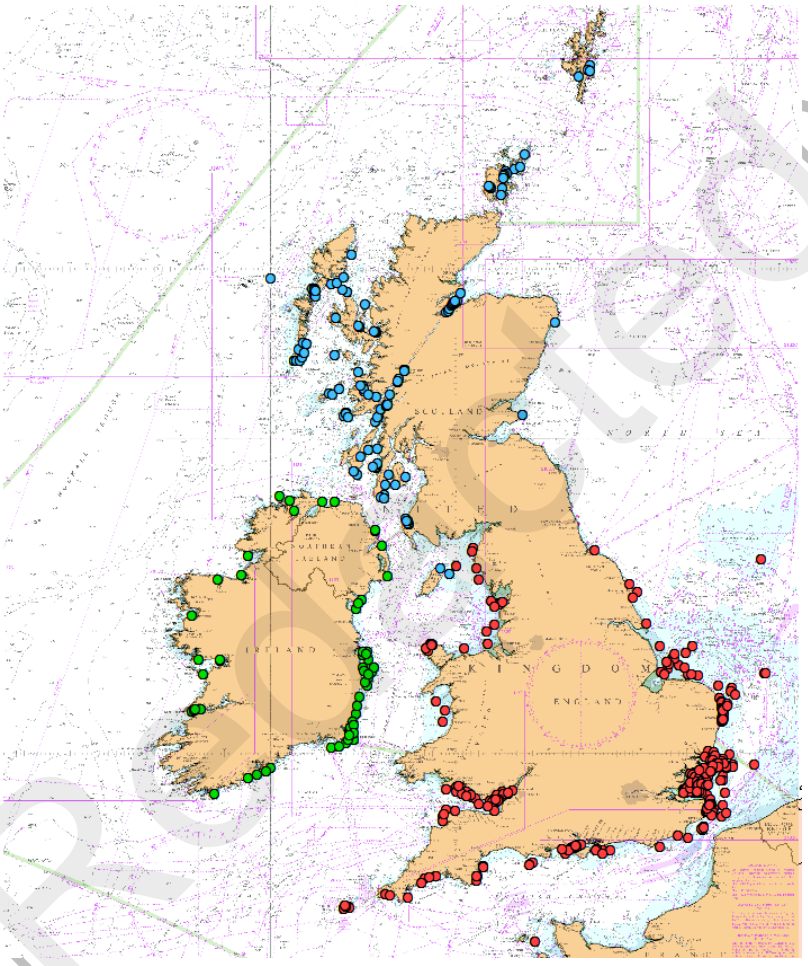
Month	AHTS
2017	
January	45
February	43
March	42
April	36
May	35
June	37
July	38
August	40
September	39
October	42
November	44*
December	-

Table 3 2016/17 North Sea AHTS Lay-up Overview (*up to 10th November 2017).

The effect of summer drilling and project activity can be clearly seen with vessels coming out of lay-up during the summer months and going back to lay-up for the winter. With summer 2017 activity coming to an end, we expect a few vessels to be laid up for the winter, therefore reducing the number of vessels available for charter on the spot market.

4.4 Type 2 Buoy locations

The locations of the Type 2 buoys, which are the most widely utilised size of buoy, are illustrated on Map 4. Out of the 738 buoys deployed around the coast of Great Britain and off the coast of Ireland in the sea areas monitored by the GLAs, more than 500 are Type 2. These buoys are considerably smaller than the Type 1 buoys at around 3.2 m high and weighing up to 6 tonnes and they don't have the longer tail tube necessitating the need for a vessel to have suitable pods. Nonetheless, to bring the buoy on board any vessel for repair and maintenance would require that vessel to have a suitable crane to lift the buoy as well as some form of bolster or roller to bring the chain and sinker on board too.



Map 4 Type 2 Buoy locations.

Type 2 buoys are located all around the coasts of Great Britain and Ireland apart from the coasts of north east England and eastern Scotland where very few are deployed. 222 out of the 504 (45%) currently deployed are in response areas 9, 10 and 11.

4.4.1 Vessel Capabilities required to handle Type 2 buoys

The smaller weight gives more flexibility to the type of vessel that is suitable to work with Type 2 buoys. There are no smaller AHTS under 15,000 BHP trading in the Northern North Sea spot market and only one small Polish AHTS of 5,150 BHP trading in the southern North Sea. This is because there is very limited demand for vessels of smaller size to support North Sea oil and gas operations and with such limited employment opportunities, Owners have opted to trade in other areas of the world.

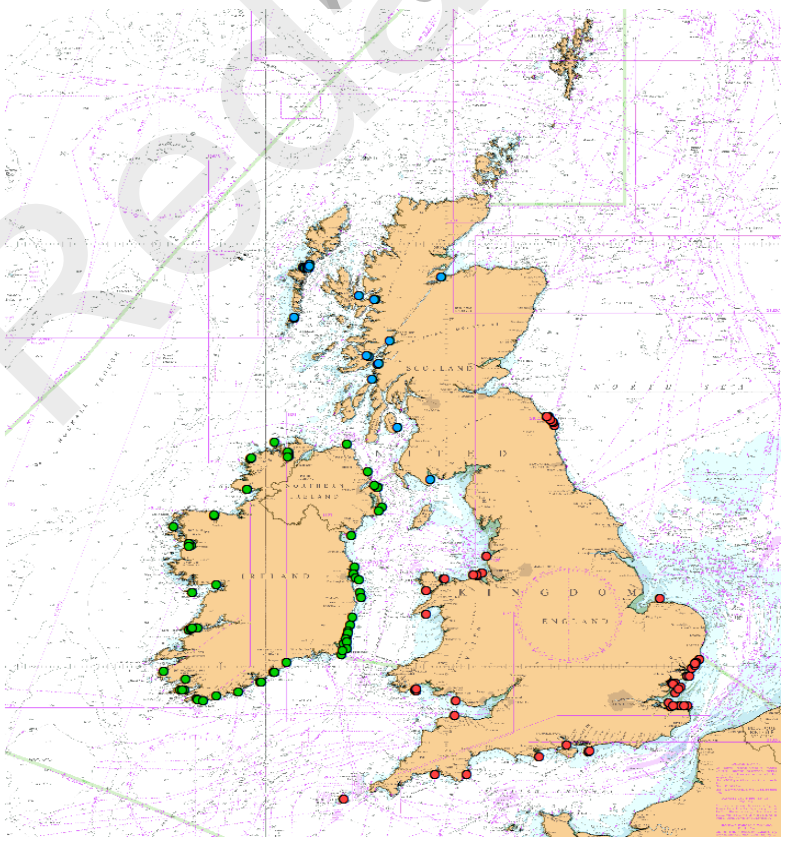
There are 9 tugs / AHT's also awaiting employment in Holland but none of the vessels have suitable crane capacity able to reach over the stern roller to lift the type 2 onto the deck.

The required sailing distance is equally problematic in being able to guarantee a suitable vessel could be deployed within a reasonable time in areas 9, 10 and 11 where 45% of the buoys are located. Once again, AHTS are able to be utilised and there will be more choice of vessels available at any time due to the smaller size of the buoys. However, the same factors of price, fuel, draft and availability, as illustrated on Graph 1, apply but it cannot be guaranteed that a vessel from the GCVM would be available at the required time. In reasonable weather, a vessel from Aberdeen could reach Oban in about 30 hours sailing at 12 knots through the Pentland Firth and to Glasgow in just over 40 hours. In any form of bad weather, these times would be increased. For example, at 6 knots these times would double with attendant time and fuel costs applying. Other than the ETV employed by the Coastguard, large AHTS do not sit off the west coast of Scotland so one would be relying on a vessel finishing a spot or term contract which would be unlikely for most of the time.

There are several Owners with smaller vessels such as multicats working on the west coast which could offer emergency response in good weather only but the nature of urgent requirements from the GCVM would likely be in weather conditions that would be far worse than small vessels could work in – we refer to the problems of smaller vessels being able to work in the responses to the Sunk Centre enquiry in section 5.3.

4.5 Type 3 Buoy Locations

The locations of the 137 Type 3 buoys are illustrated on Map 5. Although 38 of the 137 Type 3 buoys currently deployed are in areas 9, 10 and 11, the Type 3 buoys are spread widely in all areas around the coast of Britain and Ireland with 39 currently deployed in Irish waters and 40 in Scottish waters.

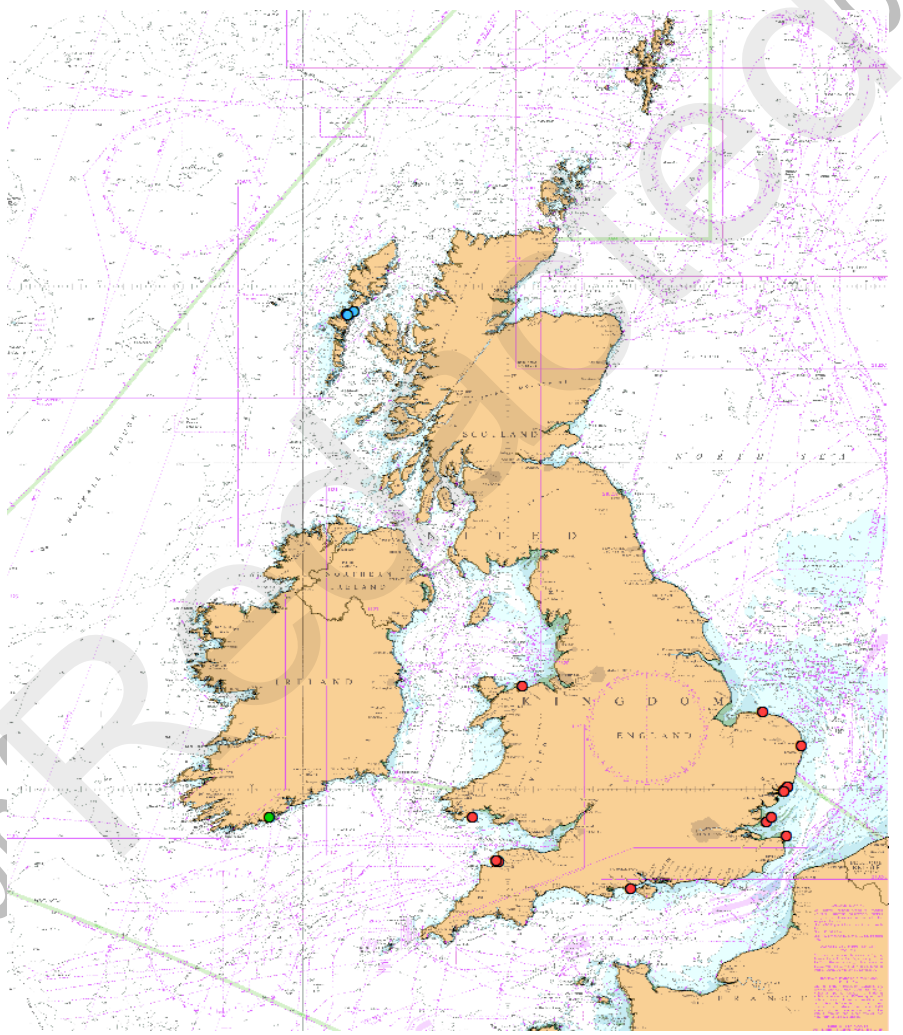


Map 5 Type 3 Buoy locations

The size of the buoys means that smaller vessel such as a multicat, if available, could handle this size of buoy and there are a number of operators around the UK that could be utilised in case of an emergency. These smaller vessels would be restricted by weather conditions, and as can be demonstrated by the market exercise carried out on the 8th June 2017 and detailed in 5.3 – the Sunk Centre summary - the smaller vessels were not able to perform work unless the weather was good albeit that the weight of the anchor was 5 tonnes rather than the 1 or 2 tonne sinkers normally used with a Type 3 buoy. In good weather, multicats could easily handle a Type 3 (or 4) buoy but are not designed for heading out and working in sea states much above around 2 m.

4.6 Type 4 Buoy Locations

The locations of the 23 Type 4 buoys are shown on Map 6. There are four Type 4 buoys in Scottish waters and 19 in English waters – there are none in Ireland. Of the 19 Type 4 buoys controlled by TH, 10 are in areas 9, 10 and 11.



Map 6 Type 4 Buoy locations.

Based on their size and weight, a smaller vessel could handle the recovery and deployment of Type 4 buoys. For lifting purposes, allowing for ship motions giving vertical accelerations of 1.5g max and including an allowance for lifting a portion of the anchoring chain at the same time as hoisting the buoy, we calculate that a vessel with a lifting capacity of 600 kgs would suffice for bringing the buoy on board provided the crane was of sufficient outreach and lifting height – dependent on the size of the sinker, a maximum of around 2 tonnes lift is necessary. Most Hiab-type workboat deck cranes

have a SWL (and acceptable working reach) well in excess of this suggested figure and as such should be suitable for working on Type 4 buoys. However, the low number and wide geographic distribution of the buoys out with the rapid response areas means that it is highly probable that one of the GLA's own vessels would be able to cover any requirement unless several buoys had been damaged in the same period of bad weather.
We would expect that if an additional vessel was required from the GVCM for spot work with a Type 3 or a Type 4 buoy (other than perhaps in the areas 9, 10 or 11 where the Alert would normally be located), a suitable vessel could possibly be found but her ability to work would be very weather sensitive and therefore cannot be relied on.

Conclusion

Considering the following factors:

- the majority of the Type 1 buoys are situated (49 of the 68 Type 1 buoys are in areas 9, 10 and 11) which are in relatively shallow waters
- the likely locations of suitable vessels in NE Scottish ports together with the respective sailing times and fuel consumption as well as their ability to leave and enter port
- the lack of vessels with the specific requirement of having pods capable of handling a Type 1 buoy
- although some AHTS could bring the Type 1 buoys on deck and lay them down on deck, this is not a feasible way of handling an AtoN buoy with the high-tech equipment being very susceptible to damage if not pod mounted
- the lack of crew familiarity on a TPV in handling Type 1 buoys as well as a lack of adequate chain and other equipment and technical knowledge necessary for buoy maintenance
- handling Type 2 buoys would not require such large cranes or as large a vessel as required to handle Type 1's. There are no other additional suitable vessels available that are trading on the GVCM other than those able to handle the larger buoys
- the Type 2 buoys would therefore also need to be brought over the stern roller risking considerable damage
- the commercial risks of relying on the very volatile short-term spot charter market and including the effects of vessel lay-ups would apply for handling either Type 1 or Type 2 buoys

means that the GVCM would not produce a suitable vessel on a short-term emergency spot charter basis able to be guaranteed to meet the GLA's modus operandi or legal response obligations for Type 1 and Type 2 buoys.

A suitable vessel able to handle a type 3 or type 4 buoy may be available in good weather conditions only when there is much less likely of the need. The market could not be relied upon to the extent required to consistently supplement or replace a GLA vessel.

This conclusion does not consider any of the added contractual and additional liability issues raised in section 5.

For longer term charters, any vessel would need to be able to handle Type 1 buoys and there are still no vessels with pods without conversion, the high daily fuel consumption costs, the deeper draft plus the likely day rate charter cost (bearing in mind some of the large AHTS cost over USD$ 100 m to build) means that a suitable technical vessel would not be available or be an economic alternative to the GLA vessels.

4.7 Helicopter operations

The GLAs now share helicopter operations with TH requiring around 95 days, Irish Lights requiring around 60 days and Northern Lighthouse Board requiring around 120 days. Not all helicopter operations require marine vessel support and varies between the GLAs depending on the location and nature of the requirement. Northern Lighthouse Board expects that between 50 and 75% of the time, marine operational vessel support is required for their operations while for TH, it's 33%, and for Irish Lights, it's around 10 – 15%. Four of the GLA vessels are equipped with a helideck and operations requiring helicopter support do not normally run concurrently.

The GVCM would produce a few vessels with helideck facilities with availability more restricted during the summer months as this is when demand for these vessels is at its highest. Some of the larger AHTS have a helideck but are often at the top end commercially and would likely demand a premium for using the helideck although this would depend, to a certain extent, on the availability of comparable vessels. As of mid-October, there are four AHTS vessels trading on the North Sea spot market with helidecks.

Attached as Appendix 7 is our latest Construction / Survey Vessel Summary dated 2nd October 2017 showing the latest availability of these vessels. Vessels equipped with a helideck are at the top end of the offshore market utilised for offshore diving, construction and walk to work operations and can be very expensive and often only available on a fly-by basis between projects especially during summer months. Their availability does however tend to improve after the summer season has come to an end. During the winter months, the vessels are often down-manned and are unable to mobilise at very short notice and would not normally be available for only one or two days' work.

The GLA vessels are mostly employed in load lifting and there are specific courses conducted by the GLA helicopter contractor for GLA personnel involved in helicopter lifting operations. There needs to be a trained helicopter landing officer and all the deck crew need to be trained for helicopter lifting operations and emergency response. The helicopter contractor is licensed and must ensure compliance with CAA rules. Therefore, any vessel's helicopter operational procedures and personnel would need approval and acceptance by the helicopter contractor before operations could be performed. Most helicopter operations to Offshore vessels and installations are for passenger transfer only and therefore the specialised nature of the GLA operations will both limit the choice of vessel and add delays to the chartering of a vessel.

There are currently four vessels capable of helicopter operations within the GLA fleet and so, for the purpose of this report, we have assumed that it is likely that the GLAs should be able to cover an emergency utilising a vessel with a helideck from within the GLA fleet rather than requiring a vessel from the GVCM.

4.8 Surveying, Wreck Search and Marking Criteria

In the event of a ship foundering, there is often floating debris such as ropes and loose equipment from the foundered vessel's deck that can become a real hazard to a vessel going to locate a wreck. Ropes can get caught around the propellers of the searching vessel whilst larger floating pieces such as containers become a hazard in their own right. This flotsam and jetsam can drift away from the actual wreck location and, if so, can constitute misleading information as to the possible wreck location as well as being an unexpected hazard especially in bad weather (when a vessel is more likely to founder) and in the hours of darkness.

Furthermore, locating the actual site of a wreck is not straightforward. The actual location of the wreck is often not quite where it is expected to be – the decommissioned tug Ella of 130 GT which foundered south east of Lowestoft on the 6th July 2017 whilst under tow is a good example of this as she was located approximately 2 nm away from the reported position of foundering. By considering this recent foundering as an example, it highlights some of the issues that the vessel searching for the wreck should be capable of undertaking. Alert was the TH search and locate vessel utilised and located the vessel about 4 nm south east of Lowestoft in position 52 degrees 25.2' N 001 degrees 49.7' E with a lowest astronomical tide clearance of 5.1 m.

Alert had to venture into shallow waters, establish the location of the wreck, the clearance above the wreck and the lay of the wreck taking into account tides and currents. Alert needed to be close to the potential danger to perform the duties required of her and her crew needed to be fully conversant with what was expected of them. It is also critically important that the advice from the searching vessel is extremely accurate so that a proper marine traffic assessment can be carried out to assess the risk to other vessels. These constitute quite a skill set for a TPV Owner to be able to comply with.

Following the advice from Alert and extensive analysis of the historical traffic density in close proximity to the wreck, TH deemed the wreck to be a hazard to navigation and deployed 4 IALA emergency wreck marking buoys. In addition, SOSREP established a 250 m temporary exclusion zone around the wreck. The Owners were instructed to remove the wreck by SOSREP but advised they were not able to arrange for its removal. As Ella was under 300 GRT, there was no statutory requirement for it to be insured for wreck removal under the Wreck Removal Convention Act 2011 and it was believed that the Ella was not insured. The Owners were therefore considered to have abandoned the wreck and the GLA were therefore instructed to arrange for the wreck to be cleared as soon as reasonably practicable and to perform a post removal survey to ensure the hazard had been mitigated. The costs incurred were instructed to be paid from the General Lighthouse Fund (GLF) to the extent they couldn't be recovered from Ella's Owners.

Most vessels from the GVCM would also, if required, have to load survey equipment prior to sailing delaying operations and compromising the requisite response time. It is unlikely that the crew will be familiar with operating the survey equipment and specialist survey operators would therefore need to be mobilised adding further delays. The crew may also not have the experience necessary to deploy the buoys in the required position and pattern, especially in shallow waters, and the obligations that the GLAs have to comply with could leave a significant risk exposure if the vessel did not correctly deploy the buoys as outlined in section 5 – Liability issues.

Another altogether different situation occurred when the Belgian beam trawler Assanat, which was around 20 m in length, capsized on the 28th December 2016 approximately 20 miles north east of North Foreland. Instead of sinking completely, the upturned vessel floated with one person on the upturned hull and only a small part of her keel visible and was therefore a moving hazard to navigation. The upturned hull was seen by a passing tanker and the alarm was raised. The wreck was drifting south west towards the Thames Estuary and close to the London arrival and departure route. Alert and Patricia were sent to assist and Patricia deployed a wreck marker buoy fitted with a Racon to mark Assanat's position. In this case, a salvage company, [redacted], was engaged by the vessel's Owners to recover the vessel which was done successfully. Although the GLAs services were not required further in this instance, the potential hazard could have resulted in a collision or worse with the vessel hull drifting towards the departure route.

4.9 Speed of Response and Geographic factors

In shallow waters, the effect of a wreck becomes more critical. MAIB data shows that the majority of vessels sinking around the UK and Ireland are fishing vessels, leisure craft and smaller SOLAS vessels which in deeper water would have little or no impact.

In Annex A – 4 of the RRC, there is a map of the 30 m contour within which it was assessed that there is a higher potential for other vessels to strike a wreck or new danger.

The southern North Sea is an area of constantly shifting sands which leads to changes in the seabed contours and this can cause the buoys to migrate. For instance, navigation journals going back to the mid 1800's chronicle changes to the Holm Sands about 6 miles off Lowestoft and the buoys there need to be checked every 6 months. This is not so much of a problem off the coasts of Scotland where the bottom conditions are generally rockier, the seabed becomes deeper closer to the coast and buoys do not need to be checked so regularly.

Map 7 The 30 m Contour

The 6 and 12 hour areas for rapid intervention to wrecks and new dangers are all in TH waters as stated in section 2.4 and require a more rapid response with the Alert with her higher speed capability normally being stationed here.

Conversely, the need for better seakeeping is less challenging in the 6-hour response area but is much more important off the coasts of Scotland, south west England and particularly off the west coast of the Republic of Ireland.

4.10 GLA Crew Capabilities

The competence of the crews on the GLA vessels and their familiarity with buoy and AtoN handling was very apparent from watching operations. The crews were extremely well trained and worked as a team to ensure safe and efficient maintenance of the AtoN. Considerable care was taken to ensure that the solar panels and other equipment were not damaged during operations. The electronics also require maintenance, repair and replacement which requires the crew to have different degrees of technical knowledge. Repairs vary in complexity – some of the simpler tasks can be undertaken by the vessels crew under ETO guidance. More complex repairs to lightships or to communications systems on Type 1 buoys require a trained ETO to be in attendance which also precludes the use of a TPV with an untrained crew.

It was noted that the GLA vessels carry cadets, apprentices and junior officers so that the crews can be fully trained to, and be familiar with, the GLAs exacting standards and this is to be commended.

AHTS vessel duties are by their nature rather different to those of the GLA and their crews are trained equally efficiently to do those duties required in a safe and timely manner. Rig anchor buoys do not have any electronic equipment on them and are pulled over the stern roller without having to worry about damage to the buoys so they are brought on deck roughly. A GLA buoy landed on deck in the same manner would probably suffer extensive and expensive damage to the electronic equipment on board which would be unacceptable.

GLA crews are also familiar with the local environmental conditions where the buoys are situated and are familiar with working in shallow waters and shifting sands. Each of the Masters we spoke with stressed the importance of local knowledge when performing AtoN duties in a safe manner and this local knowledge comes from experience.

4.11 General market commentary

The current low oil price and resultant reduced Oil Company exploration and development activity worldwide has catastrophically affected Offshore vessel Owners worldwide. Utilisation has fallen, charter rates and vessel values have tumbled as Owners have struggled to obtain gainful charter employment. As highlighted above in section 4.3, large numbers of vessels are in lay-up not earning and many Owners are struggling to survive. Even those vessels working are often barely covering OPEX let alone making any contribution to CAPEX but keeping the vessel working, even at these levels, is a better alternative to lay-up and losing good vessel crews. Some of the biggest Owners with links to the USA have sought protection under Chapter 11 financial protection. These companies include [redacted], [redacted] [redacted] and [redacted], although the latter two do not have much of a North Sea presence being more occasional visitors. Most of the hitherto strong Norwegian companies have had to go through extensive financial restructuring and investors have had to take substantial losses for the Owners to survive. [redacted], [redacted], [redacted], [redacted] and [redacted] to name a few, have all had to go down this route. [redacted], [redacted] (who in the past were the holder of the Coastguard Agreement for Salvage and Towage (CAST) for 3 ETVs around the UK coast), [redacted] have been forced by their banks to merge into one company which now owns and operates 154 modern AHTS, PSVs and construction vessels worldwide. Even [redacted], part of [redacted] in Denmark, is in dire straits and is available for sale.

Newbuilding orders for offshore type vessels have almost ceased worldwide with yards being left with vessels as Owners have cancelled orders – [redacted] in Korea was left sitting with more than USD$ 1 billion worth of completed vessels that Owners had cancelled. The three vessels were one semi-submersible rig, one large construction vessel and an accommodation vessel

for 800 persons with the last two ordered by North Sea Owners. They have managed to sell the rig at a heavily discounted price with the buyer not taking delivery until 2019 but the other two vessels remain unsold.

The consequences of the offshore markets for shipyards worldwide specialising in building offshore type vessels has also been pronounced. Very few new buildings remain to be delivered to established Owners with shipyards becoming increasingly hungry for new orders. Equipment manufacturers are having to reduce their prices putting anyone wishing to build a new vessel in a very strong bargaining position. We do not see this situation changing for at least the next 4 – 5 years as laid-up vessels, many of which are young, first need to be employed long enough and profitably enough for the Owners to be able to pay off their outstanding loans and debts. Only when that has happened, and an improved market has returned where charter rates have increased, will Owners think about ordering new vessels, however this will of course also depend on the willingness of banks and other financial institutions to provide any finance required.

5. SHORT TERM CHARTER MARKET CONSIDERATIONS

5.1 Specific Liability Issues

Notwithstanding the responsibilities of the GLAs as outlined in the various MSAs, there are potentially liability issues to the GLAs in contracting from the GVCM. Operational risks have been outlined in section 4 but there is also a contractual liability borne by the GLAs if a TPV was to not perform to the necessary standards.

Following discussions with TH's Risk Manager [redacted] on the 7th August 2017 regarding the GLAs operational track record with regards to incidents, we were advised that
the quality of service and the good track record of the GLAs has meant that, historically, both insurance premiums and the insurance deductible have been kept low [redacted]

If TPVs were to be chartered, the high probability is that the premium and deductible would go up and, in the event of a major claim resulting from the actions of a TPV, could increase greatly. It is not possible to quantify the risk financially as it would depend on the nature and amount of the claim and has not been tested in practice.

Case Law from the appeal of an action originally held before Judge Grove and a jury was heard on the 11th June 1886 and is very significant. The case, Gilbert and Another v The Corporation of Trinity House (defendants), found against The Corporation of Trinity House and the legal principles would still hold precedence in the event of there being any negligence on the part of a third party if work was being delegated by the Northern Lighthouse Board or TH to a third party where the third party does not assume the legal responsibilities to which the GLAs must adhere. We are uncertain whether the same legal principle would apply to Irish Lights in the Republic of Ireland.

The nub of the case revolved around TH contracting with a Mr Griffiths to remove a partially destroyed beacon. The beacon was not removed completely with an iron stump left sticking up which caused damage to the plaintiff's ship and the cargo it was carrying.

TH's lawyers tried to argue that TH was effectively a servant of the Crown and as such exempt from liability to an action for negligence. This was dismissed by the court by virtue of the MSA of 1854 and other arguments.

Secondly, the court found that TH was liable for Griffiths negligence as TH was responsible for the safe and due maintenance of the beacon. Part of the judgment from Judge Day reads

'Next, was there any negligence here. The beacon undoubtedly vested with the defendants. I agree that if the defendants were not responsible for the conditions of beacons throughout the country, not charged with the duty of maintaining them in a safe state, they could, by parting with the beacons, evade responsibility. But that is not the position of the defendants. They are responsible for the safe and due maintenance of these things. Here they gave Griffiths leave to take the beacon away. He never did take it away. He only took a part of it and left the rest. The defendants were responsible for the care of what remained, and it is by neglecting the care of what remained that this accident has occurred. I cannot doubt that there was negligence in allowing the stump which caused the injury to remain where it was. I am therefore of opinion that they are clearly responsible in an action for the damages which the plaintiffs have sustained.
In my judgment, the verdict ought to stand and the judgment was correct.'

Judge Wills came to the same conclusion making similar points to justify his opinion.

A copy of the whole judgment summary is attached to this report as Appendix 8.

The consequences for the GLAs to consider if a job was subcontracted, not done to the required standards and if the TPV Owner was not contractually responsible for the quality of the work are serious based on the above ruling. The judgment also illustrates that the GLAs statutory duties cannot be delegated and where a GLA outsources statutory work, the GLA will always remain responsible for the consequences of the performance of that work

TH, on behalf of the GLAs, has insurance to cover its legal liabilities including GLA negligence but this cover does not extend to TPVs that might be chartered to cover GLA spot requirements. The GLAs have a good insurance track record when utilising their own vessels. Additional cover would need to be taken out as the TPV Owner would almost certainly not have the appropriate insurance to cover all the obligations that the GLAs have and therefore would be needed to protect the GLAs. This would likely be expensive and difficult to arrange at short notice to cover the charter of a TPV – for instance out of normal office hours. Without testing the insurance market, we cannot be certain that cover would be possible and what the level of any premium (and any required deductible) would be. There is also the financial cost that if there was an incident leading to a claim where the claim was against the GLA's insurance, the subsequent insurance premiums going forward would increase and the insurance deductible may also rise leading to increased costs for the GLAs.

5.2 Short Term Charter Issues

There are several issues to consider in the chartering of a TPV to cover an emergency situation. Of primary importance in chartering a TPV is to ensure that the GLAs are not exposed to any additional risks that would otherwise not apply had their own vessel(s) been used.

The GLAs have strict responsibilities determined under the various MSAs and, consequently, the following concerns need to be addressed:

- It is unlikely that you would be able to get vessel Owners chartering their vessel to the GLAs to be willing to encompass all the risks and responsibilities that the GLAs are liable for. This is because the contract is, at best, knock for knock – so any damage to a buoy, for example, will not be covered by the TPV Owner. The vessel Owner will also not take any responsibility for putting a buoy in the wrong place. We would therefore suggest that GLA personnel would be required on board to check that all the operations are being performed to GLA standards and that any buoy is correctly re-positioned. This would not be easy to arrange at short notice and especially out of normal office hours.

- It would be advisable to have a prepared Charter Party for use in an emergency charter situation which Owners would need to have sighted and agreed prior to any contract being awarded. Bimco Supplytime 2005 (BST 2005) is an internationally recognised Charter Party and known by all vessel Owners. However, the contract is not fully knock for knock and is generally felt to be an Owner friendly form so Bimco have recently introduced Bimco Supplytime 2017 (BST 2017). While BST 2017 is not as well known or widely tested, it is more fully knock for knock (but still not completely so). We would suggest that any charter contract would have to be based on BST 2017 or another generic Charter Party and that as few changes as possible be included in light of the probability/possibility that the TPV would be required out of office hours. Therefore, the issues above regarding GLA responsibilities under this Charter Party would remain. Any change to the liability obligations contained in either of the pro forma Bimco Charter Parties would be almost impossible to agree at short notice, especially if out of office hours, as Owners would need to get changes agreed with

their P and I club. In all probability, in an emergency situation out of office hours and for a short period of charter, the Owner would demand a clean contract be agreed before the charter commences and therefore the GLAs would need to cover the additional risks. Even if they were prepared to consider this, it would take a while to get anything agreed, eating into the required response time especially for a wreck.

- As an alternative, the proposed GLA proforma Charter Party could be circulated to selected Owners who could be asked if they could agree to a charter based on this contract in case of an emergency or in case of a call off type agreement being set up. From first-hand experience and without wishing to sound negative, and even with long-term tenders issued for firm employment, the most common response in Owner's tender submissions is that the vessel is bid subject to agreement on Charter Party terms with a comment that the Owner will review the Charter Party if there is interest in their vessel. Unless an Owner sees any real likelihood of getting any work, they would likely just to put the proposed contract to one side to be reviewed if needed. A few may send it to their P and I club for comments but the P and I club will respond protecting the Owner's interest and wanting to take as few risks as possible that they may be required to cover. For a call off contract without a defined period of firm employment, such as a minimum number of days charter per annum, it will be difficult to get a proposed Charter Party reviewed.

- The probability is that a TPV would be required in bad weather and whether the TPV Master would be willing to sail is not something the GLAs can control even if a contract has been agreed to charter the TPV. The financial liability of the GLAs towards the TPV Owner can be covered by way of a cancellation clause without penalty in the event the vessel doesn't sail but the problem that caused the TPV to be chartered in the first place has not been solved. A TPV Master also will be much more cautious than the more experienced GLA Masters and may not be willing to work in conditions that the GLA vessels would.

- The locating and marking of a wreck brings its own problems as highlighted above in section 4. The BST 2005 (or 2017) is a contract between the TPV Owner and the respective GLA as Charterer and covers property owned or operated by the two respective parties. If the TPV was being chartered to find and mark a wreck, then the wreck is not part of the knock for knock terms as it is not belonging to either of the contractual parties. Coupled with the uncertainty of a wreck location and how the wreck may be lying, there are a host of liability issues arising.

- These would include – risk of damage to TPV, GLA exposure if wreck is inaccurately marked, insurance issues for TPV vessel Owner and the respective GLA and potential pollution liabilities. Many Owners would not be covered to perform this sort of work and the risks would therefore need to be covered by the GLAs or the GLAs would almost certainly be asked to pay the Owner's additional premium, especially if this was a significant amount, in the same way Owners seek to pass on other insurance premiums such as those levied in areas of potential war or piracy.

5.3 Spot Market Enquiry – Sunk Centre Summary

Background to the need for a vessel

On the 6th and 7th June 2017, the Sunk Centre light-vessel, located approx. 30 nautical miles off Harwich, was reported to be dragging out of position during westerly gales. Patricia made passage from Great Yarmouth anchorage and attended on the 8th June 2017. Patricia dragged

the light-vessel back into position but found that that the anchor had fouled its mooring with several turns of cable around it.

With Patricia's crane temporarily inoperative, the crew was unable to resolve the mooring issue. No other GLA vessel stationed on the east coast, TH decided that the GVCM should be approached to see if a TPV was available and if so, whether the vessel would be capable of doing the work within the required time frame and on suitable commercial terms.

Market enquiry issued

Following an e mail enquiry from TH, Braemar issued the market enquiry on the 8th June 2017 to more than one hundred different companies who have vessels trading in the North Sea and near Continent including Owners of tugs, multicats, multi role tanker assist vessels and Anchor Handlers (both AHTS and AHT's). The enquiry was issued to establish whether there was a suitable vessel available to charter on the east coast with the capability of handling moorings - the moorings consisted of 350 m of 44 mm cable and a 5 tonnes anchor, hence a suitable vessel would need a minimum 10-tonne crane and chain capstan(s) to handle the cable. Consideration was also given to the fact that conventional AHTs and AHTS could bring the mooring and anchor on deck by dragging over the stern without necessarily requiring the use of a crane.

At the same time on the 8th June 2017, Galatea working in the Bristol Channel area was tasked to divert and commenced passage giving an ETA on site of a.m. Saturday 10th June 2017.

Photo 43 The Sunk Inner Lightship (slightly smaller than the Sunk Centre Lightship) alongside in Harwich.

Market Responses

Out of the 100 + companies contacted, only 6 offers were received. The 6 potential vessels available are all shown in the table below. The estimated costs associated with each of the vessels proposed are shown below in comparison with the TH fleet. Data was found 'on line' for each vessel from available vessel specification information sheets.

Vessel Type	Vessel name	Location	Time from Sunk LV- Days	Day Rate	Fuel Cons. Tonne/day	Speed Kts	Total Task Time- days	Total Cost	Plus food	£ Approx
OSV	[redacted]	?	1.75	4900	4	13	5	27600	€20 /man / day	£ 27 k
AHTS	[redacted]	Aberdeen	1.5	5000	14	11	4.5	41400	?	£ 41 k
Eurocarrier 2209	[redacted]	8 Hrs away	1	5000	120 l/hr	10	3	17592	?	£ 17 k
AHTS	[redacted]	Aberdeen	1.5	5000	17	11	4.5	45450	?	£ 45 k
AHTS	[redacted]	Bergen	2.3	8000	19.8	10	6	83640	?	£ 83 k
Shoalbuster 3013	[redacted]	Ijmuiden	2	5250	c 200 l/hr	10	4	26760	?	£ 26 k
LT	THV Galatea	Bris. Channel	2	N/A	14.4	12	4.33			£ 19 k
LT	THV Patricia	Gt Yarmouth	0.2	N/A	12	12	1			£ 3.6 k

Table 4 Sunk Centre summary.

Market Enquiry Evaluation / Outcome

- The capability of each of the vessels to complete the task was factored in. The crane capacity on the [redacted] being only 6 tonnes would not be able to lift the anchor on deck. The prevailing weather conditions at the time of the incident would likely have precluded using the [redacted] which had a suitable crane. Her Owners advised the vessel would require not only good weather to do the work but also required 24 hours to mobilise a suitable crew even though she was only 8 hours away. The [redacted] had too small a crane and considered the weather to be too bad to attempt the work before the 10th June 2017. The location of the [redacted] being in Bergen (apart from the cost) precluded using this option. The two other AHTS could both bring the mooring and anchor over the stern without using their cranes (which were too small) but were more than 24 hours away at normal steaming.

- The Total Task Time indicated above is approximate and assumes that it would take half a day to embark / disembark TH personnel and load equipment and that all vessels were immediately available from their respective locations to make passage, but did not include the time that would be taken to arrange a BST 2005 or alternative contractual arrangement.

- Some vessels had follow on contracts already in place which would reduce flexibility if weather or the nature of the problem increased the time required and may have resulted in the operation not being completed while still incurring cost.

- The figures for Galatea (and theoretically Patricia) are fuel costs only and include the cost of the return voyage to the original location before they were diverted as the vessels are TH operated and therefore the costs are borne anyway.

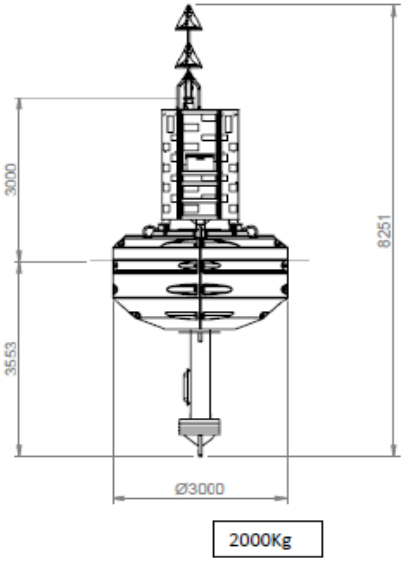
- For all examples, the cost of fuel has been assumed to be € 0.30 / litre.

- Although she was the nearest vessel, Patricia could not be considered as her crane was temporarily inoperative hence the need for a vessel from the GVCM. Had Patricia's crane been working, they would easily have been able to make passage to attend the Sunk Centre and return to Great Yarmouth in one day (not allowing for weather), hence the theoretical fuel costs are shown for one day.

- The outcome was that the GVCM could not provide a technically suitable vessel that was able to respond and start work before an available GLA vessel. Neither was any vessel from the GVCM commercially competitive compared to the costs of mobilising and utilising Galatea and hence Galatea was mobilised to complete the task.

- Galatea restored normal conditions at the Sunk Centre at 1540 UTC on the 10th June 2017; none of the available chartered options would have achieved this result before that time.

5.4 Spot Market Enquiry for a Buoy Handling Vessel for Wind Farm Work



On the 19th September 2017, we were approached by a Dutch Contractor requiring a vessel to install some demarcation buoys (as per Diagram 1) weighing about 2 tonnes with a 5-tonne sinker by latest the 26th September 2017 offshore Aberdeen. The preference was for an earlier completion but weather conditions dictated that the available vessels could not work in the prevailing weather conditions and so the later date of the 26th September 2017 was agreed for the work to be performed. We sent a market enquiry out to about 60 companies (including to GLA Planning and Commercial Manager Mr W Summers who confirmed that there was nothing available from the GLAs) inviting offers and received only three responses.

These are tabulated in Table 5.

Diagram 1 – Windfarm demarcation buoy.

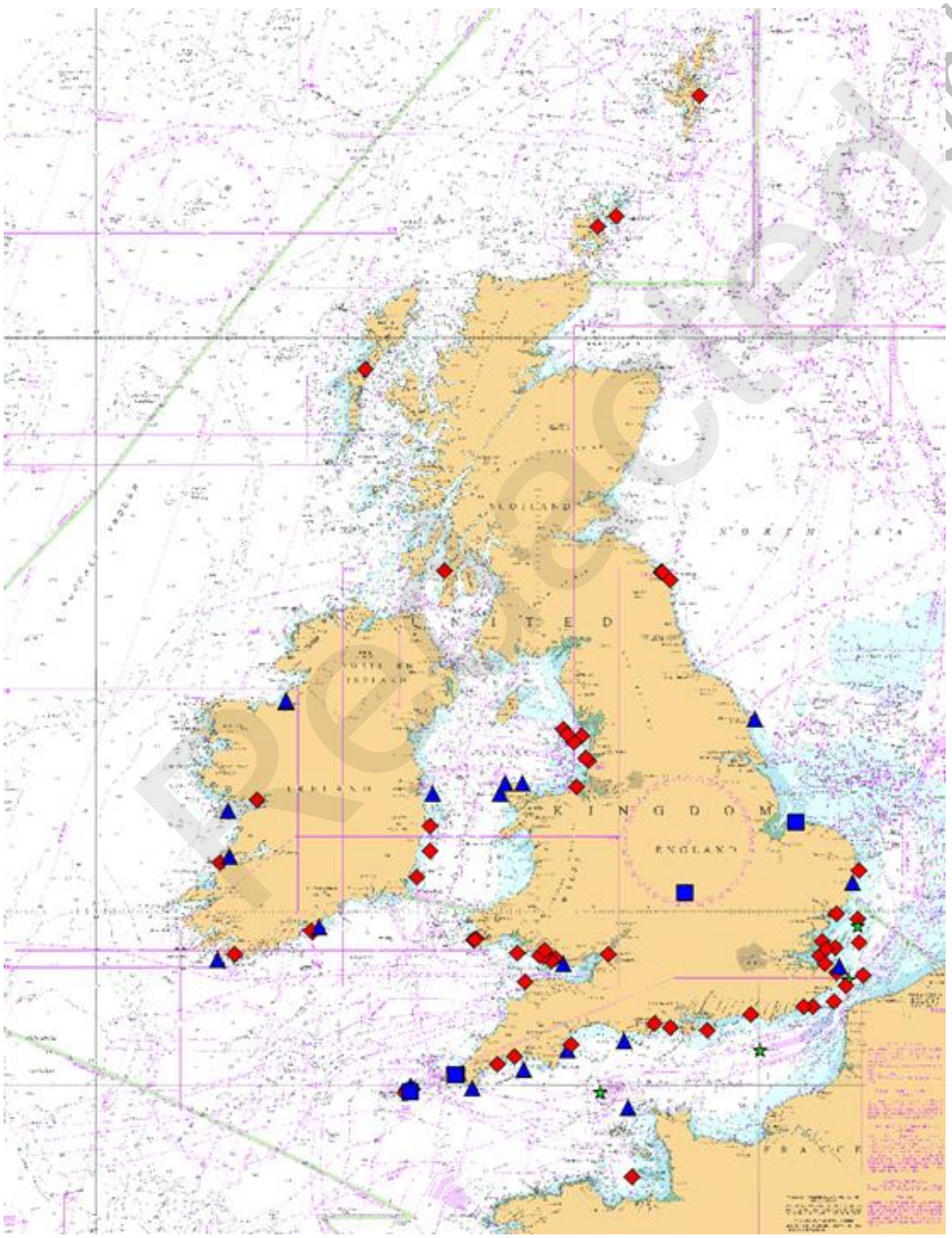
Type	Vessel	Crew	LOA (m)	Crane	Location	Day Rates	Mob / Demob	Cost
Multicat	[redacted]	4	27.7	11.3t@16m	Nigg	EURO 4,625 (24hrs) EURO 4,050 (12hrs / Ex Fuel)	EURO 12,030	EURO 21,130
Multitug	[redacted]	4	23.8	7.4t@10m	Great Yarmouth	EURO 2,750 (12hrs / Ex Fuel)	EURO 13,000	EURO 18,500 (+ Fuel)
Multicat Workboat	[redacted]	3	20	5.6t@11m	Rosyth	EURO 2,000 (12hrs / Ex Fuel)	EURO 10,000	EURO 14,000 (+ Fuel)

Table 5 Summary of offers for a spot buoy installation job off Aberdeen.

Although it was the most expensive offer, the Charterers opted to go for the [redacted] as she was the largest vessel with the biggest crane. She also had a valid Common Marine Inspection Document (CMID) and had recently been inspected and approved for another job with the same end user so additional inspections and audits were not required saving time and reducing costs.

5.5 The Winter of 2013/2014

The period from December 2013 to February 2014 was one of the worst winters in recent years and there were extensive casualties as shown on Map 8 that required emergency interventions including all 4 entrance buoys to Milford Haven (which TH have a commercial contract to maintain) being washed away and needing to be replaced. The GLA vessels were kept extremely busy but, during this period, smaller vessels such as the multicats and shoalbusters would have been unable to perform AtoN maintenance due to the prevailing weather. Rates for large AHTS also rose during this period with average rates rising to over GBP 50,000 a day so the GVCM would not have been able to provide either technically or commercially acceptable vessels during this time.



Map 8 Locations of casualties between December 2013 and February 2014. Red diamonds = AtoN's and blue triangles are lighthouses. Blue squares are DGPS stations affected – the one in the centre of England is Wormleighton.

6.0 Long Term Fleeting Options

The Patricia is due a special survey in 2020 when she will be 38 years old. A decision would have to be made based on her performance and reliability as to whether it is worth putting her through another special survey. Some spare parts are already difficult to obtain and likely to get more so as time progresses. Options for Patricia in the commercial market are likely to be quite limited by 2020 due not only to her age but also for the spare parts issue if any buyer was to do proper research. Her classic hull lines could however make her a good conversion candidate for the private yacht market. She would of course make an ideal AtoN vessel for another GLA overseas who could have more flexibility in their work demand and schedules. Scrapping Patricia is of course another but undesirable option.

The Mair is also an old vessel and as mentioned in 3.7, there is a likelihood she too will come to the end of her service in the next few years. Finding a suitable substitute vessel should prove possible when the time comes albeit probably on less attractive commercial terms than the current contract.

Some of the short-term charter issues for AHTS outlined in section 5.2 can be mitigated or removed if a vessel is chartered on a long-term basis. Dependent on what sort of long term charter arrangement the GLAs would choose to enter into, the issues change.

- Full bare boat charter – the GLAs would provide the officers and crew and be responsible for all operations, maintenance and running of the vessel. To all intents and purposes, the vessel would become a GLA vessel and the issues in 5.1 and 5.2 would largely disappear other than the insured value of the vessel in question may affect the overall insurance premium. Purchase options or an obligation for the vessel could be built in giving the GLAs the right to own the vessel outright at a certain time.

- Time charter – the GLAs would charter the vessel with the Owner providing the crew. The GLAs could have one or more persons on board in a liaison or supervisory rule but the Vessel Master, who would probably be provided by the Owners, would have ultimate say on vessel operations and would be able to dictate how and under which conditions the job in question can be done. It has worked well for the charter of the Mair but the potential for disagreement between the vessel and the GLA exists and some of the issues raised in 5.1 and 5.2 would remain although some could be removed through contract negotiations.

- The difficulty remains that there are not really any suitable vessels available from the GVCM that could manage the same roles as the current GLA fleet. Modification of an existing vessel could be an option and there are a number of relatively cheap second-hand vessels available for sale as well as yards that would be more than happy for the conversion work.

- However, AHTS vessels have a lot of supply capabilities such as the carriage of dry bulks (baryte and bentonites), oil based mud and brine which are not needed by the GLAs. The tanks for these products are all underdeck where space is at a premium. These tanks and all the pumping would need to be removed to make a reasonable hold space which would be expensive to do and there would be virtually no second-hand value in the equipment as all offshore supply vessels are delivered with this equipment already on board. Any conversion would end up as a compromise solution compared to having a purpose built designed vessel.

- In summary, should an additional vessel be required within the GLA fleet, the most sensible route considering the specific requirements of GLA vessels would be to go down a purpose built new build vessel route.

7.0 Other providers performing AtoN duties

We have had discussions with some of the other Owners of smaller vessels trading around the coasts of UK and the RoI and providers of AtoN capable maintenance and repair vessels.

[redacted]

[redacted] has a contract with the MoD as part of their plan for future provision of marine services with the contract running until 2022 for working with their moorings and AtoN. Their largest vessel the [redacted], would seem to be a technically suitable vessel for GLA duties – specification attached as Appendix 9. She has the crane capability to lift Type 1 buoys but isn't equipped with the necessary pods. They would therefore have to lift the Type 1 buoys on board and lay them on deck. Some of the Navy moorings that they handle weigh up to 18 tonnes and are rather heavier than anything handled by the GLAs. The chains attached are up to 120 mm in size and the gypsies sized accordingly. This is very much larger than the 38mm chain that the GLAs use and therefore the gypsies would need to be changed before the [redacted] could be used for GLA duties. Many of the moorings [redacted] maintain are in harbours and generally more sheltered waters.

The [redacted] does have some spare availability for third party work during the contract. Her duties primarily involve working on the West Coast of Scotland including in Loch Goil, off Peel and Heysham, off the West Coast of Pembroke, Plymouth, Portsmouth, in the approach channel to the Medway and on the shallow waters on the edge of the shipping channel at Sheerness. [redacted] also have to check the buoys in the Forth and the Tay for ice damage each Spring. Although they have potential availability and have been quoted several opportunities for employment, they advised that around 90% of the time they were unable to take advantage of the opportunities because they were either employed on MoD work or because the opportunity was in the wrong location.

Their vessel [redacted] (Photo 45) is also utilised on the contract. [redacted] was built in 1991, is 33 m loa and has a 2.0 m draft. She has an [redacted] 110T deck crane capable of handling a 10 tonne lift and has a differential GPS for accurate buoy positioning.

[redacted]

Photo 43 [redacted] vessel [redacted]

[redacted] also have eleven multicats which are capable of handling Type 3 and Type 4 buoys but some such as Forth Hunter are limited to operations no more than 20 nm from a safe haven. In sheltered waters and for planned operations in good weather, the multicat type of vessel would be very good for buoy and AtoN maintenance but [redacted] advised that they wouldn't probably be able to work with buoys safely in anything more than a 2m swell. This again demonstrates that multicat type vessels would not be suitable to operate in any form of bad weather which is when the emergency response will often be required.

The multicats typically have accommodation for a total of 6 – 8 in two man cabins. In discussions with [redacted], one thing they mentioned several times was the importance of local knowledge of the sea areas and also that the crews had the relevant knowledge to be able to perform the maintenance, repairs and testing of the AtoN to check that they were giving the correct signal / light outputs. They also stressed the problems with crew endurance on the smaller vessels really limited to 24 hours so they need to be extremely sure of the weather conditions before commencing a job. They had also had problems on occasion with buoys having broken their moorings and said that there was a problem with being able to lasso the drifting buoys

[redacted] also maintain the MoD moorings at Akrotiri in Cyprus and often use chartered in TPV's to perform the work there. They are currently using the [redacted] from Dutch company [redacted]. They made the point that for chartering in for a short-term contract, they have to use a fairly standard BIMCO contract as they have found that TPV Owners are not willing to accept any additional risks which are not their normal responsibility under the contract. As a result, [redacted] always make sure that they have a superintendent on board to ensure the work is performed to their required standards if a TPV vessel is chartered.

[redacted]

[redacted] are currently contracted to maintain around 250 AtoN units ranging from small lanterns with a range of 2nm to Port Entry Lights with a range of up to 21nm. They operate four Shoalbusters from 26m to 32m loa, eight Eurocarriers (similar to a multicat) ranging from 22 to 26 m loa with accommodation up to 12 persons but overnight accommodation for only 7 persons in 3 single and 2 double cabins.

[redacted] also have one DP Class 2 shallow water offshore support vessel, the [redacted] which was delivered during 2017. Ella F is 35.6 m loa with a draft of only 1.4 m, 30 tons bollard pull, has two bow and two stern thrusters, a stern roller, towing pins, a chain stopper and sleeping accommodation for 22 persons. Since delivery, she has proved very popular with [redacted] claiming to have been fixing around £ 8,000 per day.

All have good cranes on and the company trades them all over the world. Their position list of mid - September 2017 showed vessels trading in Canada, Denmark, Monaco, Russia, The Baltic, Togo, UAE and Venezuela as well as around the North Sea. Weather parameters for working would be 2 – 2.5 m and the vessels generally carry a crew of six.

Their vessels could handle a Type 2 buoy and the AtoN that they currently service are worked on an 'as and when required' basis and don't normally have a dedicated vessel for the work. We spoke about the availability on a general basis and they said they would probably need around 10 days prior notice to have a vessel available unless they had a pre-agreed call off contract as their fleet is busy currently. We have recently also quoted them some short term ie day by day work which they declined to bid for as they said they wouldn't currently really go out for less

than a firm period of seven days. This situation may change if their market utilisation changed and they had more vessels available.

[redacted]

Based in Holyhead in Wales, they do trade all over the world with several tugs working in Saudi Arabia for [redacted] and they have had 7 vessels working in the Caspian in the past and hopeful of going back there to support a [redacted] project. Owners think their multicats can work with a class 2 buoy if very good weather but thought the sea state parameter would be around I – 1.5 metre maximum. To maximise their availability for spot work, they try to position their tugs all around the UK coast rather than having them all in one place. At present, only one vessel the [redacted] is available for spot work in the UK and is currently located in the Great Yarmouth area. She was offered for the windfarm work covered in section 5.4. [redacted] is 23.8 m loa with two knuckle boom cranes, the larger of which can lift 25.8 t @ 5 m and 7.3 t at 10.2 m, a small deck area, bow and stern rollers and accommodation for up to 6 persons.

[redacted]

Photo 44 [redacted].

Their larger multicats have a crew of 8. For 24 hours operations, the [redacted] would have a six-man crew and if only 12 hour operations required, the crew would comprise of three or four. Owners would be interested in any form of paying employment but felt spot employment for the GLAs would have limited appeal as they felt there wasn't much scope for significant employment as the GLAs having their own vessels. They would be interested however if any form of term utilisation could be agreed.

[redacted]

[redacted] have 3 multicat type vessels which are certified MCA Workboat Code Cat 2 to go up to 60 miles offshore. They range from 19 to 22 m loa and have cabin space for 4 persons in two single and one double berth cabins. They have bases in Southampton and Pembroke and their largest vessel the 22m [redacted] is shown in Photo 45.

Photo 45 [redacted] – Note the water on deck whilst on passage.

[redacted] have been employed by [redacted] primarily for harbour duties. Their cranes could lift a Type 3 or 4 buoy and possible a Type 2 in extremely favourable weather. They operate with a crew of 3 or 4 so have a maximum of 3 persons on deck. They stated that they could operate in a sea state of 1 to 1.5 m and with their crewing level can only work 14 hours a day. The vessel crew would handle the buoy but any maintenance other than basic cleaning of marine growth would have to be done by the client chartering the vessel. [redacted] employ the vessels for gathering wave data from buoys and the vessels can cross the English Channel to North France but would normally sail across the night before to let the crew have a night's rest before starting operations. There is no space for clients to stay on board.

[redacted]

[redacted] also have commercial contracts to look after moorings for the Royal Navy not only around the coasts of the United Kingdom but also elsewhere in the world including Gibraltar. Most moorings are in sheltered waters and some of the buoy weights are in excess of the buoys used by the GLAs. They also charter vessels in to perform their contractual obligations.

All these companies and others besides have these relatively small vessels that can work with Type 3 and Type 4 buoys and some have vessels with DP that would be capable also working with class 2 buoys. With the exception of the [redacted], the other vessels in all the fleets are very weather restricted and could not work in bad weather emergency situations.

Vessels could be found that could do maintenance in good weather but their general lack of accommodation and very restricted storage space means they couldn't could not perform the range of duties that the GLA fleet currently undertake.

8. Conclusions

After fully considering the duties required of vessels working for the GLAs we have concluded that

- The GLA vessels are designed and built to carry out a multitude of tasks giving great flexibility with all the vessels able to carry out at least two out of handling Type 1 buoys in pods, Helicopter operations, have requisite sea keeping, having experience of and being capable of wreck surveying and marking all of which are necessary to deliver the various areas of GLA responsibility.

- There is a currently a lack of suitable vessels from the GVCM able to perform the duties above especially considering the need to work in bad weather.

- The experience of the crews in handling the buoys, their specialised knowledge of the maintenance of the electronics as well as the Masters and crew's knowledge of local conditions is not something that can be delivered on a TPV from the GVCM.

- There are considerable commercial risks of relying on the GVCM for a short term / spot market charter for a vessel capable of performing to GLA standards.

- There is a potential legal liability, insurance and increased premium and deductible issues with TPV Owners unfamiliar with GLA risks and operational procedures.

- Two recent market enquiries for a vessel from the GVCM did not produce a suitable vessel that could have worked within an acceptable time frame albeit for different reasons.

The GVCM could deliver small vessels that could carry out routine maintenance in good weather which will mostly be in the summer months when routine maintenance is planned. This though exposes the GLAs to having additional (spare) time on the vessels whilst paying someone else to do work that could be fitted into the GLA vessels normal work schedules in the respective areas.

Recognising the above, the GVCM cannot be relied on to be able to supply a suitable vessel to deliver the various areas of GLA obligation and responsibility on a spot charter basis on an all year around basis.

We would suggest that the GLAs consider trying to get additional third party buoy work if current planning schedules have the additional capacity to allow for generation of extra income.

The need to consider the future of the Patricia after 2020 should be looked at now so that a vessel is ready to take over from Patricia if required. Whilst the current market conditions may appear to favour looking at a second - hand vessel conversion, this would probably end up being a compromise. We would suggest that the correct solution would be to go for a purpose built bespoke replacement vessel which is capable of performing all the different GLA operations which, given the GLAs stature should be easy to finance on a long - term basis. Finance in the current market is cheap compared to historical levels so considering also that there is good shipyard availability and competitive equipment suppliers, contracting a new building vessel delivering in 2020 should be the viable option.

Consideration should be given as to what capabilities the new build vessel would need should the new build route be preferred. We would suggest considering whether helicopter capability is needed given that three other vessels in the fleet already have this. A bigger clear deck than Pole Star's is essential as well as having a bigger towing winch and the capability of over stern working. The vessel should be delivered with DP Class 2 and changes in hull design such as the Ulstein X bow should be considered to see if any new vessel could have better seakeeping qualities as well as speed in bad weather.

The potential second part of the study involved potentially carrying out testing of the GVCM to be able to provide suitable vessels capable of carrying out the GLAs operations. Given the findings of this report, we do not believe that this exercise would produce suitable vessels and therefore we do not recommend proceeding with this second phase as it is very unlikely to produce satisfactory results.

Appendix 1 – Galatea Specification

Trinity House

THV Galatea – Specification

Port of Registry	London
Year Built	2007
Call Sign	MRDQ7
Length Overall	84.2m
Breadth Moulded	16.5m
Depth Moulded	7.2m
Draft	4.3m
Air Draft	30.0 m
Service Speed	12.0 Kts
Fuel Consumption at Service Speed	670 ltrs/hr
Bunker Capacity	296t
Potable FW	170t
Technical FW	144t
Jet A1 Fuel Capacity	6,000ltrs
Endurance	35 days

Intering Stabilizer System
Anti-Heeling System

Bollard Pull 33t

PROPULSION – MACHINERY

3 x Wartsila 8L20 @ 1710 kVA
2 x Wartsila 4L20 @ 860 kVA
Stern Azimuths –
2 x Rolls Royce 1500 kW
Bow Thrusters –
2 x Rolls Royce 750 kW

DYNAMIC POSITIONING SYSTEM

Kongsberg SDP22 (IMO DP Class II)

WORKBOATS

30 kts Pacific 28 with cabin for 6 pax.
Steel Workboat – 9m heavy duty

CRANES

Liebherr Crane – 30t @ 22m (offshore)
Palfinger Crane knuckle boom –
1.6t @ 18.0m (offshore)
Stores Crane x 2 –
1.45t @ 10.0m (offshore)

CAPSTANS & WINCHES

2 x 15t max pull – chain to 44mm
Towing Winch 40t max pull
Tugger Winches x 2 – 5t max pull
Karm forks x 2

DECK FACILITIES

Main Deck Area – 550m²
ISO 20' and ISO 10' Container Lock Down matrix
Electrical Power – AC 50Hz 220V; 400V Supplies
Pressure Wash – 350bar/5000psi
Moon Pool – 1.2m²

Tween Deck – Storage & workshops
Hold – Storage & load handling

ACCOMMODATION

Single Cabins:	22
Twin Cabins:	9
Office:	1
Conference Room:	1
Mess Room:	1
Recreation /TV Rooms:	3
Changing Room:	1
Workshop:	2
Gym:	1

FLIGHT DECK

Helicopter Deck – 'D' Value 13.0m
Refuelling Facility

HYDROGRAPHIC SURVEY

Kongsberg Simrad EM 3002D Multi beam E/S
Kongsberg Simrad EA 400 E/S
PosMV Positioning
Simrad SEN-218377 SVP
Kongsberg TD304 Tide Gauge
Simrad SL 30/35 Sonar
Simrad GeoAcoustics Side Scan

COMMUNICATION

GMDS Area 2
Satcoms – Sat-C H2095C High Speed Data/Voice
Iridium – Sailor ST4110 Voice
MF/HF SSB – Sailor HC4500 R/T DSC
MF/HF SSB – R/T DSC
Weather – FAX 207 Facsimile
Navtex Rx – McMurdo ICS NAV5plus
VHF R/T DSC – Sailor RT4722
Internet Access – all Cabins

NAVIGATION EQUIPMENT

ECDIS/NAV – F/AIS-R4
Radars – Decca Bridge Master x 2
Dual-Axis – SRD500 Speed Log
DGPS – 2 x MX Marine MX 420/8
Gyro Compass – 3 x Navigat 2100 Fibre Optic
TMC Magnetic – Navipol 1 Compass
Auto Pilot – NaviPilot 4000 Digital Adaptive Autopilot
Echo Sounder – ES 5100-01

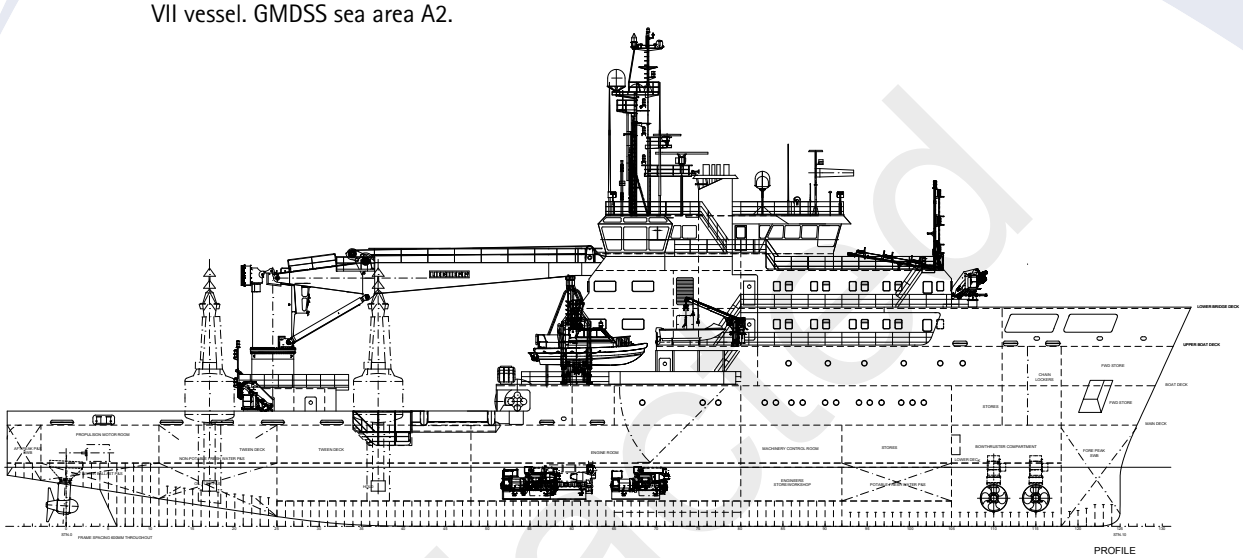


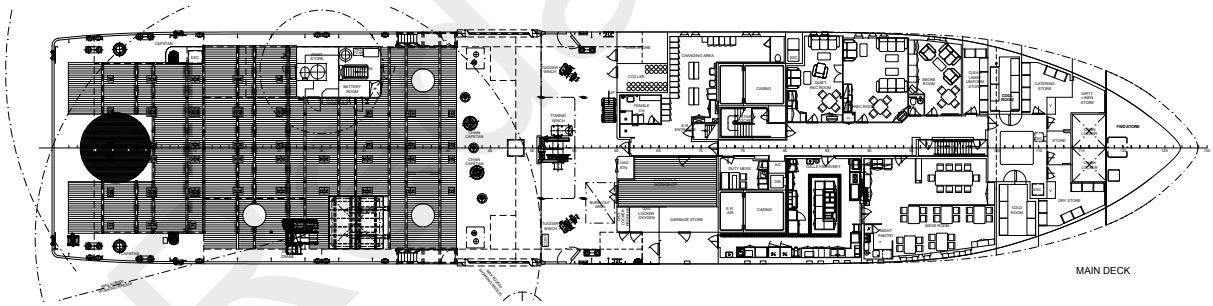

THV Galatea Specification

Trinity House's Multifunctional Tender (MFT), GALATEA, has been designed with buoy handling, wreck marking, towing and multibeam and side scan Hydrographic surveying capability. With DP2, high specification survey equipment, a 30t lift crane, a 1.2m² moon pool, a large working deck with the facility to lock containers on deck and 230v or 400v plug-in supply, a helicopter-landing pad and a high speed workboat, GALATEA is available 24/7 for a wide range of projects at very competitive rates.

Build Standard

Lloyds Register ✠ 100 A1 ✠ LMC UMS MCM EP LA CAC DPAA IMO CLASS II (Lloyds Machinery Certificate, Unmanned Machinery Space Certificate, Machinery Condition Maintenance, Lloyds Environmental Protection, Lifting Appliance and Crew Accommodation Comfort Standard). Complies with requirements for UK MCA Class VII vessel. GMDSS sea area A2.





ISO 14001:2004

ISO 9001:2008

Trinity House

Trinity House, The Quay, Harwich
Essex CO12 3JW United Kingdom
Tel: +44 (0) 1255 245121
Fax: +44 (0) 1255 245009
Email: enquiries@thls.org

www.trinityhouse.co.uk

Appendix 2 – Alert Specification

Trinity House

THV Alert – Specification

Port of Registry	London
Year Built	2005
Call Sign	MLPH9
Length Overall	39.3m
Breadth Moulded	8.0m
Depth Moulded	4.0m
Draft	2.7m
Air Draft	18.0m
Maximum Speed	17kts
Service Speed	12kts
Fuel Consumption at 12 kts	360ltrs/hr
Bunker Capacity	42t
Fresh Water	12t
Endurance	1,500nm @ 15kts 3,000nm @ 12kts 5 days working on site
Bollard Pull	28t

PROPULSION – MACHINERY

Main Engines –
2 x Caterpillar Diesel 1492 kW @ 1600 RPM

Auxiliary Generators –
2 Caterpillar C90 Diesel 155 kW @ 1620 RPM

Bow Thruster –
HRP 155kW @ 1620 RPM

Propellers –
2 Kamewa variable pitch 50 XF5/4

DYNAMIC POSITIONING SYSTEM

Kongsberg C-Pos (IMO DP Class 1)

WORKBOAT

RIB 5.4m 50hp

CRANES

Palfinger knuckle boom –
3.5t @ 10m
2.2t @ 15m

Winch 3.3t SWL

CHAIN / TOWING WINCH

Chain Capacity 100m x 38mm

Max pull 40t

DECK FACILITIES

Main Deck Area – 88m^2

2 x ISO 10' Container Lock Down matrix

Electrical Power - 230V and 400V Supplies

Pressure Wash – 350bar/5000psi

Through Hull Instrument Tube – 0.6m diameter

Hold – Storage & workshop

ACCOMMODATION

Single Cabins:	2
Twin Cabins (Bunks):	4
Crew:	6
Spare Berths:	4
Mess Room:	1
Changing Room:	1
Showers:	2
Toilets:	3

HYDROGRAPHIC SURVEY

Multi beam E/S – Kongsberg Simrad EM 3002D

Echo Sounder – Kongsberg Simrad EA 400

PosMV 320 V4

SVP – Valeport Modus (Fixed Unit)

SVP – OSIL Smart AML

Tide Gauge – Kongsberg TD304

Sonar – Simrad SL 30/35

Side Scan – Simrad GeoAcoustics

COMMUNICATION

GMDSS Area 2

Satcoms – Sat-C H2095C,
Iridium – Sailor ST4110

MF/HF SSB – R/T DSC Sailor CU5100

Navtex Rx – Furuno NX700

VHF R/T DSC – 2 x Sailor RT4822

VHF – Sailor RT2048

Internet Access – all cabins

NAVIGATION EQUIPMENT

ECDIS/NAV – F/AIS-R4

Radars –
Decca Bridge Master E250 S Band
Decca Bridge Master E250 X Band

Dual-Axis Speed Log – Consilium SAL SD4-2

DGPS – 2 x Litton Marine LMX 420

Gyro Compass – Sperry Navigat Fibre Optic

TMC Magnetic Compass –
Sperry Navipol 1

Auto Pilot – Sperry NaviPilot 4000 I

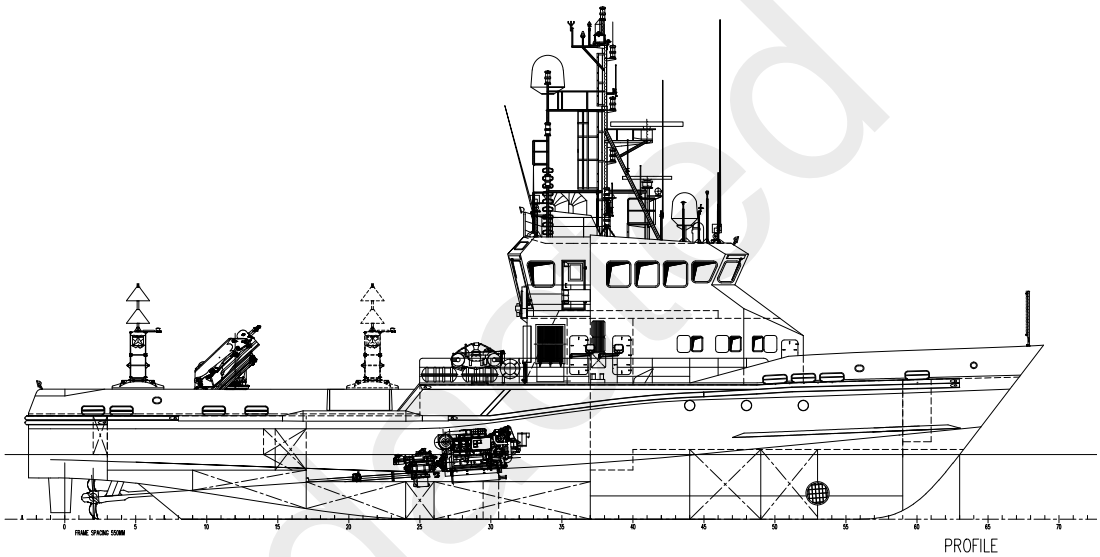
Echo Sounder – Sperry ES 5100-01

THV Alert Specification

Trinity House's Rapid Intervention Vessel (RIV), ALERT, has been designed with buoy handling, wreck marking, towing, multibeam and side scan hydrographic surveying capability. With DP1, high specification survey equipment and a maximum speed of 17 knots, ALERT is deployed primarily to cover the southeast coast where she can respond rapidly to any maritime incident. In addition, with her large working deck and 0.6m diameter through hull instrument tube, she is an ideal research platform for deployment of scientific equipment and sampling work. Available 24/7 with accommodation for an additional 4 people, ALERT can be utilised for a wide range of projects at very competitive rates.

Build Standard

Lloyds Register ✠100 A1 SSC Workboat G4✠ Lloyds Machinery Certificate, Unmanned Machinery Space Certificate, Machinery Condition Maintenance, Lloyds Environmental Policy, Lifting Appliance and Dynamic Positioning to CM Standard. Complies with requirements for UK MCA Class V111 vessel.



PROFILE

MAIN/FOCSLE DECK

ISO 14001:2004

ISO 9001:2008

Trinity House

Trinity House, The Quay, Harwich
Essex CO12 3JW United Kingdom
Tel: +44 (0) 1255 245121
Fax: +44 (0) 1255 245009
Email: enquiries@thls.org

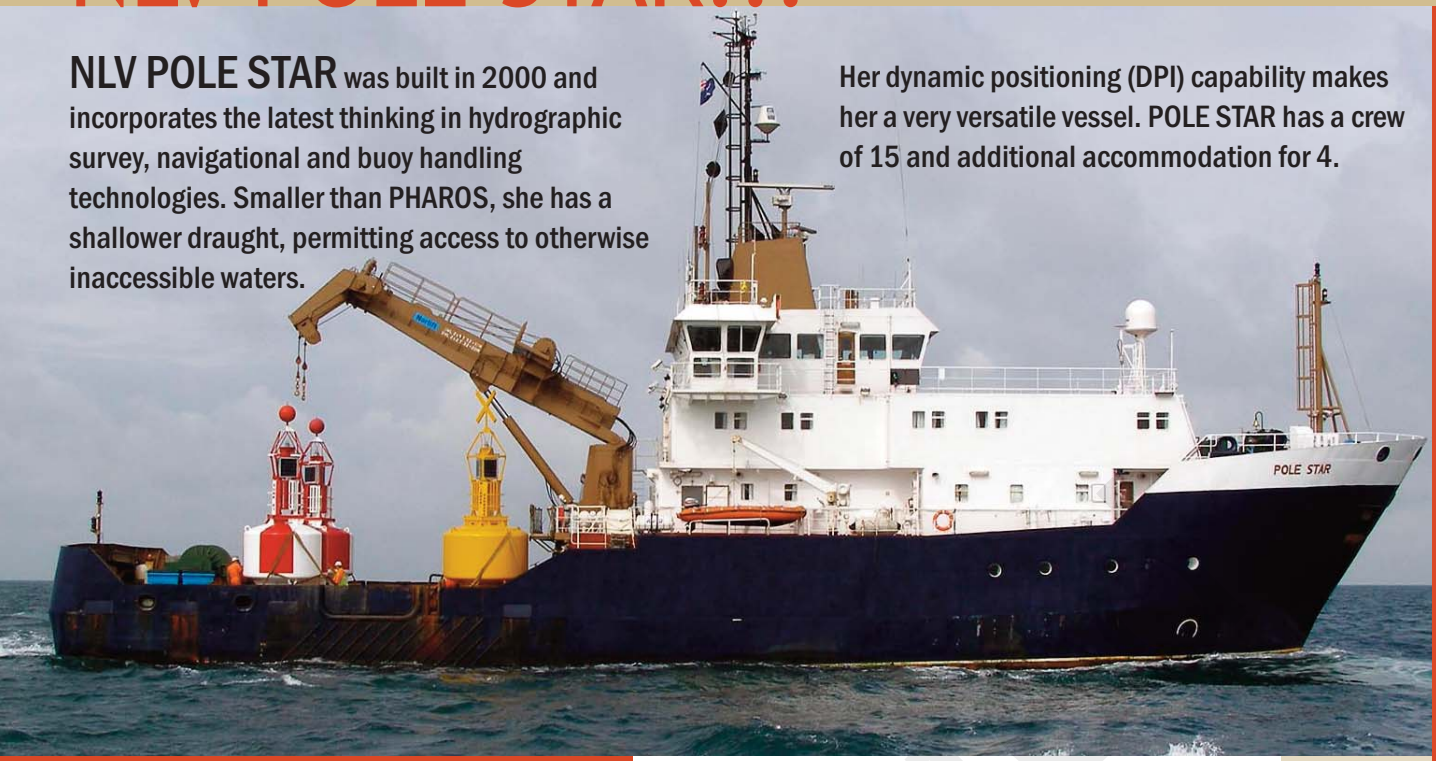
www.trinityhouse.co.uk

Appendix 3 – Pole Star Specification

NLV POLE STAR...

NLV POLE STAR was built in 2000 and incorporates the latest thinking in hydrographic survey, navigational and buoy handling technologies. Smaller than PHAROS, she has a shallower draught, permitting access to otherwise inaccessible waters.

Her dynamic positioning (DPI) capability makes her a very versatile vessel. POLE STAR has a crew of 15 and additional accommodation for 4.



Truly versatile ships...

NLV POLE STAR General Particulars...

Class - Lloyd's Register (LR) with notations: +100A1, LA, +LMC, UMS

Gross Tonnage:	1,174 tonnes
Net Tonnage:	352 tonnes
Deadweight:	437 tonnes
Length overall:	51.52 metres
Breadth moulded:	12 metres
Draught, maximum:	3.46 metres
Air draught:	24.50 metres
Manning (crew):	6 Officers 9 Ratings
Accommodation:	17 cabins, all en suite (1 x 4 berth and 1 x 2 berth for supernumeraries) 2 recreation rooms
Maximum Speed:	13 knots
Normal service speed:	12 knots
Aft working deck area:	90m²
Main Generator Engines:	Cummins Wartsila 8L170. 3 x 920kW
Propulsion:	2 x 1,000kW Rolls-Royce azimuth units
Bow Thrusters:	2 x 210kW Brunvoll controllable pitch tunnel thrusters

Equipped with:-

- Specialised buoy & mooring handling
- Dynamic positioning, DP Class I
- Integrated bridge management system
- Hydrographic survey equipment
- Wreck finding equipment
- 18 tonne crane

Appendix 4 – Granuaile Specification

Commissioners of Irish Lights

ILV Granuaile Vessel Services

TECHNICAL SPECIFICATIONS

www.cil.ie
+353 1 271 5400

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

t: +353 (0)1 271 5400
w: www.irishlights.ie

ILV Granuaile Vessel Services

TECHNICAL SPECIFICATIONS

Main Features

Lloyds 100A1, + LMC + UMS + DP Class 1- ISM Certification

- Gross Tonnage – 2,625t
- Net Tonnage – 787t
- Operational Draft – 4.60m
- Length – 79.69m
- Breadth Moulded – 6.10m
- Normal Service Speed – 10 Knots
- Aft Deck Area – 480m2
- Container Capability – 16 TEU Single Stack
- Crew – 16
- Accommodation – 22 single berth and 4 double berth cabins (including crew cabins)

Engine Configuration (Diesel Electric)

- Power: 3,500 kW
- Generator: 5 x 700 kW MAN B&W engines Type 8L 16/24 driving 690v AC AVK generators
- Propulsion: 2 x 1,100 kW INDAR variable speed AC motors driving 2 x Schottel rudder propellers type SRP 1010 ZSFP
- Bow Thruster: 1,100 kW INDAR variable speed AC motor driving Elliot White Gill Jet type 50T3S 360°

Workboats

- 2 wooden workboats & high speed RIB with passenger licenses

Navigation and Communications

- ROV Pipeline/Platform member inspections
- Cable Route Survey
- Hydrographic and Seismic Surveying
- Vibracore Sampling
- Diving Support for Salvage/Wreck Inspection and Filming
- Deployment and Maintenance of Buoys (AtoN & ODAS)
- Recovery and Deployment of Offshore Devices
- Oil Spill Response and Containment
- Standard and Emergency Towage
- SAR Coordination and Response
- Mattressing
- Helicopter Land-on and Under-slinging
- Marine Equipment Testing

Services

- 1 x Seatex MRU-5
- 1 x TSS MRU
- 1 x Marimatech SVP-HMS1820
- 1 x Kongsberg Seapath 330+
- Kelvin Hughes NT Radar
- 2 x DGPS Northstar MX500
- 2 x Simrad GC80 Gyro Compass
- Kongsberg K-Pos DP -11 Dynamic Positioning System. (DP Class 1)
- Radars: 2 x Furuno FAR 2xx7 RPU-013 (1 S-band, 1 X-band)
- Electronic charts: 2 x Furuno FMD-3200-BB Independent ECDIS systems
- 1 x Kongsberg EM 2040C Multibeam Echo Sounder
- GMDSS "A1 & A2" Approved. Kelvin Hughes DSC VHF/MF/HF



Multipurpose, versatile Class 1 DP vessel with a large working deck and proven capabilities in a wide range of operations such as buoy/ deep water mooring, Vibracore, Hydrographic Survey, mattress laying and ROV operations.

Facilities

- Large tweendeck and lower hold spaces for storage
- Class 1 Dynamic Positioning System
- Hydrographic Surveying, Kongsberg EM2040C system
- Three point mooring for diving operations
- Step down area for diving or boarding
- Forward helicopter flight-deck with fuelling facilities
- Helicopter under-slinging area at stern
- Interring Anti-Roll system for operational durability and comfort
- 40t Bollard Pull
- Moon Pool (0.5m diameter)
- Life Saving Appliances for 39 persons in total
- Large conference room
- Recreation room and facilities
- Two mess rooms

Satisfied Customers

N-SEA	Hydrographic Survey and Mattress Installation
Osiris Projects	Environmental Surveys
Marathon Oil Company	ROV Member & Pipeline Inspection
RFD Beaufort	Life Saving Appliance Testing
UK Met Office	Met Buoy Maintenance
Dublin & Belfast Ports	Buoy Maintenance
University College Cork	Ground Sampling - Vibracore
GE Wind Energy	Renewable Energy Site Marking
Marine Institute	Hydrographic and Seismic Surveying
Naval Service	Diving Support & ROV Deployment

Deck Equipment

Specialised buoy and mooring handling equipment including hydraulic ram chain guides and stoppers.

- 1 x Liebherr Crane, 20 tonne SWL with constant tension capability, outreach 20mtrs
- 30t SWL towing winch
- 2 x 15t capstans
- 2 x 5t tugger winches
- 2 x 8m heavy duty timber workboats with passenger licences
- 1 x 8m fast RIB with passenger licence
- 2 x Karmform 'chain grabbers'
- 1 set of Hydraulic Towing Pins
- Container Capability: 16 TEU Single Stack
- Moonpool: diameter 0.5m, depth 7.7m

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

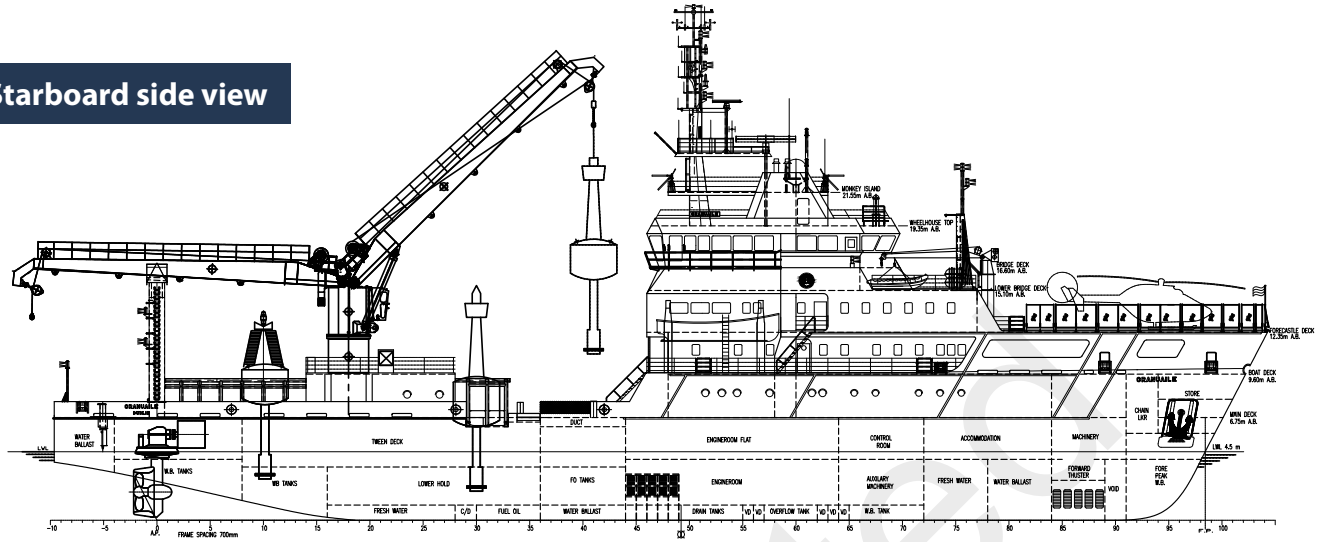
For enquiries contact Dave Ward on:

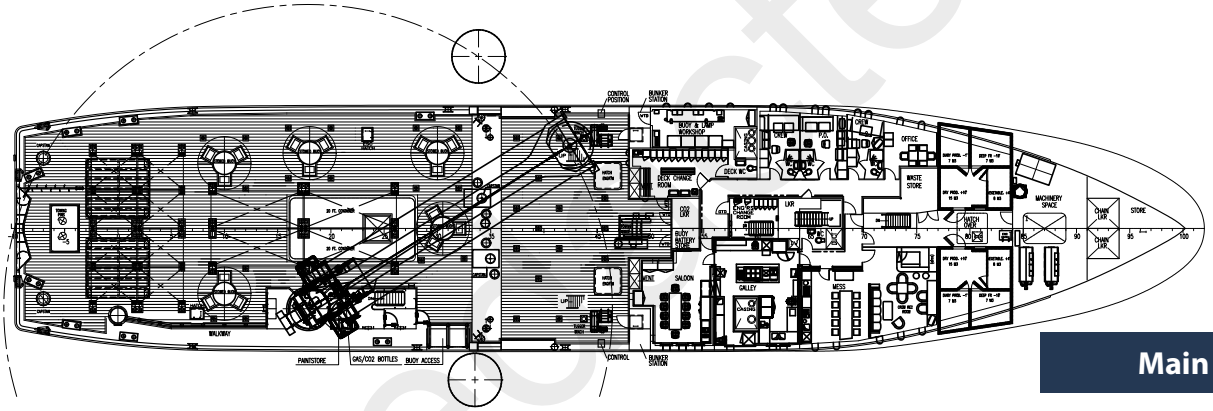
t: + 353 (0) 87 982 6803

e: dave.ward@irishlights.ie

w: www.irishlights.ie/commercial-services.aspx

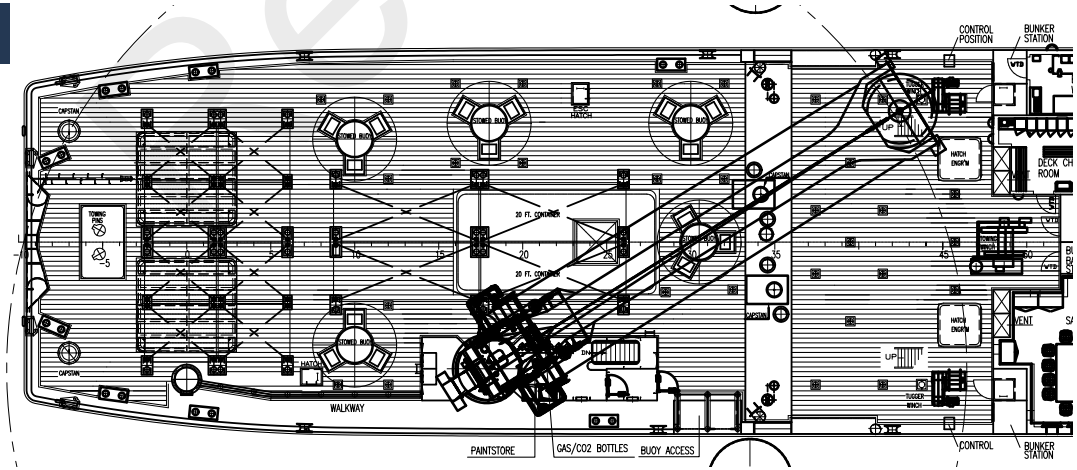
Starboard side view





Main deck

Aft deck



Commissioners of Irish Lights, Harbour Road, Dun Laoghaire, Ireland
Contact: David Ward **M:** +353 87 9826803 **T:** +353 1 271 5400 **E:** info@cil.ie **W:** www.cil.ie

Appendix 5 – Patricia Specification

Trinity House

THV Patricia – Specification

Port of Registry	London
Year Built	1982
Call Sign	GBTH
Length Overall	86.3m
Breadth Moulded	13.8m
Depth Moulded	6.9m
Draft	4.4m
Air Draft	32.0m
Service Speed	12kts
Fuel Consumption at 12kts	500ltrs/hr
Bunker Capacity	404t
Fresh Water	283t
Endurance	21 days
Bollard Pull	28t

PROPULSION – MACHINERY

Main Engines –
4 x Ruston 6RKcZ 750 kW @750 RPM

Auxiliary Diesel –
2 x Ruston 4AP230Z 240 kW @600 RPM

Propulsion Motors –
2 x 1120 kW @ 250 RPM

Bow Thruster –
360 deg Whitegill – 7 tonnes 690 kW @ 480 RPM

Propellers –
2 x Fixed pitch, outwards turning

WORKBOATS

9m heavy duty workboats x 2
RIB 5.4m 50hp

CRANES

Speedcrane 20t SWL (offshore)
Stores Crane 1t

CAPSTANS & WINCHES

2 x 14t max pull – chain to 44mm
Towing Winch 30t max pull

DECK FACILITIES

Main Deck Area – 80m²
Pressure Wash – 350bar/5000psi
Tween Deck – Storage & workshops
Hold – Storage & load handling

ACCOMMODATION

Single Cabins:	34
Double Cabins:	6
Office:	1
Conference Room:	1
Mess Room:	1
Recreation /TV Rooms:	4
Changing Room:	1
Workshop:	1
Gymnasium:	1

FLIGHT DECK

'D' Value 11.9m
Max load 10,000kg

HYDROGRAPHIC SURVEY

Kongsberg EA 400SP 38/200KHz
Geo Acoustics Side Scan Sonar 2094
SIMRAD EA500, Side Scan

COMMUNICATION

GMDSS Area 2
Satcoms – Sat-C V-sat 4003 Broadband Sailor SC4000 Iridium, Nera Sat-B
VHF R/T DSC – Sailor RT 5022
MF/HF SSB – Sailor HC4500
NavtexRx – JRC NCR 333
Internet Access points – all cabins

NAVIGATION EQUIPMENT

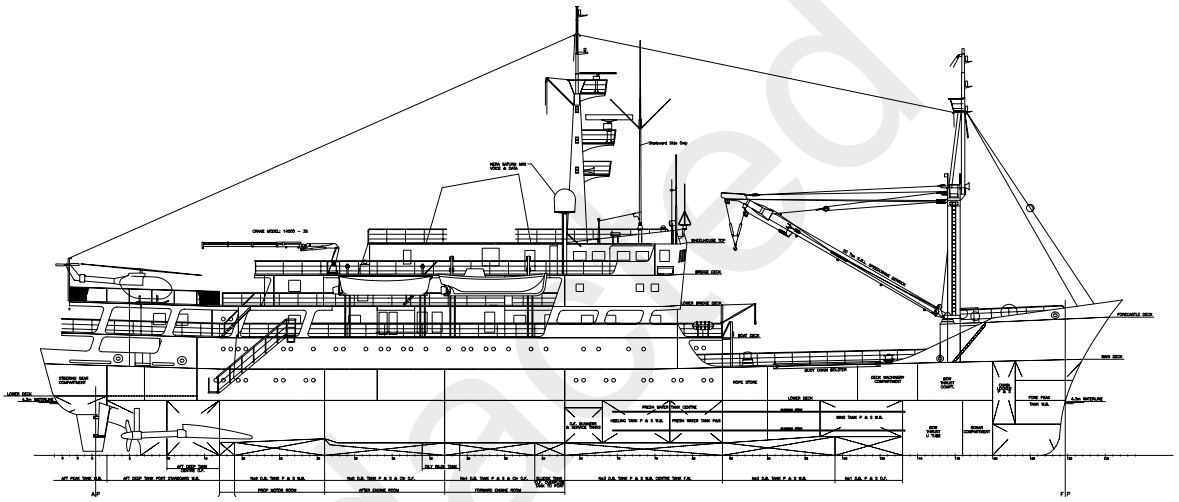
ECDIS – Sperry VisionMaster FT
Radars – Decca Marine Bridge Master x 2
Dual-Axis Speed Log – Consilium Navigation SAL SD 1-6
DGPS – SIMRAD GN33 and SIMRAD Shipmate GN30
Loran – Furuno LC 90 mk2
Gyro Compass – Simrad GC80
TMC magnetic Compass– John Lilley and Gillie Type SR2
Auto Pilot – Raytheon Compilot 20
Echo Sounder – SIMRAD EA500
AIS System – JRC AIS JHS-182

THV Patricia Specification

Trinity House's Multi Functional Tender (MFT) PATRICIA operates around the coast of England, Wales and the Channel Islands undertaking aid to navigation maintenance work, towing, wreck location and marking amongst other projects. At 86m long, PATRICIA has accommodation for an additional 20 people and benefits from a helicopter-landing pad. With a 20 tonne main crane capacity and 28 tonne bollard pull and towing winch, she is also survey capable. Available 24/7, PATRICIA is available for a wide range of projects at a competitive rate.

Build Standard

Lloyds Register ✠100 A1✠ Lloyds Machinery Certificate, Unmanned Machinery Space Certificate, Lloyds Environmental Policy and Lifting Appliance. Complies with requirements for UK MCA Class V111 vessel. Lloyds Ship Emergency Response Service.



ISO 14001:2004

ISO 9001:2008

Trinity House

Trinity House, The Quay, Harwich
Essex CO12 3JW United Kingdom
Tel: +44 (0) 1255 245121
Fax: +44 (0) 1255 245009
Email: enquiries@thls.org

www.trinityhouse.co.uk

Appendix 6 – Pharos Specification

NLV PHAROS...

NLV PHAROS was welcomed into service in March 2007. She has an overall length of 84.25 metres and breadth of 16.50 metres. The level of sophistication in her equipment is not normally found in a vessel of her size and boasts dynamic positioning (DPII), a large aft working deck area, integrated bridge management system and forward helicopter flight deck. A full hydrographic survey suite and moon pool make her an ideal survey and research platform. PHAROS also supports land-based operations by helicopter or small craft and can act as a mobile project support base for operations in remote areas. PHAROS has a crew of 18, with additional accommodation for 12.

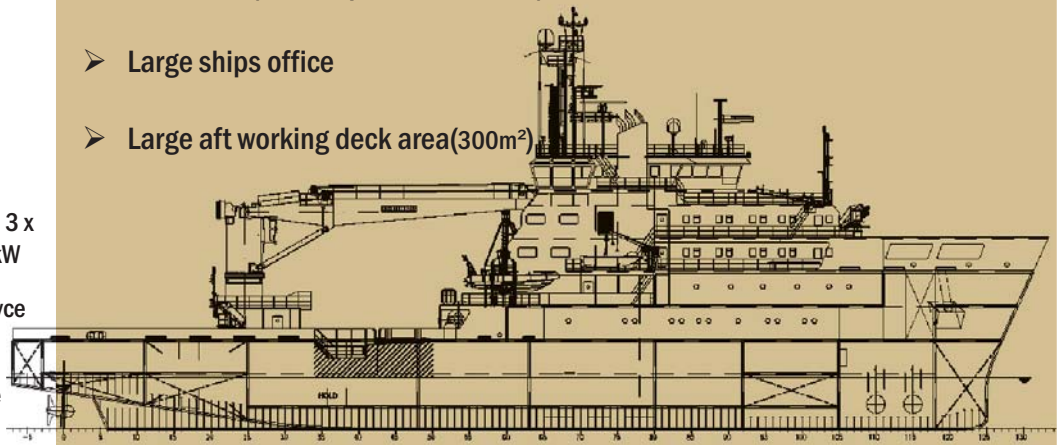
NLV PHAROS General Particulars...

Class - Lloyd's Register (LR) with Notations: +100A1, +LMC, +UMS, CAC, DP(AA), MCM, NAV, IBS, LA, EP

Gross Tonnage:	3,672 tonnes
Net Tonnage:	1,101 tonnes
Deadweight:	1,197 tonnes
Length overall:	84.25 metres
Breadth moulded:	16.50 metres
Draught, maximum:	4.25 metres
Air draught:	30 metres
Manning (crew):	7 Officers 11 Ratings
Accommodation:	30 cabins, all en suite (10 single & 1 twin for supernumeraries) 3 recreation rooms
Maximum Speed:	13.5 knots
Normal service speed:	12.5 knots
Aft working deck area:	300m²
Main Generator Engines:	Wartsila 8L20 & 4L20. 3 x 1,440kW and 2 x 720kW
Propulsion:	2 x 1,500kW Rolls- Royce azimuth units
Bow Thrusters:	2 x 750kW Rolls-Royce direct reversing tunnel thrusters

Equipped with:-

- Specialised buoy & mooring handling
- Dynamic positioning, DP Class II
- Integrated bridge management system
- Hydrographic survey equipment
- Wreck finding equipment
- 30 Tonne Crane
- Forward helicopter flight deck
- Tow winch (bollard pull 37.5 tonnes)
- Large ships office
- Large aft working deck area(300m²)



Appendix 7 – Construction / Survey Vessel Summary

Braemar ACM Offshore
25 Carden Place, Aberdeen, AB10 1UQ
Tel: +44 (0)1224 628470 (24 Hours)
Fax: +44 (0)1224 621444
Email: offshore.aberdeen@braemar.com
Website: offshore.braemaracm.com/

Construction / Survey Vessel Summary – WC 2nd October 2017

Last Updated: 09:00 hours 05.10.17

Light / Heavy Construction / DSV

VESSEL	BUILT / DESIGN	BHP / DECK / CRANE / ACC Total	[redacted]	PORT
AKOFS Seafarer (DP 3) ★ ▼ ●	2010/OSCV06/MODU	See spec / 1800m2 / 400t / 140		**Norway**
Nomand Fortress (DP 2) ★ ●	2006 / MT6016	See spec / 800m2 / 140t / 100		**Norway**
Nomand Seven (DP 3) ★ ●	2007 / VS 4220	See spec / 2000m2 / 250t / 100		**Norway**
Despina (DP 2) ★ ●	2011 / Own	See spec / 775m2 / 150t / 75		**Norway**
n/b Haldane (DSV - DP 3) ★ ▼ ●	2017 / VARD 3 03	See spec / 1050m2 / 250t / 120		Yard / Norway
NOR Atlantis (DSV DP 2) ★ ▼ ●	2011 / Part Comp	31360 / 1100m2 / 140t / 120		Leith
Bibby Topaz (DSV – DP2) ★ ▼ ●	2007 / ST-256-L	See spec / 900m2 /150t / 105		North Sea
Botnica (DP 3) ★	1988 / Comp	See spec / 670m2 / 160t / 72		Baltic Sea
Larissa (DP 2) **2 x ▼**	2011 / Own / Comp	See spec / 775m2 / 150t / 75		Bergen
Elektron (DP 2) RORO / ROV	2005 / Own	See spec / 890 m2 / 25t / 34		Oslo Fjord
Far Superior (DP 2) ★ ▼ ●	2016 / Vard / SPS	See spec / 875m2 / 150t / 85		Norway
Stril Server (DP 2) **4** ★ ▼ ●	2014 / MM85 / SPS	See spec / 615m2 + / 60t / 90		Den Helder
Havila Phoenix (DP 2) ★ ▼ ●	2009 / Havyard 858	See spec / 1100m2 / 250t / 140		North Sea
Skandi Neptune (DP 2) ★ ▼ ●	2001 / MT6016	See spec / 1180m2 / 250t / 106		Norway
EDT Protea (DP 3 DSV) ★ ▼ ●	1991 / Conv 2006	See spec / 500m2 / 50t / 88		S North Sea
Siem Stingray (DP 2) ★ ▼ ●	2013 / OSCV 11/SPS	See spec / 1300m2 / 250t / 110		Norway
Siem Spearfish (DP 2) ★ ▼ ●	2013 / OSCV 11/SPS	See spec / 1300m2 / 250t / 110		Norway
Havila Subsea (DP 2) ★ ●	2011 / Havyard 855	See spec / 600m2 / 150t / 78		Norway
Olympic Ares (DP 2) ★ ▼ ●	2013 / MT 6022 / SPS	See spec / 1120m2 / 250t / 110		North Sea
Edda Fonn (DP 2) ★ ▼ ●	2003 / Own	See spec / 700m2 / 100 t / 66		North Sea
Edda Fauna (DP 2) ★ ▼ ●	2008 / ST-255L	See spec / 610m2 / 100t / 90		Norway
Deep Vision (DP 2) ★ ▼ ●	2000 / UT745	See spec / 720m2 / 60t / 70		North Sea
Volantis (DP 2) ★ ▼	2007 / ST259	See spec / 1200m2 / 150 t / 81		NW Europe
Maersk Forza (DP 2) ★ ▼ ●	2009 / MT 6016 mkII	See spec / 1120m2 / 250t / 120		NW Europe
Olympic Triton (DP 2) ★ ▼ ●	2007 / P101	See spec / 940m2 / 150t / 100		North Sea
Grand Canyon (DP 3) ★ ▼ ●	2016 / ST259 / SPS	See spec / 1650m2 / 250t / 100		North Sea
Edda Freya (DP3) ★ ▼ ●	2016 / Salt / SPS	See spec / 2300m2 / 600t / 140		Norway
Olympic Delta (DP2) ★ ▼	2014 / MT6021 / SPS	14550 / c.900m2 / 80t / 80		North Sea
Normand Reach (DP 2) ★ ▼ ●	2014 / OSCV11 /SPS	See spec / 1300m2 / 250t / 110		North Sea
Polar King (DP 2) ★ ▼ ●	2011 / ST 254L / SPS	See spec / 960m2 / 150t / 112		Bergen
Siem N-Sea (DP2) ★▼ ●	MT6017 / No SPS	14550 / c.900m2 / 80t / 68		North Sea
Siem Barracuda (DP 2) ★ ▼ ●	2013 / OSCV 11/SPS	See spec / 1300m2 / 250t / 110		North Sea

Short Summary / Vessel New Builds

VESSEL	BUILT / DESIGN	BHP / DECK / CRANE / ACC Total	[redacted]	PORT
Topaz Tiamat (DP 2) **tbc**	2017 / Vard 3 / SPS	See spec / 1100m2 / 120t / 82		Norway / Vard
Topaz Tangaroa (DP 2) **tbc**	2017 / Vard 3 / SPS	See spec / 1100m2 / 120t / 82		Norway / Vard
Island Victory (DP 2) ★ ▼	2017 / UT797 / SPS	See spec / 1100m2 / 250t / 110		Norway / Vard

MULTI PURPOSE SUPPLY / SERVICE / ROV VESSELS

VESSEL	BUILT / DESIGN	BHP / DECK / CRANE / Total ACC	[redacted]	PORT
VOS Shine (DP 2) 4 ●	2012 / Own / SPS	6430 / 375m2 / 24t / 49		Beverwijk
EDT Jane (DP 2) 2 x ▼	2013 / PX 105 / Comp	See spec / 700m2 / n/a / 50		Aberdeen Bay
VOS Sweet (DP 2) 4 ●	2012 / Own / SPS	6430 / 375m2 / 24t / 49		Amsterdam
Deep Helder (DP 2) 4 ●	2013 / Own/ SPS	See spec / 400m2 / 20t / 50		Den Helder
Island Spirit (DP 2) ▼	2006 / UT55LN / No	See spec / 200m2 / 10t / 40		Stavanger
North Barents (DP 2)	2017 / ST216 / SPS	11424 / 1000m2 / n/a / 50		Bergen
Olympic Challenger (DP 2) ★ ▼ ●	2008 / Aker ROV 02	See spec / 1000m2 / 250t / 100		North Sea
VOS Satisfaction (DP 1) 4 ●	2007 / Own	See spec / 380m2 / 30t / 44		Rotterdam
GO Electra (DP 2) 2 x ▼	2013 / MT6009L	See spec / 506m2 / 25t/ 60		North Sea
Olympic Taurus (DP 2) ★	2012 / MT6015 / SPS	12879 / 1060m2 / 125 / 60		Norway
Olympic Orion (DP 2)	2012 / MT6015 / SPS	12879 / 1060m2 / 125 / 60		Stavanger
North Pomor (DP 2)	2013 / ST216 / SPS	11424 / 1000m2 / n/a / 50		Bergen
VOS Sugar (DP 2) 4 ●	2012 / Own / SPS	6430 / 375m2 / 24t / 49		Den Helder
EDT Hercules (DP 2) ▼	2013 / PX 105 / Comp	See spec / 700m2 / n/a / 50		North Sea

SPECIALIST AHTS

VESSEL	BUILT / DESIGN	BHP / DECK / CRANE / Total ACC	[redacted]	PORT
Skandi Skansen (DP 2) 2 x ★ ▼ ●	2011 / STX AH04 / SPS	36000 / 1070m2 / 250t / 90		Bergen
Olympic Zeus (DP 2) ▼	2009 / A122	26140 / 800m2 / 250t / 68		Norway
Skandi Iceman (DP 2) ▼	2013 / STX AH12 / SPS	34000 / 706m2 / n/a / 45		Bergen
Bourbon Arctic (DP 2) ▼	2016 / Vard 2 12 / SPS	See spec / 780m2 / n/a / 60		Bergen

▼ - Vessel Equipped with WROV
4 - Vessel Equipped with 4 point mooring system
★ - Vessel with helideck fitted
● - Vessel fitted with moonpool arrangement (note access and shape subject to reconfirmation)

Note: Accommodation quoted is maximum and allowances should be made for vessels own marine crew

Appendix 8 – Gilbert versus Trinity House Judgement

GILBERT AND ANOTHER *v.* THE CORPORATION OF TRINITY HOUSE. 1886

June 11.

Negligence—Liability—Corporation performing Public Duties—Servants of the Crown—Trinity House—Merchant Shipping Act, 1854 (17 & 18 *Vict. c.* 104), *Parts VI. and VII.*

By the Merchant Shipping Act, 1854, the superintendence and management of all lighthouses and beacons in England and the adjacent seas are vested in the Trinity House, subject to the existing jurisdiction of local lighthouse authorities: the Trinity House shall continue to hold and maintain all property vested in them in the same manner and for the same purposes as they have hitherto held and maintained the same, and extensive powers are given to them, to be exercised with the consent of the Board of Trade, in respect of the management and control of lighthouses and beacons which are subject to the jurisdiction of local authorities, and in other respects. The Act further provides that the light dues levied by the Trinity House shall be carried to the account of the Mercantile Marine Fund; that the expenses incurred in respect of the service of lighthouses and beacons shall be paid out of that fund; that the Trinity House shall account to the Board of Trade for their receipts and expenditure, and that their accounts shall be audited by the Commissioners of Audit:—

Held, that the Corporation of Trinity House were not by virtue of the Merchant Shipping Act, 1854, constituted servants of the Crown so as to exempt them from liability to an action for negligence in the performance of their duties.

A beacon vested in the Corporation of Trinity House having become partially destroyed, they licensed G. to remove it, and in so doing he negligently left an iron stump sticking up under water. In an action to recover damages caused thereby to the plaintiffs' ship:—

Held, that the defendants were liable for G.'s negligence.

MOTION to set aside the verdict and judgment obtained by the plaintiffs in an action tried before Grove, J., and a jury, and for a new trial, or to enter judgment for the defendants.

Claim for damages in respect of injuries to the plaintiffs' vessel and cargo by reason of the negligence of the defendants, or their servants, in not having removed part of an old beacon, the property of and vested in the defendants.

Defence (inter alia), that the beacon was not the property of or vested in the defendants; that they were not liable in respect of any damage occurring as alleged in the statement of claim, there being no duty imposed upon them to remove the part of the beacon; and that the defendants were not liable in respect of

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any damage caused by defective beacons, or by parts of the same being misplaced or carried away.

At the trial it appeared that prior to 1861 the beacon in question was the property of the defendants, and vested in them. In 1861 it had been partially destroyed, and one Griffiths applied to the defendants for permission to remove what remained of it. The defendants gave Griffiths permission to do so, and he removed part, but left an iron stump hidden by water. The plaintiffs' vessel ran upon the stump and was injured.

Grove, J., left the case to the jury, and in answer to questions put to them by the learned judge they found that the stump was a danger to navigation; that the plaintiffs' vessel was injured by reason of the negligence of the defendants or some one for whose negligence they were responsible; that Griffiths acted under their authority; and that there was no negligence on the part of the captain of the vessel. They also found a general verdict for the plaintiffs, and Grove, J., gave judgment accordingly.

The grounds stated in the defendants' notice of motion were, misdirection in leaving the case to the jury, and that the judgment was wrong by reason that the facts proved at the trial disclosed no legal liability on the part of the defendants.

Sir W. Phillimore, Q.C., and *E. U. Bullen*, for the defendants. The learned judge at the trial ought not to have left the case to the jury. The defendants were in the position of servants of the Crown, and therefore not liable for the negligence of Griffiths, even if he was their servant. The authority of the Corporation of Trinity House in respect of the control of lighthouses and beacons has been of gradual growth for a very long period of time before the year 1854. Originally it would seem that beacons on our coasts were for the most part private property. In order to prevent these means of safety to mariners being neglected in private hands, the guild or fraternity of the Elder Brethren of Trinity House repaired and maintained beacons, at first, perhaps, as a charity, and in process of time acquired rights in respect of the control and management of them. In 1836 many of the lighthouses and beacons on the coasts were under the control and management of local bodies to whom they had been leased by the

Crown; and by 6 & 7 Will. 4, c. 79, repealed by the Merchant Shipping Act, 1854, those lighthouses and beacons were vested in the Corporation of Trinity House. By charters of 1514 (6 Hen. 8) and 1685 (1 Jac. 2) powers were given to the Brethren of Trinity House to hold lands of a certain value, and thereout to pay a chaplain to perform certain religious offices. "Loads manage, pilotage, primage, buoyage, &c.," were also granted to them, and the amount of the dues to be received in respect thereof were specified, and the dues so received were to be expended in repairing almshouses, and for the relief of poor brethren and sisters and seafaring men. It would seem that up to the year 1854 the brethren took the dues for their own use, but that was put an end to by the Merchant Shipping Act, 1854, the effect of which statute is to make the corporation mere collectors of the dues payable in respect of lighthouses and beacons. By s. 389 the superintendence and management of all lighthouses, buoys, and beacons in England, &c., and the adjacent seas and islands, shall be vested in the Trinity House, subject to the existing jurisdiction of local lighthouse authorities. They are termed, together with other bodies "General Lighthouse Authorities;" and, subject to the provisions of the Act, shall continue to hold and maintain all property now vested in them in that behalf in the same manner and for the same purposes as they have hitherto held and maintained the same. By s. 417 all light dues or other sums received by or accruing to the Trinity House are to be carried to the Mercantile Marine Fund. By s. 420 the establishments of the General Lighthouse Authorities, on account of the services of lighthouses, buoys, and beacons, are to be fixed by Her Majesty in Council; and no increase of any establishment or part of an establishment so fixed shall be made without the consent of the Board of Trade. By s. 422 each of the general lighthouse authorities shall submit to the Board of Trade estimates of all expenses to be incurred by them in respect of the matters aforesaid, and the Board of Trade shall consider and may approve such estimates, and by s. 423 no expense is to be allowed unless sanctioned by the Board of Trade. By s. 424, for the purpose of erecting and repairing lighthouses, and other extraordinary expenses connected with the same services, the Treasury may, upon

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the application of the Board of Trade, advance sums out of the Consolidated Fund of the United Kingdom, and pay the same into the Mercantile Marine Account. By s. 428 the accounts of the whole of the receipts and expenditure of the Mercantile Marine Fund are periodically to be audited by the Commissioners of Audit. Under these enactments the defendants, it is contended, are simply the hands to collect the dues, and to expend the sums received in the erection, maintenance, and repair of lighthouses, &c., as they may be allowed by the Board of Trade. They get no profit in any sense. They are not in the position of a body making profits, and having a local destination for those profits. Whatever they receive or expend affects the whole country, not one locality only, and in this respect they differ from the position, with respect to lighthouses vested in them, of the trustees of the Mersey Docks: *Mersey Docks and Harbour Board* v. *Overseers of Llaneilian.* (1) They are in the position of a government department, such as the Board of Trade, or of a great officer of the state, such as the Secretary of State for War, or the Postmaster General.

[WILLS, J. According to your contention s. 430 of the Merchant Shipping Act, 1854, which exempts the Trinity House from payment of rates, is unnecessary.]

That section is merely declaratory of the law.

[WILLS, J. The defendants have been sued for negligence in *Romney Marsh* v. *Corporation of Trinity House.* (2)]

In that case they were sued as shipowners, the negligence being that of one of their servants in managing a pilot-cutter, but they are not liable to be sued for negligence in performing one of the functions of government entrusted to them. The great officers of state may be sued in some other capacity. Proceedings have been taken against the Secretary of State for War in respect of his capacity to hold lands: *Kirk* v. *The Queen.* (3) So also against the Secretary of State for India. The Corporation of Trinity House is not a substitution for private enterprise, nor is it a corporation formed for trading or other profitable purposes, as were the Mersey Docks Trustees: *Mersey Docks Trustees* v.

(1) 14 Q. B. D. 770. (2) Law Rep. 5 Ex. 204; 7 Ex. 247.
(3) Law Rep. 14 Eq. 558.

Gibbs. (1) The foundation of the judgments in that case is that the trustees were not a public body acting for the whole nation, as, it is contended, the defendants here are. The true test whether the privilege of the Crown applies is stated in the judgments of the House of Lords in the leading case, *Mersey Docks* v. *Cameron.* (2) The defendants here are constituted for "public purposes such as are required and created by the government of the country, and are therefore to be deemed part of the use and service of the Crown." If that be so, the defendants, being servants of the Crown, entrusted with the performance of public functions, are not liable for the negligence of an inferior servant of the Crown. The principles should be applied of *Nicholson* v. *Mounsey* (3), *Lane* v. *Cotton* (4), *Whitfield* v. *Le Despencer* (5), *Mersey Docks Trustees* v. *Gibbs* (6), *Coe* v. *Wise* (7), and *Forbes* v. *Lea Conservancy Board.* (8) Griffiths was at most a mere licensee of the defendants to remove the beacon, and they having sold what remained of it to him, were not liable for his acts: *Bartlett* v. *Baker.* (9)

Pyke, (*Bucknill, Q.C.,* with him), for the plaintiffs, was not called on.

DAY, J. In this case two questions arise. First, are the defendants liable to be sued at all in respect of injuries caused by reason of the negligent condition in which beacons, or the remains of beacons, vested in them are kept? Secondly, is there any evidence of negligence on the part of a person for whom the defendants could be held responsible? I entertain no doubt whatever on the first point. The law is plain that whosoever undertakes the performance of, or is bound to perform, duties—whether they are duties imposed by reason of the possession of property, or by the assumption of an office, or however they may arise—is liable for injuries caused by his negligent discharge of those duties. It matters not whether he makes money or a profit by means of discharging the duties, or whether it be a corporation

(1) Law Rep. 1 H. L. 93.

(2) 11 H. L. 443. Judgment of Lord Westbury at pp. 504, 505, and of Lord Cranworth at p. 508.

(3) 15 East, 384.

(4) 1 Ld. Raym. 646.

(5) 2 Cowp. 754.

(6) Law Rep. 1 H. L. 93. Judgment of Blackburn, J., at p. 111.

(7) 5 B. & S. 440.

(8) 4 Ex. D. 116.

(9) 3 H. & C. 153; 34 L. J. (Ex.) 8.

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Day, J.

or an individual who has undertaken to discharge them. It is also immaterial whether the person is guilty of negligence by himself or by his servants. If he elects to perform the duties by his servants, if in the nature of things he is obliged to perform the duties by employing servants, he is responsible for their acts in the same way that he is responsible for his own. As to persons who have undertaken duties of a public character, and discharge them without profit or emolument, take the case cited in argument, *Mersey Docks and Harbour Board* v. *Overseers of Llaneilian* (1). Now to my mind it would have made no difference in that decision if the Commissioners for the Mersey Docks had been amalgamated into one commission with the commissioners of any number of other docks. It is not because they have more duties to discharge that they are less liable for the consequence of their negligence. It is not because they have more opportunities of doing wrong that they are to be less liable to make compensation for the wrong when they have done it. In the same way I can see no difference in the liability of persons who have undertaken the discharge of duties in respect of 50 or 500 lighthouses than if they have undertaken the discharge of duties in respect of one. As to the history of Trinity House, I have no doubt it is true that it has grown up gradually with the amalgamation of lights or beacons which were at one time almost universally private property. Persons erected beacons or lighthouses where they were required, and those who navigated the seas, at first perhaps voluntarily and afterwards by compulsion, paid tolls in respect of those beacons and lighthouses. Rights gradually grew up; rights recognised by law; rights enforced, it may be, by charters or by Acts of Parliament. With the gradual development of those rights it became necessary at last to bring all those lighthouses and beacons under one general authority, and eventually in 1854, the whole system, and the whole law with respect to them, was more or less amalgamated. They were all brought under the one central authority of the Trinity Board, which had long had an existence, originally as a private body, and gradually and naturally developing its authority and influence and acquiring fresh powers, until at length all lighthouses and

(1) 14 Q. B. D. 770.

beacons (including the beacon in question) were vested in it. Now does all this cause the Trinity Board to be servants of the Crown? I cannot conceive that they represent the Crown as servants any more because they deal with all the lighthouses and beacons than the Board of the Mersey Docks represent the Crown because they deal with the lighthouses in the port of Liverpool, or the harbour of the Mersey. The Trinity House, to my mind, is not in the position of a great officer of state. It is nothing more than an amalgamation by authority of state of a vast number of bodies having general authority over the lighthouses and beacons and buoys throughout the country for the general convenience. It is a corporation with very great powers vested in it by statute, but in no possible sense can it be deemed to represent the Crown. All the great officers of state are, if I may say so, emanations from the Crown. They are delegations by the Crown of its own authority to particular individuals. That is not the case with the Trinity House, which has its nature and origin defined with sufficient clearness to enable us to say that at any rate it is in no sense an emanation from the Crown, nor in any way whatever a participant of any royal authority. In my judgment, therefore, the defendants are liable like any other body for their own negligence, or the negligence of their servants, for it may be difficult to see how a corporation could itself be guilty of negligence.

Next, was there any negligence here? The beacon was undoubtedly vested in the defendants. I agree that if the defendants were not responsible for the condition of beacons throughout the country, not charged with the duty of maintaining them in a safe state, they could, by parting with the beacons, evade responsibility. But that is not the position of the defendants. They are responsible for the safe and due maintenance of these things. Here they gave Griffiths leave to take the beacon away. He never did take it away. He only took a part of it, and left the rest. The defendants were responsible for the care of what remained, and it is by neglecting the care of what remained that this accident has occurred. I cannot doubt that there was negligence in allowing the stump which caused the injury to remain where it was. I am, therefore, of opinion that they are clearly

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responsible in an action for the damages which the plaintiffs have sustained.

In my judgment the verdict ought to stand, and the judgment was correct.

WILLS, J. I am of the same opinion. Two objections have been taken to the verdict and judgment. The first is that the Corporation of Trinity House cannot be sued in respect of the negligence alleged against them by the plaintiffs. It is sought to put them on the level of great officers of the state, who cannot be sued because they are the servants of the Crown. I am of opinion that the defendants' counsel have altogether failed to shew any facts, or anything in the constitution and history of the Trinity House, or in the legislation affecting it, which entitles us to consider it on the same footing as a great officer or a great department of the state. We have had brought before us the whole history of the Trinity House, and the charters and Acts of Parliament affecting it, and it would seem that at first it was a private guild or corporation. Now at what time did it cease to be so, and become a great representative of the state? It is suggested that that effect was produced by virtue of two statutes, one of which vested a number of lighthouses and beacons along the coasts in the corporation, and the other—the Merchant Shipping Act, 1854—contained very specific provisions for the control of lighthouses and beacons, and the administration of the funds realised by the tolls collected in respect of them. I am of opinion that those statutes in no sense altered the constitution or capacities of the corporation itself. They imposed new duties upon it; they gave it new powers, and subjected the administration of its funds to certain conditions, but that was all. The Trinity House remains exactly what it was before those statutes were passed, and to my mind is no more to be considered as representing a great officer of the state than are the Ecclesiastical Commissioners, or the Copyhold Commissioners, or any other similar body. I therefore see no reason for saying that the Trinity House cannot be sued; and if it be necessary to fortify that opinion, it certainly is fortified by the fact that the Trinity House has been successfully sued. In *Romney Marsh* v. *Corporation of*

Trinity House (1), the corporation was successfully sued for an act which seems to me undistinguishable in principle from the act or neglect which founds the cause of action in the present case. They were the owners of a pilot cutter, which, being negligently managed by their servants, was driven against the plaintiffs' wall, and it was held that the defendants were liable. I do not mean to say that the question raised in the present case was argued and discussed there. I suppose that at that time it did not occur to any one to argue it, though the defendants were represented by very able counsel. That case went to the Exchequer Chamber, and the judgment of the Court below was affirmed; and it is certainly remarkable that, if the proposition for which the defendants' counsel have contended before this Court were well founded, the same objection should not have been taken in the Exchequer Chamber. The contention that there may be certain purposes in respect of which the Trinity House must be regarded as a private corporation, and other purposes in respect of which it must be regarded as a great department of state, appears to me singularly untenable. The common law furnishes no such instance of a composite person or corporation, and I can hardly conceive that any person or corporation can have that duplicate capacity vested in them by statute. It was said on behalf of the defendants that the Secretary of State for India has been held liable to be sued under certain circumstances, and has been held not so liable under certain other circumstances. I have not had the opportunity of testing that analogy by getting to the root of the illustration, but I suspect that it would be found that in the cases in which he has been made party to an action as defendant (if the fact be so), it was by virtue of some statute transferring to him the liabilities of the East India Company, and that the right to sue him was given by the statute. I am clear that at common law there is no instance of any person or body having two distinct capacities—in one of which there is no liability to be sued because the person or body is the direct representative of the Crown, and in the other there is a liability to be sued because the capacity is that of a private corporation or a person.

(1) Law Rep. 5 Ex. 204; 7 Ex. 207.

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WILLS, J.

The remaining question is, whether there was any negligence in this case which would make the defendants liable. I cannot doubt that there was. It is conceded that the beacon in question was vested in the defendants. It does not cease to be vested in them because they cease to use it. Under such circumstances their statutory right is to remove it. Here, instead of doing that, they gave permission to Griffiths to remove it. In my opinion they cannot get rid of their liability by allowing somebody else to do that which, if unlawfully done by themselves, would have subjected them to a right of action, namely, to alter the premises vested in them in such a way as to leave them a trap and a source of inevitable danger to persons using the seas. They have allowed somebody else so to deal with their property as to convert a thing which before was perfectly safe into a source of hidden and certain danger. As long as the stump remained there it was vested in the defendants, because nothing was done to divest it, and being vested in them it was their duty to take care that it was in such a condition as not to cause injury to others. For these reasons I am of opinion that both the objections taken by the defendants fail.

Motion dismissed.

Solicitor for plaintiffs: *R. S. Fraser.*

Solicitors for defendants: *Sandilands, Humphrey, Armstrong, & Jackson.*

W. A.

Appendix 9 – [redacted]

Work Package 4 – Commercial Impact and Future Balance

Phase 1 - Review Current Commitments

Commercial Balance Methodology

GLA Fleet Review – Phase 2

Work Package 4: Commercial Balance Methodology

Author: Mike Spain
Date: 3 Nov 16
Document No: 350,018

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Reference Documents

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Approvals

Name	Date	Signature
Roger Barker Director of Navigation (TH)	18/01/2017	S. Keddie of Behalf of Roger Barker
Rob Dorey Director of Operations (TH)	18/01/2017	S. Keddie of Behalf of Rob Dorey
Robert McCabe Director of Operations (Irish Lights)	18/01/2017	S. Keddie of Behalf of Robert McCabe
Phil Day Director of Marine Operations (NLB)	18/01/2017	S. Keddie of Behalf of Phil Day
Tony Wright (Marine Operations)	18/01/2017	S. Keddie of Behalf of Tony Wright
Brendan Coyne (Finance and Procurement Manager)	18/01/2017	S. Keddie of Behalf of Brendan Coyne
Steve Keddie	18/01/2017	Steve Keddie

1 Background

Having reviewed current commercial commitments as the first step of Work Package 4 of Phase 1, this paper will define the methodology to deliver Phase 2 of Work Package 4.

Phase 2 will identify the financial benefits from the exploitation of reserve capacity within a centralised operational plan. It will:

- Assess potential reserve capacity together with exploitation and financial models
- Produce reserve capacity report
- Detail fleet commercial work against operational profile to deliver optimum VFM

2 Methodology

The potential reserve capacity will be identified and assessed through use of the existing Reserve capacity Report produced by the Combined Fleet Management team.

The means of exploitation will be reviewed with reference to fixed commitments and study of prior commercial engagements models.

Financial models will consider options of a fully commercial bias versus the intra-governmental cost recovery/contribution model. A risk/benefit analysis will be conducted against both models to include contract commitment timescales.

GLA charge-out rates will be reviewed.

The reserve capacity report will consider the utility of known spare capacity and ad hoc spare capacity.

The delivery of optimum VFM will require input from GLA Directors of Finance and will include consideration of planned income, occasional income and RPI-X, etc.

3 Conclusion

Input to this phase will required from the GLA Business Development teams, Combined Fleet Management and Finance Departments.

The methodology will be reviewed and revised on an ongoing basis as new information becomes available from other sources and as guided by the PMWG.

Work Package 4 – Commercial Impact and Future Balance

Phase 1 - Review Current Commitments

Review of Current Commercial Commitments

GLA Fleet Review – Phase 2

Work Package 4: Review of Current Commercial Commitments

Author: Mike Spain
Date: 16/08/16
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Name	Date	Signature
Roger Barker Director of Navigation (TH)	09/11/16	S. Keddie on Behalf of Roger Barker
Rob Dorey Director of Operations (TH)	09/11/16	S. Keddie on Behalf of Rob Dorey
Robert McCabe Director of Operations (Irish Lights)	09/11/16	S. Keddie on Behalf of Robert McCabe
Phil Day Director of Operations (NLB)	09/11/16	S. Keddie on Behalf of Phil Day
Project Board Chair	09/12/16	S. Keddie on Behalf of I. McNaught

1 Background

In support of Phase 2 of the wider Fleet Review instigated by the United Kingdom Department for Transport a review of current and ongoing commercial commitments is required. These commitments will be expressed in ship-days allocated. Days allocated to commercial are purely drawn from spare capacity in the programme.

2 Commercial Income

The GLF derives an average of c.£3.9 million per annum from commercial income. This is nett income, after deduction of costs. The majority of this income derives from ship-supported activities.

3 **Buoywork**

Each GLA maintains buoys on behalf of third party clients, whether these are owned by the client or on hire to them by the GLA.

The commitments to commercial at-sea buoy servicing are:

	Northern Lighthouse Board (NLB)	Commissioners of Irish Lights (CIL)	Trinity House Lighthouse Service (TH)
Multi-function Tender		6 Days	40 days
Medium Function Tender	33 days		
Launch			48 days

Fig. 1 – Days allocated to commercial buoywork

4 Government Inter-Departmental Agreements

Both Commissioners of Irish Lights and Northern Lighthouse Board have inter-departmental agreements in place with other government bodies. These take the form of Service Level Agreements (CIL) and Memoranda of Agreement/Understanding (NLB).

Northern Lighthouse Board (NLB)		Commissioners of Irish Lights (CIL)	
Agency	Days per annum	Agency	Days per annum
Ministry of Defence	50	Irish Coast Guard	4
		Sustainable Energy Authority of Ireland	2
		MaREI Project	4
Total	50	Total	10

Fig.2 - Days allocated to support of other government departments

5 Tri-GLA Contracts

There is one tri-GLA contract in place which is with the Met Office. This is administered by TH on behalf of all three GLAs. This requires an average of 15 days per annum.

6 Ship Charter

There are no long term fixed charter agreements for any GLA. Commercial charters other than those listed above are sought if and when spare capacity matches market demand.

NLB has one contract which calls upon Pharos once every three to five years for up to 5 days if she is available.

7 Conclusion

The majority of time allocated to commercial activity is in the form buoywork. This work is for the most part programmed in and around statutory work while vessels are operating in or transiting through neighbouring areas.

The other main component of third party activity consists of support to other Government departments in both the UK and Ireland. The aim of these agreements is to provide best value for Government and taxpayer for the wider benefit of the GLAs' respective countries.

In total two hundred and two(202) days are allocated to third party work, as shown in Figure 3 below;

	Northern Lighthouse Board	Commissioners of Irish Lights	Trinity House Lighthouse Service
Buoywork	33	6	88
Service Level Agreement		10	
Memoranda of Agreement/Understanding	50		
Tri GLA Contract	15		
Total days	202		

Fig.3 – Total of days allocated to commercial work from spare capacity

Work Package 4 – Commercial Impact and Future Balance

Phase 2 – Identify the financial implications and potential benefits from the exploitation of reserve capacity within a coordinated operational plan

Commercial Impact and Future Balance Report

GLA Fleet Review – Phase 2

WP4 Phase 2: Commercial Impact and Future Balance

Author: Mike Spain
Date: 24 January 2018
Document No: 377751

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377751v6	29/03/18	Approved PDF
377751v7	13/04/18	Corrected Commercial Income Figures

Reference Documents

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Approvals

Name	Date	Signature
Mike Bullock	28/03/2018	[redacted]

1 Background

Work Package 4 aimed to deliver an assessment of the ongoing viability and value of commercial work undertaken by the combined GLA fleets. It will identify the financial benefits from the exploitation of reserve capacity within a centralised operational plan and assess the Value for Money of undertaking third party commercial work.

2 Reserve capacity

Commercial work is only undertaken within the reserve capacity of the fleet. Primacy is always ceded to statutory obligations where necessary and this is included in all contract agreements relating to vessels. The reserve capacity is determined through combined fleet management and then relayed to the business development functions of the GLAs.

The aim of the business development function is to fill any identified reserve capacity with profitable and appropriate taskings. Given the emphasis on Risk Response Criteria (RRC) there is no longer true reserve capacity as vessels are positioned with the purpose of covering Risk Response Areas as a primary function. Reserve capacity must therefore be redefined as periods when the vessels are appropriately deployed to cover RRC but are not otherwise engaged in GLA statutory work. Any engagement in commercial activities should therefore only be undertaken where it does not compromise RRC.

3 Financial Model

The GLAs derive a significant financial contribution from undertaking commercial work for third parties. In the last 4 years (included projection for 2017/18) commercial work has contributed an annual gross income in excess of £3.2 million.

	2014/15	2015/16	2016/17	2017/18 (Projected)
CIL	£1,622,572	£618,570	£ £991.536	£769,899
THLS	£ 1,726,057	£ 1,417,526	£ 1,452,451	£ 1,264,984
NLB	£ 903,024	£ 1,236,637	£ 1,135,536	£ 1,279,500
Total	£4,251,653	£3,272,733	£3,579,523	£3,314383

Table 1 – Commercial income generated via GLA vessels.

This income has been generated via established long term commercial contracts, ad hoc commercial engagements and Memoranda of Understanding (MoU) or Memoranda of Agreement (MoA) with other Government departments.

In the current commercial climate the minimum charge out day-rate for GLA vessels is far in excess of the published spot market rates by a factor of 3 - 4. The GLAs do not seek work below the agreed minimum day-rate of each vessel type to avoid any risk of subsidising the market. This limits the work available to GLA vessels and is reflected in declining income levels.

Intra-Governmental work between departments is undertaken on the basis that all GLA costs are recovered. This provides a contribution to income in terms of recovering all fixed and variable costs while not laying additional profit margin costs against other Government departments. This provides good value for money for both partners and to their respective Governments. The ongoing operational requirements of partner

departments is such that income generated from MoU/MoA is more predictable than dependence of the vagaries of the open market.

In the case of Irish Lights the funding arrangements agreed between the DfT and DTTAS take account of the potential to generate commercial income to contribute to funding the delivery of core services, based on the utilisation of reserve capacity. In the case of the Granuaile, Irish Lights has stated an annual reserve capacity of up to 100 days.

Commercial income has provided support to the viability of RPI-x programme.

4 Planning and spare capacity

Coordinated Fleet Management is responsible for planning the overall work of the GLA fleet. Within the plan certain windows of opportunity may be identified to enable the possibility of commercial work to be undertaken. The introduction of the single airframe helicopter contract has constricted the flexibility of these windows of opportunity. The opportunity of matching ad hoc commercial opportunities to spare capacity is therefore severely restricted if the main direction of effort is towards seeking ad hoc commercial contracts.

Engaging in intra-Governmental work has the benefit of enabling forward planning through the allocation of blocks of availability and scheduling joint operations which both fit the windows of opportunity and do not compromise risk response. This arrangement is also beneficial to our Government partners in that it supports their budgeting and planning schedules. Additional taskings may arise through the year but are always subject to statutory primacy and RRC.

Windows of opportunity are variably available dependent on vessel type. Multi-function tenders necessarily have a greater forward definition of a plan whereas the medium buoy tender and rapid intervention vessel may have greater flexibility of availability relating to statutory obligations but are limited by their risk response duties.

5 Commercial Activity during trial period

All GLAs undertook commercial work utilising vessel reserve capacity during the fleet review trial period. Across all the GLAs there was a downturn in total income during the period. Opportunities were declined due to non-availability of vessels in the correct area resulting from RRC commitment, e.g. [redacted] buoy attendance, Rampion buoys. Allowance must also be made for the concurrent general slowdown in the UK/Irish marine market and the attendant slump in the spot market day rate to an average of <£10,000 per day for AHTS and c. £5,000 per day for PSVs (Clarkson Platou Offshore Availability Report).

6 Buoywork

All contracted commercial buoywork was completed during the period. Contracted buoywork is a good fit with GLA statutory work. It can be scheduled in and around statutory commitments as part of the planned activities for a vessel working in a nominated area. There is also a reasonable degree of flexibility as to when commercial buoywork is undertaken which accommodates variation in the combined fleet plan.

The current 7 vessel fleet configuration supports the integration of buoywork into the GLA activity plan. Buoywork contributes 127 days of planned commercial work across

the three GLAs (Northern Lighthouse Board – 33, Commissioners of Irish Lights – 6, Trinity House Lighthouse Service – 88).

The rate of return is variable per GLA due to the costs of the vessels employed on buoywork – MFT, MBT, RRV. As a percentage the contribution from buoywork/buoy rental for NLB averages at 30% of vessel income; for Trinity House it averages at over 50%; and for Irish Lights it is c.10%.

7 Commercial capability and limitations

The current open commercial market has an overcapacity of modern vessels in the AHTS and PSV sectors. This is particularly relevant to activities in the offshore oil and gas sector and offshore wind. Contracting companies are specifying vessels less than 10 years old and minimum DP2 as the norm. All GLA vessels are now over 10 years old and only two are DP2 rated. Additional limitations are supernumerary accommodation capacities (limited by class), deck area, crane capability and equipment fit.

All GLA vessel contracts contain a clause permitting the vessel to break away from the contract, at no liability to the GLA, in the event that a navigational emergency requires attendance of the vessel. This necessary clause has been a reason for non-engagement in past enquiries. Government partner agencies fully understand the need for such a clause and have been supportive in facilitating attendance at outages when appropriate.

GLA vessels are limited in the period of engagement on commercial activity by the requirements of statutory undertaking. Contracts requiring greater than one month or with extendable options are not viable for Trinity House or NLB.

8 Impact of fleet configuration

The existing seven vessel fleet configuration ensures that the current levels of commercial activity are sustainable. There may be scope for a modicum of growth although this will continue to be constrained by RRC and market forces. This assumes full GLA control and management of all vessels.

Any move to a six vessel fleet would necessitate a withdrawal from all non-buoy related work. The loss to the GLF would be in the region of £2.4 million per annum averaged over period 2014-2018 (NLB - £873k, Trinity House - £677k, IL - £ 849k). In addition to the financial loss there would be a wider impact on our Government partners and their ability to conduct their marine activities.

A five vessel fleet would effectively cause the cessation of all third party commercial work involving GLA vessels. There would be a loss of income to the GLF equivalent to £ 3.6 million per year.

9 Conclusion

The prime purpose of having a measured modicum of spare capacity in the GLA fleet is to allow flexibility in response to unplanned eventualities. The ability to use this spare capacity to generate third party income supports the General Lighthouse Fund and ensure each vessel provides maximum value for money in its operational capacity.

The current seven vessel model for the GLA fleet permits a certain limited level of surplus capacity which supports the ability to generate third party income while not compromising statutory work or RRC.

Work Package 5 – Supplementary Solutions Development

Phase 1 – Expand, develop Tri-GLA ‘Zone Boat’ arrangements to support operations

Use of Local Contract Vessels in support of AtoN Maintenance

The General Lighthouse Authorities

Use of Local Contract Vessels in support of Aids to Navigation Maintenance

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
350037v1	21/11/2016	Document Creation and reviewed at PMWG05
350037v2	01/12/2016	Removal of PB chair 'sign-off'
350037v3	02/12/2016	Converted to PDF
350037v4	08/12/2016	Remove reference to OP53 [redacted] Inspection, Update Doc. Ref. (TH Local Boat Services Directory)
350037v5	09/12/2016	Converted to PDF

Reference Documents

Document No.	Document Title
350038v2	CIL Local Boat Operations v1
350035v3	The Northern Lighthouse Board – Zone Boat Services Directory
342836v6	Trinity House – Local Boat Services Directory

Approvals

Name	Date	Signature
Roger Barker Director of Navigation (TH)	28/11/2016	S. Keddie on Behalf of R. Barker
Rob Dorey Director of Operations (TH)	28/11/2016	S. Keddie on Behalf of R. Dorey
Robert McCabe Director of Operations (Irish Lights)	28/11/2016	S. Keddie on Behalf of R. McCabe
Phil Day Director of Operations (NLB)	28/11/2016	S. Keddie on Behalf of P. Day

Contents

1. General Preamble

2. Northern Lighthouse Board Zone Boats Services Directory
    1. Safety Summary Sheet
    2. Zone Boat Services by Area

3. Irish Lights Boat Operations Document
    1. Local Boat Policy
    2. Available Resources
    3. Local Boat by Area
    4. Risk Assessment

4. Trinity House Local Boat Services Directory
    1. Local Boat Policy
    2. Local Boat Service Providers
    3. List of Local Boats not in regular use

General Comments

The three General Lighthouse Authorities, The Northern Lighthouse Board (NLB), The Commissioners of Irish Lights (IL), and Trinity House (TH) each supplement their respective in-house AtoN tender fleets by making use of local contract boat services.

Each organisation has independently produced its own stand-alone directory of Local Boat Services (referred to as Zone Boats in the case of NLB). The three documents are generally similar, however, there are differences in content which reflects the necessarily different ways in which local boats are utilised and managed across the GLAs.

For this reason the stand-alone Directories will form discrete sections of this overarching document, and the update of the discrete sections will remain the responsibility of the respective GLAs.

General Utilisation

All three GLAs use their local boat fleet for the transfer of personnel to and from offshore lighthouse stations. This can be for pre-planned routine maintenance visits or for casualty intervention.

Local boats are also used to provide a cost effective means of rectifying failures on buoy stations in inshore or sheltered waters when the normal GLA vessel is not available within an acceptable timeframe. Depending on the nature of the failure it may be possible to effect a full repair (in the case of simple component failure), or to effect a temporary repair, clearing the casualty status of the station pending arrival of one of the GLA vessels in the area to effect a full repair. In the case of IL and NLB the procedure is for support personnel with the necessary spares to travel by road to join the local boat which will then transport them to and from the casualty. In the case of TH, buoy failures are normally rectified using the road-transportable RIB operated under the West Coast Launch contract (ref. Section 4, sub section 2.9 below) – the personnel working under this contract hold the necessary spares and have the required skill sets to carry out the work.

Quality Control

When using 3rd Party operated local boats for the carriage of personnel and equipment which are the responsibility of the GLAs it necessary that duty of care is not compromised by the use of sub-standard vessels or personnel who do not have the necessary skill sets to safely carry out the tasked work. In all cases there are measures in place to ensure that local (zone) boats operators' continued compliance with regulatory requirements and competence of crew. The three GLAs have developed different methods of achieving this; all three methods are valid but reflect the different environments in which the GLAs operate.

NLB currently have contracts in place with 16 Zone Boats. The contract specifies the vessels and crews to be used when the boat is operating on NLB tasking and the levels of certification required to be in place for the boat and its crew.

TH do not have formal contracts with local boat operators. There are 15 Local Boat operators which are nominated for use and with whom informal arrangements are in place. These boats are inspected biennially by a member of the TH Marine Department or an Officer from a TH vessel to ensure continued compliance with the necessary regulation and competence of crew.

IL do not have formal contracts with local boat operators. There are a number of boat operators around the Irish Coast nominated for use. Quality Control is maintained by ensuring that whenever a local boat is used there will be a CIL person present who is capable of inspecting the boat prior to use.

Work Package 5 – Supplementary Solutions Development

Phase 1 – Expand, develop Tri-GLA 'Zone Boat' arrangements to support operations

The Northern Lighthouse Board – Zone Boat Services Directory

Work Package 5 – Supplementary Solutions Development

Phase 1 – Expand, develop Tri-GLA 'Zone Boat' arrangements to support operations

Commissioners of Irish Lights Local Boat Operations

Work Package 5 – Supplementary Solutions Development

Phase 1 – Expand, develop Tri-GLA ‘Zone Boat’ arrangements to support operations

Trinity House – Local Boat Services Directory

Work Package 5 – Supplementary Solutions Development

Phase 2 & 3 – Alternative Resource Solutions and Alternative Vessel Funding and Delivery Mechanisms

Supplementary Solution Development Report

GLA Fleet Review – Phase 2

Work Package 5: Supplementary Solution Development

Author: Phil Day
Date: 7th March 2018
Document No: 380089

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
380089v1	05/02/18	DRAFT
380089v2	05/02/18	Comment
380089v3	07/02/18	Following comment from PB09 and PMWG19
380089v4	03/03/18	PD updated following PMWG comment
380089v5	28/03/18	Approved at Project Board
380089v6	28/03/18	Approved PDF

Reference Documents

Document No.	Document Title

Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

Background

Work Package 5 aimed to:-

- Deliver an expansion of the tri GLA Zone/local boat arrangements to support operations
- Consider alternative resource solutions based on the proposed charter trials and coordinated plan
- Consider alternative vessel funding and delivery arrangements.

This WP was developed into three phases:-

Phase 1 – Expand, Develop Tri-GLA 'Zone Boat' arrangements to support operations

Objective:	Expand and develop Tri-GLA 'Zone Boat' arrangements to support operations as an element of a layered fleet model.
Conduct:	Assess each GLA existing arrangements and compile a directory of local boats of known standard. Consider appropriate contractual basis for use within layered fleet.
Acceptance Criteria:	Delivery of a directory of all GLA local (Zone) boats with standards understood and contractual basis for use agreed by Chief Execs.

Phase 2 – Alternative Resource Solutions

Objective:	To remain open to emerging opportunities, alternative delivery models and funding solutions. As charter test and evaluation develops, prepare to cost and evaluate alternative resource solutions should RRC, cost effectiveness and overall workload not be achievable.
Conduct:	Should excess or shortfall in capability/capacity exist then consider alternative or supplementary means of delivery GLA responsibilities.
Acceptance Criteria:	Signed off report detailing a range of costed solutions which mitigate risk to acceptable level.

Phase 3 – Alternative Vessel Funding and Delivery Mechanisms

Objective:	To investigate alternative funding and delivery mechanisms to deliver required capability to assure a VfM solution.
Conduct:	Identify and examine delivery solutions and funding mechanisms not covered within the Houlder report or not examined sufficiently. Look for emerging opportunities as the project develops and provide costed solutions for comparison which include a balance and assessment of risk and cost.
Acceptance Criteria:	Delivery of a costed and risk mitigated fleet model which includes identified alternative resource solutions if appropriate, agreed by Chief Execs'.

Work Package 5 (WP5) Conduct

In **phase 1**, a Tri GLA zone/local boat directory was created by the Coordinated Fleet Management (CFM) group. This is a live document which sets out each vessel's capability operating limits, location etc. on a GLA by GLA basis. The document is available to all GLAs from a share file system. This task was completed in November 2016 and a layered use of zone/local boats has been part of and recorded through the coordinated planning process for WP2.

In **phase 2** it was intended to assess the anticipated trial of spot market vessels In support of the GLA fleet. The Braemar evaluation of the charter market found that the charter market could not be relied on to provide suitable vessels on a spot charter basis. They went on to recommend that trial testing was not going to deliver suitable vessels. Phase 2 of WP4 was therefore halted.

In **phase 3**, alternative vessel funding and delivery mechanisms are considered as business solutions, separate to the statement of vessel requirement. This has drawn on wider experience of:-

- A former large oil major fleet operator experienced in chartering and operating both bare boat and time charter.
- A former public sector senior manager responsible for managing a large outsourced vessel based service contract.
- A former ship owner's senior manager responsible for delivering charter vessels to a public sector client.
- Informal discussions with Braemar during Phase 2 of this WP
- Houlder Findings.

Utilising the knowledge of this group the PMWG considered the delivery options which are:

- Time charter (hire of a crewed vessel) or other suitable contract in of suitable vessel or vessels to carry out tasking under GLA instruction.
- Bare boat charter (hire of a vessel without a crew) of suitable vessel or vessels to be operated as per an owned vessel by the GLAs
- Purchase used vessel and convert.
- Purchase a suitable new vessel.

It was determined that actual costings should not be included in the report to avoid unnecessary redactions and provide a report which can be published in full without providing commercially advantageous information to potential future suppliers.

Work Package 5 (WP5) Analysis – Local / Zone boats

The three General Lighthouse Authorities, The Northern Lighthouse Board (NLB), The Commissioners of Irish Lights (IL), and Trinity House (TH) each supplement their respective in-house AtoN tender fleets by making use of a network of known local contract boat services compliant with the MCAs workboat code or IRCG equivalent. Each organisation has independently produced its own directory of Local Boat Services. Three documents have been produced that make up a Tri-GLA directory.

All three GLAs use their local contracted boat fleet for the transfer of personnel to and from offshore lighthouse stations. This can be for pre-planned routine maintenance visits or for outage intervention. These vessels are not exclusive to the GLAs and their availability is subject to contracting around any prior commitments.

Local boats are at times used to attend AtoN outages while in addition TH has the road-transportable RIB operated under the West Coast Launch contract, also proving survey capability for rivers and estuaries when conditions permit.

These vessels are operated by trusted crews with good local knowledge providing a cost effective supplement to the core fleet when the circumstances permit recognising that these are small craft and operations are highly weather dependant.

Across the GLAs the arrangements for local boats include contracts and informal arrangements on a short term / spot charter basis. Checks on certification and compliance are conducted across the GLAs.

Example of Local / Zone boat use during Nab Tower Modernisation

Example of RIB type zoned boat used for buoy outage

During the trial 275 day period the zone boats have been used to good effect and have supplemented the core fleet by GLA=186, TH=92, IL=33, NLB=63 occasions and have made an important contribution to the layered fleet model ensuring the task is matched to the most appropriate vessel and thereby providing the most cost effective solution

Work Package 5 (WP5) – alternative vessel funding and delivery mechanisms

Background

Houlder Findings.

In the executive summary to the GLA fleet review 2015 report Houlder stated;

- *MV Mair presents a good example of the potential for the GLAs to benefit from the cost effective support available from commercial marine operators; in this case through a time charter.*

- *Time charters, similar to that of the MV Mair, may be used to support routine GLA tasking such as maintenance of smaller buoys. In addition, a vessel under time charter would be available to respond to casualties, wrecks and new dangers at short notice. Such arrangements could be made either on a long term basis for a number of years …..*

- *Regular maintenance and handling of the larger (Type 1 and 2) buoys requires a purpose-built vessel, specialist skills and appropriate experience. This is best delivered by vessels owned and operated by the GLAs as part of a core fleet. …*

In Section 4.2 they noted:

- *The considerable size and weight of these AtoNs [*Type 1 buoys] *demands a basic size of support vessel to enable safe handling and storage of the buoys, either while replacing defective elements or simply to provide stable support during routine cleaning and maintenance. The current arrangement generally comprises a purpose built crane or derrick and a small number of vertical 'buoy pods' which allow the counter-balancing tail tube to sit below weather-deck level. These pods dictate vessel dimensions, specifically the hull depth necessary to afford the requisite weather-deck-to-keel distance and the height of the buoy drives the size of crane needed to lift it. Any Type 1 vessel crane must have sufficient capacity for buoys weighing up to 14 tonnes, their mooring arrangements and wave induced shock loading up to a specified sea state.*

Braemar advice

During the latter stages of Phase 2 of this work package informal discussions to gain knowledge of replacement vessel options identified that;

A used vessel is more suitable for shorter term operation (a few years) rather than a longer term option. There will always be compromise on design and equipment fit and living with those compromises for the defined period of a contract, where the vessel pays for itself within this period makes sense and involves no or minimal additional investment. Living with those in the longer term means that you are operating a sub optimal vessel, with no standard kit, with perhaps supply chain and training considerations. Long term operation generally benefits from a new vessel of the

desired design incorporating equipment which is more aligned with the operator's norm.

Risk appetite

The GLAs' approach to risk appetite is aligned with UK Treasury guidance in terms of adopting the five point 'averse', 'minimalist', 'cautious', 'open', 'hungry' descriptors. HM Treasury (2006)

Classification	Description
Averse	Avoidance of risk and uncertainty is a key Organisational objective.
Minimalist	Preference for ultra-safe business delivery options that have a low degree of inherent risk and only have a potential for limited reward.
Cautious	Preference for safe delivery options that have a low degree of residual risk and may only have limited potential for reward.
Open	Willing to consider all potential delivery options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (and value for money etc.).
Hungry	Eager to be innovative and to choose options offering potentially higher business rewards, despite greater inherent risk.

(HM Treasury 2006)

The GLAs Government accepted risk appetite remains 'averse' in terms of AtoN provision and for hazard risks such as health & safety, the environment and regulatory compliance. In the case of risks associated with operational and policy delivery, a more 'cautious' or 'open' approach is adopted. Also, in respect of the pursuance of commercial opportunities, the GLAs' risk appetite has broadly continued to reflect a 'cautious' approach within a robust framework of loss control. In terms of financial / value for money aspects, the GLAs' risk appetite is assessed as being between 'minimalist' and 'cautious'. This reflects that the GLAs are prepared, where appropriate, to consider value for money and a willingness to consider broader benefits in terms of their overall delivery profile.

Work Package 5 (WP5) Analysis – alternative vessel funding and delivery mechanisms.

Taking into account the findings of Houlder and the advice given informally by Braemar, the working group identified the options available to the GLAs to provide additional or replacement vessels for the longer term.

I. Purchase a suitable new vessel.

This option has been the traditional mechanism for the GLAs to provide vessels for their operations. The model is to take a commercial secured mortgage/loan for the value of the vessel construction and repay this over an agreed period e.g. 15 to 20 years followed by a smaller rental figure for use beyond the period of the loan. The bank remains the owner of the vessel which is fully staffed, operated and maintained by the GLA.

A Second option exists whereby the GLF takes a Treasury loan for the value of the vessel construction and repay this over an agreed period e.g. 10 to 15 years. The GLA concerned would be the owner of the vessel from the outset and there would be no payments due beyond the life of the loan. If the GLF is healthy the loan can be paid off early. It is likely associated interest rate would be lower than a commercial loan.

From a high level costing perspective it can be assumed that current MFT and MANT operating costs delivered under a commercial mortgage/loan provide a good indication of replacement vessel cost range within a margin of error. The indicative costs provided by Houlder for a MANT or MANT+ type vessel fall within this range.

II. Purchase used vessel and convert

Given both Houlder's identification of the requirements for vessel capabilities and Braemar's advice that this option was considered for exclusion. However it is feasible if a suitable vessel is on the market.

The model is to take a commercial secured mortgage/loan for the value of the vessel purchase and repay this over an agreed period. This would be for a shorter period than option *I* to reflect the already used element of a vessel's life e.g. 10 years followed by a smaller figure for use beyond the period of the mortgage. The costs of conversion and alteration would fall to the GLF. The bank remains the owner of the vessel which is fully staffed, operated and maintained by the GLA.

A Second option exists whereby the GLF takes a Treasury loan for the value of the vessel purchase and alterations and repays this over an agreed period e.g. 10 to 15 years. The GLA concerned would be the owner of the vessel from the outset and there would be no payments due beyond the life of the loan. If the GLF is healthy the loan can be paid off early. It is likely the associated interest rate would be lower than a commercial loan.

From a high level costing perspective it can be assumed that current MFT and

MANT operating costs delivered under a commercial mortgage/loan will be similar to option *I* for the period of the loan. Under a Treasury loan it may be expected that a longer loan period remains possible with costs discounted for a reduced purchase price. However this ignores the conversion costs which may be added to the loan as it is not directly secured against the vessel. This is based on continuing GLA crew costs, fuel and lube and repair costs and insurance remaining unchanged. The indicative costs provided by Houlder for a MANT or MANT+type vessel fall within this range.

III. Bare boat charter (hire of a vessel without a crew) vessel to be operated as per an owned vessel by the GLAs

The model is to charter a new or nearly new vessel using a standard charter party agreement with a Ship owner. It should be noted that the final owner may be a commercial bank as it's likely the ship owner will have a loan/mortgage on the vessel.

From a high level costing perspective it can be assumed that current MFT and MANT operating costs also provide a good indication of vessel cost range within a margin of error under this arrangement.

This is based on continuing GLA crew costs, fuel and lube and repair costs and insurance remaining unchanged with lease costs swapped for vessel charter cost.

The indicative costs provided by Houlder for a MANT or MANT+type vessel fall within this range.

IV. Time charter (hire of a crewed vessel) or other suitable contract in of suitable vessel to carry out tasking under GLA instruction.

Houlder were quite specific that Type 1 and 2 buoyage was best handled by GLA owned and operated vessels with experienced crew. They also identified the longer term time charter as an option for vessel supply. The work group considered that a specialised vessel could (in principle) be provided as a time charter noting this came with additional risks.

The model is to charter a new or nearly new vessel using a standard charter party or service agreement with a Ship owner. The vessel to be crewed by staff employed by or contracted to the ship owner.

It should be noted that the final owner may be a commercial bank as it's likely the ship owner will have a loan/mortgage on the vessel.

A standard BIMCO type time charter may prove insufficient for the type of work envisaged and the operational risks encountered. Therefore a service contract may be more appropriate for this type of operation. In any event an OJEU tender process will need to be followed.

Crewing costs are one of the few areas where a ship operator normally has discretion to save money which would transfer into a lower charter rate. This is achieved by using cheaper nationals (lower wages), offshore contracts and associated national insurance exemption and no or little pension provision

Legal advice has indicated this contract would be covered by the TUPE regulations which require the transfer of affected staff to the new employer under the same terms and conditions.

This therefore leaves only an offshore contract and the employer National insurance exemption available to provide crew cost savings. This also has a political ramification outside the scope of this WP.

Given the likely lack of crewing savings from a high level costing perspective it can be assumed that current MFT and MANT operating costs adjusted for the removal of employer national insurance provide a good indication of vessel costs range within a margin of error under this arrangement.

This is based on continuing GLA crew costs (minus employer NI), fuel and lube and repair costs and insurance remaining unchanged with lease costs swapped for vessel charter cost.

The indicative costs provided by Houlder for a MANT or MANT+ type vessel fall within this range.

Risks

Each of the four options has risks associated with it many of which can be mitigated and controlled.

I. Purchase a suitable new vessel.

This option has mainly commercial risks associated with late delivery and cost overruns at the build stage, vessel performance issues and equipment supportability. These can be mitigated by using established vessel designs or separate design contract. Build costs and overruns can be mitigated by fixed cost contracts and liquidated damages along with pre contract verification of financial viability of the bid. Using recognized supportable equipment and warranties can also mitigate equipment concerns.

II. Purchase used vessel and convert

This option may on the face of it provide a cost effective option purchasing a nearly new laid up vessel or used vessel for a reduced cost compared with building from new. However the specific requirements of a GLA vessel are likely to mean the supply of suitable hulls is limited, the vessel may be a compromise on design and equipment fit or no suitable vessel may be available. This can be mitigated for by exploring this option in conjunction with I &III. A used vessel means the vessel is closer to the replacement cycle and allows a shorter term return on investment.

III. Bare boat charter (hire of a vessel without a crew), vessel to be operated as per an owned vessel by the GLAs

The current charter market would suggest a good commercial rate for a vessel could be obtained however the specialised features of the required vessel or pre charter alterations or build to meet the GLA requirements would suggest the full benefits of a depressed market would not be realised. The specific requirements of a GLA vessel are likely to mean the supply of suitable pre-existing hulls is limited, the vessel may be a compromise on design and equipment fit or no suitable vessel may be available. This can be mitigated by chartering a new build.

A bare boat charter tendered through OJEU processes may mean competition whilst keeping prices down may also end up with unrealistic bids that later prove to be not commercially viable and early withdrawal or renegotiation occurs.

The level of commercial risk in a bare boat charter are increased due to the third party relationship of ship owner and bank along with any exposure the ship owner has through other operations.

IV. Time charter (hire of a crewed vessel) or other suitable contract in of suitable vessel to carry out tasking under GLA instruction

The current charter market would suggest a good commercial rate for a vessel could be obtained however the specialised features of the required vessel or pre charter alterations or build to meet the GLA requirements would suggest the full benefits of a depressed market would not be realised. The specific requirements of a GLA vessel are likely to mean the supply of suitable pre-existing hulls is limited, the vessel may be a compromise or no suitable vessel is available. This can be mitigated by chartering a new build.

As with bare boat charter the level of commercial risk is increased due to the third party relationship of ship owner/service provider and bank along with any exposure the ship owner/service provider has through other operations.

A service based contract may (if not carefully constructed) provide an avenue for cost increases where additional operations or tasking's are requested and not previously specified. This can be mitigated for by using specialized assistance to draw up any specification.

A Service based contract tendered through OJEU processes may mean competition whilst keeping prices down but may also end up with unrealistic bids that later prove to be not commercially viable and early withdrawal or renegotiation occurs. This can be mitigated by open book process, scoring matrix that does not give excessive weight to price and a detailed specification.

The impact of TUPE rules mean that this service based contract has additional reputational and business risks. There is a risk of low GLA staff morale, union action including strike, Political issues relating to off shore contracts (perceived tax avoidance). These are not easily mitigated.

Service based contract may also raise issues of control with the contracting GLA, and risk falling operational standards. These can be mitigated by having clear command and control processes and supervisory processes within the contract.

Conclusion

All four of the options explored provide a viable cost based option for the GLAs. All, within a margin for error, fall within similar cost range. All options have similar financial risks. Option IV has the most reputational and operational risks associated with it but could be achievable. Option I and III have similar risk profiles and have less reputational and operation risk associated with them. Option II may result in longer term difficulties caused by the operational compromise of a used vessel and would need to be approached with extreme caution.

This high level review will need further analysis and costing in a business case aligned to the Green Book prior to a final decision on approach and financing for vessel replacement.

Work Package 6 – Additional Recommendation Review

Phase 1 – Further Work

Houlder Additional Recommendations

GLA Fleet Review – Phase 2

Supporting Documentation

Houlder Additional Recommendations (Table 12 & 13)

Author: Ewen Mackerchar

Date: 13th April 2017

Document No: 359297

Document History and Approvals

Revision History

Document Reference	Date	Summary of Changes
359297v1	13/04/17	Creation
359297v5	09/10/17	Updated E. Mackerchar
359297v6	11/01/18	Updated to Final E. Mackerchar
359297v7	18/01/18	Updated P.Day following review at FRPB 12th January 2018
359297v8	22/02/2018	Updated during PMWG18
359297v9	08/03/18	Updated following comment out of PMWG18
359297v10	08/03/18	PDF version
359297v11	13/03/18	Reworked following additional comment out of PMWG20
359297v12	28/03/18	Minor format changes made during PMWG21 and approval
359297v13	28/03/18	Approved PDF

Approvals

Name	Date	Signature
S. Keddie	28/03/2018	[redacted] on behalf of PMWG, approved during PMWG 21 on 28th March 2018

WP6 (Additional Recommendation Review)

- Phase 1 – Further Work
  - Additional Recommendation Review – Evaluate recommendations identified within table 12 of the Houlder Report
  - Additional Recommendation Review – Develop implementation plan for recommendation's taken forward
  - Additional Recommendations Review - Sign-Off Report Implementation plan

Additional recommendations report delivered 01/10/2017

Table below presents Houlders further recommendations contained within Table 12 which have been allocated responsibilities for actions and to be updated by Chair of CFM as work progresses.

SUMMARY		
No	**Name**	**Action**
1/10	**1.1 Combined Procurement**	This Action is now Closed
1/11	**1.2 Contracted-in support**	Recommend for closure
1/12	**1.3 Hydrographic Survey**	This Action is now Closed
1/13	Crewing	This Action is now Closed
1/14	Crewing	This Action is now Closed
1/15	Seasonality	This Action is now Closed
1/16	Wreck geolocation	This Action is now Closed
1/17	GLA Cruises	This Action is now Closed
1/18	**1.4 Commercial Contracts**	This Action is now Closed
1/19	Communications suite	This Action is now Closed
1/20	Pennant securing	This Action is now Closed
1/21	Stakeholder Interaction	This Action is now Closed
1/22	Hullform	This Action is now Closed
2/1	Winch	This Action is now Closed
2/2	Chain Handling	This Action is now Closed
Please see below for specific details relating to each action.		

No.	Name	Detailed Recommendation	Responsibility	Comments
1/10	**1.5 Combined Procurement**	Progress options for combining purchase of the more expensive commodities (fuel and lube oil) as well as efficiencies in overall procurement staff effort.	IGC10	**See Appendix 1
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** Previously NLB utilised a Scottish Government Framework for the supply of bunker fuel with mixed results. The contract made savings on delivery costs but paid market prices for gas oil. There were issues encountered over the quality of fuel and delays and difficulties in reaching ship destinations. With respect to Lube oils and greases the differing grades and manufacturers specified by equipment providers and the known difficulties with changing these means any single supplier would have to provide all options. Larger fleet operations can get large savings from a single supplier, small if any savings for relatively small orders are likely. Joint procurement or the use of existing government framework contracts are utilised where ever possible and suitable. Examples of joint procurements include charting, weather, buoy moorings, sat comms, helicopter (saving £10m over 7 years) and vessel procurement. Framework contracts include vehicles and IT. Given the extensive joint procurement experience it is the opinion of procurement and the CFM group that there would be negative operational benefits and limited if any savings on a tri GLA framework for fuel and lubes.		
1/11	**1.6 Contracted-in Support**	[redacted]	Braemar – WP4 Chartering	**See Appendix 7
Actions		**Action Closed out for Project – Further work may be required within CFMG** Section 7 of the Braemar report covers “Other providers of AtoNs” where [redacted] were looked at as an option. The report advises that most moorings [redacted] attend are in sheltered waters and they use contracted in tonnage to perform their contractual obligations which in general is with smaller vessels unsuitable for the wide range of GLA work Section 5 gives detail of potential liability issues where ship-owners are unlikely to encompass the risks and responsibilities that the GLA’s have		

1/12	**1.7 Hydrographic Survey**	Deepen the relationship with the MCA Civil Hydrography Programme with a view to bidding for MCA survey work.	Commercial	**See Appendix 2.1 **See Appendix 2.2
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** The MCA Civil Hydrography Programme is commercial let by tender in two to three large segments, all bidders are fully commercial, professional survey organisations with access to multiple dedicated survey vessels and survey teams. The GLA's have neither the vessel availability nor the professional capability in terms of qualified hydrographers to commit to the scale of work involved. The GLA's would only be able to supply a vessel/vessels for specific tasks also requiring a survey team. This would require tri GLA procurement. TH are presently reviewing the requirement for a survey equipment upgrade.		
1/13	**1.8 Crewing**	Continually scrutinise Agency costs to ensure cost effectiveness when compared with FTE	CFM	
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** The GLA's generally use [redacted] .Agency charges vary between [redacted] per person per day on-board the ship on top of a day rate that matches GLA salary. There are low pension charges for agency staff circa [redacted] versus [redacted] for GLA staff. Agencies are used for short term gaps, such as sick leave and crew training. There have been past examples where too many agency staff cause operational challenges with Heli Ops and boat work due to lack of training and certification. Agency costs have remained relatively static for the last five years. In summary Agency provides a cost effective short term staffing solution.		
1/14	**1.9 Crewing**	Review manning levels across the GLA fleet to understand apparent inconsistencies and identify any beneficial cross sharing of ideas	CFM	**See Appendix 3
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** Crew numbers on board GLA ships are generally similar with regards to size of ship and type of operation, for example, Galatea has an extra officer to support the vessel core buoy work activity whereas Pharos has an extra member of deck crew to support working ashore for Heli Ops the vessels primary function. Catering crews are the same numbers, apart from the Granuaile which has one caterer. On other GLA ships due to having cadets, apprentices and lighthouse and project staff it would not be feasible to have only one caterer as agency support would be needed on a regular basis. The Pharos and Galatea also carry an ETO on each shift, Granuaile has an ETO on alternative shifts. The DP2 versus DP1 and the added complexity of these newer vessels means that ETO numbers are unlikely to be changed. In addition a number of ETO hold OOW(E) CoC required on Pharos and Galatea		

		to help comply with safe manning requirements beyond 150nm from shore when required.		
1/15	**1.10 Seasonality**	The option of augmenting staff to enable longer work periods during the summer months should be assessed.	CFM	
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** GLA crews do take advantage of the longer days during the summer months to conduct buoy work, heli-ops and other activities. The vessels are staffed for 24 working of navigational watches but operation duties are limited to 12 hours due hours of rest requirements and CAA flying rules. Working beyond 12 hours regularly would require an uplift in staff both on the bridge & engine room (watches for DP ops) and on deck. Accommodation availability limits the number of staff that can be taken on and therefore the potential for hour's extension. Houlder identified the importance of the experience of GLA staff when conducting operations. Significant numbers of inexperienced seasonal staff could have a detrimental impact on vessel operational safety.		
1/16	**1.11 Wreck geolocation**	Explore the scope and cost of adapting helicopter capabilities to enhance their use in wreck geo-location.	CFM	**See Appendix 4
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** • A search for civilian aircraft mounted systems was conducted. No hydrographic systems appear to be available for aircraft use. • There are many limitation with the helicopter for this type of work including day time flying only and limited weather condition which the helicopter can fly in. Depending on the wreck location there could also be issues with refuelling distances and locations. Any operators Air Operating Certificate (CAA approval) would require to be updated for these operations. • Deployment of wreck marking buoys by helicopter were investigated some years ago for TH by an independent consultant and it was concluded not to be a suitable option. Issues around wreck location and max size and weight of the payload make this option impracticable. .		
1/17	**1.12 GLA Cruises**	Market test interest in conducting cruises on-board GLA vessels (emulating the 'Patricia Voyages')	Commercial	GLA Comments received as indicated below. **See Appendix 5.1 **See Appendix 5.2 **See Appendix 5.3

Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** The option of carrying out a market test for conducting cruises on board GLA vessels in considered non-viable for the following reasons. Supernumerary cabins are required for staff and contractors engaged in project reducing the amount of passenger cabins available. For most NLB projects there is limited space for contractors on board the ship as it currently stands. The nature of GLA statutory work would make it difficult to enable advanced bookings and in the event of advanced bookings there would likely be multiple cancellations also it would reduce the options available for carrying out commercial work. Contract work such as the Met Office and MOD require suitable weather windows where voyages can change at short notice. The single galley on the GLA ships does not have the capacity to cater for an additional dining room on a regular basis. Additional catering and steward staff would need to be hired through an agency as and when required which would be operationally challenging.		
1/18	**1.13 Commercial Contracts**	Ensure that contractual relationships with local operators are appropriately constructed to ensure that GLAs are not exposed to litigation in the event of a sub-contractor suffering an accident while servicing an AtoN.	Legal	25/04/17 – response received from TH Legal which is applicable to all GLA's **See Appendix 6
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** All GLA's use local boats of a voyage charter basis where boats are either certificated by the MCA or DTTAS in Ireland. The vessel operator is responsible for insurances and does not participate in AtoN maintenance. The GLA's Employers and General Liability Insurance collectively covers GLA staff and agents travelling on local boats in performance of their duties and liability to third parties in relation to connected incidents.		
1/19	**1.14 Communications suite**	GLA vessels would benefit from their own standalone vessel maintenance system held on-board (for stores requisitions etc.)	CFM	See notes
Actions		**Action Closed out for Project – Further work may be required within CFMG** All GLA vessels have their own maintenance system on board TH = DANAOS NLB = Storekeeper IL = MX suite		

1/20	**1.15 Pennant securing**	All GLA vessels (and any chartered-in) should use the 'Happy Hooker' to de-risk deck operations.	CFM	See notes
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** All GLA vessels use the "happy hooker" system. Could be provided to any chartered in vessels depending on their required operation.		
1/21	**1.16 Stakeholder Interaction**	GLAs and NMIC should pursue a closer relationship	CFM	See notes
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** • TH submit daily disposition reports for the GLAS to NMIC [redacted] • Any assistance available to GLAs would only be on an opportunity basis and could not be built into GLA vessel disposition plans, nor be relied upon.		
1/22	**1.17 Hullform**	If installed Moon Pools are not used for commercial activities then consideration should be given to installing plating to streamline the hull form	CFM	See notes
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** All GLA vessels with moon pools have utilised them for commercial contracts. Therefore there is no appetite to installing plating at this time.		
2/1	**1.18 Winch**	The selection of the type of winch (rope/chain capable) should be considered from a pan-GLA perspective taking into consideration all likely tasking (including commercial).	CFM	See notes
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** TH undertook assessment of extending current towing winch. Due to the location above the ER, it was considered cost prohibitive to undertake the deck strengthening in this area required for the extended winch as well as the actual cost of the winch. As far as the CFM group are aware there has been no requirement outside of the Met Office contract which require a different type of winch from which the ships have at present.		

2/2	**1.19 Chain handling**	Retrospective installation of a hydraulic chain-stopping system on existing vessels should be considered 4.3.4	CFM	See notes
Actions **Notes on Actions**		**Action Closed out for Project – Further work may be required within CFMG** All vessels except Pharos and Patricia have some form of hydraulic chain stopper. NLV Pharos has a manually operated chain stopper whilst Patricia uses a senhouse slip arrangement. Modifications to provide hydraulic actuation for Pharos are being considered for next dry dock.		

2 Appendices

3 Appendix 1

3.1 Ref 1/10 – Combined Procurement - Colin Brolly (Procurement) - 12/04/17

Ewen,
Further to an email that was forwarded to me from Sharon Wheatley (as NLB are now Chair for the respective IGC Groups) details below:
There are potentially a few difficulties with this requirement – my understanding is that all three Marine Departments currently use different lubes. I would be grateful if you could confirm that this is still the case.
Previously NLB has utilised a Scottish Government Framework [redacted] for the supply of Marine Fuel – this resulted in a lot of concerns over the quality of the fuel being delivered and delays in reaching NLB destinations.
If there is a requirement for a joint tender for the marine Fuel I would recommend utilising an existing Framework that is already available such as the Scottish Government or conducting further research to see if we can be added to other contracts such as SEPA, MOD ….
The GLA on their own would not in my view generate the savings that could potentially be available from an existing Framework. With all frameworks and our own contracts there are the risks to be considered that NLB experienced previously.
Let me know if you wish to discuss further.
Regards Colin.

4 Appendix 2.1

4.1 Ref 1/12 - Hydrographic Survey – MS - 23/03/17

The MCA Civil Hydrography programme is commercially let by tender in 2-3 large segments. All bidders are fully commercial professional hydrographic survey organisations with access to multiple dedicated survey vessels and a full operational survey team. The GLAs have neither the vessel availability nor the professional capability in terms of qualified hydrographers to commit to the scale of work involved.
If the GLAs were to bid it would be as a supplier of vessel of opportunity to support a specific task. This would then require either MCA to nominate and task a CHP contractor to provide a survey team or for the GLA to hire in the services of a hydrography team. The latter would involve GLA Procurement which would effectively make the work non-viable.
Where we do have options is to bid to CHP contractors for ad hoc back-fill work. This includes recovery of tide gauges, etc. which may have to remain on site for a period longer than the survey takes. NLB already has excellent relationships with MCA and CHP contractors and has undertaken such tasks on a number of occasions.

5 Appendix 2.2

5.1 Ref 1/12 - Hydrographic Survey - BS - 19/05/17

TH have been working closely with the MCA during the last twelve months to undertake research as to the requirements for MCA CHP work. THV Alert conducted a trial with the MCA as to potential use of THV Alert for CHP work. A number of recommendations where made regarding the status of our survey equipment. THV Alert's survey equipment has limited maintenance support and is due for replacement. TH is currently reviewing the survey equipment upgrades for THV Alert with a view to replace the existing system during the 2017/18 financial year. Replacing the system would enable THV Alert to meet IHO standards required for any potential CHP work.

6 Appendix 3

GLA	Irish Lights	NLB	NLB	TH	TH	TH	TH
Vessel	Granuaile	Pharos	Pole Star	Galatea	Patricia	Alert	Mair
Rank							
Deck Officers	4	4	4	5	5	3	
Master	1	1	1	1	1		
Chief Officer	1	1	1	1	1	1	
2/O	1	2	2	3	3	2	
3/O	1						
Other Deck Officer	--						
Engineer Officers	2.5	3	2	3	4	1	
Chief Engineer	1	1	1	1	1		
2/E	1	1	1	1	1	1	
3/E	--				1		
4/E	--						
ETO	0.5	1		1	1		
Other	--						
Deck Crew	6	8	6	6	7	2	
Boatswain	1	1	1	1	1		
Ass't Boatswain	1			1	1		
Rating 1	1	1	1	1	1	1	
Rating 2	1	1	1	1	1	1	
Rating 3	1	1	1	1	1		
Rating 4	1	1	1	1	1		
Rating 5	--	1			1		
Rating 6	--	1					
Rating 7	--						
Rating 8	--						
Rating 9	--						
Rating 10	--						
PO Deck Maintainer		1	1				
Engine Crew	1	1	1	1	1		
Rating Engine 1	1	1	1	1	1		
Rating Engine 2	--						
Catering	1	2	2	2	2		
Chief Cook	1	1	1	1	1		
2nd Cook	--						
Steward 1	--	1	1	1	1		
Steward 2	--						
Other	--						
Total	**14.5**	**18**	**15**	**17**	**19**	**6**	**0**

7 Appendix 4

7.1 Ref 1/15 – Wreck Geolocation – PDG – 21/08/17

Ewen

As previously discussed, there are a number of ways that the EC135 helicopter might be deployed to assist NLB vessels in wreck geo-location.

- In a rather basic and old-fashioned way, the helicopter may simply be used as an **aerial observation platform**.
  - Wrecks lying in shallow clear water, particularly when lying on a contracting sandy sea-bed, can be seen directly through the water.
  - Debris from the wreck may be lying awash on the surface of the sea – this is very difficult to detect from a vessel but stands out very well from the air.
  - Wrecks frequently leak fuel and oil which is very visible from the air as a slick.
  - The helicopter radios can be used to detect transmissions from an EPIRB deployed by the wrecked vessel.
  - Observers on the helicopter can take photographs using readily available hand-held cameras thus recording important evidence that may be ephemeral (i.e. it may soon have become waterlogged and sunk).
  - The wreck location can be established by the use of the GPS on board the helicopter, or by radar range/bearing from the support vessel.
  - The speed and range of the helicopter means that the support vessel can cover a very large area quickly – over-the-horizon capability.

- An external camera mount is available for fitment to the helicopter. This enables the **carriage of sophisticated imaging systems** which gather high-resolution data (either stills or video) in both the visual and infra-red parts of the spectrum.
  - The lens fitted to this equipment enable visual detection of small objects at long range – useful for recording and identification of debris from the wreck.
  - Some imaging equipment has special inertial/GPS enhancement which allows the measurement of location and distances within the image to an accuracy of less than 0.5 m. The provides a very powerful tool for planning salvage operations.

- It is possible to mount **other specialist sensors** either inside the cabin or on the outside of the helicopter.
  - Multi-Spectral Imager – this can differentiate very subtle changes in colour and texture of the sea surface and, onshore, is being used (for example) to automatically identify different species of plant, and the presence of water saturated ground. Some development would be required but this might be extended to the identification of very low levels of leakage from the tanks or cargo of the wreck, and so aid location.
  - Magnetic Anomaly Detection (MAD) – this is a very well proven military technology which uses a sensor to detect localised changes in the earth's magnetic field such as those caused by an underwater vessel made out of ferrous metal. The military have used it for detecting submarines and it would therefore be ideal for detecting submerged wrecks.

- Geophysical Survey – electro-magnetic detection equipment (either fitted to or towed beneath the helicopter) is in common use for geological surveys and might be adapted for marine use.

. The helicopter is fitted with sliding doors (which can be opened in flight) and a cargo hook. These could be used to **deploy floating or submerged sensors** from the air. Apparatus is available that enables the **recovery from the sea surface** of some types of floating equipment.
  - Sonobouys – once again, a very well established military technology for detecting submarines. They come is two main categories: passive listening devices which could detect sounds coming from the wreck; and active pingers which look for objects in the water.
  - Other sonar sensors (either floating on the surface or hanging down beneath a surface buoy) could be developed in-house by NLB using their existing skilled personnel. NLB's expertise in the marine environment could be powerfully partnered with PDG's expertise in the air environment
  - Wreck marker buoys could also, in the same way, be deployed from the helicopter.

PDG has a long experience of working with customers to develop innovations in the use of new as well as established technology aboard our helicopters. These innovations need not have any effect on the day-to-day conventional use of the helicopter. We would be very happy to work with NLB towards using existing or readily available assets to diversify NLBs capabilities.

[redacted]
Chief Pilot

8 Appendix 5.1

8.1 Ref 1/17 - GLA Cruises - DW - 15/05/17

I don't believe conducting cruises on GLA vessels would be viable for Irish Lights to offer as a commercial service for the following reasons:

- The nature of our statutory work would make it difficult to commit to a fixed schedule and plan to enable advance bookings
- Additional catering and steward staff would need to be hired and accommodated, reducing the number of available cabins
- Spare capacity is generally used for contract charters which are very important source of income which wouldn't want to jeopardised due to low value cruise commitments

Access to the vessel is not suitable for non-able or unfit persons

9 Appendix 5.2

9.1 Ref 1/17 - GLA Cruises - MS - 23/03/17

While there may be external interest in conducting cruises on GLA vessels it is considered non-viable for NLB to offer this option:

- The nature of the statutory programme of works precludes selling cruise space in advance.
- Supernumerary cabins are required for contractors and staff engaged in projects.
- All cabins are single berths. Not suitable for couples. Cabins would have to be adapted (from which budget?) to be suitable.
- The single galley on Pharos does not have the capacity to cater for an additional dining room on a regular basis.
- Additional catering and steward staff would need to be hired and accommodated, reducing the number of available cabins.
- Spare capacity on the programme is used for vessel charters which utilise the spare cabins and support UK plc, e.g. MOD, NSRS, Met Office, etc. Income from these charters would be put at risk.
- Pharos is used as a helicopter support vessel for operations. There is inherent risk in helicopter operations in relation to untrained passengers.
- Access to the vessel is not suitable for non-able or unfit persons. Stairways are steep and access is generally via the working deck as it is not always possible to deploy the access gangway direct to the supernumerary deck.

10 Appendix 5.3

10.1 Ref 1/17 - GLA Cruises – BS - 19/05/17

TH have investigated the feasibility of carrying out some kind of trial on board Galatea, and consider that the potential impact that this would have on future statutory maintenance programmes make this not viable at this time; plus the points raised by NLB and Irish Lights equally apply to TH.

11 Appendix 6

11.1 Ref 1/18 – Commercial Contracts - Thomas Arculus (Legal) - 25/04/17

Good afternoon Tom
Thank you for your email.
With regard to the contractual position in respect of MV MAIR and the risk of accident whilst servicing an AtoN (re. the Houlder's recommendation regarding review of the potential exposure to litigation arising from an accident whilst servicing an AtoN) it should be noted that the Contractor is required to provide a broad indemnity to TH in respect of liabilities arising from the performance of the Contract, including in addition for liabilities relating to pollution and in respect of claims from third parties. Furthermore the Contractor is required to maintain Marine Liability insurance or an entry in a Protection & Indemnity Association covering crew liability, third party personal injury, and property damage liability (including collision liability) and pollution liability [redacted].

The marine insurance is required to be arranged in the joint names of the Contractor and TH and provides for a specific waiver of the insurer's subrogation rights against TH. [redacted]
Insurance cover is also required under the contract [redacted] in respect of loss or damage to TH property, or property held by TH on behalf of a third party, either on the Vessel or at the Contractor's shore side premises.
[redacted]
In addition to the above, the GLAs' General Liability insurers also note that during the execution of their duties the employees, contractors, agents and servants of the GLAs are required to travel as passengers on third party craft hired for transport to and from, but not limited to, buoys, lighthouses and light vessels and light floats. Insurers also note that these third party craft may also be utilised in connection with work on the aforementioned AtoNs. The insurers have agreed to cover the GLAs' liability to third parties arising from such usage and provide cover to the GLAs to a limit of [redacted] per incident in respect thereof.
Regards
Russell

12 Appendix 7

12.1 Ref 1/11 – Contracted in Support

All information below is directly extracted from the Braemar report

5. SHORT TERM CHARTER MARKET CONSIDERATIONS

5.1 Specific Liability Issues
Notwithstanding the responsibilities of the GLAs as outlined in the various MSAs, there are potentially liability issues to the GLAs in contracting from the GVCM. Operational risks have been outlined in section 4 but there is also a contractual liability borne by the GLAs if a TPV was to not perform to the necessary standards. Following discussions with TH's Risk Manager [redacted] on the 7th August 2017 regarding the GLAs operational track record with regards to incidents, we were advised that the quality of service and the good track record of the GLAs has meant that, historically, both insurance premiums and the insurance deductible have been kept low [redacted] If TPVs were to be chartered, the high probability is that the premium and deductible would go up and, in the event of a major claim resulting from the actions of a TPV, could increase greatly. It is not possible to quantify the risk financially as it would depend on the nature and amount of the claim and has not been tested in practice.

5.2 Short Term Charter Issues
There are several issues to consider in the chartering of a TPV to cover an emergency situation. Of primary importance in chartering a TPV is to ensure that the GLAs are not exposed to any additional risks that would otherwise not apply had their own vessel(s) been used. The GLAs have strict responsibilities determined under the various MSAs and, consequently, the following concerns need to be addressed: • It is unlikely that you would be able to get vessel Owners chartering their vessel to the GLAs to be willing to encompass all the risks and responsibilities that the GLAs are liable for. This is because the contract is, at best, knock for knock – so any damage to a buoy, for example, will not be covered by the TPV Owner. The vessel Owner will also not take any responsibility for putting a buoy in the wrong place. We would therefore suggest that GLA personnel would be required on board to check that all the operations are being performed to GLA standards and that any buoy is correctly re-positioned. This would not be easy to arrange at short notice and especially out of normal office hours.

Section 7 "Other providers"

[redacted] also have commercial contracts to look after moorings for the Royal Navy not only around the coasts of the United Kingdom but also elsewhere in the world including Gibraltar. Most moorings are in sheltered waters and some of the buoy weights are in excess of the buoys used by the GLAs. They also charter vessels in to perform their contractual obligations. All these companies and others besides have these relatively small vessels that can work with Type 3 and Type 4 buoys and some have vessels with DP that would be capable also working with class 2 buoys. With the exception of the [redacted], the other vessels in all the fleets are very weather restricted and could not work in bad weather emergency situations. Vessels could be found that could do maintenance in good weather but their general lack of accommodation and very restricted storage space means they couldn't could not perform the range of duties that the GLA fleet currently undertake.

Work Package 7 – Fleet Structure Report

Phase 1 - Fleet Structure

Fleet Structure Report

GLA Fleet Review – Phase 2

Work Package 7 (WP7) – Fleet Structure Report

Author: Project Management Working Group (PMWG)
Date: 26/01/2018
Document No: 376304

EXECUTIVE SUMMARY

- The objectives of Work Package 7 are:
  - Review report from WP2, WP3, WP4, WP5
  - Evaluate weighting for risk reduction against cost
  - Develop fleet construct proposal
  - Evaluate Commercial balance and reserve capacity following fleet structure experience

- Response Criteria (RRC) is the metric against which preparedness for contingent requirements is set. This methodology is endorsed by both DfT and DTTAS. An independent audit by Price Waterhouse Cooper considered the measure to be entirely appropriate and Houlder endorsed this stating that *'they see no reason that judgements drawn and the timescales proposed for response to contingent requirements in the area identified should not be used as a basis for assessing the risks managed by the GLAs*.'

- WP2 focused upon the Centralised Fleet Planning recommendations contained within the Houlder report. There has been good progress with these recommendations and RRC outcomes and coverage have seen significant improvements because of it. It is however important to note that whilst a theoretical 100% RRC coverage baseline plan is possible with 7 vessels, this assumes that, all 7 vessels are available i.e. there are no unplanned absences and that the vessels can achieve their service speeds in the prevailing conditions. Clearly neither can be guaranteed and this is demonstrated by the actual operational monitored data.

- WP3 tested the Houlder assumption*: 'the ability to work with the charter market to meet contingent requirements'*; it concludes that *'the GVCM cannot be relied on to be able to supply a suitable vessels to deliver the various areas of GLA obligation and responsibility on a spot charter basis on an all year around basis'*

- WP4 ascertained that the 7-vessel structure has a measure of reserve capacity to respond to unforeseen incidents and/or breakdowns while covering risk areas. When possible this capacity is used to undertake third party tasking which contributes ~UK£3 million to offset overall GLA costs. The capacity for commercial work would reduce dramatically with any hull reduction.

- WP5 incorporates the local /zone boat arrangements as an element of a layered fleet, utilised for low level tasking commensurate within their capability. These provide a cost effective supplement to the fleet to meet specific requirements but do not enable a reduction in fleet numbers.

- The fleet outcomes proposed in the Houlder report have been analysed using methodologies endorsed by the 3 GLAs and fleet outcome 1 (Maintain Existing Construct) has been shown to be the only viable outcome from those identified within the Houlder report.

- Analysis of performance and risk indicates that a reduction in risk could be achieved by the addition of an 8th vessel, however the GLAs believe that a pragmatic approach, driven by actual operational experience should be adopted and a 7-vessel structure maintained, supported by additional

mitigation measures, some of which can be delivered sooner, while others should be incorporated into future vessels.

- As individual vessels reach the end of their service lives, the relevant GLA will be able to assess the capability requirement against the prevailing and future challenges and enhance the delivery of statutory compliance by:

    - the use of modern hull and machinery technologies to increase actual speed performance in heavy weather.
    - reducing running and procurement costs with modern standardised equipment.
    - the increased operational availability of younger vessels.
    - further refining coordinated fleet management processes and procedures.
    - matching capabilities where appropriate to the broader Government maritime strategy.

Recommendation.

The recommendation is for a 7-vessel layered fleet of mixed capability, acknowledging the likely continuation of exposed risk in actual conditions, but with additional mitigation measures aimed at closing the risk gap in a cost effective manner. The existing fleet is currently broadly matched to the baseline requirement with no justification for urgent and major change across the fleet as a whole at this time. Vessels should be replaced however in line with this recommendation when considered justifiable by the GLA Operator, submitted through an individual business case to the Department in a timely manner to ensure continuity of cost effective cover at risk levels no higher than identified through the 7 ship model. Business cases will consider all aspects of capability requirement, risk mitigation, identified design considerations and business delivery options.

Document History and Approvals

Document Location

The definitive copy of WP7 Report is held on IManage document management system

Revision History

Document Reference	Date	Summary of Changes
376304v1	05/01/18	First draft
376304v2	09/01/18	Formatting updates
376304v3	31/01/18	PMWG Comment
376304v4	07/02/18	Comments during PMWG18 meeting
376304v5	15/02/2018	Further comment by PMWG members
376304v6	20/02/2018	PB Comment
376304v7	28/03/2018	Approved at Project Board
376304v8	28/03/2018	Approved PDF
376304v9	13/04/2018	Corrected Commercial Income Figures

Reference Documents

Document No.	Document Title
336,037	Fleet Review PID
376,089	Houlder Final Report
350,099	Rg – JSB – Fleet Review Mandate
350,100	Fleet Review submission and Minister's letter
373,055	Fleet Review Phase 2 – WP3 – Braemar Final Report including appendices
344,506	GLA Fleet Review – Phase 2 (489) – WP01 Centralised Monitoring Report 04.08.16
344,510	GLA Fleet Review – Phase 2 (489) – WP02 Memorandum of Understanding
358,119	Fleet Review Phase 2 addressing additional recommendations on risk
377,751	WP4 Phase 2 – WP4 Phase 2 - Commercial Impact and Future Balance
364,361	FR WP2 GLA Co-ordinated Planning 2017-18 Project Board Presentation Slides
30,100	General Lighthouse Authorities – Risk Response Criteria
348,274	GLA Fleet Review – Phase 2(489) WP2 Coordinated Planning Phase 1

Approvals

Name	Date	Signature
PB Chair M. Bullock	28/03/2018	[redacted]

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1 Introduction

On 7th September 2016 the Project Initiation Document (PID) for Phase 2 of the Fleet review process was approved by the project board. This report concludes the work of WP7 and takes into account evidence contained in the reports from WP2 (Coordinated Planning), WP3 (Charter Test and Evaluation), WP4 (Commercial Impact and Future Balance) and WP 5 (Supplementary Solutions Development). This report uses the outputs from the above WPs to present the development of the GLA Fleet Construct Proposal, evaluating risk reduction against cost and evaluating commercial balance and reserve capacity.

1.1 Assessing the degree of risk

The Houlder report stated:-
'In assessing the risk, it is important to understand the event or sequence of events which are considered a risk. Whilst it can be argued that the failure to respond to an incident within the times laid down in the RRC is not, in itself, a risk as the consequence is unclear, the RRC response times have been developed based on the requirement to ensure navigational safety with a view to the potential for an incident or accident at sea. For this reason a failure to respond within the agreed timescales is considered as the metric against which risk is measured.

The shortfall in the overall ability to schedule vessel operations in relation to the impact of operational risk as a result of unplanned circumstances even on a relative basis has a number of consequences.

- *Dynamic risk has to be borne by the affected operations team with no scale or metrics against which to judge acceptability either to the GLA CEO, who bears the ultimate liability risk, or the Department upon whom a late response to an incident which resulted in a knock on incident would doubtless reflect poorly.*
- *Any change to fleet disposition will affect the risk profile but without any pre-agreed scale, the decision to accept the risk lacks transparency and is vested in the operations team. Plainly in the worst case this leads to an increase in a GLA's overall degree of risk which not only is predominantly opaque to higher authorities (CEOs and Ministers), but might actually be at a level that would be considered unacceptable to said authorities'*

Houlder identified that failure to respond within the agreed RRC time scales is the metric against which risk is measured.

This approach though results in a "after the fact analysis" which provides a degree of uncertainty, in the results of the trial, in the coverage of the fleet, and in the consequences of failing to respond to a serious incident.

Therefore as well assessing "after the fact" the GLAs have assessed the risk against the potential failure to meet the RRC.

The Risk Response Criteria measures the ability to respond against service speeds in moderate weather. The Boards have agreed that a level of risk appetite must be reflected against the core 6. 12 and 24 hour requirements and the overall assessment of fleet requirements reflects the appetite together with actual performance achievable throughout the period of consideration.

The RRC was endorsed by DfT and DTTAS and an independent audit was undertaken by Price Waterhouse Cooper who considered it to be an entirely appropriate and independent process. Houlder considered that; '*there was no reason that judgements drawn and the timescales proposed for response to contingent requirements in the areas identified should not be used as a basis for assessing the risks managed by the GLAs*.'

1.2 GLA risk terminology

- **Risk Response Criteria (RRC)** – A baseline requirement as defined in Risk Response Criteria document revised and published 2014.The key points are 6, 12 and 24hour areas 100% of time in moderate conditions where service speed can be achieved
- **Risk Appetite (RA)** - as defined in Paper 'Additional Recommendations on risk' (document number. 358,119) The key points are 6, 12 and 24-hour areas are 95%, 90% and 85% respectively which introduces a risk tolerance in terms of area and time but only accepting one area to be within this tolerance at any given time.
- **Risk Appetite in Actual Conditions (RAAC)** - utilising the basis of the RRC coupled with risk response appetite in terms of tolerance and using the actual operational conditions and 'layered vessel' capabilities experienced on the day gives the GLA boards a more realistic appreciation of the ability to respond

1.3 Risk Appetite

Taking into account the level of risk acceptance identified within the 6, 12 and 24 hour areas have differing minimum acceptable coverage requirements. These are defined as:

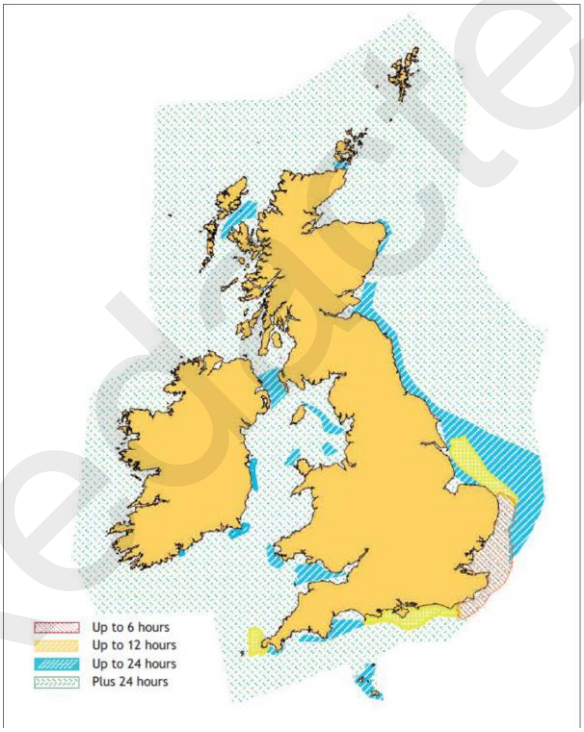
Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24hrs	1@ 15%	2 hrs

*All other areas to be 100% covered both in area and time to respond

1.4 Risk Response Criteria Versus Actual Conditions coverage

The GLAs have 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.
The Risk Response Criteria (RRC) are based upon service speeds in moderate weather conditions and are categorised into 3 areas shown in the figure below:

- The Red area (south east England) indicates the requirement for a response within 6 hours
- The three yellow areas (approaches to the Humber, Solent and Lands' End) indicate up to 12 hours
- Darker blue hashed areas up to 24 hours
- The remaining pale blue mottled area indicates that a response in excess of 24 hours would be acceptable



Risk Response Criteria (RRC) Areas

The RRC document states that *'time of response 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'*.

In reference to this definition Houlder stated: 'Rapid response to a wreck could however be required in any sea condition, with higher likelihood that it will be in poor weather.'

From RRC document: '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 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 distribution was analysed but proved inconclusive regarding significant areas of increased frequency.

Based on these risk assessments time of response was allocated:'

Area of Interest No.	Local Description	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
1	North Channel	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	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/ 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	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	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	Medium	Medium	270	99/1	High	2	3	6	12	Complicated bathymetry and routes throughout. Significant renewable developments.
7	Cromer	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	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	461	89/ 11	High	3	3	9	6	14% of vessels > 9m draught. Significant proportion of passenger and tanker vessels.
10	Dover Approaches	High		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	Medium	High	281	71/ 29	Medium	3	2	6	12	Traffic is less congested than area 9/ 10, but shallow depth increases vessel/ wreck allision. High leisure component.

Area of Interest No.	Local Description	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
12	Western Solent	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	Low	Medium	Medium	125	49/ 51	Low	2	2	4	24	Deep draught vessels in Torbay increases risk.
14	Lizard	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	High	High	Medium	110	65/ 35	Low	3	2	6	12	Topography and TSS increase risk.
16	Milford Haven Approach	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	Medium	Low	Medium	83	83/ 17	Low	3	1	3	24	Crossing traffic from Holyhead. East/West conflict in North.
18	Morcambe Bay	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	194	80/ 20	Medium	3	1	3	24	Buryford Bank is port limit. 24 hour in Dublin Bay and inside banks from Codling.
20	Tuskar	Medium	Medium	Medium	150	73/ 27	Medium	3	1	3	24	South Shear increased risk. Deep water TSS. 24 Hours only west of Tusker.
21	Cork Approaches	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	44	84/ 16	Low	2	1	2	24+	Harbour limit is Loop Head. Low risk beyond.
23	Galway Bay	Low	Low	Medium	45	58/ 42	Low	2	1	2	24+	Heavy seasonal passenger traffic.

The period of rigorous testing undertaken throughout the project trial phase from 1st April 2017 through 31st December 2017 has allowed us to make a better informed assessment of our ability to respond in live conditions

The trial logged response to the RRC on an incident by incident basis using the actual speed that the vessel could achieve on the day in question which is measured from the tasking of a vessel to the arrival at task destination. This provides a real life measurement of the fleets' ability to respond based on actual speeds and operational conditions achievable on the day as reported by the vessel.

Therefore there can be occasions when the service speed does not breach the RRC, the reality of actual weather, sea conditions (with consequent reduced speeds) and vessel capability differences can result in gaps opening up within the coverage leading to potential unacceptable situations.

2 Work Package (WP2)

2.1 Work Package 2 (WP2) Methodology

WP2 was split into 4 distinct work phases to deliver:

2.1.1 Phase 0 - Project MOU

The Project MOU underpinned the project planning and gave structure and guidance to the planning team in creating the plans for the trial period of the project and ensuring that key data was captured to allow assessment of criteria such as Risk Response.

2.1.2 Phase 1 - Establish Tri-GLA framework, organisation, procedures and initial planning tool

Houlder recommended the *'establishment of a team to undertake the scheduling of the GLA fleet to deliver the statutory requirements of the three organisations'*. This team would deploy the fleet in accordance with an agreed set of guidelines (Project Memorandum of Understanding and GLA Fleet Review – Phase 2(489) WP2 Coordinated Planning Phase 1) designed to meet the statutory outputs while minimising the risk of failure to respond to any contingent issue within the timescale presented in the Risk Response Criteria (RRC).

In response to the Houlder recommendation a GLA team was set up using the basis of the existing Coordinated Fleet Management (CFM) structure consisting of the marine managers from the three GLAs and a central fleet planner based in Harwich. Taking the operational requirements from the 3 GLAs and overlaying these operational tasks onto a single coordinated plan that allows for greater flexibility and coordination than in the past. This has allowed key data to be collected over the trial period to understand the true operational requirement for the fleet in both RRC and operational tasking.

2.1.3 Phase 2 - Establish Individual GLA operational requirements and develop coordinated fleet plan

In the development of the baseline plan the team have focused on delivering against the RRC along with completion of routine maintenance and project support. The plan and reporting requirement is made available to the GLA planners and vessels through utilising standard software calendars tailored to provide a cost effective solution that provides live data to enable them to respond to planned work and outage / risk response.

2.1.4 Phase 3 – Evaluate, Refine centralise planning model, build coordinated plan

Using the basis of the Risk Response Criteria, the planning team monitored the vessel disposition during the project trial against RRC coverage identifying any changes to the baseline plan and the impact of those changes against the baseline plan. Deviations to the baseline plan were expected as events occur and the

planning team used the output from WP2 Phase 1 – 'Coordinated Planning' report (348274) to evaluate the impact.

Data was collected on a daily basis from which an ongoing analysis was maintained through the creation of a daily dashboard. The dashboard provided an easy method for interpreting the data and acting upon real time data which allowed informed decisions to be made for timely adjustment to fleet disposition'.

An incident was and continues to be recorded for every event that results in a deviation from the baseline plan which results in a compromise to the Risk Appetite in Actual Conditions (RAAC). Events that do not compromise RAAC coverage are not recorded as an incident. From this data two days per month over a period of 9 months have been extracted to allow in depth analysis. The effect of varying fleet numbers on these days was examined to give the effect on the risk coverage. Four of these days plus two incident free days were then selected for further analysis.

The data for these days was then mapped against the baseline plan, the actual activity of the day against baseline planning speed and also against actual reported speed were modelled. This enabled a demonstration against risk coverage with varying fleet numbers.

This methodology was presented to and accepted by the project Reference Group on the 26th January 2018.

2.2 Work Package 2 (WP2) Analysis

2.2.1 Baseline Plan

The baseline plan for operational requirements was approved on the 23rd March and went live on the 1st April 2017, this included:

- Risk response coverage
- Planned AtoN maintenance requirement
- Project support
- Helicopter operations
- Planned vessel maintenance
- Survey and AtoN inspection requirements

The plan created allowed for 100% coverage of the RRC and completion of the operational tasking using the existing 7-vessel fleet.

2.2.2 Daily Dashboard

The daily dashboard allows for an ongoing record of when it has become necessary to change the baseline plan and record the consequent impact of the ability to respond.

2.2.3 Changes to Baseline

The baseline plan could become compromised by one or more of the following reasons:

- Response to wreck or new danger
- AtoN outage
- Unplanned vessel breakdown
- Significant adverse weather conditions
- Environmental constraints
- Impact of unplanned helicopter use
- Consequential reschedule of planned work
- Urgent requirement for Hydrographic survey
- Urgent in year changes to AtoN requirements
- Unexpected changes to user requirements
- Impact of supplier product or delivery failure

The baseline plan has changed by over 61% over the trial period from 1st April 2017 to 31st December 2017.

2.2.4 RRC covered / planned work completed

Prior to implementing the Coordinated Fleet Planning recommended in the Houlder Report, the coverage of the 12-hour RRC area was on average 17%. However, with the introduction of Coordinated Fleet Planning, during the trial period this has improved to 93% using RAAC. This was achieved by taking a holistic view across all GLA areas and by giving primacy to Risk Response.

Whilst embracing the Houlder model of coordinated positioning, in reality once the baseline plan changes it can be impractical for the other vessels in the fleet to move in a synchronised way. The baseline plan, taking risk response as primacy, aims to give full coverage to the risk response areas throughout the year whilst completing all the planned work. However it has been seen within the trial period that the following factors all have had an impact on the baseline plan, reducing the likelihood of being able to deliver the required risk response and completion of planned work.

- Supply issues
- Planned downtime
- Unplanned downtime - Failures etc.
- Weather downtime
- Environmental windows and constraints
- Limitations of capabilities in some vessels
- Aids to Navigation Outage
- Helicopter availability
- Dock Bookings
- Committed commercial work

The coordinated plan trial has demonstrated that the knock on effect of the above events make it impractical to constantly move vessels away from the planned work.

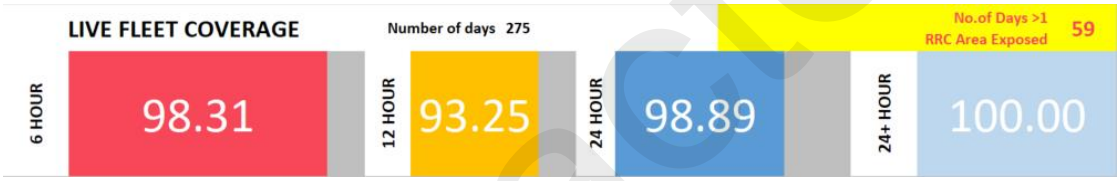
2.2.5 Seven Vessel Dashboard Analysis

Assessing actual operating conditions on a daily basis (actual vessel disposition reports), the resulting average risk response coverage following the changes and events throughout the trial period was extracted from the daily dashboard measured against the Risk Appetite in Actual Conditions (RAAC).

The average risk response coverage over the trial period as collected on 31st December 2017 can be measured using the two following metric's:.

1. the number of tasked days at 275 days (reporting period) together with the number of times within those tasked days that more than 1 risk response area is exposed
2. The average figures given show the performance from the 7-vessel fleet as a percentage coverage for the trial period for the collected 6, 12 and 24hour period.

However as with all averages, it does not show significantly poorer performance in individual areas on specific days which includes occasions when the baseline Risk Response Criteria (RRC) is compromised. To understand the significant effect this has on the ability for the GLAs to respond, further analysis of each individual event is required on a case-by-case basis and presented later within this section.

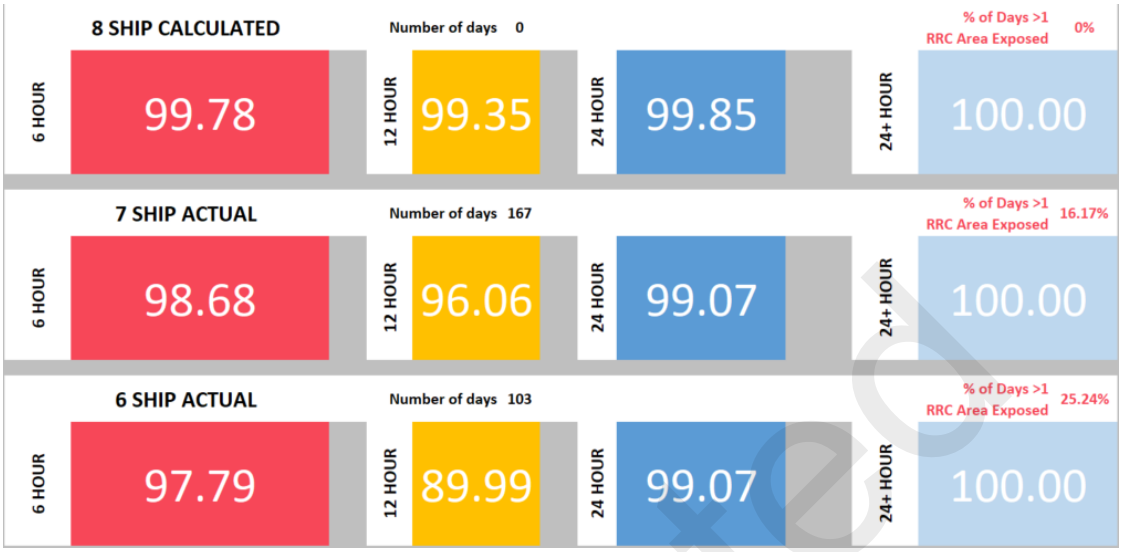


During the reporting period within individual areas there were:

- 132 days when the risk appetite in actual conditions was compromised
- 59 days with more than 1 risk area exposed
- 36 days when 1 or more areas have 0% coverage

2.2.6 Vessel Numbers Dashboard Analysis

To demonstrate the effect of vessel numbers on the overall average coverage. Analysis was conducted to determine the effects of a 6, 7 and 8 vessel fleet.
This is detailed within the table below.



The impact of having a 6-vessel fleet on the 6, 12 and 24-hour areas is that the overall average fails to meet the risk appetite threshold in actual conditions (RAAC) and that more than one risk area is exposed 25% of the time. Similarly the impact of having a 7-vessel fleet is that more than one risk area is exposed 17% of the time. This analysis being built on actual data when during the trial period only 6 or 7 vessels have been available.

This figure also shows a calculated average based upon an 8-vessel fleet, which enables the GLAs to fully meet the Risk Appetite in Actual Conditions (RAAC) and is deemed the optimum fleet construct.

2.2.7 Detailed analysis of selected days

The following analysis gives an extract from the detailed series of events that describe actual vessel disposition with and without incidents (Full detail of the scenario and vessel disposition can be found in (Annex 1 – Detail Analysis Examples).

The Risk Response Criteria (RRC) areas of 6, 12 and 24 hours and the tolerance set upon these are built on achieving Service speed of vessels in moderate conditions. The analysis below shows the impact of service speed and actual speed on the day to the Risk Coverage.

13th April 2017

Fleet No.	Coverage with 7 Vessels		Coverage with 6 Vessels	
Actual Plan, Service Speed	Portland to Beachy 12 Hrs RRC	*100% coverage*	Portland to Beachy 12 Hrs RRC	*79% coverage*
	Cromer to Dover 6 Hrs RRC	*100% coverage*	S. North Sea to Tay 24 Hrs RRC	*95% coverage*
Actual Speed	Portland to Beachy 12 Hrs RRC	*36% coverage*	Portland to Beachy 12 Hrs RRC	*36% coverage*
	Cromer to Dover 6 Hrs RRC	*92% coverage*	Cromer to Dover 6 Hrs RRC	*86% coverage*
	Humber to Cromer 12 Hrs RRC	*95% coverage*	Humber to Cromer 12 Hrs RRC	*64% coverage*
	S. North Sea to Tay 24 Hrs RRC	*89% coverage*	S. North Sea to Tay 24 Hrs RRC	*87% coverage*
Comment	On this day with 7 vessels coverage could be maintained at a theoretical service speed, however given the actual conditions of the day and the resulting speeds achievable as reported by the vessels the ability to respond was significantly compromised. If only 6 vessels were available, analysis shows that we would fail to meet the agreed risk appetite threshold on two counts at service speed. At actual speeds achievable on the day the resulting response is further compromised.			

2nd June 2017

Fleet No.	Coverage with 7 Vessels		Coverage with 6 Vessels	
Actual Plan, Service Speed	All RRC Areas	*100% Coverage*	Land's End 12 Hrs RRC Area	*44% Coverage*
Actual Speed	All RRC Areas	*100% Coverage*	Land's End 12 Hrs RRC Area	*44% Coverage*
Comment	There were no incidents on this day; with 7 vessels coverage in each individual area was achieved on the Actual speeds on the day. However if only 6 vessels were available, analysis shows that there would potentially have been some exposure in the Land's End 12 Hrs RRC area even at full Service speeds.			

Braemar reported that during the 6th and 7th June 2017 an opportunity arose to gain support from and to test the short term charter market. Braemar approached 100+ charter companies to support vessel operations off the east coast. Of the 100+ companies contacted only 6 offers were received and of the 6 offers no vessels were technically and economically suitable to undertake the role.

6th July 2017

Fleet No.	Coverage with 7 Vessels		Coverage with 6 Vessels	
Actual Plan, Service Speed	Cromer to Dover 6 Hrs RRC	*95% Coverage*	Cromer to Dover 6 Hrs RRC	*95% Coverage*
	Portland to Beachy 12 Hrs RRC	*90% Coverage*	Portland to Beachy 12 Hrs RRC	*90% Coverage*
	Humber to Cromer 12 Hrs RRC	*100% Coverage*	Humber to Cromer 12 Hrs RRC	*100% Coverage*
	S. North Sea to R. Tay 24 Hrs RRC	*100% coverage*	S. North Sea to R. Tay 24 Hrs RRC	*100% coverage*
Actual Speed	Cromer to Dover 6 Hrs RRC	*0% Coverage*	Cromer to Dover 6 Hrs RRC	*0% Coverage*
	Portland to Beachy 12 Hrs RRC	*0% Coverage*	Portland to Beachy 12 Hrs RRC	*0% Coverage*
	Humber to Cromer 12 Hrs RRC	*34% Coverage*	Humber to Cromer 12 Hrs RRC	*0% Coverage*
	S. North Sea to R. Tay 24 Hrs RRC	*93% coverage*	S. North Sea to R. Tay 24 Hrs RRC	*0% Coverage*
Comment	On this day with 7 vessels coverage in each individual area was achieved however two RRC areas were effected thus the risk appetite threshold was compromised even at service speeds. Given the events and actual conditions of the day and the resulting speeds achievable as reported by the vessels the level of risk was further exposed across four areas, two area having no coverage. If only 6 vessels were available, analysis shows that although at service speeds no further deterioration was found, following the events and actual conditions on the day this showed that risk was further exposed with zero coverage in four areas.			

25th Sept 2017

Fleet No.	Coverage with 7 Vessels		Coverage with 6 Vessels	
Actual Plan, Service Speed	Land's End 12 Hrs RRC	*67 % Coverage*	Land's End 12 Hrs RRC	*54 % Coverage*
Actual Speed	Land's End 12 Hrs RRC	*67 % Coverage*	Land's End 12 Hrs RRC	*54 % Coverage*
Comment	On this day, Galatea was diverted east to attend a buoy outage. This left Granuaile and MV Mair providing partial coverage of the Land's End Area. Following the events and actual conditions on the day and due to the distance of both vessels from Land's End, the area was exposed, the level of exposure increasing for a six vessel fleet.			

8th October 2017

Fleet No.	Coverage with 7 Vessels		Coverage with 6 Vessels	
Actual plan, Service speed	All RRC Areas	*100% Coverage*	Liverpool Bay 24 Hrs RRC	*21% Coverage*
			Morecambe Bay 24 Hrs RRC	*98% Coverage*
			Dublin Bay & East Irish Coast 24 Hrs RRC	*85% Coverage*
Actual Speed	All RRC Areas	*100% Coverage*	Holyhead Bay	*0 % Coverage*
			Liverpool Bay	*0 % Coverage*
			Morecambe Bay	*18 % Coverage*
			Dublin Bay & East Irish Coast 24 Hrs RRC	*39 % Coverage*
Comment	There were no incidents on this day; with 7 vessels coverage in each individual area was achieved on the Actual speeds on the day. However if only 6 vessels were available, analysis shows that there would potentially have been some exposure in the Irish Sea 24hour and 12 hour RRC area even at full Service speeds.			

10th December 2017

Fleet No.	Coverage 7 Vessels		Coverage 6 Vessels	
Actual Plan, Service Speed	Portland to Beachy 12 Hrs RRC	*87 % Coverage*	Portland to Beachy 12 Hrs RRC	*87 % Coverage*
Actual Speed	Land's End 12 Hrs RRC	*0% Coverage*	Land's End 12 Hrs RRC	*0% Coverage*
	Portland to Beachy 12 Hrs RRC	*60% Coverage*	Portland to Beachy 12 Hrs RRC	*60% Coverage*
	Cromer to Dover 6 Hrs RRC	*99% Coverage*	Cromer to Dover 6 Hrs RRC	*99% Coverage*
Comment	With THV Patricia heading for shelter, THV Galatea's speed reduced due to the poor weather this created exposure on the South Coast even at normal service speeds. However given the actual conditions and speeds achievable on the day the level of risk was further exposed across three areas, Land's End area having no coverage. Although there was no demonstrable difference between the 7 and 6 ship scenarios, the East Coast 24 Hrs RRC area as far north as Aberdeen is only being covered by THV Alert which would have had to abandon the 6hr area and is therefore unacceptable.			

2.3 Key Achievements

- The establishment of planning team processes and procedures
- Project Memorandum of Understanding (MoU) agreed
- The creation of a baseline plan optimised for Risk Response Coverage gave an apparent 100% cover whilst planning for all routine operational tasking to be completed with a 7-vessel fleet.
- During the period of the trial, the overall average risk coverage has improved measured against RAAC, most notably within the 12-hour area from 17% coverage pre-trial to 93% as of 31st December 2017 due to improvements within the overall fleet planning process and the primacy given to the Risk Response.

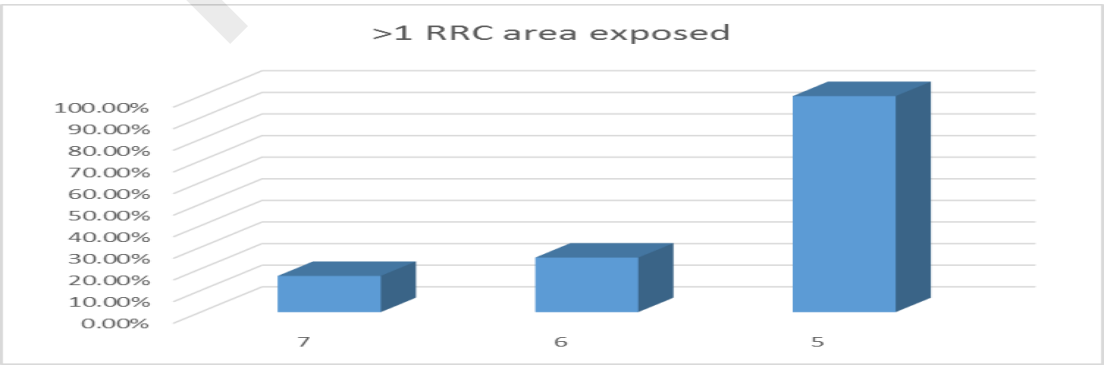
% risk covered	6 Hour	12 Hour	24 Hour
Before Trial	94.41	17.76	80.92
Thresholds	95.00	90.00	85.00
Following Trial	98.31	93.25	98.89

2.4 Work Package 2 (WP2) Conclusion

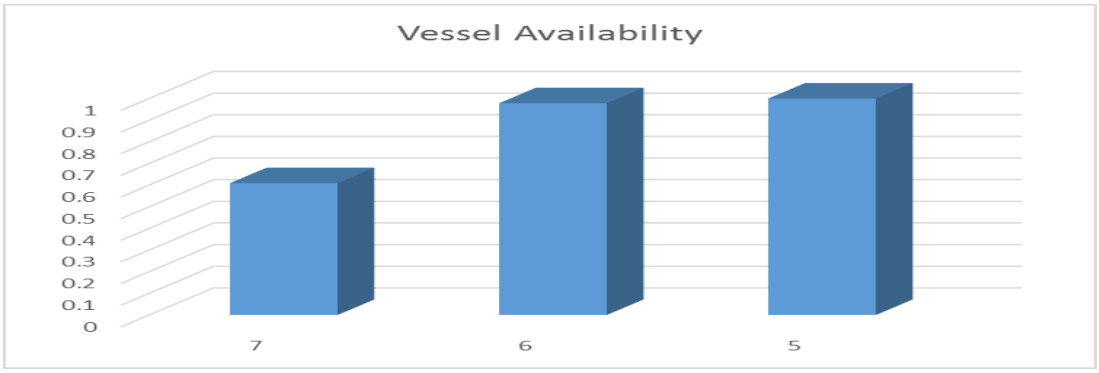
The testing has shown that the risk appetite must be based on actual conditions encountered. The baseline plan shows that a 7-vessel fleet covers the baseline Risk Response Criteria (RRC) and organisational tasking. However, this is based on achieving service speed and meeting a single incident response. As a consequence of necessary baseline changes the fleet is no longer optimally positioned despite the best efforts of prioritisation. These changes and the varying capabilities of a layered fleet result in unacceptable risk exposure. Analysis of data based on actual conditions demonstrates that in reality there are risks that are not apparent in a baseline plan. The trial period analysis shows that;

- 7 vessels is not always sufficient,
- 6 vessels significantly increases the risk and
- 8 vessels give the overall optimum coverage measured against RAAC.

One view of expressing the scale of the level of exposure is by considering the percentage time that more than one risk area is exposed against the number of vessels available. In this case 7 vessels shows that more than 1 area is exposed 16.77% of the time, 6 hulls gives a figure of 25.24% and 5 hulls 100%. On all these occasions the fleet is failing to meet the GLA Risk Response Appetite in Actual Conditions (RAAC).



Whilst operating a 7-vessel fleet there will always be occasions when the fleet is operating with fewer vessels. During this period it can be seen that 7 vessels were only available for 60% of the time.



*Based on the 9 month trial period of live data – docking will vary year to year. It could be assummed that unplanned maintenance and breakdowns will increase with the age of the fleet.

3 Work Package 3 (WP3)

3.1 Work Package 3 (WP3) Methodology

The project set out to test the recommendations of the earlier Houlder report that among other things proposed improved coordinated fleet planning and that short term / spot market charter vessels could supplement a reduced core fleet.

3.2 Work Package 3 (WP3) Analysis

WP3 engaged a technical expert to test the assumption that the short term / charter market can be relied on to support a reduced core fleet. An expert analysis of the short term / spot charter market was undertaken by Braemar ACM Shipbroking Ltd. who provided an authoritative report on the short term / spot charter market

The Braemar report has been received and the key conclusions are:

After fully considering the duties required of vessels working for the GLAs we have concluded that:

- *The GLA vessels are designed and built to carry out a multitude of tasks giving great flexibility with all the vessels able to carry out at least two out of handling Type 1 buoys in pods, Helicopter operations, have requisite sea keeping, having experience of and being capable of wreck surveying and marking all of which are necessary to deliver the various areas of GLA responsibility.*

- *There is a currently a lack of suitable vessels from the GVCM able to perform the duties above especially considering the need to work in bad weather.*

- *The experience of the crews in handling the buoys, their specialised knowledge of the maintenance of the electronics as well as the Masters and crew's knowledge of local conditions is not something that can be delivered on a TPV from the GVCM.*

- *There are considerable commercial risks of relying on the GVCM for a short term / spot market charter for a vessel capable of performing to GLA standards.*

- *There is a potential legal liability, insurance and increased premium and deductible issues with TPV Owners unfamiliar with GLA risks and operational procedures.*
- *Two recent market enquiries for a vessel from the GVCM did not produce a suitable vessel that could have worked within an acceptable time frame albeit for different reasons.*

3.3 Work Package 3 (WP3) Conclusion

From Braemar report:
'Recognising the above, the GVCM cannot be relied on to be able to supply a suitable vessel to deliver the various areas of GLA obligation and responsibility on a spot charter basis on an all year around basis.'

Given this conclusion from Braemar the planned 2nd phase of WP3; 'to test the market' was not carried out in line with the recommendation from Braemar below:

'The potential second part of the study involved potentially carrying out testing of the GVCM to be able to provide suitable vessels capable of carrying out the GLAs operations. Given the findings of this report, we do not believe that this exercise would produce suitable vessels and therefore we do not recommend proceeding with this second phase as it is very unlikely to produce satisfactory results.'

The conclusion presented by this work package was then used to re-assess the Houlder recommended fleet construct and is covered later within this report.

4 Work Package 4 (WP4) analysis

4.1 Work Package 4 (WP4) Methodology

WP4 was split into two phases:
Phase 1 looked at reviewing the current commercial commitments whilst Phase 2 was designed to look at the commercial impact and future balance impacted by new fleet constructs, identifying any reserve capacity whilst delivering optimum VFM.

4.2 Work Package 4 (WP4) Analysis

The existing seven vessel fleet configuration ensures that the current levels of commercial activity are sustainable. There may be scope for a modicum of growth although this will continue to be constrained by RRC and market forces. This assumes full GLA control and management of all vessels.

Any move to a 6-vessel fleet would necessitate a withdrawal from all non-buoy related work. The loss to the GLF would be in the region of £2.4 million per annum averaged over period 2014-2018 (NLB - £873k, Trinity House - £677k, Irish Lights - £849k). In addition to the financial loss there would be a wider impact on our Government partners and their ability to conduct their marine activities.

A five vessel fleet would effectively cause the cessation of all third party commercial work involving GLA vessels. There would be a loss of income to the GLF equivalent to £ 3.6 million per year.

4.3 Work Package 4 (WP4) Conclusion

The prime purpose of having a measured modicum of spare capacity in the GLA fleet is to allow flexibility in response to unplanned eventualities. The ability to use this spare capacity to generate third party income supports the General Lighthouse Fund and ensure each vessel provides maximum value for money in its operational capacity.

The current seven vessel model for the GLA fleet permits a certain limited level of reserve capacity which supports the ability to generate third party income while not compromising statutory work or RRC.

In his direction to the JSB the Minister stated that ‘The fleet should be of the size and composition required to enable the GLA’s to meet their statutory duties and liabilities, and that while any reserve capacity should be utilised to earn commercial income this is not the principle purpose for the fleet’.

Taking this approach the recommended composition of the fleet is based purely around statutory requirements. Given the conclusion to maintain the 7-vessel fleet it can be reliably anticipated that subject to market conditions the commercial income can be forecast at current levels.

5 Work Package 5 (WP5)

5.1 Work Package 5 (WP5) Methodology

The project set out to consider options for supplementary vessel solutions in 3 phases: Tri GLA zone/local boat arrangements; the results of trial chartering of vessels on the spot market and any alternative vessel funding and delivery mechanisms.

5.2 Work Package 5 (WP5) Analysis

In **phase 1**, a tri GLA zone boat register was created by the coordinated planning group. This live document is an up to date record of all GLA contracted or approved zone/local boats, which forms the first layer of the tri GLA response capability. The project recorded and reported vessel use in WP2 data.

In **phase 2** it was determined that no further testing was appropriate following the recommendation within the Braemar report.

In **phase 3**, the Project Board determined that alternative vessel funding and delivery mechanisms should be considered as business solutions, separate to the statement of vessel requirement and hence will be addressed within any future vessel business case. Options available include:-

- Time charter (hire of a crewed vessel) or other suitable contract in of suitable vessel or vessels to carry out tasking under GLA instruction. NB this is likely to be subject to TUPE rules requiring the vessel operator to take on GLA staff at current pay and pension rates.
- Bare boat charter (hire of a vessel without a crew) of suitable vessel or vessels to be operated as per an owned vessel by the GLAs
- Purchase used vessel and convert.
- Purchase a suitable new vessel. NB. Funding options to be considered within the Business Case subject to Government rules

5.3 Work Package 5 (WP5) Conclusion – Local / Zone boats

The three General Lighthouse Authorities, The Northern Lighthouse Board (NLB), The Commissioners of Irish Lights (IL), and Trinity House (TH) each supplement their respective in-house AtoN tender fleets by making use of a network of known local contract boat services compliant with the MCAs workboat code or IRCG equivalent. Each organisation has independently produced its own directory of Local Boat Services. Three documents have been produced that make up a Tri-GLA directory.
All three GLAs use their local contracted boat fleet for the transfer of personnel to and from offshore lighthouse stations. This can be for pre-planned routine maintenance visits or for outage intervention. These vessels are not exclusive to the GLAs and their availability is subject to contracting around any prior commitments.
Local boats are at times used to attend AtoN outages while in addition TH has the road-transportable RIB operated under the West Coast Launch contract, also proving survey capability for rivers and estuaries when conditions permit.
These vessels are operated by trusted crews with good local knowledge providing a cost effective supplement to the core fleet when the circumstances permit recognising that these are small craft and operations are highly weather dependant.

Across the GLAs the arrangements for local boats include contracts and informal arrangements on a short term / spot charter basis. Checks on certification and compliance are conducted across the GLAs.

Houlder assessed that the core GLA fleet could be supplemented by commercial arrangements that would significantly enhance the ability to respond to contingent requirements while reducing overall fleet cost and risk.

Example of Local / Zone boat use during Nab Tower Modernisation

During the trial period the zone boats have been used to good effect and have supplemented the core fleet by GLA=186, TH=92, IL=33, NLB=63 occasions and have made an important contribution to the layered fleet model ensuring the task is matched to the most appropriate vessel and thereby providing the most cost effective solution.

6 Analysis of Houlder Options

The fleet construct recommended by the Houlder report is set out in option 2 from Houlder's table 10 below.

	Do Nothing	Maintain Existing Construct	Minimise Fleet Spend		Cautious	
Fleet Outcome	-	1	2	3 A & B	4	~~5~~
MFTs	4	4	3	3	3	~~3~~
MANTs	1	1	1	1	2	1
Charter/ SANTs	2	2	1	2	1	1
Main Features	Fleet construct and management remains unchanged	Fleet numbers unchanged Patricia replaced in 2020/21	Early disposal Patricia Sell Alert once broker option provided (by end 2017)	Early disposal Patricia Retain Alert **or** sell Alert and replace with time-charter	Early Sell Alert Patricia replaced in 2020/21	Early Sell Alert Dispose of Patricia by end 2018
Benefits	No new vessel procurement	Greatest risk reduction	Lowest fleet spend	Greater RRC area coverage	Greater Type 2 capability	Risk of change mitigated
Issues to address	High risk of additional cost or breakdown of Patricia	High CAPEX for replacement vessel	Testing commercial support viability	Testing commercial support viability	High CAPEX for replacement vessel	Testing commercial support viability
10 Year Fleet Spend	£186.3m	£196.9m	£142.0m	£153.6m	£176.1m	£147.5m
% Saving from Fleet Outcome 1	5.4%	-	27.90%	22.00%	10.50%	25.10%
Avg. responses outside RRC pa	1.78	0.23	0.67	0.42	0.44	0.67
% change from current situation	-	-86.70%	-62.20%	-76.30%	-75.10%	-62.20%

Table 10 from Houlder's report of potential outcomes and fleet constructs

Houlder recommended the thorough testing of the underlying assumption that the short term / spot charter market can be relied on to support operations as identified in the 'Issues to address' row within the table 10 above. WP3 set to test this assumption by contracting a Technical Specialist.
The Braemar Report and deliverable from WP3 that was submitted to and agreed by the Fleet Review Phase 2 Project Board concluded that:

'The General Vessel Charter Market (GVCM) cannot be relied upon to supply suitable vessels to deliver the various areas of GLA obligation and responsibility on a short term / spot charter basis on an all year around basis'.

Therefore based on this new information from WP3 of the Fleet Review Phase 2 project the Houlder options can be re-appraised:

6.1 'Fleet Outcome' 2, 3, 5 (Not feasible)

The Houlder table 10 (shown below) can now be modified to remove the options that rely on the GVCM supplying vessels to support the GLA fleet.

	Do Nothing	Maintain Existing Construct	Minimise Fleet Spend		Cautious	
Fleet Outcome	-	1	~~2~~	~~3 A & B~~	4	~~5~~
MFTs	4	4	~~3~~	~~3~~	3	~~3~~
MANTs	1	1	~~1~~	~~1~~	2	~~1~~
Charter/ SANTs	2	2	~~1~~	~~2~~	1	~~1~~
Main Features	Fleet construct and management remains unchanged	Fleet numbers unchanged Patricia replaced in 2020/21	~~Early disposal Patricia~~ ~~Sell Alert once broker option provided (by end 2017)~~	~~Retain Alert or sell Alert and replace with time-charter~~	~~Early Sell Alert~~ Patricia replaced in 2020/21	~~Dispose of Patricia by end 2018~~
Benefits	No new vessel procurement	Greatest risk reduction	~~Lowest fleet spend~~	~~Greater RRC area coverage~~	Greater Type 2 capability	~~Risk of change mitigated~~
Issues to address	High risk of additional cost or breakdown of Patricia	High CAPEX for replacement vessel	~~Testing commercial support viability~~	~~Testing commercial support viability~~	High CAPEX for replacement vessel	~~Testing commercial support viability~~
10 Year Fleet Spend	£186.3m	£196.9m	~~£142.0m~~	~~£153.6m~~	£176.1m	~~£147.5m~~
% Saving from Fleet Outcome 1	5.4%	-	~~27.90%~~	~~22.00%~~	10.50%	~~25.10%~~
Avg. responses outside RRC pa	1.78	0.23	~~0.67~~	~~0.42~~	0.44	~~0.67~~
% charter from current situation	-	-86.70%	~~-62.20%~~	~~-76.30%~~	-75.10%	~~-62.20%~~

Houlder Table 10 modified as a result of Braemar report WP 3 output

Reference now can be made to the Houlder resilience table 9 below that can now be modified as a result of the information gained from the Braemar report.

As stated by Houlder: '*In order to safeguard the provision of AtoN there must be inherent resilience against unforeseen events such as loss of a vessel. Table 9 below outlines some examples of how this might be provided from this layered approach'*

Houlder Table 9 below shows the table modified to remove the option of short term / spot charter market. As can be seen from the Houlder table this now exposes the GLA's to significant risk if the mitigation cannot be relied upon.

Issue	Consequence	Houlder Mitigation	Alternative Mitigation
Loss of Type 1 capable vessel	Potentially unable to achieve planned maintenance of Type 1 buoys or effectively respond to Type 1 causalities	~~Go to charter market to source a suitable helicopter platform thereby freeing Pharos to perform Type 1 buoy work~~	Resilience of type one capability within the GLA fleet
Loss of helicopter capable vessel	Unable to support required helicopter operations for lighthouse replenishment and project engineering tasks	~~Go to charter market to source a suitable helicopter platform~~ or use one of the remaining helicopter capable vessels in the fleet as a short term backfill	Resilience of Helicopter platform availability within the GLA fleet
Loss of Type 2 capable vessel	Unable to achieve planned maintenance of Type 2 buoys	Go to temporary extended operations with core fleet or ~~seek short term charter for vessel able to handle Type 2 buoys~~	Resilience of type 2 capable vessels within the GLA fleet
Unforeseen operational requirements or incidents that require departure from routine tasking	Fall behind on planned buoy maintenance work, resulting in increased failure rates	Go to temporary extended operations with core fleet or ~~seek short term charters to help meet the annual BSL targets~~	Ensure sufficient resilience within GLA fleet capacity to complete routine tasking prioritise on an event basis

Houlder Report Table 9: Examples of the resilience in a core GLA fleet comprising three MFT's, one MANT and one SANT

Therefore analysis of Houlder Fleet construct outcomes 2, 3 and 5 have categorised these as 'Not Feasible' leaving the 'Do Nothing' outcome, Outcome 4 and Outcome 1

6.2 Do Nothing 'Fleet Outcome' (Not feasible)

The 'Do Nothing' outcome was not considered viable by Houlder due to the increased risk posed by continuing with the current fleet but no change to vessel management. Vessel management changes have been implemented through coordinated planning however ageing vessels make the 'Do Nothing' an unfeasible outcome and does not require any further consideration.

6.3 'Fleet Outcome' 4 (Not feasible)

In considering outcome 4 which is a 6-vessel solution, the data collected from the trial period shows that the residual risk from a six vessel fleet would expose the GLA fleet beyond the risk appetite. In addition the loss of the Rapid Intervention Vessel (RIV) would significantly reduce the risk response capability of the fleet and is contrary to the purpose of the vessel's procurement and therefore an unfeasible outcome that does not require further consideration.

6.4 'Fleet Outcome' 1 (Feasible)

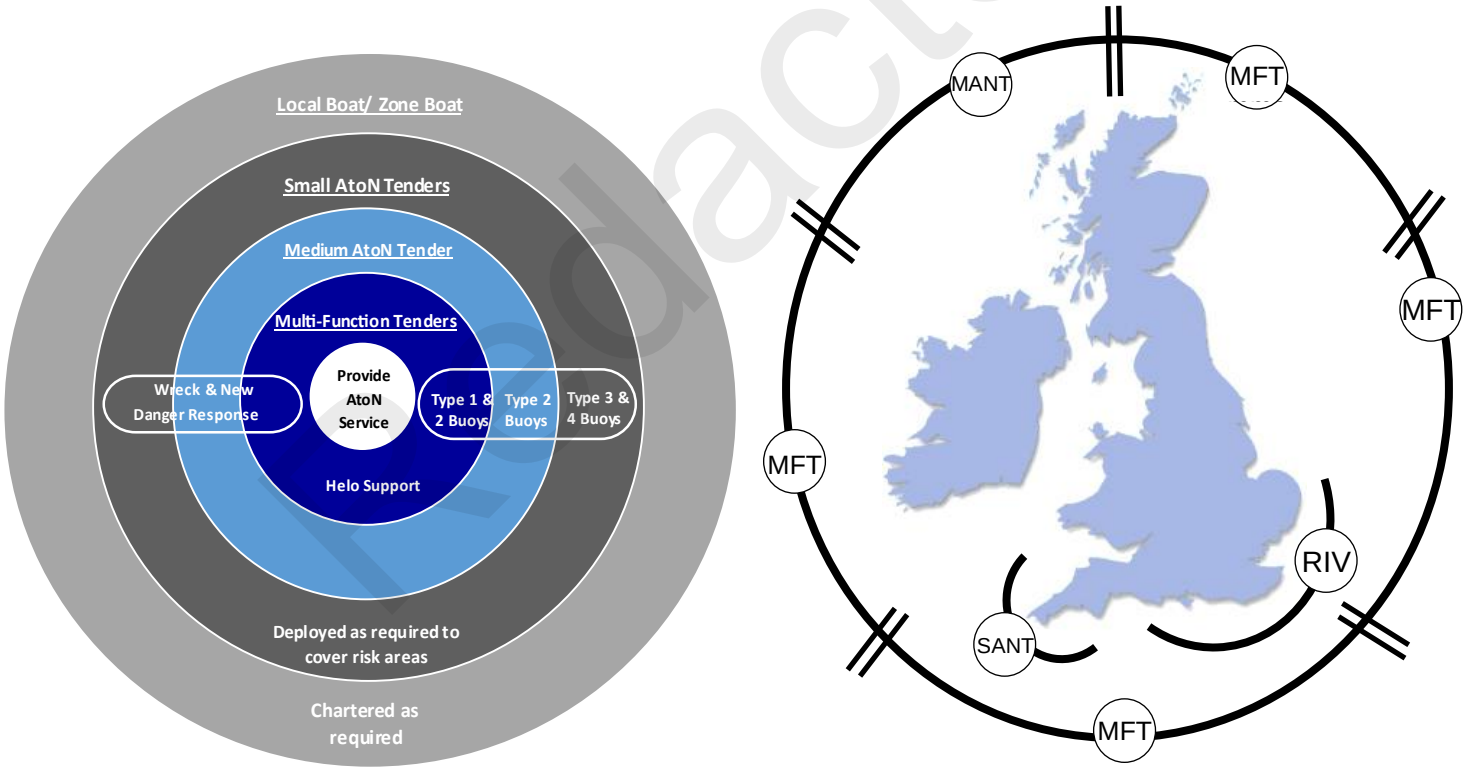
The data collected throughout the trial period very much aligns with outcome 1 (the 7-vessel fleet construct) from the Houlder model which does carry some risk as outlined by Houlder however is the lowest risk of the Houlder outcomes considered. The project data does show that in some circumstances the risk appetite is exposed when using a 7-vessel fleet.

7 Work Package 7 (WP7)

Having analysed WP2, 3, 4, 5 and further analysis of Houlder Outcomes the following section concludes these work packages.

7.1 Houlder Format of a Layered fleet model

The combined requirements of individual GLAs can be described in the Houlder format of a layered fleet model. Introduced within the Houlder Report and has been broadly validated by the Fleet Review Phase Two analysis. The layered fleet model is shown below modified to give a more accurate match of GLA layered fleet requirement following the analysis of live data recorded throughout the trial period and the conclusions presented by the Braemar work. The resultant layered fleet model shows that the GLAs use of charter vessels in its network of local / zone boat used to best effect by delivering the low level planned and some responsive unplanned tasking. The core fleet of 7-vessels delivers the risk response coverage, planned and unplanned tasking, keeping smaller high speed vessel (RIV) and small vessel (SANT) routinely but not exclusively within the areas of higher risk. The 5 larger vessels are shown on the figure as a diagrammatic indication of the baseline risk response layout. It is essential to the operational requirement that the vessels are able to independently move to meet the required tasking.



Layered fleet model from Houlder modified to take into account the information gained from Phase 2.

7.2 Vessel Capabilities and Limitations

With the exception of speed all vessels are considered equal with respect to measuring their ability to respond to risk. In reality the layered fleet includes a mix of capabilities and limitations which is desirable in many respects but comes with associated compromises in other respects.

The tables below gives an indication of the type of employment and compromises associated with each vessel.

WORKLOAD TABLE
Sum of each Category (per Ship & GLA) - Days

FR Task category	IL	IL Total	NLB		NLB Total	TH				TH Total	Grand Total
	Granuaile		Pharos	Pole Star		Alert	Galatea	Mair	Patricia		
Non Operational Statutory	24	24	6	35	41		2	10	32	44	109
Operational Statutory	151	151	196	151	347	224	211	175	181	791	1289
Third Party	69	69	48	47	94	14	41	28	36	119	283
Weather-bound	30	30	25	43	68	37	20	62	25	145	243
1st April to 31st Dec 2017	**275**	**275**	**275**	**275**	**550**	**275**	**275**	**275**	**275**	**1099**	**1924**

Using the Houlder terminology of MFT, MANT and SANT as broad capability types aims to categorise the requirements of each GLA into these broad types. The trial period has shown that due to weather constraints and location of the task whilst trying to maintain the risk response cover within the risk appetite it has not always been possible to maintain RRC coverage and complete all operational tasking.

MATCHING TASK to VESSEL CAPABILITY			
Task Group	**Trinity House**	**Northern Lighthouse Board**	**Irish Lights**
Type 1	MFT	None	MFT
Type 2	MFT / MANT	MFT/MANT	MFT/MANT
Type 3 & 4 Buoys	MFT/MANT/SANT	MFT/MANT	MFT
Helicopter	MFT	MFT	MFT
High Speed Requirement	RIV[*1] (1 - 6Hr)	MFT/MANT (1 - 24hr)	MFT (1 - 24Hr)
Shallow water capability	SANT	None	None
Survey Capability	MFT, SANT	MFT, MANT	MFT
Sea keeping[*2]	MFT	MFT	MFT
MFA - Towing	MFT, SANT	None	None

[*1] – RIV non shallow water
[*2] – The data shows that weather downtime is reduced with a larger vessel therefore it would be beneficial in all vessels however taking a necessary and pragmatic approach higher speed and shallow water capability is also required which cannot be delivered with a larger more seaworthy vessel

It can be seen that the larger vessels have broader utility and greater scope for third party tasking and are less susceptible to weather. Conversely, smaller vessels are ideally suited for shallow water operations which cannot be achieved with a larger vessel and can utilise their higher speed to cover significant areas of risk in moderate conditions at reduced cost compared with an MFT vessel. Therefore a blend of capabilities is required within the overall fleet which provides coverage in adverse weather conditions, is capable of operating in shallow water, provides rapid high speed intervention and together combine to meet the operational requirements of the GLAs whilst continuing to meet the Risk Response Appetite in actual conditions.

A number of capabilities exist within the same vessel type and therefore it can be concluded that the requirement is:

- MFT/MANT to meet the combined Helicopter / Type 1, Type 2 requirement and good seakeeping capability
- SANT / RIV capable of shallow water operation and high speed capability
- Vessels capable of towing and repositioning MFA's
- All vessels to have multi-beam Survey capability

7.3 Inter GLA working

The Houlder report recommended that a pre-requisite to achieving an efficient, integrated GLA Fleet is the adoption of centralised fleet planning via a dedicated fleet planning team and a suitable management and communication structure should be established.

This has been implemented and monitored over the trial period. A dedicated planning team based on the Combined Fleet Management (CFM) group with a dedicated planner in Harwich was created in March 2017. The team have prepared and managed the application of the coordinated fleet plan. Centralised monitoring located in Harwich available to the GLA CFM planner was initiated on the 1st April 2016.

The baseline plan created from the 3 GLAs operational plans were overlaid and then adjusted to provide a combined GLA operation plan giving the Risk Response Criteria (RRC) primacy. The baseline plan was created to deliver optimum coverage of the RRC areas and to complete all planned operation tasking.

Throughout the trial period 202 (as recorded in the incident register) occasions have been logged when the plan has deviated from the baseline. During these occasions the planning team have been required to re-direct the vessels to higher priority tasks and good cooperation between GLAs has been required to limit the degree of exposure of the RRC.

Tri-GLA vessel tasking has been included within the baseline plan and gives the benefit of using the capability of the different vessel types to accommodate tasking particular suited to those vessels whilst covering the RRC. Examples of this included THV Galatea moving to Scotland to conduct helicopter operation replaced by NLV Polestar in the southern North Sea.

7.4 Risk analysis

Risk Response Criteria (RRC) set the context against which preparedness for contingent requirements is set. This factor is endorsed by both DfT and DTTAS. An independent audit by Price Waterhouse Cooper considered the measure to be entirely appropriate and Houlder endorsed this stating that 'they see no reason that judgements drawn and the timescales proposed for response to contingent requirements in the area identified should not be used as a basis for assessing the risks managed by the GLAs'.

The Houlder report concluded that 'having a defined metric against which to judge or define the acceptable level of risk would be of assistance to the GLA's and would also help them to determine the impact on overall risk profile of any intended change in fleet construct'.

The GLA's approach to risk appetite is aligned with UK Treasury guidance in terms of adopting the five point 'averse', 'minimalist', 'cautious', 'open', 'hungry' descriptors. HM Treasury (2006)

Classification	Description
Averse	Avoidance of risk and uncertainty is a key Organisational objective.
Minimalist	Preference for ultra-safe business delivery options that have a low degree of inherent risk and only have a potential for limited reward.
Cautious	Preference for safe delivery options that have a low degree of residual risk and may only have limited potential for reward.
Open	Willing to consider all potential delivery options and choose the one that is most likely to result in successful delivery while also providing an acceptable level of reward (and value for money etc.).
Hungry	Eager to be innovative and to choose options offering potentially higher business rewards, despite greater inherent risk.

(HM Treasury 2006)

The GLAs Government accepted risk appetite remains 'averse' in terms of AtoN provision and for hazard risks such as health & safety, the environment and regulatory compliance. In the case of risks associated with operational and policy delivery, a more 'cautious' or 'open' approach is adopted. Also, in respect of the pursuance of commercial opportunities, the GLAs' risk appetite has broadly continued to reflect a 'cautious' approach within a robust framework of loss control. In terms of financial / value for money aspects, the GLAs' risk appetite is assessed as being between 'minimalist' and 'cautious'. This reflects that the GLAs are prepared, where appropriate, to consider value for money and a willingness to consider broader benefits in terms of their overall delivery profile.

Taking this into account and given that the 6 and 12 hour response areas are determined to be areas of unacceptable risk failure to meet the coverage is unacceptable. The risk appetite for not providing coverage is therefore averse.

The 24 hour response areas are determined to be acceptable with caution. The risk appetite for not providing coverage can therefore be described as Cautious

7.4.1 Risk Appetite

Taking into account the Houlder recommendation and the associated Board approved level of Risk Acceptance, the 6, 12 and 24 hour areas have differing minimum acceptable coverage requirements. These are defined as:

Area	Acceptable Number of areas and percentage of area not covered*	Additional Time to respond in area*
6 hrs	1 @ 5%	20 mins
12 hrs	1@ 10%	1 hr
24hrs	1@ 15%	2 hrs

*All other areas to be 100% covered both in area and time to respond

Throughout the trial period the key metric of risk response and risk response coverage have been logged on a daily basis. This has allowed the GLAs to fully understand the risk cover presented by the current fleet and the impact to this risk cover of increasing the fleet numbers to 8 vessels and reducing the fleet numbers to 6 vessels.

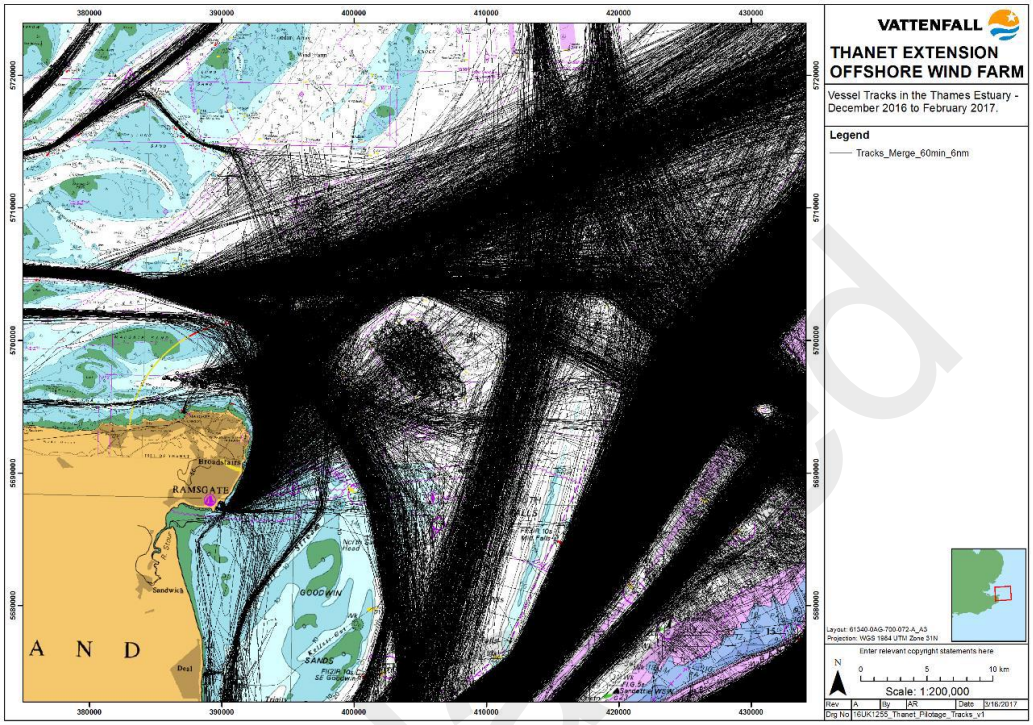
Vessels	Average Risk Coverage (Taking into account weather, multiple incidents and other restrictions)			
Risk Appetite (RA)	6Hr RA = 95	12Hr RA = 90	24Hr RA = 85	>1 area exposed% RA = 0
8	99.78	99.35	99.85	0
7	98.68	96.06	99.07	17
6	97.79	89.99	99.07	26

The percentage risk coverage given by this table provides an overall average over the trial period. As shown earlier by the detailed analysis unacceptable levels of risk are presented that are hidden in the overall percentages above.
To enable the GLAs to mitigate the exposed risk, the following measures can be employed:

- Increase fleet to 8 vessels
- Continuous improvement in operational management of the fleet
- Enhance vessel capabilities of the fleet e.g. speed, handling and manpower capabilities
- Operation of a more modern fleet to reduced unplanned vessel downtime
- Greater use of Zoned / Local Boats

7.4.2 Likelihood and consequence

It is acknowledged that the likelihood of a major event is difficult to determine however evidence shows that the increasing density of traffic and restrictions on sea-room from obstructions such as wind farms funnels traffic into a more concentrated areas.



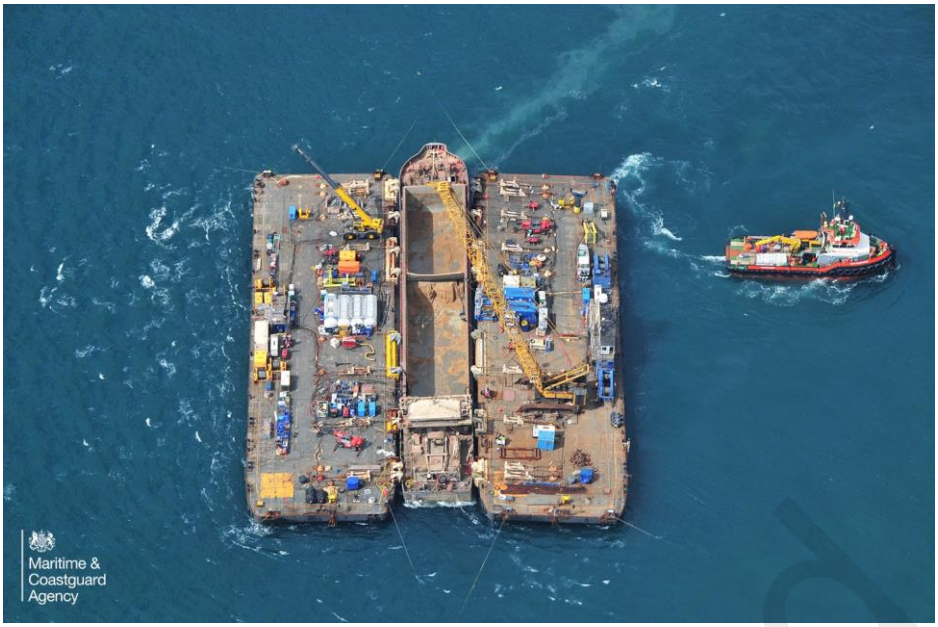
Should an incident occur, either due to an AtoN outage not being rectified or due to one vessel striking another foundered vessel, the potential for escalation in much of the waters around the British Isles is considerable, resulting in further loss of life and pollution and damage to fish stocks, sea birds, marine mammals and tourist beaches. A potential worst case scenario in the Sandettie deep water route could severely restrict the flow of trade to the major ports of the UK and Europe.

The 50,000 tonne TRICOLOR sinking in 2002 which resulted from a collision in an overtaking incident with the KARIBA presented a significant hazard to shipping, with two vessels hitting the wreck and a reported 100 further vessels passing through the exclusion zone. Guard vessels were progressively increased to 6 over the period to keep both passing shipping and the salvage vessels safe for the year that it took until the danger was removed.

Tricolor 2002

Even a small vessel in shallow waters can represent a significant hazard, such as in the case of the tug ELLA off Lowestoft in 2017. Similarly, the 90m FLUVIOUS TAMAR in the Southern North Sea TSS SW lane, also in 2017 which although relatively small in itself, presented a significant threat to the deep draft vessels using that lane.

Tug ELLA ashore, sank July 2017



FLUVIOUS TAMAR sank Jan 2017, lifted between two barges.

From the GLA Risk Response Criteria Document:

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.

When assessing impact and likelihood to identify the risk response criteria the following criteria has been used by the GLAs. This is the standard criteria used for all GLA Navigation assessment including the five yearly Aton review.

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

Figure 1Extract from GLA Risk response criteria

7.5 Costs analysis

Vessel	Average Annual Cost (GBP Millions) 2010 Figures	Existing Lease Finance
Patricia	3.2	
Galatea	4.1	£1.5m pa to 2022
Pharos	4.3	£1.5m pa to 2023
Granuaile	2.3	
Pole Star	2.8	£0.6m pa to 2020
Alert	1.2	£0.4m pa to 2021
Mair	0.6	
[1]Replacement MFT	4.6	
[1]Replacement MANT	3.5	
[1]Replacement MANT (with helideck)	3.6	

Table 8: Annual cost of each vessel in the GLA fleet and potential replacement vessels

[1] derived from Houlder Report

8 Fleet Construct and Recommendation

WP7 aimed to deliver the 'Fleet Structure' report consisting of inputs from WP2, 3 4 and 5 and the evaluation of risk against cost. It would present a fleet structure proposal and consider the commercial opportunities from any residual capacity within the structure.

The proposal consists of vessel numbers against risk coverage and within those vessels numbers the ability to conduct all planned work and vessel downtime with an allowance for unplanned work whilst utilising any reserve capacity for commercial work to offset costs.

Houlder previously identified areas of over and under capacity on a Tri-GLA basis. The data has been collected to demonstrate the requirement of the fleet starting initially from a baseline plan and to capture additional unplanned activity. The data can be analysed to demonstrate the capability necessary within the fleet to deliver the requirement needed taking into account the disposition of the vessels to cover the Risk Response Criteria (RRC) along with the disposition of the AtoN's for both routine maintenance and unplanned outage response.

Data shows that due to weather constraints and the geographic locations of both the AtoN and the risk response areas, coverage of the risk response areas whilst delivering a cost effective AtoN service requires between 7 and 8 vessels with a varying degree of capabilities to service the disparate requirements of the AtoN's.

Therefore the fleet construct can take the approach of increasing the fleet to 8 vessels or by remaining with no less than 7 vessels with additional mitigation measures.

Vessels	Risk Coverage (Taking into account weather, multiple incidents and other restrictions)				Cost Deviation (year)£M 2015 Costs
Risk Appetite (RA)	6Hr RA = 95	12Hr RA = 90	24Hr RA = 85	>1 area exposed% RA = 0	
8	99.78	99.35	99.85	0	+1.2
7	98.68	96.06	99.07	17	0
6	97.79	89.99	99.07	26	-0.6

Cost figures based on table 8 Houlder assumptions:
8 ships by adding 1 x Alert equivalent.
7 ships as per current fleet.
6 ships minus 1 x Mair.

8.1 Mitigation and future design considerations

8.1.1 Mitigation measures:

The proposal for the 7 vessel fleet of mixed capability with the following mitigation:

- Continuous improvement in operational management of the fleet through consideration of lessons identified
- Enhance vessel capabilities of the fleet e.g. speed, handling and manpower capabilities
- Operation of a more modern fleet to reduced unplanned vessel downtime and reduce running costs
- Greater use of local boats where appropriate included the RIB that is included in within the 'Mair' contract.

8.1.2 Factors for consideration in vessel design and operation:

- Better able to maintain speed in adverse weather – *improves coverage and reduces risk.*
- Incorporating the capability to be able to respond effectively to the casualty or incident – *Minimises AtoN outage time and improves wreck or new danger response.*
- Commonality of capability to reduce planning constraints – *reduce passage time and fuel consumption while minimising outage time.*
- Manpower and endurance – *optimised for best availability and performance of capital asset.*
- A high speed requirement for specific circumstances with acceptance of compromise on endurance and capability in other respects – *routinely deployed to the higher risk areas with ability to utilise a single vessel for 6 hour area.*
- A shallow water requirement for specific circumstances with acceptance of compromise on endurance and capability in other respects – *cost effective smaller vessel better suited to servicing buoys and beacons in shallow and sometimes rocky water including survey work where larger vessels would be unsuitable.*
- Environmental considerations including fuel – *modern machinery matched to requirement and consider emerging technology in propulsion and power systems where suitable to minimise fuel consumption and emissions.*
- Opportunities to align capability with cross government agencies – *as recommended by the Reference Group for mutual cross department support.*

One approach could be to develop a detailed, long term view of the future Fleet, mapping out over time the capabilities necessary and matching requirements to planned vessel out of service dates. However the reality is that given the relatively long service life of vessels and constantly evolving technology, it would be counterproductive to be too rigid. Instead, the opportunity to offer best value is to consider the available market options, technology and ship design at the point when individual vessels are replaced and therefore benefit can be realised from inclusion into design of the risk reductions factors that have been identified. It is the intention therefore that detailed capability assessment is not incorporated within this report but should be subject to individual business cases as vessels are replaced over time.

8.2 Recommendation

The recommendation is for a layered 7-vessel fleet of mixed capability, acknowledging the likely continuation of exposed risk in actual conditions, but with additional mitigation measures aimed at closing the risk gap in a cost effective manner. The existing fleet is currently broadly matched to the baseline requirement with no justification for urgent and major change across the fleet as a whole at this time. Vessels should be replaced however in line with this recommendation when considered justifiable by the GLA Operator, submitted through an individual business case to the Department in a timely manner to ensure continuity of cost effective cover at risk levels no higher than identified through the 7 ship model. Business cases will consider all aspects of capability requirement, risk mitigation, identified design considerations and business delivery options.

Annex 1 – Detail Analysis Examples

GLA Fleet Scenarios

Six dates (shown below) taken from Live Data collated for further analysis.
13th April: 2nd June: 6th July: 25th September: 8th October: 10th December

Document Number [redacted]

Commissioners of IRISH LIGHTS | Navigation and Maritime Services

Key Supporting Documentation

Houlder Report 2015

HOULDER

3 February 2016

General Lighthouse Authorities Fleet Review 2015

Executive Summary

Prepared for # GLA Fleet Review Project Board

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1. INTRODUCTION

Houlder was selected to conduct the 2015 Review of the fleet requirements of the General Lighthouse Authorities ("GLAs"), the aim of which is to identify the optimum number of ships, the capability of those ships and their appropriate ownership and operational management during the period 2016-25 to enable the GLAs to fulfil their statutory duty to maintain marine Aids to Navigation ("AtoN") and respond to casualties, wrecks and new dangers in an efficient and cost-effective manner.

We have been made welcome onboard all GLA vessels and by all those engaged during the course of this review. The support and open approach of the Project Board members and all project stakeholders throughout the review is acknowledged and has been appreciated.

2. METHODOLOGY

The review process involved three main activities:

Vessel and Facilities Visits

Visits were conducted to each of the seven vessels in the current fleet as well as the facilities at Harwich and Dun Laoghaire. This was an opportunity to inspect the vessels, interview their crews and witness them working to help fully understand the condition, capability and operation of the fleet.

Modelling

Following the data gathering phase of the review, two models were developed to analyse different fleet constructs and programming strategies from an operational and financial perspective. The financial modelling used inputs from GLA data sources and afforded the opportunity to assess the financial impact of emerging ideas. Alongside this we developed a probabilistic model to assess the relative impact of various vessel numbers, capabilities and fleet dispositions on the risk of failing to fulfil statutory requirements, particularly contingent demands (wrecks, emerging dangers and AtoN casualties). Input to the model is drawn from a statistical analysis of responses to casualties, wrecks and new dangers over the past five years. The risk for a given fleet construct is then presented as the number of incidents to which a response would not be delivered within the timescales presented in the Risk Response Criteria. This is then used to compare the various fleet constructs under consideration.

Governance and Stakeholder Engagement

The works included frequent and detailed involvement with the Project Board, comprising representatives from the UK Department for Transport ("DfT") (chair); the Irish Department of Transport, Tourism And Sport ("DTTAS"); the Lights Advisory Committee ("LAC") and the three GLAs. The Project Board

reviewed all schedules during development and provided valuable feedback. A range of industry-wide stakeholders was engaged, culminating in a workshop with the GLA CEOs and non-executive directors to present and debate emerging conclusions.

All project works were subject to an internal governance process through a Peer Review Group who reviewed project progress and documentation at each key stage prior to it being presented to the Project Board.

3. SUMMARY OF FINDINGS

Existing Fleet

The following are our key conclusions regarding the capability of the current seven vessel fleet:

- THV Galatea, NLV Pole Star and ILV Granuaile provide good matches of capability to requirement.
- Trinity House's employment of a commercial vessel (MV Mair) is cost effective and the vessel is well matched to the requirement in her main area of operation.
- Trinity House operates two helicopter capable vessels, but requires only one.
- Northern Lighthouse Board and Trinity House both have an excess of Type 1 buoy handling capability across their fleets.
- NLV Pharos is over-capable when considering the specific requirements of the Northern Lighthouse Board. She was, however, procured at a highly competitive price.
- Trinity House lacks the necessary speed of response to meet the timescales presented in the Risk Response Criteria for the high risk areas. THV Alert (which was procured to meet this requirement) is unable to maintain speed in higher sea states.
- Due to her age and increasing operating costs THV Patricia should be retired during the ten year review period.
- ILV Granuaile and NLV Pharos both have excess capacity which is currently used to secure commercial income.

Integrated Operations

A 'Coordinated Fleet Management' model was introduced by the GLAs in response to the 2009 Fleet Review. Further operational and financial efficiencies could be achieved by extending the approach to include full integration of routine fleet operations.

Risk

Our analysis has shown a notable imbalance in the risk carried across the GLAs with Trinity House carrying the significant majority. In high risk areas the Risk Response Criteria can only be met by having one or more vessels available in that area.

Having a defined metric against which to judge or define the acceptable level of risk would be of assistance to the GLAs and would also help them determine the impact on overall risk profile of any intended change in fleet disposition.

Commercial Income

Release of residual capacity to the commercial market in order to generate income inevitably creates operational challenges. Currently managed on an individual GLA basis with only limited control from a fleet-wide perspective, this requirement has the clear potential to increase risk when considering the overall fleet output. An alternative means of generating such commercial income or reducing the overall cost of an integrated GLA fleet to offset any requirement for third party income would be beneficial.

Commercial Support for GLA Operations

MV Mair presents a good example of the potential for the GLAs to benefit from the cost effective support available from commercial marine operators; in this case through a time charter. Other options such as short term time charters or developing relationships with brokers to source an appropriate vessel at short notice could offer significant benefits in delivering the AtoN service and reducing the risk carried by the GLAs.

Maintenance and Handling of Buoys

Regular maintenance and handling of the larger (Type 1 and 2) buoys requires a purpose-built vessel, specialist skills and appropriate experience. This is best delivered by vessels owned and operated by the GLAs as part of a core fleet. Notwithstanding, in an emergency situation, other vessels available from the charter market could be capable of providing limited support to Type 1 buoys, and more effective support to Type 2 buoys.

Southern North Sea and Dover Straits

The sea areas stretching from the Humber to the Dover Straits carry the greatest risk of all of the areas covered by the GLAs due to the high traffic and Aid to Navigation densities, shallow water and shifting sands. This is recognised in the Risk Response Criteria, requiring a response to a contingent requirement within six hours. A permanent presence is required in this area to ensure navigational safety.

Resilience

The future fleet must provide adequate resilience against unforeseen events such as the loss of a specialist vessel from the core GLA fleet. In particular,

alternative delivery options must exist (either from within the core GLA fleet or by charter) for planned maintenance of Type 1 and 2 buoys or support to helicopter operations.

4. FUTURE FLEET

We have identified three core features which are considered to be key to the development of the future GLA fleet: Centralised Fleet Planning, a Layered Fleet Model and Increased Commercial Support.

Centralised Fleet Planning

A centralised Fleet Planning Team should be established to undertake scheduling of the entire GLA fleet to deliver the statutory requirements of the three organisations. This Team would deploy the fleet in accordance with a set of agreed guidelines designed to meet the statutory outputs while minimising the risk of failure to respond to any contingent issue within the timescale presented in the Risk Response Criteria. Fundamental to this is the routine stationing of at least one vessel in the six hour response area.

Whilst it is accepted that unforeseen events will inevitably disrupt the detailed schedule, this does not diminish the benefit of an integrated and structured approach to programming. The overall distribution of the vessels in the GLA fleet would be planned to ensure a rapid response and thereby the deviation and time required to respond to a contingent requirement would be minimised. Any such deviation would be from a planned fleet disposition and known position of risk. Therefore, both the impact on the GLA risk profile and the appropriate mitigation options would be more readily identifiable and managed.

The Fleet Planning Team would also manage, from operational and risk perspectives, income generation from the GLA fleet. An integrated programme would potentially create marketable opportunities for any given fleet construct. Close interaction between this Team and the individual GLAs would be crucial to ensure that each organisation's statutory and legislative obligations are being met.

A Layered Fleet Model

Facilitated by the integrated approach to operations, this would comprise four elements:

- Three GLA owned and operated Multi-Function Tenders (MFT) focused on delivering core Aids to Navigation maintenance and providing contingent capability to respond to wrecks, new danger or casualties to Aids to Navigation.
- One GLA owned and operated Medium Aids to Navigation Tender (MANT) operating predominantly in Scottish waters in the summer, and southern areas in the winter.

- One or more Small Aids to Navigation Tenders (SANT) which may be GLA owned and operated or chartered from the commercial market to deliver Type 3 and 4 buoy maintenance and provide cover for response to wrecks and new dangers.
- Contingent response in high risk areas from commercial operators through a combination of charters and support from brokers.

Increased Commercial Support

It is assessed that the core GLA fleet could be supplemented with additional commercial arrangements that would significantly enhance the ability to respond to contingent requirements while reducing overall fleet costs and risk. Two viable options have been identified; long or short term time-charters and broker support arrangements.

Time charters, similar to that of the MV Mair, may be used to support routine GLA tasking such as maintenance of smaller buoys. In addition, a vessel under time charter would be available to respond to casualties, wrecks and new dangers at short notice. Such arrangements could be made either on a long term basis for a number of years or for short term discrete tasking to help meet buoy maintenance schedules or provide cover should a GLA vessel be out of service.

Arrangements should be made with a suitably qualified and experienced ship broker who may be called upon 24/7 to source, at short notice, a vessel capable of responding to a wreck or new danger at any location. This may take the form of a ‘first responder’ that would then be followed by a GLA asset when available. The arrangements could be trialled for little or no cost and would have no negative impact on the level of risk carried by the GLAs. Any such arrangements should be tested regularly once in place.

Fleet Outcomes

Building on the above, we determined and analysed a series of alternative Fleet Outcomes based on the layered fleet model including the baseline options of doing nothing or maintaining the existing fleet construct by replacing Patricia with a new MFT; we only consider the second of these baselines to be a viable option. For each potential fleet outcome the relative operational risk was calculated together with the total fleet spend through the ten year review period.

	Do Nothing	Maintain Existing Construct	Minimise Fleet Spend		Cautious	
Fleet Outcome	-	1	2	3 A & B	4	5
MFTs	4	4	3	3	3	3
MANTs	1	1	1	1	2	1
Charter / SANTs	2	2	1	2	1	1
Main features	Fleet construct and management remains unchanged	Fleet numbers unchanged Patricia replaced in 2020/21	Early disposal Patricia		Early sell Alert	
			Sell Alert once broker option proved (by end 2017)	Retain Alert **or** sell Alert and replace with time-charter	Patricia replaced in 2020/21	Dispose of Patricia by end 2018
Benefits	No new vessel procurement	Greatest risk reduction	Lowest fleet spend	Greater RRC area coverage	Greater Type 2 capability	Risk of change mitigated
Issues to address	High risk of additional cost or breakdown of Patricia	High CAPEX for replacement vessel	Testing commercial support viability	Testing commercial support viability	High CAPEX for replacement vessel	Testing commercial support viability
10 Year Fleet Spend	£186.3	£196.9m	£142.0m	£153.6m	£176.1m	£147.5m
% Saving from Fleet Outcome 1	5.40%	-	27.90%	22.00%	10.50%	25.10%
Avg. responses outside RRC pa	1.78	0.23	0.67	0.42	0.44	0.67
% change from current situation	-	-86.70%	-62.20%	-76.30%	-75.10%	-62.20%

Table of potential outcomes and fleet constructs

Note: The option of maintaining the existing construct by replacing Patricia with a MFT is shaded as a baseline and comparator for other options. The 'Do Nothing' outcome is included to show the risk and cost of continuing the current fleet with no changes to vessels or management, this is not considered to be a viable option.

Implementation

Key elements require testing before committing to a desired end-state to ensure the ability of the GLAs to deliver statutory obligations. This is especially relevant to situations where the transformation involves expensive, lengthy or irreversible decisions such as disposal of a vessel.

The two specific assumptions identified for early investigation are;

- practical evaluation of the ability to meet the Type 2 buoy maintenance burden with a reduced, but reprogrammed core fleet of three Multi-Function Tenders, and one Medium Aids to Navigation Tender; and,
- market testing of the practicality of commercial options to support GLA responses in high risk areas.

5. RECOMMENDATIONS

A pre-requisite to achieving an efficient, integrated GLA Fleet is the adoption of centralised fleet planning via a dedicated Fleet Planning Team established in Harwich. We recommend that action is taken to establish such a team at the earliest opportunity in order that detailed planning and scheduling works may be undertaken to prove the ability of the revised fleet construct to deliver the statutory obligations of the GLAs and that suitable management and communication systems may be established.

We recommend that the GLAs move progressively towards the 'Minimising Fleet Spend' approach with the aim of achieving the 3+1+1 fleet construct of Outcome 2. In progressing towards the 3+1+1 fleet construct it is considered pragmatic to first adopt a 3+1+2 fleet construct of Outcome 3B with both MV Mair and THV Alert being retained to support operations in the high risk sea areas around the south coast of England identified in the Risk Response Criteria.

The 3+1+1 model would comprise a core fleet of the following:

- 3 Multi-Function Tenders (MFT)
- 1 Medium Aids to Navigation Tender (MANT)
- 1 Small Aids to Navigation Tender (SANT)
- Support from commercial vessels through a combination of short term charters and support for contingent operations.

We expect this to be undertaken in a series of discrete steps with each proposed change being subject to prior testing to de-risk the transition to this new construct.

The following underlying assumptions should be tested:

a) the viability of fulfilling the Type 2 buoy maintenance and support requirements with only one MANT;

b) the availability of suitable commercial vessels for short term time charter to support maintenance of Type 3 and 4 buoys working in conjunction with a single SANT to support operations around the south coast of England; and,

c) the ability to work with the commercial charter market to meet contingent requirements.

We have also identified and prioritised a number of additional detailed recommendations which should be adopted starting in the near term. The highest priority of these are presented in the below table.

No.	Name	Detailed Recommendation	Section Ref.
1/1	Commercial Alternatives	Market test viability of commercial options, focused on four high risk areas for the provision of support to contingent requirement for wrecks, casualties and new dangers based on alternatives of: a. Time charter – will include maintenance of AtoN up to type 3 and 4 buoys b. Retainer for call off c. Broker support for call out when required This should prioritise the Solent Area, Dover or Harwich (depending on market findings), and Land's End.	7.5
1/2	Commercial Alternatives	Engage a suitably qualified and experienced ship broker for a trial period, as soon as possible, to explore the 'broker call out' option	7.5
1/3	Scheduling	Develop operating guidelines underpinning a harmonised schedule	7.2.2
1/4	Integrated Operations	Centralise fleet planning, based in Harwich and led by TH's operations team. After 1 year consider the appropriateness of rotating lead	7.1, 7.2
1/5	Risk	Implement means of determining risk routinely carried operationally and share with respective Departments	5.3.5
1/6	Risk	CEOs should provide guidance to their operations teams as to the degree of risk (failure to meet the RRC) that is acceptable	5.3.5
1/7	Risk	CEOs should provide guidance to their operations teams on the process to be followed if acceptable risk looks to be compromised	5.3.5
1/8	Contracted-in support	Assess viability of providing sonar suite (for accurate wreck geo-location) and training for deployment on a vessel that is contracted-in	5.4.2
1/9	AtoN monitoring	Include centralising monitoring on a 24/7 basis in Harwich as an additional element of the tri-GLA review currently underway	5.3.1

Table of detailed recommendations related to Fleet Optimisation to be completed by end of Year 1 (Note: Section references relate to the main report)

HOULDER

3 February 2016

General Lighthouse Authorities Fleet Review 2015

Final Report

Prepared for **GLA Fleet Review Project Board**

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Distribution: UK Department for Transport
Irish Department of Transport, Tourism and Sport,
Trinity House
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List of Abbreviations

AIS	Automatic Identification System
AMS	Australia Marine Services
AMSA	Australian Maritime Safety Authority
AtoN	Aids to Navigation
BSL	Buoy Servicing List
CAPEX	Capital Expenditure
CAST	Coastguard Agreement for Salvage and Towage
CFMG	Coordinated Fleet Management Group
CIG	Commercial Income Generation
CIL	Commissioners of Irish Lights
DfT	UK Department for Transport
DGPS	Differential Global Positioning System
DOC	Document of Compliance
DP	Dynamic Positioning
DTTAS	Irish Department of Transport, Tourism And Sport
ECDIS	Electronic Chart Display & Information System
ETV	Emergency Tow Vessel
FTE	Full Time Equivalent
GLA	General Lighthouse Authority
GLF	General Lighthouse Fund
GPS	Global Positioning System
IGC	Inter-GLA Committee
ILDF	Independent Light Dues Forum
ILV	Irish Lights Vessel
IRCG	Irish Coast Guard
ITT	Invitation to Tender
LAC	Lights Advisory Committee
MANT	Medium Aid to Navigation Tender
MCA	Maritime and Coastguard Agency
MFT	Multi-Function Tender
MoD	Ministry of Defence
MOU	Memorandum of Understanding
NCA	Norwegian Coastal Administration
NLB	Northern Lighthouse Board
NLV	Northern Lights Vessel
NMIC	National Maritime Information Centre
ODAS	Ocean Data Acquisition System
OPEX	Operating Expenditure
QHM	Queen's Harbour Master
RACON	Radar Transponder
RIB	Rigid Inflatable Boat
RIV	Rapid Intervention Vessel
RNLI	Royal National Lifeboat Institution
ROV	Remotely Operated Vehicle
RRC	Risk Response Criteria
SANT	Small Aid to Navigation Tender
SAR	Search and Rescue
SATCOM	Satellite Communication

SOSREP	Secretary of State's Representative
TH	Trinity House
THV	Trinity House Vessel
TORs	Terms of Reference
TUDS	Tender Utilisation Data Sheets
VFD	Variable Frequency Drive
VHF	Very High Frequency (Radio)

1. INTRODUCTION

1.1. Background

The aim of the 2015 GLA Fleet Review is to identify the optimum number of ships, the capability of those ships and the appropriate ownership and operational management of the ships required during the period 2016-25 to enable the General Lighthouse Authorities ("GLAs") to fulfil their statutory duty to maintain marine Aids to Navigation ("AtoN") and respond to dangerous wrecks and new dangers in an efficient and cost-effective manner.

Trinity House issued an Invitation to Tender ("ITT") on the 8th May 2015 on behalf of the Fleet Review Project Board chaired by the UK Department for Transport ("DfT") and comprising representatives of the three GLAs; the Irish Department of Transport, Tourism and Sport ("DTTAS"); and the Lights Advisory Committee ("LAC"). Houlder responded to the ITT and was subsequently awarded the contract to conduct the review.

1.2. Summary

This report represents the main deliverable of the contract described above. A short summary of each section is provided here.

Methodology

The structured approach to the review process is described including the three distinct phases and dialogue with the Peer Review Group and Project Board at key stages of the project. Operational and financial models were also developed to aid the assessment of different fleet options.

Visits Conducted and Stakeholder Engagement

Visits were conducted to each of the seven vessels under GLA control and a number of meetings were held in order to establish the views and opinions of a wide range of stakeholders. Brief summaries of each of the meetings are provided with the key issues discussed.

Vessel Capabilities

The four major capabilities which will drive the size and cost of the vessels within the GLA Fleet are described. These are the handling of Type 1 buoys, support to helicopter operations, good seakeeping qualities and speed of response. A number of key capabilities which do not have a substantial effect on the size or cost of the vessels are also considered.

Ownership and Operational Management

Advances made by the three GLAs since the last fleet review, including the coordination of fleet management, are discussed together with the areas in which there remains potential for further efficiencies.

Analysis of the Fleet

The various different fleet constructs which were modelled both operationally and financially are presented for comparison against the baseline case which confirmed that Trinity House ("TH") carries significantly more risk than either the Northern Lighthouse Board ("NLB") or Commissioners for Irish Lights ("CIL"). Further sensitivities are summarised which indicate that it would be possible to operate a reduced fleet with additional commercial support without increasing the level of risk carried.

Fleet Optimisation

A process is described for how the three GLAs can move towards an optimised reduced fleet and benefit from broader support from commercial operators.

Recommendations

A number of recommendations are made for the optimum GLA fleet over the ten year review period.

2. METHODOLOGY

2.1. Shared Data Portal

In order to provide us with the necessary information to conduct the review and to facilitate an open exchange of information and communication, an online shared data portal was established by the Project Board. This allowed the three GLAs to upload a substantial amount of information including data relating to their operational and vessel management; individual and joint policies as well as historical data on fleet tasking, AtoN casualties and wrecks and new dangers. A number of external reports were also provided including the previous 2009 Fleet Review by C-MAR consultants and the 2010 Atkins report assessing the provision of marine AtoNs around the coast of the UK and Ireland.

The shared portal also allowed us to upload documents produced during the course of the review and for these to be accessed by all relevant parties. This contributed to the high level of transparency of the review process.

2.2. Planned Approach

The methodology included in our tender response was developed to ensure that the review was conducted using a systematic and fully transparent approach with the intention of providing a robust set of conclusions. A combination of desktop research, visits to the three GLAs and operational vessels as well as consultation with external stakeholders was to be employed alongside detailed operational and financial modelling and analysis.

The detailed aspects of the works to be undertaken were arranged following the contract award at which point we had access to GLA staff and documents, allowing us to develop a more thorough understanding of the constraints and requirements.

2.3. Actual Approach

Following the Contract Initiation Meeting held on the 4th August 2015 and our review of the documents provided to us through the shared portal, we developed a more detailed methodology comprising three distinct phases. In this we took a gated approach to ensure complete transparency to the Project Board and to facilitate input from our Peer Review Group at key stages of the review.

2.3.1. Phase One

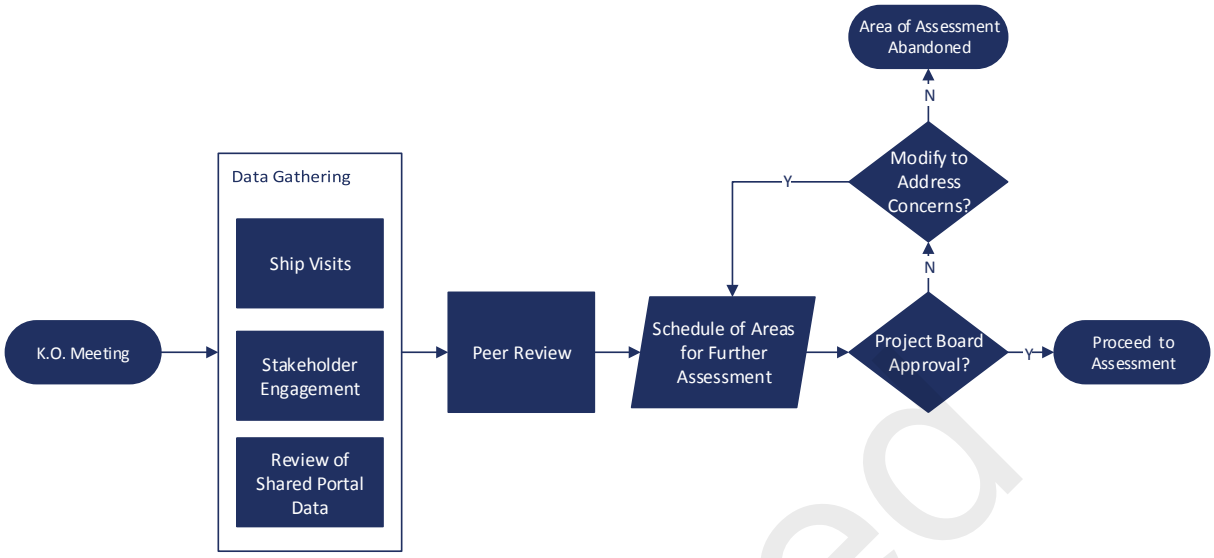

Figure 1: Methodology for Phase One of the review

The focus of Phase One was on data gathering; this was achieved (as planned in the tender response) through a combination of GLA ship visits, stakeholder engagement and desktop review of information made available to us through the shared portal. The work allowed us to develop a 'Schedule of Areas for Further Assessment' (Appendix 1) which listed aspects that we proposed to investigate further with respect to the benefits, operational risks and other issues against the four topics to be addressed by the review:

- number of vessels;
- capabilities;
- operational management; and,
- ownership.

This schedule was formed in consultation with our Peer Review Group before being presented to the Project Board for review, modification and approval. In parallel to the data gathering exercise two models were developed for the assessment of different fleet constructs from a financial and an operational perspective. The approach employed in these models and the limitations thereof are described in more detail in Section 2.4.

The modelling of sensitivities within the Schedule of Areas for Further Assessment was designed to allow us to interrogate specific facets of GLA operations in a progressive fashion. It was not until the next Phase that we started to weave together the findings of these individual analyses in order to move forwards towards holistic Fleet Outcomes.

2.3.2. Phase Two

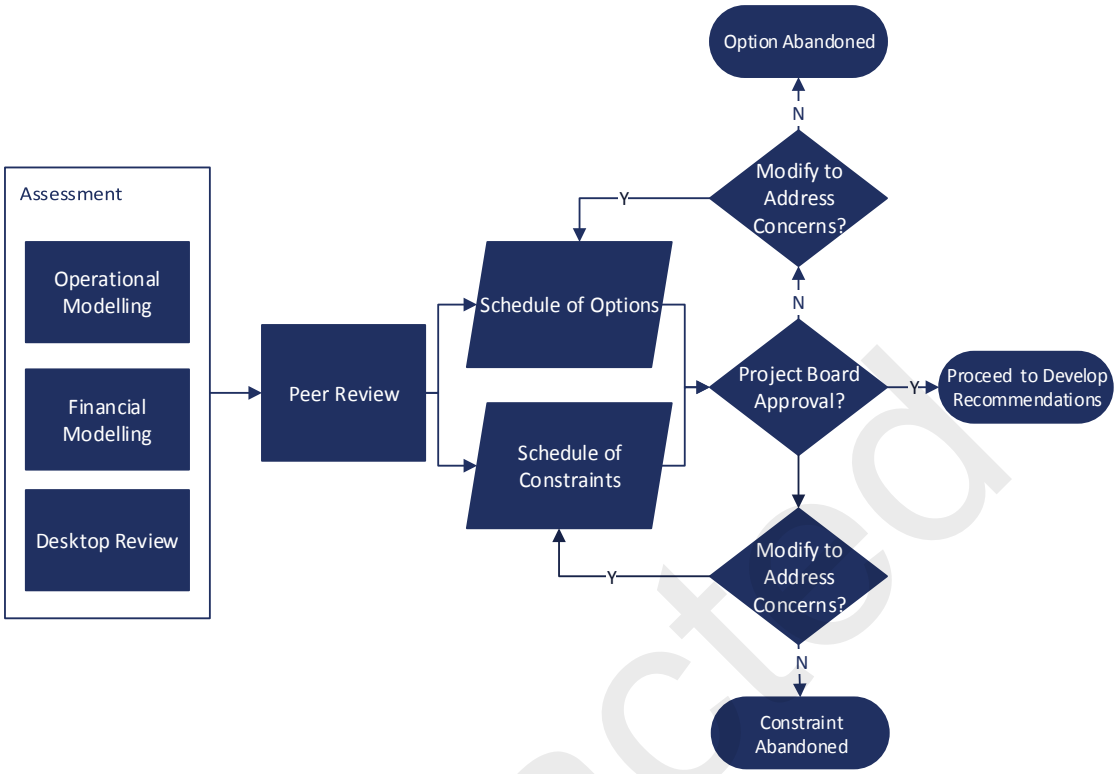

Figure 2: Methodology for Phase Two of the review

Phase Two involved the detailed analysis of each line item in the Schedule of Areas for Further Assessment through the use of our operational and financial models and the review of available information. The main deliverables, again produced in consultation with our Peer Review Group, were a Schedule of Assumptions, a Schedule of Constraints and a Schedule of Key Findings (Appendices 2, 3 and 4 respectively). In parallel and for clarity, we developed a Schedule of Assumptions related to the financial and operational modelling. All three schedules were presented to the Project Board for review, modification and approval.

2.3.3. Phase Three

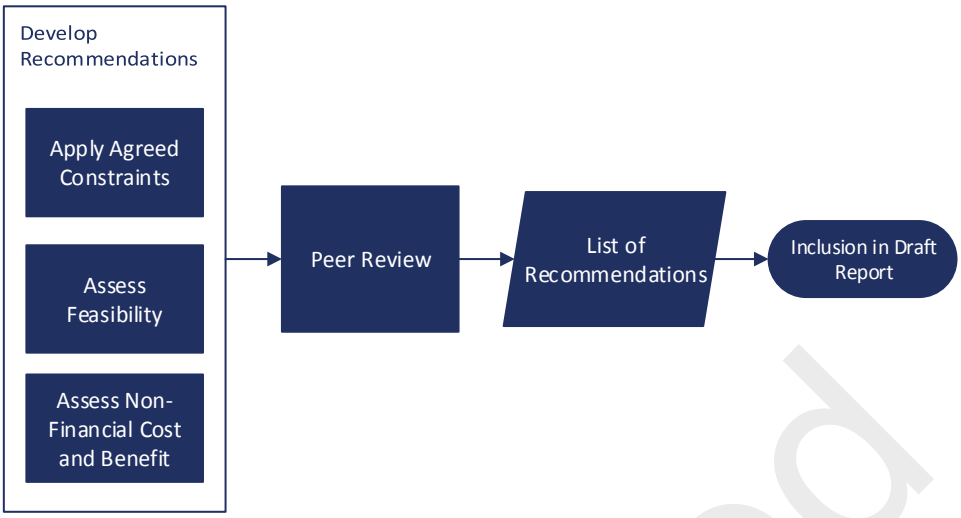

Figure 3: Methodology for Phase Three of the review

Phase Three was the final stage of the review process in which our recommendations were developed. It was during this Phase that we amalgamated all the findings from prior Phases to develop a short list of potential Fleet Outcomes, applying the agreed constraints and assessing the feasibility and non-financial costs and benefits of each.

We make a professional recommendation for the preferred fleet outcome and present a fuller list of specific recommendations. These were developed in consultation with our Peer Review Group and deal with a range of issues that may be considered for inclusion in any of the more strategic Fleet Outcomes.

2.4. Modelling

Two models were developed to aid the analysis of different Fleet Outcomes and subsequent recommendations. A summary of each is given here and fuller approach statements are provided at Appendix 5.

2.4.1. Operational and Risk

The operational and risk model was developed to support analysis of alternative fleet constructs in terms of both vessel number and capability by providing a risk-based assessment of the ability to respond to contingent requirements, enabling comparison with existing operations. Its aim was to establish the level of exposure to risk that each of the three GLAs carries for each fleet construct together with the overall level of operational risk managed across the three GLAs. To achieve this the model calculates, over a given time period, the probability that a wreck is not responded to within the times laid down in the Risk Response Criteria, the total buoy downtime and vessel utilisation.

Probabilities of wrecks and new dangers for each GLA sea area were derived from a statistical analysis of historical data recorded by the GLAs. The model was run for 5,000 iterations for each fleet construct. In each iteration an algorithm was employed to determine which, if any, vessel could respond in time, had the required capability, was not over utilised and was working in the area. This allowed the buoy casualty downtimes and number of wrecks not responded to in time to be determined.

For each fleet construct the user was able to control the areas each vessel works in, the amount of time they spend in each area over the chosen time period and their capability.

2.4.2. Financial

The financial model was developed to support the development of recommendations for the GLA fleet by providing the anticipated CAPEX and OPEX costs of different fleet constructs in terms of vessel numbers, ownership and management over the ten year review period.

The model builds from the bottom up, vessel by vessel to give a consolidated picture of an entire fleet. Each vessel, both current and alternative, has its own financial data sheet. The model calculates the total fleet spend and the impact on the General Lighthouse Fund ("GLF") reserve balance over the ten year review period. A baseline position was created by selecting the current fleet which allowed each alternative fleet construct to be compared against the current situation by determining additional savings or costs.

The input to the model was derived from data provided by the GLAs and from our ship broking and charter market expert who provided indications of the current sale values of the GLA vessels, current purchase prices for alternative vessels and typical daily charter rates for both chartering out GLA owned vessels and chartering in external support from commercial operators.

As the effectiveness of the financial model relies on the accuracy of financial data provided by each GLA, the inputs and assumptions were made available on the shared portal to give an opportunity for each GLA to double-check the underlying financial data.

3. VISITS CONDUCTED AND STAKEHOLDER ENGAGEMENT

3.1. Introduction

As part of the data gathering process, we visited all seven operational GLA vessels, Harwich and Dun Laoghaire. A planned visit to Oban was cancelled on account of changes to the ships' programmes. We also sought the views of a range of stakeholders, specifically concerning the potential for the GLA fleet to meet wider UK and Irish Governmental maritime and operational objectives.

The majority of stakeholder engagements fell after the initial sequence of ship visits and detailed discussions with each of the GLA operations teams. The meetings were discursive, affording us the opportunity to share progress made to date with the review and any emerging findings appropriate to the other party. Dialogue that was founded on our increasingly informed position brought better focus and value to these engagements.

Within the interviews we recorded any concerns that the stakeholder might have regarding the four key questions under consideration in this review; we also focused on areas in which they might consider the GLAs delivering functions over and above the core, statutory AtoN service.

Construction of this 'shopping list' of additional activities and associated necessary platform alterations was facilitated by the GLA representatives providing, separately, a list of activities that they would anticipate being of attraction to a wide variety of potential users of the GLA fleet. The blended list is held at Appendix 6 and is discussed further in Section 4.6.

The following sections provide a chronological record of the stakeholders/organisations visited and key findings or points arising. Detailed notes were prepared for all meetings (except for the final CEO workshop) and shared with the Project Board through the shared portal.

3.1. GLA Ship and Headquarters Visits

3.1.1. Trinity House

The visit programme started with a briefing in Harwich immediately after the Contract Initiation Meeting (4th August). This afforded an insight to the operations, constraints and issues pertaining exclusively to TH followed by a tour of THV Alert. Although the vessel remained berthed alongside, the discussions allowed an appreciation of her strengths and weaknesses. Shortness of time precluded an introduction to the Harwich AtoN monitoring facility, and detailed discussions around ship programming or procurement, which resulted in a subsequent return visit.

The following week we visited THV Galatea at sea off Seahouses in Northumberland primarily to witness replenishment activity in support of refurbishment work to Longstone Lighthouse. We were also able to witness inspection work on a Type 3 buoy.

There followed visits to the NLB and the CIL before re-engaging TH, this time onboard THV Patricia operating in the Bristol Channel. We spent two days at sea observing buoy maintenance activity (which included recovery of a Type 1 buoy) and took the opportunity to engage (briefly) some of the fee-paying passengers who were embarked for one of TH's income generating cruises - 'Patricia Voyages'.

The final element came five weeks later with a visit to MV Mair, moored in Barry Harbour. As the only commercially contracted vessel in the GLA fleet, this was an especially valuable session during which the open and frank conversations with the owner allowed a number of aspects relating to the use of commercially owned vessels to deliver elements of the AtoN service to be explored and explained.

3.1.2. Northern Lighthouse Board

The first trip was onboard NLV Pole Star at sea off Stranraer when we observed a Type 2 buoy being lifted, cleaned and repositioned, and had time for a full tour of the ship and discussions with senior management. On completion we disembarked and relocated to visit NLV Pharos in Greenock.

Pharos was in dry dock undergoing defect rectification subsequent to a grounding during AtoN operations in the Western Isles. The original intention had been to witness helicopter operations from the ship, but clearly this was impractical. Nonetheless, we took the opportunity to spend some hours with the NLB Operations Team which offset the lack of a visit to their operating base in Oban.

3.1.3. Commissioners of Irish Lights

The first element of the introduction to CIL's activities comprised some time at sea onboard ILV Granuaile off Killybegs in Donegal Bay to conduct a Type 2 buoy lift, then demonstrate how the workboats are operated in order to deliver support to shoreside installations. In parallel ILV Granuaile was preparing to mobilise for a charter to meet the requirement to generate commercial income.

On completion of the short day onboard, we drove to Dun Laoghaire and spent the following morning in CIL HQ. As with TH and NLB, this allowed us to contextualise the support activities and facilities for CIL's operations and to have a detailed conversation with the Operations Team to explore their specific issues.

3.2. Stakeholder Interviews

3.2.1. Lights Advisory Committee

The Committee was represented by Michael Everard (Chairman LAC), Gavin Simmonds (member of the LAC, Policy Director (Security and Commercial) at the Chamber of Shipping, and Project Board member); and Martin Putman

(member of the LAC, Port Manager of Portsmouth International Port, and Project Board member).

The LAC had pre-prepared a number of points that they wished to discuss and these are held at Appendix 7. The key points are summarised below.

- The LAC is keen to see the GLAs adopt a more commercial approach, specifically considering contracting out elements of the service.
- There was interest in efforts to assess the level of risk inherent in GLA operations objectively.
- The LAC would welcome some investigation into crewing, specifically whether efficiencies may be achieved through 24 hour working (increasing vessel usage), nationality and number of crew members, and seasonality (potentially amalgamated with 24 hour working to increase output during favourable weather conditions); all of which might lead to a different fleet composition and reduced costs.

3.2.2. Independent Light Dues Forum ("ILDF")

This Forum was represented by Nicholas Finney. Understandably, the ILDF focus was on the potential for efficiencies to be pursued with accompanying reductions in costs (thence Light Dues). There was considerable discussion around the subject of leveraging the benefits of Virtual Aids to Navigation with concern that the GLAs might not be fully embracing the concept. The developments in this area that we had observed and limitations discovered (see Section 5.4.4) were shared.

3.2.3. GLA Joint Strategic Board Fleet Review Group

The Chairman, Nigel Palmer, explained his specific interest in the review, namely to monitor progress in order to be confident that the outcome would assure adequate vessels to enable the GLAs to meet their statutory obligations. We discussed the following key areas.

- The challenge of resourcing as necessary to be able to manage not only core tasking, but also, given the safety critical nature of the output, to handle peak demand situations.
- Potential delivery models that could leverage the benefits of greater centralisation of programming, managing residual capacity on a tri-GLA basis rather than individual operations teams working in isolation.

3.2.4. Trinity House - Legal and Risk

The aim of the meeting with the Deputy Secretary Legal and Risk Manager, Jon Price, was to gain a better understanding of constraints that should be considered before making any recommendations that might simply be impractical for the GLAs from a legal or statutory perspective. The majority of

the discussion focused on the degree of risk being borne by the GLAs and the associated legal ramifications (specifically relating to the legal responsibilities of the CEOs).

3.2.5. Carnival

The Operations Director, Michael McCartain, was engaged to seek the views of a representative of the wider shipping community. While aware of the GLA's remit, he was unsighted on the review, was broadly content with the current service provided and harboured no specific worries regarding the review, nor wished to raise any points of specific concern (related to the review areas).

3.2.6. Department of Transport, Tourism and Sport

The Governmental representatives at the meeting were Dr Deidre O'Keeffe (Assistant Secretary Maritime), Eilish Kennedy (Maritime Safety Policy Division), Brian Hogan (Chief Surveyor, Marine Survey Office) and Eugene Clogan (Irish Coast Guard ("IRCG")). Discussions included the following key points.

- IRCG are able to call on the services of any vessel operating in Irish Waters in time of need. This would include an aspiration to use Granuaile as an emergency first response to an emerging incident in Irish waters, recognising that she is not an Emergency Towing Vessel ("ETV"). Furthermore, under Section 26 of the Sea Pollution Act, the Minister is able to intervene with Granuaile's programme (as well as any other vessel in Irish waters) for the purpose of preventing, mitigating or eliminating danger from pollution or threat of pollution. These powers are similar to those held by the UK Secretary of State's Representative ("SOSREP").

- The Marine Survey Office took the opportunity to share some specific areas where the Irish Flag regulatory approach might differ from that adopted by the Maritime and Coastguard Agency ("MCA"). The most significant was the legal requirement for the operating authority which holds the Document of Compliance to be physically located in Ireland.

- The key strategic role of Granuaile was discussed with stated expectation that in any future model there will be a vessel owned and registered under the Irish Flag.

3.2.7. National Maritime Information Centre ("NMIC")

A relatively new organisation, the NMIC role[1] is to '*secure the UK advantage in the maritime domain*' which translates into an aspiration to '*seize opportunities …….to enhance the UK's overall maritime development, safety, security and resilience*.' The discussion was exploratory with the aim of investigating

[1] National Maritime Information Centre (NMIC), 2015, Available: www.nmic.org.uk [Accessed: September 2015]

whether the GLA fleet would offer capabilities of relevance and use to NMIC. We met the Deputy Director (a serving Royal Navy officer) and his MCA colleague, acting as one of the representatives from a broad range of Governmental organisations.

To date there had been very little interaction between the GLAs and NMIC to which end the Centre had no specific concerns or views over the current review. However, there was a general recognition that a closer relationship could be of benefit and this has since been facilitated.

3.2.8. Transport Scotland

Chris Wilcock and Val Ferguson represented Transport Scotland, and were joined by Ian Craig from Marine Scotland.

The role and importance of the ETV (currently Herakles, based in Orkney, under contract until end March ’16) was a key topic of discussion. Although not specifically part of the GLA Fleet Review, we explained how this issue will be addressed as one of the ‘additional capabilities’ that have been identified and which might add benefit to the GLA fleet.

Transport Scotland emphasised the considerable political sensitivity surrounding the ETV function; they also provided a useful and informative insight to the shape of devolved powers, how these affect maritime operations in different ways and how this might change as the new Scotland Bill takes shape.

3.2.9. Maritime and Coastguard Agency (“MCA”)

We met with Hugh Shaw (SOSREP – also a member of the Review Reference Group), Stan Woznicki (Head of Counter Pollution and Salvage) and Andre Coccucio (Head of Navigational Safety). The following points were noted.

- Under the Civil Hydrography Programme the MCA manages an ongoing survey effort around the UK, chartering eight survey vessels. There is interaction between the MCA and GLAs who liaise in order to deconflict tasking at the programming stage, not least regarding major survey tasks. However, this degree of liaison does not extrapolate to more reactive survey activity that falls outside the pre-programmed schedule, with potential for duplication of effort with MCA and GLA assets tasked in same area.

- The MCA would be pleased to see the GLAs bidding for the survey work and are of the view that an accommodation would likely be found to allow any contract to include an appropriate break clause to be enacted should it be necessary to release a GLA vessel to primary tasking for unplanned, emergency work. It should be noted that this would amount to a public procurement exercise, potentially putting the GLAs in competition with other providers. Considerations would also have to be

made regarding the employment of specialist surveyors to oversee the work.

- Counter pollution was discussed as a possible area where the GLAs could provide additional support to the MCA. The MCA requirement would simply be for a platform on which they could embark suitably trained personnel and equipment – i.e. no requirement for GLA crews to be appropriately trained.

- In preparation for a salvage task, the MCA has established the CAST process (Coastguard Agreement for Salvage and Towage) which provides the Agency with an awareness of what towage assets might be made available from commercial operators, at a pre-agreed rate. The GLA fleet could volunteer for CAST – there is no obligation to commit to any emergent tasking which would be based on the GLA vessels' suitability and availability.

- The ability to provide an ETV capability was of interest, with an acceptance that the bollard pull from the GLA fleet is sub-optimal.

The ability to undertake additional survey work will be dependent on the final fleet outcome. However, it is considered that such work may be of relatively short duration, in existing operational areas and, noting the MCA's flexibility, more easily accommodated within the ship's programme.

3.2.10. GLA Chief Executive Officers

We met with the GLA CEOs on two occasions. At our first meeting the overall progress of the review was discussed together with some key findings, the latest thinking and the plan for moving forward. As a result of this meeting it was agreed to hold a workshop with the GLAs, chaired by the DfT, at which the CEOs were each joined by a board member and their Project Board representative. This fell at an advanced stage of the review and provided the opportunity to present the approach taken, the results of our modelling and our recommendations. In keeping with the overall approach of openness and transparency we were pleased to receive immediate feedback on the emerging Fleet Outcomes.

The conversation was wide ranging, especially around the implementation of some of the commercial elements. There was general agreement with (and support for) the concept of incremental implementation, allowing any embedded assumptions to be fully tested. All three GLAs were also firmly of the view that any transformational change should be led from within, on the basis that in recent years the organisations have shown themselves to be proficient in delivering change.

3.3. International Providers of Aids to Navigation

Although not engaged directly, we spent a brief time researching the provision of aids to navigation in other countries around the world. At the Contract

Initiation Meeting it was recommended that we look at the countries with similar shipping traffic, coastlines and navigational challenges as the UK; specifically mentioned were Scandinavia, Australia and nations located adjacent to the Malacca Straits.

3.3.1. Norway

The Norwegian Coastal Administration ("NCA") or Kystverket is responsible for the provision of approximately 20,000 AtoN, including 5,000 lights and 100 lighthouses. Other responsibilities include the provision of Vessel Traffic Services, pilot services and pollution control. Through a separate operating unit, the organisation operates a mixed fleet of eleven new and ageing vessels as shown in Table 1. These vessels perform planned tasks in support of the construction, maintenance and management of AtoN around the coast.

Name	Length	Speed	Craneage	Built	Type
OV Skomvær	44m	14kts	7t @ 11m	2013	AtoN Tender & Oil Spill Response
OV Utvaer	44m	14kts	7t @ 11m	2013	AtoN Tender & Oil Spill Response
Lindesnes	23m	15kts	8t max	2011	Workboat
Clean Seas 1	32.5m	10kts	8t max	1979	Oil Spill Response & AtoN Tender
Clean Seas 2	32.5m	10kts	8t max	1980	Oil Spill Response & AtoN Tender
Clean Seas 3	32.5m	10kts	8t max	1981	Oil Spill Response & AtoN Tender
Clean Seas 4	32.5m	10kts	8t max	1982	Oil Spill Response & AtoN Tender
MS Villa	41.8m	11.5kts	12t max	1975	AtoN Tender
MS Ona	37m	11kts	12t max	1985	AtoN Tender
MS Træna	25.6m	11kts	5t max	1977	AtoN Tender
MS Vestfjord	31m	11kts	10t max	1984	Reserve AtoN Tender

Table 1: Summary of Norwegian Coastal Administration Fleet

The NCA receives its financing from the state as well as users through "safety fees". The fee structure varies by region; they are levied either on vessels more than 24m in length, gas tankers calling at certain ports or vessels carrying hazardous cargo and are calculated based on Gross Tonnage or displaced volume.

3.3.2. Australia

The Australian Maritime Safety Authority ("AMSA") is responsible for approximately 500 AtoN including traditional lighthouses, beacons, buoys, RACONs, DGPS and AIS stations. The organisation is responsible for provision of AtoN for ocean and coastal navigation while states, ports and territories provide aids in ports and harbours. The cost of providing AtoN is met by the commercial shipping industry through the Marine Navigation Levy.

In 2001 AMSA outsourced its AtoN maintenance; the contracted company as of February 2014 is Australian Maritime Systems ("AMS") who also provide an ETV capability. AMS operates the Coral Knight, a 60.5m Anchor Handling Tug

Supply Vessel modified to provide Emergency Towing Services. The vessel spends 100 days a year maintaining AMSA's AtoN network in the sensitive sea areas surrounding the Great Barrier Reef and Torres Strait, she carries an emergency wreck marking buoy and is also equipped to provide SAR and pollution response support. The remaining AtoN are managed by each individual state authority.

3.3.3. Singapore

The Maritime and Port Authority of Singapore ("MPA") is responsible for maintaining 5 lighthouses and more than 120 buoys[2]. The organisation achieves this with a single 35m buoy tender "Panduan" capable of lifting 15 tonnes using an aft A-frame. Additional capabilities include firefighting and oil spill response.

The MPA receives funding to carry out its AtoN maintenance work from the "Aids to Navigation Fund". The user-financed fund was founded in 2008 to support the renewal and maintenance of AtoN in the Straits of Malacca and Singapore. It is managed by Malaysia, Singapore and Indonesia who each chair the committee for three years at a time in rotation. Financing comes from users of the Straits with major contributors including the Nippon Foundation, International Foundation for Aids to Navigation, International Maritime Organisation, Malacca Strait Council and a number of other Governments. The fund is part of a wider tripartite co-operation between the three littoral states.

3.3.4. Relevant Findings from the Review of International Providers

Drawing any distinct lessons or benefits from the operations of other GLAs was not possible beyond the conclusion that there are many different ways of delivering a successful AtoN service and that the approach adopted is highly dependent on the geography of the sea area in which the AtoN are situated. Furthermore, the services are delivered by a wide range of vessel types and sizes, each suited to the nature of the AtoN hardware deployed.

[2] MPA Commissions New Buoy Tender Vessel (Singapore), World Maritime News, Available: http://worldmaritimenews.com/archives/100847/mpa-commissions-new-buoy-tender-vessel-singapore/ [Accessed 17 Dec. 2015].

4. VESSEL CAPABILITIES

The review requires an indication of the capabilities required of the vessels in the GLA fleet in order to fulfil their statutory duty to maintain AtoN and to respond to hazardous wrecks and new dangers. In order to achieve this we have sought to stipulate the range of capabilities against which the current fleet's output may be assessed and any future vessel's ability be determined.

Using the comprehensive catalogue of additional capabilities provided by the GLAs and included in Appendix 6, we have segregated capabilities into two categories; 'major' which would be likely to drive the size and cost of any vessel and 'key' which would not fundamentally affect the size of any vessels and may be incorporated at additional cost.

In order to assess the GLAs' requirement to deploy major capabilities we have mapped where these would be required against the twenty-one sea areas defined by the GLAs, shown in Figure 4. These areas were selected as the basis for this assessment in order to ensure that our works are aligned with current GLA priorities and targets.

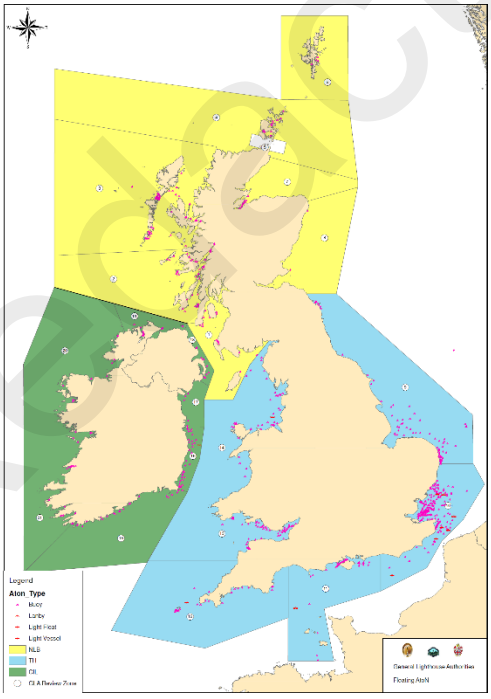

Figure 4: The twenty-one GLA sea areas

This Section is arranged as follows:

- a brief description of the inter-GLA buoy types;
- the major capability requirements that we have identified;
- the range of key capabilities that we consider worthy of specific mention;

- an assessment of the existing fleet using a bottom-up approach;
- options to improve the GLA fleet's balance of capability;
- a discussion of the range of Additional Capabilities that the fleet might require to meet broader demands;
- Commercial Income Generation considerations; and,
- a brief overview of some buoy/mooring operators around UK and Irish waters.

4.1. Inter-GLA Buoy Types

In order to harmonise the nomenclature used to describe AtoN buoys, the GLAs have defined four main buoy types based on the height of the installed light's focal plane. These are listed in the GLA Joint Navigation Requirement Policies document 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.

While the focal plane height is not necessarily linked to a buoy's overall size and weight, as this can differ greatly depending on the type of superstructure and AtoN equipment fitted, there is nevertheless a strong correlation between the two. For the purposes of this report, all references to Type 1, 2, 3 and 4 buoys are based on the typical buoy body metrics provided by Trinity House and reproduced in Table 2 below.

Buoy Body	Diameter (m)	Height (m)	Total Weight inc. AtoN Fit
Type +1 inc. tailtube	3.5	8.9	12,000
Type 1 inc. tailtube	3.05	8	10,500
Type +2	3.05	3.2	c. 6,000
Type 2	3.05	3	c. 5,500
Type 3	2.2	3.8	550
Type 4	1.45	1.8	300

Table 2: Inter-GLA Buoy Metrics

A table containing the number of each buoy type in the GLA sea areas is provided at Appendix 8.

4.2. Major Capability Requirements

We have identified four major capabilities required of certain GLA vessels in order to deliver the AtoN service:

- ability to handle Type 1 buoys;
- capacity to embark and operate a helicopter;
- seakeeping; and,
- speed of response.

4.2.1. Ability to Handle Type 1 Buoys

The considerable size and weight of these AtoNs demands a basic size of support vessel to enable safe handling and storage of the buoys, either while replacing defective elements or simply to provide stable support during routine cleaning and maintenance.

The current arrangement generally comprises a purpose built crane or derrick and a small number of vertical ‘buoy pods’ which allow the counter-balancing tail tube to sit below weather-deck level.

Figure 5: Buoy pod with 3 supporting pedestals - onboard Galatea

Figure 6: Type 1 Buoy being lifted onto Patricia’s deck

These pods dictate vessel dimensions, specifically the hull depth necessary to afford the requisite weather-deck-to-keel distance and the height of the buoy drives the size of crane needed to lift it. Any Type 1 vessel crane must have sufficient capacity for buoys weighing up to 14 tonnes, their mooring arrangements and wave induced shock loading up to a specified sea state.

The geographical spread of Type 1 buoys across the GLAs is presented in Figure 7 below.

Area		Buoys Type 1
NLB	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
TH	9	14
	10	26
	11	10
	12	4
	13	5
	14	2
CIL	15	2
	16	3
	17	
	18	2
	19	1
	20	
	21	

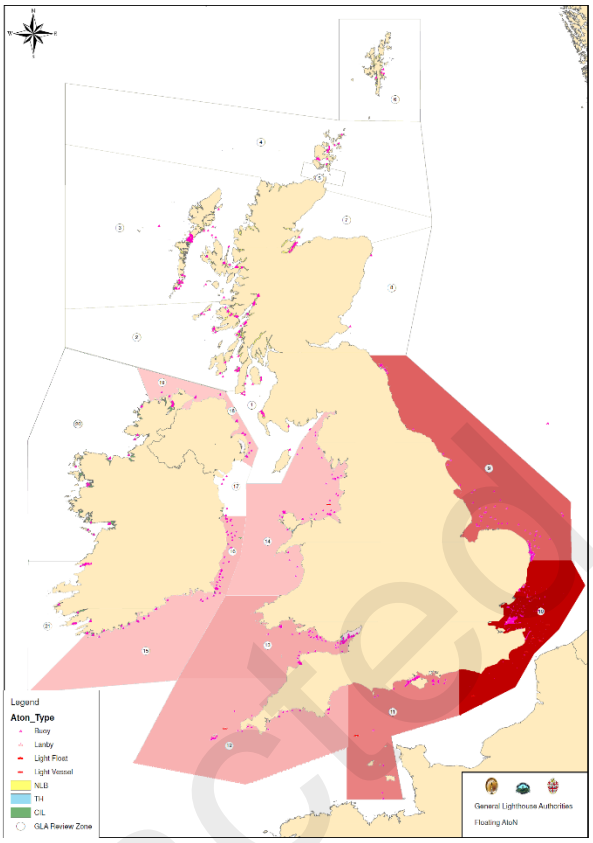

Figure 7: Geographical distribution of Type 1 buoys

The majority of Type 1 buoys (sixty-one) lie in TH waters, predominantly to the east and south of England. NLB has no such buoys in their waters. CIL's Type 1 buoys are either off the north coast (three in areas 18 and 19) or to the east and south east of Ireland (five in areas 15 and 16).

4.2.2. Capacity to Embark and Operate a Helicopter

Incorporation of a flight deck attracts some unavoidable costs – both CAPEX for the installation and OPEX for crew training and certification, maintenance of fuel and fire systems, etc. The operational criteria are also important, although should be considered as a factor alongside seakeeping; the guidance followed is that offered by the Helideck Certification Agency[3], summarised as pitch/roll 2°, helideck inclination 2.5°, Heave Rate 1.0m/s, Heave Amplitude 3m, with daytime only operations.

The table and diagram presented in Figure 8 indicate the areas and number of sites where this capability is required. The left hand column gives the requirement for ship supported helicopter operations as part of the regular support to AtoN while the right hand column indicates the requirement for the next six years, on completion of which it is anticipated that this specific demand for ship-borne helicopter hours will start to diminish.

[3] Helidecks Limitations List, Helideck Certification Agency (HCA), October 2015, Available: http://www.helidecks.org/index.php/information/hll [Accessed: 1st November 2015]

It is apparent that NLB has a substantial ongoing requirement for a helicopter capable vessel; TH similarly, although within a more distinct area (Channel and Irish Sea); but CIL's ship-based helicopter demand will reduce considerably once the support to planned projects has passed.

Area		Helo Support	
		Storing	Planned Projects
NLB	1	3	5
	2	3	7
	3	7	12
	4	5	6
	5	2	2
	6	2	3
	7		
	8	1	2
TH	9		
	10		
	11	3	3
	12	5	2
	13	5	6
	14	2	1
CIL	15		2
	16		2
	17		1
	18		1
	19		2
	20		4
	21		

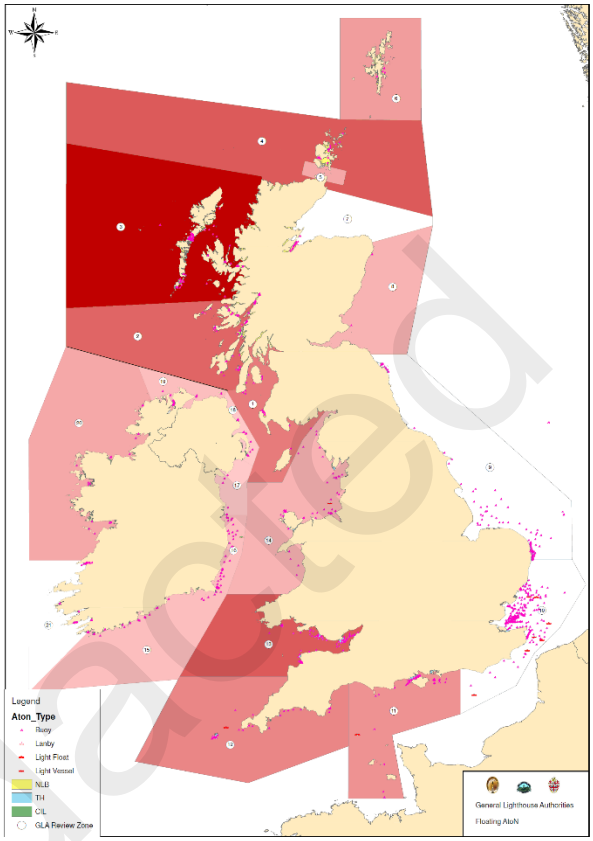

Figure 8: Geographical distribution of ship-borne helicopter support requirement

4.2.3. Seakeeping

Steep seas may be found at some point in the year in virtually all of the twenty-one GLA areas which could easily be interpreted as a need for substantial vessels that possess sufficient seakeeping characteristics to be able to discharge the GLA statutory duties in the worst conditions. This would skew recommendations. We have based our findings on a statistical analysis of sea states, drawing on the review that TH conducted of the Fugro Offshore Technology Report 2001/030[4].

Table 3 below presents the percentage of time in a given year for which certain wind speeds or wave heights are exceeded.

[4] Health & Safety Executive (HSE). Wind and wave frequency distributions for sites around the British Isles, 2001, report prepared by Fugro GEOS, Offshore Technology Report 2001/030.

Sea Area	GLA Areas	Percentage Exceedance Values				
		Wind Strength		Significant Wave Height		
		BF4	BF6	1.5m	3m	4m
Hebridean Shelf	2, 3 & 4	85	37	74	43	23
Northern North Sea	5, 6 & 7	83	35	64	23	11
Central North Sea	8 & 9	76	25	42	9	3
Southern North Sea	9 & 10	74	21	26	3	1
English Channel	11 & 12	70	20	42	11	4
Celtic Sea	12, 13 & 15	77	25	62	22	11
Irish Sea	1, 14, 16 & 17	70	21	31	9	3

Table 3: Percentage exceedance values

Figure 9 provides a broad order depiction of the relevance of these weather conditions, again shown on the GLA area basis (the darker the shading the more demanding the conditions); this representation creates some plainly false boundaries or 'cut-off' points and the Fugro Report did not address the areas to the west of Ireland where the Atlantic fetch can create very demanding conditions. Nonetheless, the analysis does support some key findings:

- The probability of poor weather conditions to the west of Ireland drives the need for a vessel with very good seakeeping qualities. This conclusion is reached mindful of the fact that the CIL Buoy Servicing List ("BSL") should be manageable well within any given year and noting that flexibility in the ship's operating schedule may enable work to be planned and undertaken whilst avoiding the worst of the weather;

- NLB will require a vessel with good seakeeping;

- TH's challenges in this specific regard are not as geographically widespread as for the other GLAs, with a relatively low incidence of poor conditions in the North Sea; however the South West Approaches presents a more significant issue.

It is also noted that whereas the seakeeping qualities of the vessels will marginally improve operability, the more challenging sea conditions will result in more weather downtime for vessels operating in these areas. Appropriate scheduling of vessel works may reduce this downtime for planned activities.

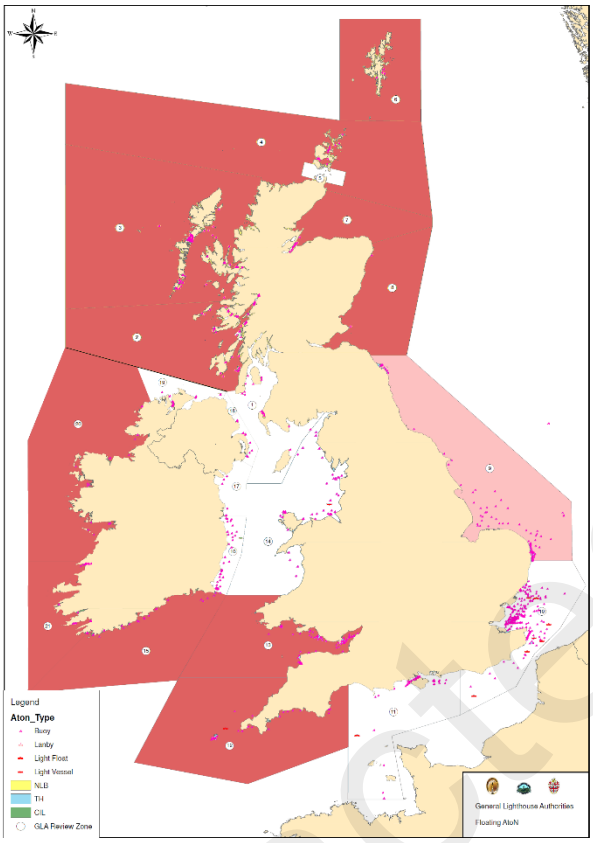

Figure 9: Areas requiring enhanced seakeeping capabilities

4.2.4. Speed of Response

The requirement for higher speed is to ensure that vessels charged with the rapid intervention task are able to respond in a timely fashion to wrecks or new dangers within the higher risk areas - 6 and 12 hour regions defined by the GLA developed Risk Response Criteria ("RRC") (see Section 5.3.3). These are indicated in the chartlet in Figure 10 taken from the RRC document where:

- The red area (south east England) indicates the requirement for a response within 6 hours;
- The three yellow areas (approaches to the Humber, Solent and Lands' End) indicate up to 12 hours;
- Darker blue hashed areas up to 24 hours;
- The remaining pale blue mottled area indicates that a response in excess of 24 hours would be acceptable.

The RRC document states that "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". Rapid response to a wreck could however be required in any sea conditions, with a higher likelihood that it will be in poor weather.

The GLAs routinely meet or exceed the standards set by the International Association of Lighthouse Authorities ("IALA") for AtoN availability. However, the importance of responding swiftly to all casualties, in particular those of the highest navigational significance, is clear and results in the need for rapid response capability in all sea conditions. Therefore, there is a requirement for a blend of excellent seakeeping and speed.

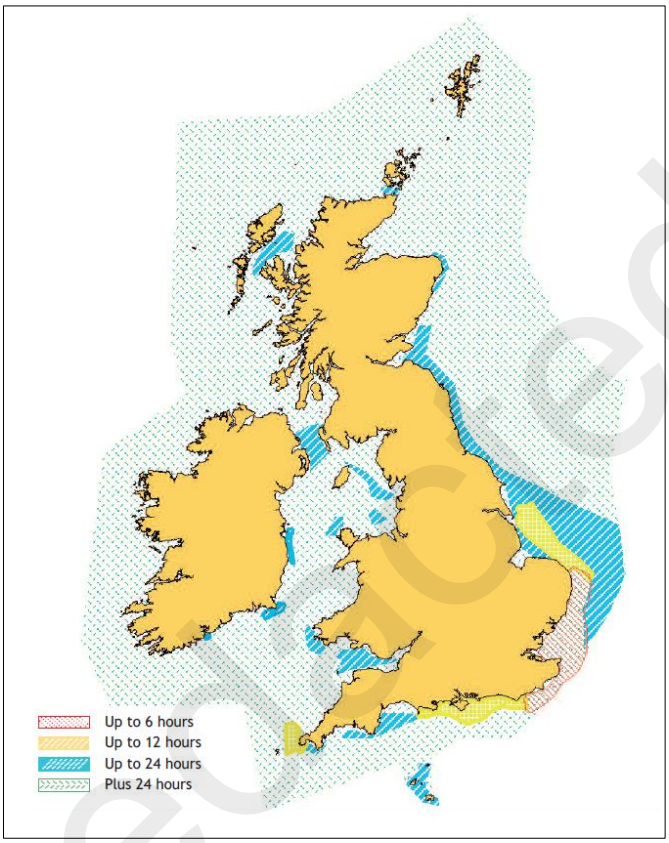

Figure 10: Risk Response Criteria Areas

4.3. Key Capabilities

There are a number of additional capabilities that individual vessels require, which would not fundamentally drive the size of any future vessel. The principal ones are discussed below.

4.3.1. Crane

The crane lift capacity for Type 1 capable vessels needs to take account of the weight of the heaviest buoys, their chain and the sinker as well as any additional shock loading and additional stresses that may be encountered. This capacity must be achievable at a suitable radius, particularly if the crane is positioned to one side of the vessel.

The current crane configuration generally (not onboard all vessels) requires the operator to be in the cab positioned high on the crane pedestal. The benefit is reported as allowing the operator readily to observe the position of

the buoy in over-the-side lifts, enhanced by the crane being installed off-centre. Consideration should be given to the option of providing the operator with a chest pack remote control enabling him to work at deck level and co-ordinate more effectively with the other members of the deck team when appropriate.

4.3.2. Hydrographic Survey Suite

Such a facility provides two outputs of particular significance, with emphasis on multibeam sonar:

- Accurate geo-location of wrecks:
  - Historically, third party reporting of wreck location is inaccurate, potentially by a considerable margin;
  - Before laying any wreck markers to cause transiting vessels to divert around the new danger, it is essential that the diversion is valid and not inadvertently causing a vessel to divert into danger;
  - A multibeam sonar affords the ability to locate a wreck accurately and to determine the clearance depth.
- Hydrography:
  - Specifically profiling changes in sea bed contours is of special relevance around the southern North Sea where shifting sands are commonplace and can also have significant impact on the position of key buoyage;
  - The criticality of this is evidenced by the increasing dependency of shipping on the accurate location of buoyage (see Section 5.5).

4.3.3. Communications Suite

GLA vessels require a comprehensive communications suite specifically VHF, SATCOMs and reliable internet connectivity to enable good communications paths between ship and shore; not only for relaying changes to ship tasking but also to allow update of data to shore on buoy condition, mooring chain wear etc.

It is noted that all GLA vessels would benefit from their own standalone ship maintenance system held onboard (for stores requisitions etc.) rather than a requirement to log on to the GLA base system each time work is required. Such a standalone system, with a periodic (daily or weekly) reconciliation (to/from shore) of updates and requirements, would be more user friendly and efficient than the current systems.

4.3.4. Chain Handling

Handling buoy mooring chain, with attached heavy sinker is hazardous and carries a risk to personnel safety, not least when the sinker is ‘sanded’ and considerable force needs to be applied to the mooring chain in order to

release the bottom suction. To minimise the risk of injury from chain slippage, we observed various options ranging from a manual guillotine to hydraulic, remotely operated Karm Forks. The latter offer a more substantial means of 'chain stopping' with less manual intervention. Retrospective installation of such a hydraulically operated chain-stopping system on existing vessels should be considered, subject to financial and technical viability, and its inclusion is recommended on future vessels.

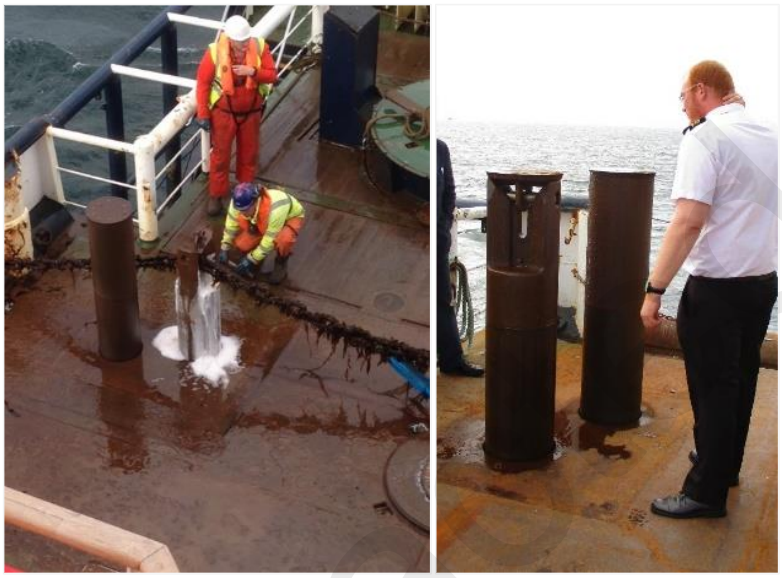

Figure 11: Karm Forks installed on Galatea

4.3.5. Winch

The type of winch installed varies across the fleet with some being purely for recovery and deployment of ropes, while others are able to handle chain. Views on the need and applicability of this varied across the GLAs.

NLB selected a chain winch as it can handle a wide range of chain sizes as well as rope. Granuaile's winch is being modified this financial year to handle chain.

4.3.6. Sea Boat Operations

Operations such as logistic support to lighthouses require a substantial workboat that is capable of acting as a drone to transport provisions (including fuel and water) from the host vessel direct to the installation. We assess that any vessel that is capable of handling Type 1 and 2 buoys will also be capable of supporting any such work boat, although this should be actively considered in any future procurement process.

The use of workboats for replenishment of lighthouses differs between TH and CIL. On Galatea we witnessed the workboat being used to deliver fuel and water to an engineering crew at Longstone Lighthouse. This was achieved by filling a container in the work vessel from Galatea, transporting it ashore and

pumping into the lighthouse storage tanks. On Granuaile, two hoses were taken ashore with the workboat (as shown in the picture below) and the supplies pumped across.

Figure 12: Fuel and water hoses being towed ashore for lighthouse replenishment from Granuaile

4.3.7. Miscellaneous

All vessels employ a remote device, introduced from the US Coast Guard, for attaching securing pennants to buoys, nicknamed ‘The Happy Hooker’. An ingenious and imaginative tool that has been deployed across the GLA fleet, it is an excellent yet simple piece of equipment that reduces the risk to personnel by avoiding the need to buoy-jump (where personnel physically clamber onto a buoy to attach recovery pennants/wires). This tool will doubtless be included in the inventory for any future vessel, which we fully endorse.

Figure 13: A ‘Happy Hooker’

Several of the vessels with superstructures forward and working decks aft do not lie well to their anchor with a distinct tendency to yaw and drag. The current means of avoiding this is to operate Dynamic Positioning (“DP”) continuously when at anchor, noting that both Galatea and Pharos only require heading control rather than full DP. It is for consideration in any future

ship design that use of stern anchors is considered as an alternative to such use of DP.

Several GLA vessels are fitted with Moon Pools of varying diameters. In some cases these have proven useful for commercial contract operations while in others they have never been used. Where the latter is true, consideration should be given to installing plating to streamline hull form and improve fuel efficiency.

4.4. Current Fleet Capability

A full technical report on all vessels is included at Appendix 9. The following summarises the key observations from our ship visits of direct relevance to this review.

4.4.1. Trinity House

Trinity House's fleet comprises two Multi-Function Tenders ("MFTs") (Galatea and Patricia) and a Rapid Intervention Vessel ("RIV") (Alert). Additional support is delivered by the MV Mair, a 24m ex-Navy tender provided under a time-charter agreement with a commercial operator.

THV Galatea

THV Galatea (DP2) is a modern and capable vessel, she is Type 1 buoy capable and can support helicopter operations however it was noted by the crew on board that she can struggle to maintain speed in heavy seas. As with all the modern GLA vessels, Galatea is fitted with an effective hydrographic survey suite.

THV Patricia

THV Patricia (DP1) is a highly capable ship with a helideck and the ability to handle Type 1 buoys. She possesses particularly good sea-keeping qualities but her age is starting to show. This is especially apparent in the engineering spaces with increasing obsolescence and consequent cannibalisation of the six Ruston diesel engines (only five were operable at the time of our visit). She also provides regular cruises for fee-paying passengers keen on tasting the 'GLA experience'.

THV Alert

THV Alert (DP1) fulfils a primary role as the RIV and consequently spends time largely within reach of the 6 and 12 hour response areas around the south east coastline of England. Installed with a comprehensive multibeam sonar suite, she acts as an excellent platform from which to confirm precise location and configuration of a wreck, and is equally useful in meeting the hydrographic survey task that is crucial in the southern North Sea areas; there is a close linkage between TH (using Alert data) and the UK Hydrographic

Office who appear content that Alert's survey information meets their exacting criteria.

Procured with the anticipation of handling only plastic buoys, Alert has a capability that peaks for routine, safe operations at Type 3 buoys. This poses a programming frustration since a large element of the AtoN tasking that lies in her primary area of operations involves the larger Types 1 and 2 buoys, on which she cannot be employed.

Aside from the limitation on size of buoy that she can manage, Alert's major limitation is speed made good which drops significantly in challenging sea conditions and limits her ability to deliver rapid intervention.

Following our stakeholder engagement with the MCA's Head of Navigational Safety (responsible for the Civil Hydrography Programme – see Section 3.2.9) it is apparent that this survey capability could be integrated more widely into Departmental activity around the UK, with potential financial benefit to TH; this merits further investigation, noting the caveat offered earlier regarding engagement in commercial work.

MV Mair

MV Mair provides a valuable service, under time charter to TH. Tasked by the TH operations team primarily with operations in and around the Bristol Channel, the contract for services allows for employment further afield. She is remarkably well equipped and suited to her tasking with an excellent surveying suite and RACON. Her size limits her to operations with Types 3 and 4 buoys, and speed (10 knots) constrains her use in any sort of rapid intervention role for which she is not already pre-positioned.

Of shallow draft, Mair can service buoyage that is inaccessible to the larger TH fleet elements. While her size is a constraint on buoy maintenance, her short length overall is close to the maximum for the tidal mooring which is provided (free of charge) by the RNLI in Barry Harbour – a facility that is of immense utility in the challenging tidal conditions in the Bristol Channel.

Our clear judgement is that for the cost of the contract and when taking into account the very willing, customer-focused approach of the owner/operator (G J Binding & Sons Ltd. who operates, maintains and crews the vessel), MV Mair represents excellent value for money that would be a challenge to replicate elsewhere. She sets a good precedent as a role model for the commercial option of employing a vessel on a time-charter that may be tasked by the GLA operations team largely as if she was an 'owned' asset.

The service available under the Binding contract extends to a highly capable Rigid Inflatable Boat ("RIB") that is rapidly deployable by road, at short notice, countrywide. Fitted with keel mounted multibeam sonar and Differential GPS, this craft is able to conduct a rapid survey of a reported wreck location accepting the limitations of daytime-only operations, remaining relatively close inshore (potentially out to 12nm) and in lower sea states. It would be wrong to

assume that a highly capable RIB such as Binding's offers a proper alternative to the more substantial platforms that are survey capable; but it is equally impossible to avoid the conclusion that this affords TH an excellent and highly flexible adjunct to their fleet.

4.4.2. Northern Lighthouse Board

NLB operates two vessels, one MFT, Pharos, and one Medium AtoN Tender ("MANT"), Pole Star.

NLV Pole Star

NLV Pole Star (DP1) appears to be well suited to the majority of AtoN work in NLB's waters. Although capable of servicing Types 2 to 4 buoys the deck space available for such work while also transporting replacement buoys is limited, which presents an additional factor that programmers need to take into consideration. She does not possess the ability to embark an aircraft, instead her helicopter capability is limited to vertical replenishment operations. NLB places no significant requirement for speed on the ship and she faces limitations in the higher sea states. Nonetheless, with a programmed BSL demand that is readily containable within the time available, she is well suited to the GLA role.

Although Pole Star is well able to access the vast majority of AtoN, there are some that lie in waters too shallow for her. To contend with this, NLB has established a number of local arrangements, for example in the Sound of Harris where fish farm operators provide this capability.

Figure 14: Pole Star's aft working deck

NLV Pharos

NLV Pharos (DP2), of very similar construction to Galatea, is an extremely capable ship but she fields capabilities which exceed NLB's specific requirements. While her primary role is helicopter support for the outlying lighthouses for which she is more than capable, she undertakes buoy work (is Type 1 buoy capable) and supports casualty response. Although NLB has no requirement to work with Type 1 buoys in their own waters, Pharos' capability in this regard, when viewed from a GLA fleet-wide perspective, offers operational resilience providing the option, under a more integrated approach to operations, to deploy Pharos in support of routine TH or CIL Type 1 buoy work.

A spacious ship, Pharos can support many of the Additional Capabilities listed at Appendix 6, not least providing planning space for embarked crisis management personnel.

4.4.3. Commissioners of Irish Lights

CIL operate a single MFT, Granuaile.

ILV Granuaile

ILV Granuaile (DP1) is, from a capability perspective, a good fit for her current role. Granuaile routinely sails in areas that are prone to considerable Atlantic seas and swell and has sufficient seakeeping characteristics to perform her duties in these waters. She operates two substantial wooden workboats, the considerable maintenance load of which is offset by the welcome degree of robustness that is available when operating close to rocky shorelines. This requirement will diminish as planned upgrades to lighthouses will reduce the demand for such logistic support from sea.

Granuaile provides both Type 1 buoy capability and a helicopter deck. Helicopter operations are predominantly focused on the provision of support to lighthouses, a requirement that will reduce (similar to the workboat) once the capital improvement programme completes (2022). The consequence is that towards the end of this review period, CIL will be operating a vessel that is considerably more capable than is required to deliver CIL's statutory responsibilities, although clearly there will still be the requirement to support the eight Type 1 buoys in CIL areas. In the context of the overall GLA fleet the capability of Granuaile provides an opportunity to provide resilience and also support the work of NLB and TH.

The challenge for CIL is in meeting broader Governmental requirements. Granuaile is considered a strategic asset and as such meets some additional remits that are placed on her that lie totally beyond the discrete GLA tasking. CIL has already moved towards a fully self-funding mechanism with the associated implications on Granuaile's programming.

4.5. Capability Coherence

Table 4 below provides a summary overview of all major capability requirements, and indicates where there is either an excess or shortfall from the perspective of the GLA operating the asset.

GLA Area		Type 1 Buoy	Helicopter Platform	Sea-worthiness	Speed
NLB	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
TH	9				
	10				
	11				
	12				
	13				
	14				
CIL	15				
	16				
	17				
	18				
	19				
	20				
	21				

Type 1 Buoy	Helicopter Platform	Sea-worthiness	Speed
Note 1			
Note 2	Note 3	Note 4	
	Note 5		

Capability not required
Capability required

Excess of Capability
Shortfall of Capability

Notes:

1. Pharos is Type 1 Buoy capable but this is not required in NLB waters;
2. Patricia and Galatea are both Type 1 buoy capable but the statutory BSL demand could be covered by just one such vessel;
3. Patricia and Galatea are both helicopter capable, but the attribution of flight hours to TH should be manageable by one such vessel;
4. Alert is markedly hampered if required to make headway in a significant sea state;
5. After 2021 the requirement for Granuaile to support helicopter operations will diminish and reach a minimum by 2025.

Table 4: Overview of Major Capability Requirements and Excess

By interpolating the data within this table, along with other constraints that we have identified, we draw the following conclusions regarding the major capability issues which drive the size and cost of the vessel.

When approached from an individual GLA perspective:

- NLB and TH both have an excess of Type 1 buoy capability;
- TH lacks the necessary speed of response to meet Risk Response Criteria with the current fleet;

- TH operates two helicopter capable vessels. While this affords a degree of operational flexibility and resilience, it is probable that the demand could be met by one such vessel;

- CIL has a good match of capability to requirement, but this loses balance after 2021 when the shipborne helicopter support requirement starts to reduce to occasional tasking such as personnel transfers and battery changes. On the basis that Ireland will always require its own vessel and that there is no requirement for more than one ship to meet CIL's statutory AtoN remit, CIL will always require a platform that displays good seakeeping qualities;

- NLB will require at least one vessel that displays good seakeeping and possesses helicopter capability.

4.5.1. Mitigation Options

The concept of sustaining and deepening operational co-ordination and integration lies at the heart of evolving towards a more efficient and coherent GLA fleet. The following conclusions may be drawn by considering the overall GLA fleet and the combined requirements of the three GLAs.

Buoy Handling

- There is considerable over-capacity in Type 1 buoy capability, much of which is vested in the newer tonnage.

- It is recommended that should a replacement for Patricia be required, then it should not include this major capability.

- Given the limited number of Type 1 buoys in CIL's inventory, it is entirely conceivable that these could either be serviced by other GLA ships, or, conversely, CIL could absorb some of TH's Type 1 load, for example in the Irish Sea and South West Approaches.

- Pharos' Type 1 capability is not required by NLB. Nonetheless, unless the option to sell and replace this ship is pursued (not recommended) retention of such spare capacity that can support either TH or CIL provides attractive, cost-effective resilience.

- Although not a major capability consideration, our analysis of the overall fleet capability indicates that Buoy Types 2-4 are widely spread across many of the areas. With the aim of optimising operational flexibility of the entire GLA fleet, it is recommended that any vessels in the core GLA fleet should be suitably equipped to handle up to Type 2 buoys (acknowledging that neither Alert nor Mair is fully capable of this).

Helicopter Capability

- From a tri-GLA perspective, fully integrated programming of helicopter capable ships such that they may operate in support of another Authority leads to an over-capacity of flight decks, particularly when CIL's requirement diminishes in the latter years of this review period. The likely decommissioning of Patricia during the review period will reduce this excess capacity; should the Fleet Outcome selected require a replacement for Patricia, then the capability to operate helicopters should not be a consideration.

- NLB, using Pharos to support offshore helicopter operations, does not require a vessel of her size simply to meet the helicopter requirement. The larger vessel with better seakeeping offers certain advantages, however the additional operational time actually delivered is restricted by the helicopter operating envelope which will preclude operations in the more inclement conditions. It is feasible to conceive of a significantly smaller support ship that would still have sufficient seakeeping qualities to support helicopter operations and deliver NLB's statutory requirements. The low initial purchase cost of Pharos coupled with the resilience offered to the overall GLA fleet make her retention the preferred option and the emphasis shifts to seeking to employ the ship in support of TH and CIL.

Seakeeping and Speed

- The area of greatest concern lies in the ability to deliver a timely response in the sea areas with short response criteria, currently delegated to Alert whose speed operability and viability is seriously eroded in relatively low sea states.

- There is no immediate solution to this challenge within current fleet assets.

- One option to would be to approach the issue from a completely different angle, namely by pursuing a commercial solution, employing an appropriately capable vessel already in the high risk area of concern, as described in Section 5.4.2.

4.5.2. Key Capability Considerations

Craneage

- A common concern onboard Galatea, Pharos and Pole Star was the stability and pendulum effect induced when lifting buoys with the fixed boom cranes.

- With the current arrangement, the crane boom length is determined by the requirement to lift the tallest buoy clear of the deck when reaching across the vessel's deck.

- The boom must be raised to a sufficient height to bring the hook above the buoy. The whole weight on the crane hook is then suspended far above deck level, raising the vessel's centre of gravity thus reducing the vessel's stability.

- Furthermore, with the large cranes, smaller buoys will have an excessive length of cable from the jib to their attachment points which, in higher sea states, can result in a pronounced swinging motion.

- A knuckle-boom crane would allow lift point to be kept closer to deck level during most of the lifting operation, mitigating both issues.

- It should be noted that although Granuaile is fitted with a similar crane to the other three vessels, her crew did not share the same concerns.

Winch

- The selection of the type of winch on any future GLA vessels should be considered from a pan-GLA perspective, taking into consideration all likely tasking, especially when the fleet is operated in a more integrated fashion (see later sections and recommendations).

4.6. Additional Capabilities

The directive in the ITT was that "*There is no intention to develop the fleet specifically for commercial or alternative operations; the focus is on the fleet required to provide a reliable, efficient and cost effective AtoN service, albeit one that has the capability necessary to maximise its utilisation*." Within this context, and following discussions with key stakeholders, we identified a number of areas where the utility of the GLA vessels might be broadened to meet the requirements of other entities offering the opportunity to increase the utilisation of the GLA vessels.

Of those interviewed, the MCA and Irish Coast Guard were the most enthusiastic about leveraging the GLA fleet capacity. For both of these organisations, there was considerable interest in an ETV capability, which was also of significance (for slightly different reasons) to Transport Scotland. The GLAs' surveying capability was also the focus for potential closer interaction.

- The Irish Coast Guard seek a vessel with a bollard pull in the order of 50T. This would be capable of rapid deployment just to hold a distressed vessel into sea, rather than provide a fully capable ETV which would be chartered separately.

- The MCA shares a broadly similar view, but is of the opinion that a bollard pull of c.80T would meet their ETV need.

- The MCA, TH and NLB all conduct surveys around UK waters. There is scope for their efforts to be more closely shared to avoid duplication of

effort as well as providing a commercial opportunity for the GLAs which may be able to be scheduled into the overall AtoN support programme.

Appendix 6 provides a summary of all additional activities for which support might be sought from the GLA fleet. Some of these are minor adaptations that could be incorporated at minimal cost, whereas others would undoubtedly be costly (and potentially non-viable until a new vessel is introduced with these specifically included in the design). In the absence of an accurate specification against which to provide rough order of magnitude costs, we have elected to provide a broad indication of the probable cost, and whether it could be considered in a current fleet asset.

4.7. Commercial Income

The DP2 vessels, namely Pharos and Galatea, will attract a higher day rate on charter and have a greater range of opportunities. Currently, however, the vessel towards which most attention is focused for income generation is Granuaile. The challenges of generating income through chartering the GLA vessels may be substantially addressed by an alternative approach to fleet scheduling which is discussed further in Section 5.6.

4.8. Capability of Other Operators

Acknowledging that there are some unique challenges pertaining to GLA operations, it is of note that there are several other UK and European based operators who conduct buoy handling operations around the UK and Ireland (as well as further afield). The following four companies are highlighted for illustrative purposes; the list is not intended to be exhaustive.

Not all associated vessels are DP fitted, but these operators (amongst others) should be fully capable of providing reliable commercial support of high quality and integrity.

5. OWNERSHIP AND OPERATIONAL MANAGEMENT

5.1. Current Situation

5.1.1. Ownership of the Vessels

This varies across the fleet, from owned outright (Granuaile) to lease charter agreements (of differing financial costs), to operation under commercial charter (MV Mair which is contracted on a Time Charter basis). Regardless of the prevailing nature of 'ownership' the GLAs are able to manage and task all seven vessels with a considerable degree of flexibility.

5.1.2. Operational Management

The GLAs operate broadly similar structures wherein the operational management function is separate from but closely integrated with broader (including corporate) responsibilities. The detailed organisational structure inevitably varies from Authority to Authority, but taken in isolation the overall scale of each organisation appears to be appropriate to the respective management task. Adoption of continuous improvement initiatives by each of the GLAs (driven by the need to find financial efficiencies) has resulted in considerable dual-tasking of a number of operational and managerial roles. Inevitably, this closer enmeshing of operational delivery staff with the supporting managerial and administrative roles complicates the pursuit of further efficiencies that might be realised through, for example, combining functions with other GLAs. Notwithstanding this complication, it is considered that there are operational benefits from pursuing such integration, and potentially some savings to be realised.

5.1.3. Ship Tasking

Detailed execution of planned AtoN maintenance activity (the BSL) is delegated to ships' masters. This is a pragmatic approach which seeks the benefit of fuel efficiency (avoiding any inadvertently incoherent HQ-based tasking) and drawing masters into the overall planning and execution process. Although the latter is a 'soft benefit' our experience is that this inclusive approach delivers considerable, albeit not immediately tangible, advantages in developing the working relationship between HQ and ship, across broader issues than just AtoN maintenance.

5.1.4. Sub Contract Arrangements

When considering the relevance of subcontract work exclusively to AtoN maintenance and repair, there are differences across the GLAs. At one end of the scale is TH's use of MV Mair for provision of a '*Buoy Work Vessel and Aids to Navigation Support Services, required primarily in and around, but not confined to the area of the Bristol Channel*'[5]. At the other sit a range of local

[5] *TH West Coast Launch – Terms and Conditions of Contract*, Portal <Vessel Management><TH><TH West Coast Contract Launch>

agreements, for example NLB's use of fish farmers in the Sound of Harris or CIL where (as is apparent from monthly casualty reports[6]) the majority of instances of immediate/initial response to an AtoN casualty are taken by assets other than Granuaile.

We understand that the commercial arrangements are varied but that the majority are established on a relatively formal footing. Nonetheless, it would be appropriate to re-visit these contractual relationships to ensure that the GLAs are not inadvertently exposed to litigation in the event of an accident affecting one of their sub-contractors when they are servicing an AtoN.

5.2. Inter-GLA Cooperation and Coordination

We observed numerous positive actions that had been taken by the GLAs following reviews completed over the past six years. Most notable was the increased degree of integrated planning and cooperation, overseen by the Coordinated Fleet Management Group ("CFMG"), operating under the authority of IGC5. Established following the 2009 Fleet Review this was considered by the GLAs as being the most cost effective version of fleet management. Of the tasks placed on the CFMG, the following are relevant to this review.

- Review and produce the annual GLA Fleet Plan;
- Review and produce the five year rolling Tri-GLA Tender Overhaul Plan;
- Maintain the GLA Fleet and Overhaul Plans above through bi-monthly meetings;
- Monitor and review GLA cover requirements as plans change;
- Identify and discuss utilisation of GLA vessels for joint statutory and commercial projects.

5.2.1. Planning

Joint planning is already in place and addresses the first three of these tasks; but with the limited co-ordination being restricted to periodic meetings and phone calls as required, there is scope for this to be extended. For example, in preparing the annual AtoN maintenance schedule (the BSL), GLA operations teams liaise to ensure that significant periods of vessel downtime (maintenance periods, routine dockings) are harmonised as far as possible to minimise non-availability of the overall fleet and ensure coverage. This is considered to be an important, logical and very useful activity which demonstrates the benefit of the current level of co-operation between the GLAs. However it is considered that a deeper and more detailed arrangement

[6] Portal <Statistical Analysis><CIL><AtoN Casualties>

would deliver greater coherence and optimisation of the overall Fleet plan across the full range of BSL planning and management of emergent work.

5.2.2. Execution

At the start of 2014, TH's plan allowed for 100% completion of the programmed statutory work. However, owing to unplanned events and extended periods of bad weather, the actual completion was only 79%; this shortfall has been an increasing feature of recent years as indicated in Figure 15 below; this shows the degree to which TH has completed the BSL over the last five years.

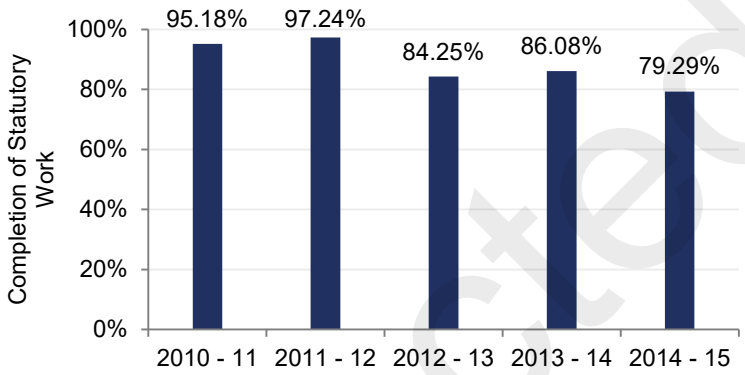

Figure 15: Trinity House Buoy Servicing List completion 2010 – 2014

There is clearly very close coordination between GLAs in management of issues that arise regarding the day-to-day plan, incorporating the demand for unplanned activity (wrecks, emerging dangers or AtoN casualties). The consequent impact on risk, and consideration of appropriate risk mitigation measures, is addressed at Section 5.3.

5.3. Potential Areas for Further Cooperation and Coordination

5.3.1. Incident Monitoring

During working hours, each GLA operates its own AtoN monitoring centre which acts, among other things, as a focal point for reporting of incidents arising in its own area and for initiating subsequent recovery actions. Each GLA uses a different bespoke commercially available software system for this purpose and employs their own system in different ways. There is a tri-GLA project underway to move to a common system, targeted at completion in five years' time.

In the meantime, outside working hours all such monitoring is conducted using a centralised facility located in Harwich – an excellent example of closer integration. There is no apparent loss of clarity or reduction in service when NLB and CIL handover their service at the end of the working day. Total centralisation of the task (24/7) would facilitate increased co-operation between the GLAs and deliver certain efficiencies over time through a

reduction of manpower in NLB and CIL, albeit possibly partially offset by a small increase in TH overhead. As this would deliver financial benefits with no distinct operational deficit, it is recommended that this extended integration is progressed as an additional element to the tri-GLA project already in place.

5.3.2. Crew Numbers and Resourcing

The three GLAs operate the crewing roster of their vessels in different ways as indicated in Table 5 below.

GLA	Vessel	Duty / Leave	Complement		
			Officers	Crew	Total
TH	Patricia	3 weeks / 3 weeks	9	10	19
	Galatea		8	9	17
	Alert		4	2	6
NLB	Pharos	4 weeks / 4 weeks	7	11	18
	Pole Star		6	9	15
CIL	Granuaile	4 weeks / 4 weeks	6.5*	8	14.5

*The single Electro-Technical Officer on Granuaile has a split roster spending 50% with each of the Port and Starboard Watches

Table 5: GLA vessel manning rosters

It should be noted that more frequent crew changes reduce the overall efficiency of operations due to the time and cost of the associated port visits.

CIL and NLB manning levels are at the bare minimum to crew their ships; any short term requirement for backfill (e.g. to cover sickness) will either be via 'off roster' crew members (with accompanying need to compensate in due course) or by employment of Agency staff. TH does, however, retain some extra personnel above the normal complement to provide some resilience and avoid agency costs. While neither option should necessarily be seen as of greater benefit than the other, it would be appropriate to ensure that the additional costs of Agency personnel are continually scrutinised to ensure that this is more cost effective than increasing the FTE headcount.

The requirement to compensate staff for working 'off roster' days is reduced by the Annualised Day Scheme operated by CIL. This scheme allows any crew absences to be recovered through training days or additional days on board, providing flexibility and significantly mitigating the impact of sick leave absence.

We observed variation between the crew sizes onboard Granuaile, Pharos and Galatea all of which are broadly similar vessels:

- Granuaile operates with 6.5 officers (see above note regarding ETO) and 8 crew;
- Pharos operates with 7 officers and 11 crew;

- Galatea operates with 8 officers and 9 crew.

Whilst it is clear that each GLA is well aware of the approach taken by others, joint review of manning levels should be considered to ascertain whether there are lessons that should be shared between the GLAs. We would not underestimate the challenges and costs inherent in pursuing any consequent change. As a minimum such lessons should be incorporated in the design and procurement of new or alternative tonnage.

5.3.3. Risk Response Criteria

The Risk Response Criteria ("RRC") set the context against which preparedness for contingent requirements is set. Although endorsed by the DfT and DTTAS, they do not attract universal support; specifically the LAC harbours concerns over the objectivity that underpins the findings, noting that these criteria could be seen as driving the size of overall GLA fleet (hence level of Light Dues) – the shorter and more demanding the criteria, the more vessels would be required to be available to respond.

As part of the RRC development, Price Waterhouse Cooper consultants conducted an audit which is considered to be an entirely appropriate and independent process. Nonetheless, as part of this review, and in light of the potential impact of the RRC on vessel numbers and capabilities, we studied the document in depth and discussed it in detail. Accepting that there is an inevitable and unavoidable degree of professional judgement embedded therein, we see no reason that the judgements drawn and the timescales proposed for response to contingent requirements in the areas identified should not be used as a basis for assessing the risks managed by the GLAs.

The requirements of the RRC impact each of the GLAs in fundamentally different ways. The consequence is that operations and planning for coverage of the high risk areas in TH waters is necessarily very much more focused on the demand of the RRC than is the case for NLB or CIL for each of whom the most demanding criterion is to be able to respond within 24 hours in discrete areas (e.g. the Minch, approaches to Dublin and Aberdeen).

5.3.4. Assessment of the Degree of Inherent Risk

The need to be able to articulate the risk to the ability to meet contingent demands is modelled jointly, using a programme that we observed in TH. The output is a series of 'Bubble Diagrams' that depict the coverage provided by each of the vessels in their current locations at maximum speed over a given time thereby identifying where gaps in coverage might lie. Consequently the programme can help with determining fleet disposition. A typical output is shown in Figure 16 below.

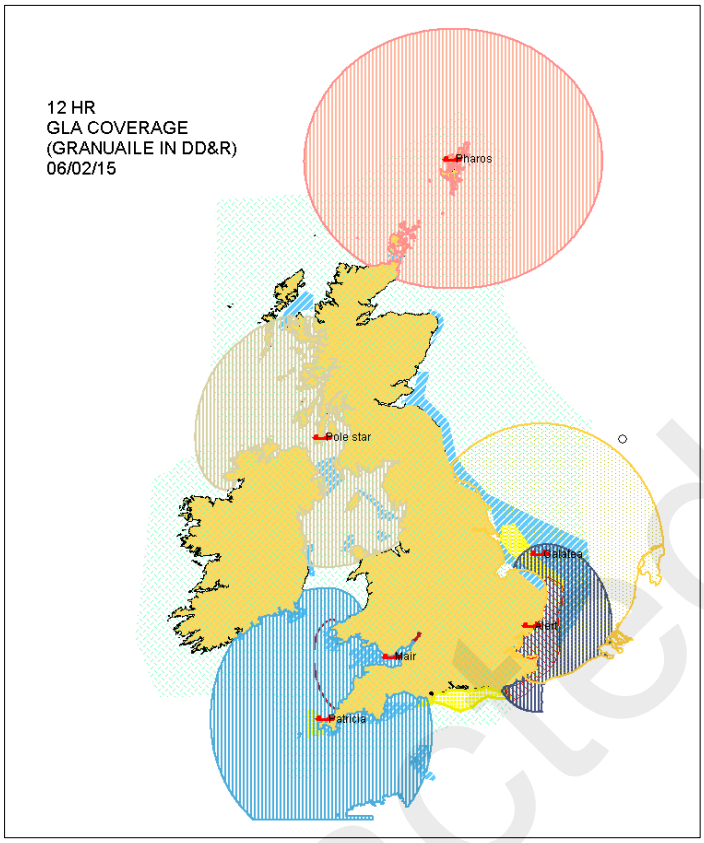

Figure 16: Example 'Bubble Diagram' showing 12 hour steaming distances of each operational GLA vessel

The system is hosted within TH and operated in both Harwich and London. It places high demands on the computer hardware and takes 15 to 20 minutes to run for a given single fleet disposition. It is designed to indicate where gaps might arise in GLA coverage. It is not designed, however, to indicate the change in degree of risk that any GLA operations team might incur with a change in the disposition of vessels.

What is clear is from routine *post facto* reports prepared in Harwich is the degree to which RRC criteria are not met. The 'FR Report'[7] lists the RRC areas that are not covered each time the program is run. An analysis of this data is presented in Table 6 below.

[7] *FR Vessel Analysis Sheet,* Portal <Statistical Analysis><TH>

RRC	Area	No. of occurrences	%age shortfall
12hr	W Approaches to Solent	27	38.6%
12hr	Land's End	26	37.1%
12hr	Humber	19	27.1%
12hr	Outer Solent	19	27.1%
24hr	Firth of Forth	17	24.3%
24hr	Peterhead	15	21.4%
6hr	Dover W Approaches	8	11.4%
6hr	Dover Straits	3	4.3%
6hr	Yarmouth to Ramsgate	1	1.4%
12hr	Cromer	1	1.4%
24hr	North Yorkshire coast	1	1.4%

Table 6: RRC Shortfall Analysis

The RRC were met for those areas not included in this table. The data is presented with two caveats:

- The programme had been run 70 times over 37 weeks, approximately twice per week, but not on the same days in each week;
- The 27 areas being reported bore no direct comparison to those used elsewhere in TH documentation (e.g. the 21 statutory areas).

Nonetheless, it is considered that the data offers a representative indication of the degree of risk inherent in day-to-day coverage of the GLA fleet based on the requirement presented in the RRC.

It may be concluded that there is an extant and substantial risk to TH's ability to meet their departmentally endorsed response criteria in several of the higher risk areas.

5.3.5. Assessment of the Degree of Emerging Risk

In assessing the risk, it is important to understand the event or sequence of events which are considered a risk. Whilst it can be argued that the failure to respond to an incident within the times laid down in the RRC is not, in itself, a risk as the consequence is unclear, the RRC response times have been developed based on the requirement to ensure navigational safety with a view to the potential for an incident or accident at sea. For this reason a failure to respond within the agreed timescales is considered as the metric against which risk is measured.

The shortfall in the overall ability to schedule vessel operations in relation to the impact of operational risk as a result of unplanned circumstances even on a relative basis has a number of consequences.

- Dynamic risk has to be borne by the affected operations team with no scale or metrics against which to judge acceptability either to the GLA CEO, who bears the ultimate liability risk, or the Department upon whom a late response to an incident which resulted in a knock on incident would doubtless reflect poorly.

- Any change to fleet disposition will affect the risk profile but without any pre-agreed scale, the decision to accept the risk lacks transparency and is vested in the operations team. Plainly in the worst case this leads to an increase in a GLA's overall degree of risk which not only is predominantly opaque to higher authorities (CEOs and Ministers), but might actually be at a level that would be considered unacceptable to said authorities.

We witnessed a situation where a combination of planned commitments, a crew change and unanticipated damage that required a period of extended repair and maintenance for one of the ships, resulted in the majority of the GLA assets unexpectedly operating around Scotland and to the west of Ireland:

- The consequence was an increased risk to TH's ability to meet the six and twelve hour response criteria in the Channel and Dover Straits;

- This exposed the absence of any means rapidly to define the consequent change to the inherent operational risk in meeting statutory requirements;

- Instead it placed the burden on operations teams to make pragmatic professional judgements without any underpinning substantiation of the impact of their decisions.

The conclusions that we draw from this incident are three-fold:

- GLA operations teams would benefit from a means of determining the risk routinely carried. This should be transparent and shared with respective Departments;

- CEOs should indicate the level of risk of failure to meet the RRC that is acceptable (and this might need to be agreed with DfT and DTTAS); and,

- If the agreed level looks likely to be exceeded, there should be clear guidance to the affected operations team as to what process to follow.

5.4. Response to Wrecks and Emerging Dangers

The occurrence and necessary response to wrecks and emerging dangers varies across the GLAs, reflected in part by the different RRC. TH reports a need to respond to typically twenty wrecks per annum, acknowledging that there are a significant number of other incidents that could potentially require a

physical response, but are reviewed at director level and determined not to require an immediate response. For example, we witnessed a situation where a speedboat sank in the approaches to Swanage but in a position where the potential danger to passing traffic initially was deemed inconsequential and no immediate response judged necessary.

Similarly, we were briefed widely on situations in which vessels had sunk in water that is of such a depth that the wreck presented no danger to vessels, regardless of the attitude adopted on the sea-bed (e.g. settling in an upright position with the bow being considerably more buoyant than the stern). The majority of the waters in NLB and CIL areas of responsibility in which wrecks historically have occurred are in deep water and the wreck did not present a hazard to navigation and consequently did not require immediate action to locate and mark it.

The operational response to a wreck inevitably revolves around what capabilities are required and are able to be deployed quickly. The requirement for accurate geo-location and determination of clearance is addressed at Section 4.3.2; given the 'stretch' in the ability of the current fleet adequately to meet the mandated level of response, the question of the identification of alternative, rapid intervention options inevitably arises.

5.4.1. Use of Helicopters

In principle, helicopters could provide rapid means of responding to any new wreck. However, there remain several limitations:

- Helicopters are currently unable to locate any fully submerged wreck.
- If they mark inaccurately, they could inadvertently aggravate the situation.
- They lack the duration physically to 'sit on a wreck' to warn vessels of the presence of a hazard.
- Helicopter operations may be restricted in poor weather conditions and at night, which is particularly limiting in winter.

Many Navies have, for decades, operated helicopters that are installed with dipping sonars (and some have aircraft that are also capable of deploying sonobuoys). These might have applicability in the GLA domain. Although the ten year helicopter support contract is only recently in place it would be appropriate to explore the scope (and cost) of adapting aircraft capabilities to enhance their use in wreck geo-location.

Although not in the direct remit of this review, it is also recommended that the GLAs monitor developments in the use of air portable UUVs (Unmanned Underwater Vehicles) that would be capable of rapid deployment and accurate location, including sonic profiling of a wreck.

5.4.2. Use of Contracted-in Support

An alternative quick response option may be found in establishing a very short notice charter arrangement to contract a vessel in the local area. The ability of the charter vessel to locate the wreck accurately may be limited to equipment installed or potentially enhanced through the deployment of portable sonar equipment owned by the GLA and pre-positioned at a suitable location within the high risk area.

Should the vessel not be equipped with suitable survey equipment, it would simply mobilise to proceed rapidly to the vicinity, thence to advise passing shipping of the presence of a new hazard albeit without a precise location.

This 'First Responder' capability would need to be supplemented quickly by a vessel equipped with appropriate surveying equipment to localise the hazard, then mark with an array of wreck markers; we envisage that this would probably be by urgent re-programming of one of the vessels in the GLA fleet, although there is potentially scope to outsource this specific task.

We identified three options to deliver this commercial alternative:

1. *Framework contract with local operators*

   We investigated this further, engaging with two separate companies who would be potential candidates.

   The first company had previously been approached to provide an oil spill response facility and had concluded that the only viable option was to have a dedicated vessel permanently on standby. The only other means of activating the vessel would have been via a directive from the MCA (if appropriate, dependent on the nature of the emergency) for the company to break any charter currently in place, with associated liability and insurance implications.

   The second company owns a fast response vessel (25 knot capable, comfortable cruising speed of 16 knots), capable of deploying Type 4 buoys; the indicative price was £850-1,000 per day, payable as a retainer whether or not the vessel was employed.

   To leverage the benefits of this type of approach, it would be necessary to install appropriate geo-location equipment and conduct associated training, as has been achieved with the RIB available under MV Mair's contract. An alternative option might be found through use of a deployable sonar suite that mitigates any physical alteration to the host vessel. Given the considerable positive impact that such innovations might have on risk reduction in the high risk areas it is recommended that this concept be given further consideration as part of the commercial options testing that we introduce in Section 7.6.

2. *Emulating the MCA Coastguard Agreement for Salvage and Towage ("CAST") arrangement*

   Although feasible, to date the MCA initiative has not been leveraged to any considerable extent, for a number of reasons and, furthermore, even if enacted, there is no guarantee of vessel availability.

3. *Calling on the support of a suitably experienced ship-broker who would be available 24/7 to identify potential vessels from a comprehensive database and negotiate a short-term charter party*

   This Broker Support concept must be seen as part of a structured response, dependent on whether the vessel is equipped with survey equipment, wreck marking buoys, RACON etc., and trained in laying a small pattern of buoys.

   If the vessel has these capabilities then it could represent an extremely cost-effective way of reducing risk in key areas without further demand on a GLA owned asset. For example, as discussed in Section 5.3.4, the 12 hour response requirement of the Western Approaches to the Solent is not met for more than 38% of the year. Even with a relatively low success rate of 50% of sourcing a suitable vessel (our ship broking expert predicts 85%) this shortfall in the ability to meet the RRC would effectively be halved to 19%. While having the potential to dramatically reduce the level of inherent risk, this option would complement and not supplant the need for the GLAs to re-programme a suitable asset as soon as possible.

The viability of each approach will vary in different locations and further specific market testing is required to assess the options in each area. As an example there is a significant flotilla of support vessels in and around Portsmouth Harbour which could readily be mobilised at short notice to respond to a wreck, casualty or new danger in the Solent area.

A full report from our ship broking and charter market expert is included at Appendix 10.

5.4.3. Queen's Harbour Master Portsmouth

TH has routine and open communications with Queen's Harbour Master ("QHM") Portsmouth whose area of responsibility extends across the main eastern approach channels to the Solent; these are understood to be predominantly liaison conversations but there might be scope to extend them to mitigate TH's shortfall in ability to respond to the RRC in that specific area (noting that this impacts only one part of the twelve hour area as the western approach past the Needles is outside QHM's area).

Namely, should any incident occur involving a wreck, emerging danger or AtoN failure in the 12 hour response area within or on the axis of QHM's area of responsibility, and this is deemed to be of sufficient importance that urgent action is taken to avoid a serious incident, then QHM could close the eastern

approaches to the Solent to any passing traffic. This would be supplemented with VHF updates, pending the arrival of an appropriate GLA asset to locate and mark the wreck. Although such closure is designed to contend with security of warship movements it nonetheless offers a 'last ditch', stop-gap alternative to contending with a wreck.

5.4.4. Use of Virtual Aids to Navigation

The ILDF shared a concern that the GLAs are not fully embracing the potential inherent in new technologies including the use of Virtual Aids to Navigation. The GLA report on Marine Aids to Navigation[8] highlights some key points in this regard which may simplistically be summarised as needing to contend with the lowest common denominator. Under current maritime legislation, the unavoidable quandary is that while major shipping operators are likely to have embraced fully the e-advantages offered by ECDIS, this does not automatically translate to vessels with smaller tonnage. Yet all operators need to be able to navigate with certainty and in safety.

The report also identifies the need in coastal waters for the mariner to be able rapidly to gain situational awareness, for which buoyage is envisaged to be the most proficient means. We support this view.

We debated at length the appropriateness of marking a wreck or new danger with a Virtual AtoN on ECDIS. While the attractiveness of this is plain, there are complications that must be considered:

- The reported position might be in error. This could have disastrous consequences by inadvertently diverting shipping into the vicinity of the new hazard; and,

- Not all vessels are capable of presenting the Virtual AtoN on their navigational equipment.

The solution lies in a need for a physical presence on site, capable of surveying the locality to refine accurately the position of the hazard (and ideally fitted with a RACON).

[8] *Marine Aids to Navigation Strategy,* Portal <Joint Policy>

5.5. The Growing Importance of Accurate Buoy Positioning

The combination of modern technology and commercial pressures has also caused an unanticipated situation to develop. Modern navigation systems inevitably afford a sense of greater accuracy in charting and buoyage which, when taken in conjunction with the additional time/money pressures under which masters operate, has led to ships sailing considerably closer to channel markers than used to be the situation.

In waters such as those in the southern North Sea where shifting sands are commonplace, this places an additional premium on the need for AtoN that are not only reliably positioned, but also checked as such[9] especially the Type 2 buoys which are in abundance in this and some other high risk areas, as indicated in Figure 17. This presents a programming challenge to ensure that there is sufficient Type 2 buoy handling capacity in these areas.

Area		Buoys Type 2
NLB	1	15
	2	43
	3	38
	4	14
	5	
	6	4
	7	11
	8	2
TH	9	54
	10	139
	11	26
	12	21
	13	43
	14	26
CIL	15	11
	16	27
	17	3
	18	4
	19	5
	20	8
	21	10

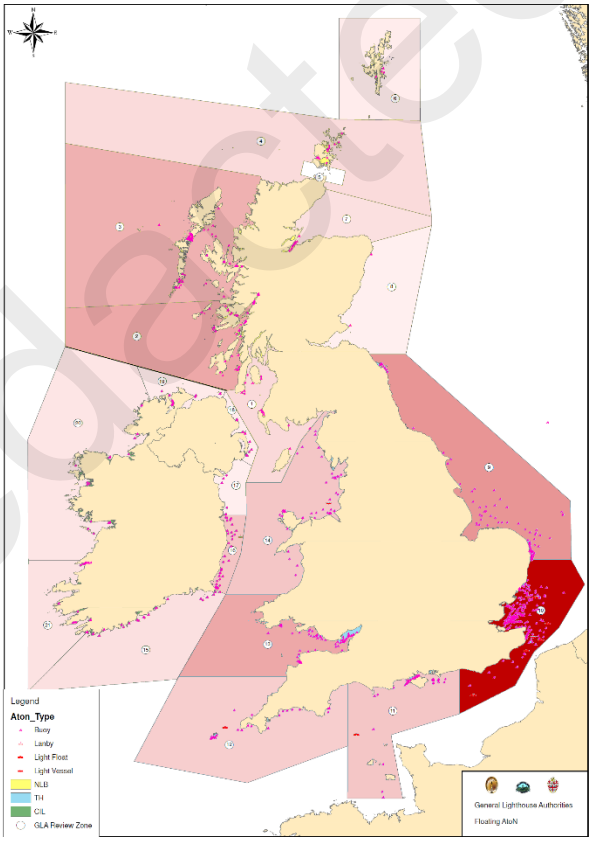

Figure 17: Geographical distribution of Type 2 buoys

5.6. Release of Residual Capacity

Planned AtoN maintenance for each GLA does not demand 100% utilisation of all of their fleet, which currently allows residual capacity to be deployed on income generation opportunities. While the reality differs for TH (see Section 5.2.2), with the current fleet construct there still remains scope for some

[9] Increasingly, AIS beacons are being installed on buoys in order to accurately monitor their positions)

vessels to be released, at varying degrees of risk to the ability to respond to unforeseen tasks.

Discounting the need to hold vessels at high readiness for contingent tasking, residual capacity is most apparent for CIL where Granuaile's programme for routine maintenance of AtoNs within their area of responsibility routinely allows the ship to be released for income generation for 100-120 days per annum; similarly, Pole Star can complete the NLB AtoN buoy maintenance programme without Pharos (although the latter is required to support helicopter operations), implying a degree of deployable residual capacity.

The inherent risk in releasing any vessel to income generation will be mitigated to a considerable extent by the ability and capacity of another GLA to be ready to respond to any emerging tasking. This is underwritten by a Memorandum of Understanding ("MOU") for Inter-GLA Ship Support[10]. The MOU provides the agreed context within which the GLAs will, through the Coordinated Fleet Management Group "*…consult on their work plans and align the capacity of the GLA fleet in the most efficient and effective manner to meet the known programmed operational, maintenance and contingency requirements and commercial contract obligations*." This is a relatively high level document which lays out some clear guidance on the manner in which any such operation shall be conducted and the subsequent management of finances. By its very nature the MOU does not delve into great detail around the balance of risk versus income generation activity.

These operational constraints present significant challenges to carefully constructed programmes, behind which lie clear requirements to generate income, ultimately to reduce the drawdown on the General Lighthouse Fund ("GLF") and to limit CIL funding required from the Irish Government, thereby mitigating the level of light dues in both jurisdictions.

5.6.1. Commercial Income Generation – Challenges and Opportunities

The ongoing challenge to operational management staffs lies in working closely together to strike the right balance between allowing ships to be detached for income generation, while maintaining a contingent capability that is not only ready, but also optimally positioned to respond to any instance of AtoN casualties, wrecks and emerging new dangers in accordance with the times presented in the RRC. The five year summary TUDS (Tender Utilisation Data Sheets) provided by each GLA[11] indicate that historically the proportion of total fleet time spent responding to 'Emergency Hazards' and 'AtoN Casualties' for each organisation is: TH 2.47%, NLB 1.72%, CIL 2.41%. These figures do not include time spent steaming to incidents.

[10] *Inter GLA Ship Support,* Portal <Vessel Management>
[11] *TH TUDs – 5 Years Summary 2010 – 2015,* Portal <Statistical Analysis><TH>; *NLB TUDS Summary of 5yrs*, Portal <Statistical Analysis><NLB>; *TUDS Excel 5 year,* Portal <Statistical Analysis><CIL><TUDS>.

In addition to programming issues in generating the expected level of commercial income, we identified the following three specific challenges.

- The requirement to be able to meet unforeseen contingent tasking drives a need for GLAs to be able to terminate any Charter Party at short notice in order to allow the ship to return to GLA tasking to respond to an unplanned event. NLB and CIL operate in areas which have less demanding RRC (and experience has indicated that their anticipated demand for such a break of contract is low), however TH is very much more constrained, again driven by the shorter response times in the RRC. Records show that Pharos has been released to conduct tasking (ODAS buoys) in the southern part of the Bay of Biscay which, while taken on risk, has proved to be entirely viable; and Granuaile has operated in the vicinity of Gibraltar on opportunities to secure commercial income.

- The charter market is fickle, as a result of the falling oil price there is ready availability of many vessels in and around the North Sea. Typically, where daily rates might have been in the order of 18k Euros per day before the slump in oil price, now it is likely to be closer to 12k Euros. Even at the current day-rates it is now more difficult to secure charter income than it was in 2014.

- Short-term charter opportunities are of lower value. We are aware that both NLB and CIL have procured short-term contracts that have been relatively profitable. However, for planning purposes, it would be better to consider a sensible minimum as being 14 days (10 days on task with 4 days for mobilisation/demobilisation). Anything less than this will likely represent a considerable risk to the charterer.

Using current processes, the likelihood of being able to programme any significant commercial opportunity well in advance is remote, the exception being some 'State activities' that are already routinely undertaken [redacted] This leads to an inevitable requirement to manage this commercial pressure reactively. However, the stark, fundamental differences between the three GLAs' statutory and other obligations (specifically meeting the RRC) result in considerable variances in the balance of risk versus gain across the GLA boundaries. These variances threaten the achievement of fully integrated operations which, if it were to disintegrate, would have a significant negative impact on the overall risk to the safety of navigation in waters around the UK and Ireland.

Not all income generation initiatives necessarily require the vessel to be released from primary tasking. For example CIL is able to generate income by renting out lighthouse accommodation, TH by providing voyages onboard Patricia where the availability of separate, high quality accommodation is of considerable appeal and very marketable. When Patricia is retired this opportunity will disappear. Although these additional revenue generation activities compare poorly with the value of vessel charter, they still help to contribute to the overall financial challenge.

It is recognised that there may be opportunities to replicate the passenger voyages on board other large GLA vessels but the restrictions and interruptions to vessel schedules as well as the safety implications of having passengers onboard working vessels should be considered carefully.

The income generation challenge is magnified by current circumstances. While there is continual pressure on generating substantial revenue, not least in light of Irish Self-Funding, there is the opposing influence of depressed market opportunities and value. It would be appropriate, therefore, to consider an alternative approach to fulfilling income generation expectations, as developed in the following paragraphs.

5.6.2. Operational Management of Income Generation

1. Current Process

The key elements are:

- Each GLA markets its own residual capacity, targeting a client database that is accustomed to the ships and the unique constraints that operating a GLA vessel brings (for example the need to break charter in the event of a high priority emerging problem);

- The monies generated are used as an offset to operational expenditure, enabling that GLA to work within the annual sanction from the GLF.

This approach fails to leverage the synergy that would be available from a fully integrated programme.

2. An Alternative Approach

The intention is to deliver at least the same financial end-state as under the current regime. The degree of residual capacity will be dependent on the final fleet outcome selected, but by managing whatever residual capacity exists from a fleet-wide perspective, there may be scope to release a capable vessel to a more attractive income generation opportunity, relying on colleague GLA assets to back-fill for both statutory and unforeseen tasking.

In relation to this alternative, the following points should be considered:

- TH, NLB and CIL programmes would be developed in a fully coordinated fashion, down to BSL level, with an acceptance of total integration of cross-boundary operations (for example planning for one GLA asset to operate in another GLA's area for routine AtoN maintenance).

- With careful preparation, this should enhance the GLAs' ability to meet their statutory requirements without threatening any statutory or legislative processes.

- This is in keeping with the purpose of the Coordinated Fleet Management Group which is:

  - "The maintenance of a co-ordinated GLA Fleet Resources Plan. The GLA Fleet Plan is to be continuously up-dated and maintained in order to maximise operational efficiency and develop the use of shared spare (reserve) capacity for contractual operations."

- Having reviewed the CFMG TORs, the only adjustments that would be required would be to state specifically the requirement to produce a co-ordinated BSL and an acceptance of frequent dialogue being the norm (rather than on the planned occasional basis, or "as and when operationally required").

- The ideal delivery vehicle would be a single co-located body that manages planning and execution however, it is understood that there are considerable complications in integrating ship management across the GLA fleet.

- Irish legislation requires any vessel operating under their Flag to host the Document of Compliance ("DOC") physically within Ireland affording ready access by the Regulator to the management team. At first look, this could narrow the available options for closer integration through co-location down to one, with TH and NLB relocating their operations teams to Dun Laoghaire. However, there is a clear distinction between the planning and scheduling function and the technical management of the vessel under the DOC – the concept of a centralised Fleet Planning Team is addressed in Section 7.2.

- Whichever delivery model is employed, the product would be a fully harmonised programme that offers:

  1. a greater probability of delivering all GLA BSLs;
  2. scope for better planning to mitigate the inherent risk in meeting RRC challenges;
  3. better risk management in light of emerging issues (wrecks etc.); and,
  4. potentially more marketable income generation windows.

5.6.3. Income Generation – Financial Treatment

As part of its annual bid for GLF funding, each GLA includes a target for delivery of commercial income which typically lies around £1M (or equivalent); this eases the financial burden on the GLF, thence on the level of Light Dues.

Should the alternative operational management process for income generation be adopted, then it would be appropriate to match it with a slightly different approach to the treatment of monies generated. This would recognise the fact that the asset(s) released from core GLA activities were still delivering

financial benefit to the GLF but this could not be directly related to any one GLA. To reflect this, we would propose that:

- The split of revenues remains on the same pro-rata basis as is currently the case. CEOs would continue to target an amount for income generation which they would be able to monitor, as at present, using established internal governance processes;

- Any subsequent adjustments to the division of monies would require agreement between DfT and DTTAS which would then flow down to the GLA CEOs.

5.6.4. 'In-Sourcing'

This represents an entirely different model for managing the GLF's fiscal expectations using an approach that assumes a similar financial end-state to the current situation, but that is delivered in an entirely different manner.

Instead of relying on commercial income generation by chartering-out the fleet's residual capacity, costs would be cut by the equivalent amount. Realistically this could only be delivered by disposal of 1 or more vessels which, in itself, could only be achieved by a more integrated approach to planning of fleet operations.

The concepts of integrated operational management and centralised fleet planning are the basis of the Fleet Outcomes presented in Section 7.6.

6. ANALYSIS OF THE FLEET

As described at Section 2.3.1, the output of Phase One was a Schedule of Areas for Further Assessment held at Appendix 1. This was developed following our valuable GLA ship and HQ visits and stakeholder engagement meetings. Each of the sensitivities listed in this document were assessed using the financial and operational models; the assumptions made are listed in the Schedule of Assumptions held at Appendix 2. Detailed results of modelling each sensitivity are included at Appendix 11 with analysis at Appendix 12.

The following summarises the significant features of this Phase, thereby providing an appropriate bridge in this report between the earlier factual findings against each of the ITT categories, and the integration of our modelling and analysis, presented as a range of Fleet Outcomes in the next section (Fleet Optimisation).

6.1. Overview of the Sensitivity Analyses

Each aspect to be assessed was modelled operationally and financially. While the former was appropriate to explore the variations around ship numbers, capability and ownership, the latter was also required for operational management issues.

The output from the operational and risk modelling is indicative and risk is presented relatively. It is essential, therefore, to consider this alongside the probability of any incident occurring. For example, in one of the Baseline cases TH would fail to respond to a wreck or new danger within the required time every 0.6 years, but for NLB this would be extended to once every 95.4 years and for CIL, once every 497 years. Clearly, small adjustments to data entries for the latter two GLAs would have a significant impact, but nonetheless the point is clear that TH's baseline of risk is very significantly higher than that of NLB or CIL.

6.1.1. Baseline Cases

These were crucial to identify today's 'As Is' situation (serial BL1 – '*Baseline*'). Using the data provided by the GLAs, we have represented the cost of delivering current operations from which the cost impact of all variations have been derived. We also used this baseline condition to set the risk datum from which the positive or negative impact on risk profile has been determined, both by GLA and overall for each sensitivity.

Working from the BL1 baseline, we modelled the following three key sensitivities.

- BL2 ('*Baseline Minus*') investigates the impact of a situation where the current level of integration and coordination between the GLAs collapses and each GLA focuses exclusively on their own areas.

- In BL3 ('*Baseline Enhanced'*) the GLAs integrate their operations more than is currently the case under Coordinated Fleet Management, for example by increasing the interaction between CIL and TH through tasking Granuaile with all Type 1 buoy maintenance in the Irish Sea.

- BL4 ('*Baseline Plus*') assesses a further improvement to the integration within BL3, but with a shift of focus to a replacement vessel for Patricia.

6.1.2. Vessel Numbers and Capability

The eight sensitivities in the Vessel Numbers and Capability ("VNC") category focused on the effects of changing the physical make-up of the GLA fleet.

- VNC1 and VNC2 assess the impact of replacing Patricia with one and then two ships, with accompanying adjustment to their capabilities.

- VNC3 and VNC4 investigate the impact of replacing both Patricia and Alert with two and then three ships, allowing us to investigate the change in the cost/benefit equation by including extra tonnage.

- VNC5 examines the impact of replacing Pharos with a new vessel without the capability of handling Type 1 buoys.

- In VNC6 Granuaile is replaced by a slightly less capable vessel without Type 1 buoy handling capabilities but with lower OPEX costs.

- VNC7 ('*Total Integration*') explores the benefits of a fully integrated operation by allowing any of the current GLA vessels to work in any area on both routine and emergency tasks.

- The final sensitivity – VNC8 ('*Output Based Integrated Operations*') - was modelled once the findings of all others had been completed and impacts assessed. It assumed a condition where operations were freed from any of the constraints of the existing fleet. A fleet was assumed that was based only on the strict AtoN support requirements of the three GLAs in a fully integrated operation.

6.1.3. Ownership

Six areas for further assessment fell under the category of ownership ("OWS"). These were designed to explore the benefit of increasing the use of commercial solutions to operational challenges.

- OWS1 and 2 were focused specifically on the higher risk areas in which TH routinely falls short of meeting the RRC, along the south coast (Solent and Lands' End) and approaches to the Humber.

- OWS3 and 4 modelled outsourcing maintenance of the smaller Type 3 and 4 buoys.

- OWS5 considered the replacement of Pharos with a smaller, but still helicopter capable platform which is chartered-in.

- The final analysis (OWS6 – '*Charter in Support for all T1 Buoys'*) was discounted on further discussion with our broker. Our conclusion was that it would be exceptionally difficult to source a vessel that would have both the facilities necessary to conduct maintenance on these very sizeable units and a crew with the necessary expertise.

6.1.4. Operational Management

When considering the likely cost benefits of alternative operational management ("OM") areas that we had identified, it was clear that operational modelling was not required. Each area was modelled to assess the financial impact.

- OM1 24/7 Monitoring – assesses the financial benefit of fully integrating this function in Harwich.

- OM2 Seasonality and OM3 24/7 operations investigate maximising vessel utility when weather conditions are more conducive to buoy maintenance by increasing staffing levels.

- OM4 Manning and Rostering – explores areas where we observed inconsistencies in manning levels across the GLAs.

- OM5 to 9 adopted a progressive approach to centralising elements of ship management.

6.2. Key Findings

The key findings arising from the analysis of the sensitivities are summarised in this section. A 'Schedule of Key Findings' was developed throughout the review process to assist information sharing with the Project Board and is held at Appendix 4. A fuller analysis of the modelling results is included at Appendix 12.

Operational Risk

As displayed in Figure 18, the risk carried by TH is, in all cases, significantly greater than that carried by either CIL or NLB. This is to such an extent that the overall risk carried by the three organisations is effectively that carried by TH.

Strong integration between the three GLAs is crucial, as demonstrated in BL2 where the risk increases for all parties when cross-boundary operations cease.

Effective programming is key, specifically that a vessel must always be located in GLA sea area 10 (Thames and Dover) to mitigate the risk in the 6

hour RRC response area. In VNC3, only one of the replacement vessels was programmed in both areas 9 and 10, resulting in the increased operational risk.

The sensitivities which resulted in the lowest operational risk were those that incorporated integrated programming. Namely VNC7 in which any GLA vessel of the existing fleet could operate in any area for routine maintenance, thus allowing an integrated approach to programming the existing fleet. This sensitivity was key to developing the 'Output Based Integrated Operations' solutions of VNC8a and VNC8b which are discussed in more detail below.

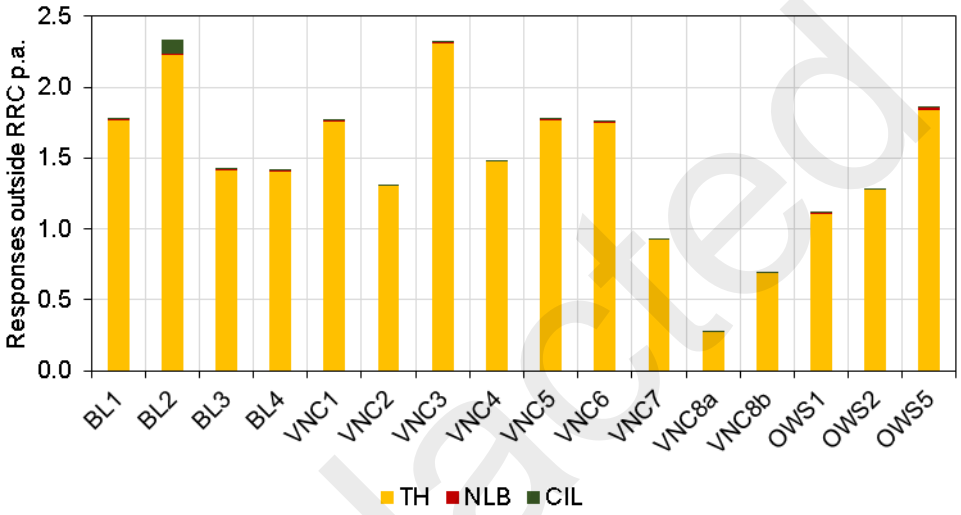

Figure 18: Responses to wrecks and new dangers outside the Risk Response Criteria per annum

AtoN Buoy Availability

In all cases modelled, IALA criteria for buoy availability were met.

Fleet Costs

As the baseline case includes no new vessel procurement, most sensitivities showed an increase in cost, with three exceptions:

- VNC5, where Pharos is replaced by a helicopter capable MANT.
- The two variations of VNC8 in which a core fleet of four GLA vessels is supported by commercial arrangements.

Estimates were made of the potential costs/savings of the operational management sensitivities and included at Appendix 12. Limited investigation was conducted in this area so these are indicative only.

6.3. Output Based Integrated Operations

The Schedule of Areas for Further Assessment contained a line reserved for the theoretical model of 'Output Based Integrated Operations' which was to be developed in light of findings from the analysis of other areas. The intention of this was to allow the development of a fleet that could meet the GLAs' statutory requirements and was not subject to any constraints related to the existing fleet or management.

In the resulting model the GLAs would physically 'own' (be that under lease agreement or owned outright) just four vessels with the key capabilities to support statutory requirements. This would comprise three MFTs positioned at approximately equal intervals around the coast of the UK and Ireland. A MANT would then be employed as a 'sweeper' vessel to perform buoy maintenance tasks. Additional contingent cover would be provided in the highest risk areas of Humber, Thames Estuary, Dover, Solent, Lands' End and the Bristol Channel by a number of commercial arrangements which could take the form of any of the following:

- Vessels on time charter for response to casualties, wrecks and new dangers as well as routine maintenance of local AtoN (limited to Type 3 and 4 buoys). Managed and controlled by the GLAs, this would represent a similar contract to Mair's.

- Vessels kept on a paid retainer, available at short notice to respond to casualties, wrecks and new dangers but not tasked with any routine maintenance.

- Vessels chartered via a broker on an 'as needed' basis to respond to casualties, wrecks and new dangers. This relies on the availability to source, at very short notice, vessels able to provide 'First Responder' capability, subsequently augmented by the arrival of a suitably equipped asset.

- Vessels on short term or seasonal charters to meet AtoN maintenance schedules as required.

For this fleet to successfully deliver maximum benefit financially and operationally, it would require fully integrated programming, technical support, procurement and crew resourcing.

Two configurations were modelled:

- VNC8a consisted of the core GLA fleet described above, broker support in all six high risk areas and two time charters on the east and west coasts of England; and,

- VNC8b only used broker support to provide additional cover in the high risk area.

The results of each showed significant risk reduction and cost savings as discussed at Appendix 12. This concept was therefore used to inform the development of Fleet Outcomes.

6.4. Vessel Utilisations

In order to establish a broad measure of the vessel number requirements, an analysis of the current fleet utilisations was performed. The Tender Utilisation Data Sheets ("TUDS") record the activities of each vessel for every hour of each day. Since the 2009 Fleet Review, the tasks have been categorised as:

- Weather Working Time – time spent weather bound.
- Overhead Tasks – essential tasks required to maintain operability of the vessels including bunkering, personnel transfer etc.
- Statutory Tasks – tasks that form part of the GLA statutory duties, for example responding to AtoN casualties, local lights inspections etc.
- Contract Operations – commercial income generation tasks.
- Shared Tasks – tasks that are shared whether the vessel is engaged in statutory or commercial activities. This includes steaming, loading and discharging.
- Non-Utilised Tasks – including time spend at anchor or alongside.

We analysed this data for the previous five year period, the results of this are shown in Table 7 below.

Vessel		Statutory, Shared and Overhead Tasks	Contract Operations Tasks	Non-Utilised	Weather Bound	**Total**
CIL	Granuaile	37%	18%	41%	4%	**100%**
NLB	Pharos	41%	8%	45%	6%	**100%**
	Pole Star	36%	10%	48%	6%	**100%**
TH	Patricia	46%	3%	43%	7%	**100%**
	Galatea	43%	6%	47%	5%	**100%**
	Alert	25%	4%	59%	11%	**100%**
	Mair	14%	5%	72%	9%	**100%**
Total		**243%**	**54%**	**354%**	**50%**	**700%**

Table 7: GLA vessel utilisations for the previous five year period

Totalling the utilisations of all seven vessels for statutory, overhead and shared tasks gives 243%. Therefore, in theory, these tasks could have been completed with 2.43 ships, assuming 24 hour operations and no weather downtime.

A more practical conclusion is that, providing the requirement to secure commercial income is removed, it would be possible to meet the statutory requirements with a fleet of five ships each averaging 12 hours per day on task. This would maintain the facility to increase efficiency and output through integrated operations and retain the ability to work longer hours should this be required.

6.5. Development of Fleet Outcomes

The process of transitioning from individual ‘Areas for Further Assessment’ to the integrated offering of ‘Fleet Outcomes’ took account of the outputs of financial and operational models, the risk and changes in risk (relative and absolute), striving for the right balance between deliverability, efficiency and risk management.

The range of potential Fleet Outcomes and the processes proposed in progressing towards an optimised fleet was then subject to close scrutiny by the Peer Review Group. This resulted in five candidate Fleet Outcomes.

7. FLEET OPTIMISATION

7.1. Underpinning Elements

We identified a number of key drivers that should be taken into consideration when developing the GLA Fleet, in order to manage risk effectively whilst delivering an efficient, high quality AtoN service. These will largely be applicable to whichever Fleet Outcome is selected:

Centralised Fleet Planning. This is considered to be a pre-requisite to whichever outcome is pursued.

Risk and Contingent Requirement. The GLA CEOs are responsible for managing the risk and will remain so. For the purposes of this review, risk is linked to the ability to respond to the contingent requirement although there remain numerous other risks which are managed daily by the GLAs. In the higher Risk Response Areas, the only wholly reliable means of mitigating the risk is to have one or more vessels available to be in all such areas at all times. This is not possible with the existing GLA fleet and is not considered to be cost effective. It is also notable that TH's risk is significantly higher than that for the other GLAs.

Use of Commercial Support. Building on the experience of MV Mair (acknowledging that she has been supporting TH for an extended period and has become very familiar with GLA processes and expectations), there are three alternative delivery options.

- Time charter - vessel crewed by the contractor but tasked by the GLA.
- Payment of a retainer - with a vessel available at immediate notice to respond to a GLA requirement (noting that the costs could be equivalent to a time charter).
- Broker support to secure a vessel from the open market as and when required potentially at very short notice.

Notwithstanding the commercial approach adopted, it is crucial that the contracted vessel's operations are firmly under the control of the tasking GLA and trialled regularly.

Seasonality and Sea Conditions. Greater output could potentially be achieved from the available GLA fleet by scheduling vessels to avoid the worst of the winter weather and sea conditions and programming to work longer hours during the summer months (by enhancing crew numbers).

Maintenance and Handling of Buoys. We have concluded that routine maintenance and handling of Type 1 and Type 2 buoys requires a purpose-built vessel manned by a crew with the necessary skills, competencies and experience to maintain and service the AtoNs safely; this would be best delivered by vessels owned and operated by the GLAs. In an emergency

situation, it is feasible that other vessels might be able to provide a limited degree of support to Type 1 buoys, and marginally more support to Type 2 buoys.

Sea Areas 9, 10 & 11. The impact of a shipping incident in these areas around the south east of England could be enormous and potentially very damaging to wider national trade. The shallow seas and shifting sands in these busy areas drive a need for constant monitoring of the buoyage and the ability to intervene to ensure navigational safety.

The Existing Fleet.

- Patricia is an ageing vessel and is likely to be retired during the ten year review period.
- Alert is not capable of handling anything more substantial than a Type 3 buoy and is unable to maintain her design speed even in moderate seas.
- Mair is reliable and represents good value for money but she is not capable of handling Type 1 or 2 buoys.
- Pharos and Galatea were procured together in a particularly cost-effective arrangement. Neither will require replacement within the review period.
- Pharos does not require the ability to handle Type 1 buoys in NLB waters.
- Pole Star is well suited to the task of buoy maintenance for NLB and is likely to require replacement shortly after this Review period.
- Granuaile will be 25 years old by the end of this review period but is considered to be in good condition and is unlikely to require replacement, assuming no unforeseen increase in maintenance or refit costs.
- NLB and CIL both have excess capacity (and capability) in their fleets.
- TH does not have the resources at its disposal to effectively cover the high risk 6 and 12 hour sea areas as defined in the RRC.

Commercial Income Generation. The requirement to release vessels from GLA operations to secure commercial income can be a distraction from core tasking and may increase the risk to the overall output of the GLA fleet.

General Efficiencies. Building on the successful tri-GLA helicopter contract, there is potential for benefits to be realised through combining procurement efforts. In the first instance these should focus on the more expensive commodities of fuel and lubricating oil. Although not analysed in detail, there

might also be efficiency gains through reduction in overall numbers of procurement personnel across the three GLAs.

Vessel Costs. Table 8 below contains the annual cost of each vessel in the GLA fleet including potential replacement vessels (see Assumptions AFM12 and AFM13 in Appendix 2). Currently Pharos and Galatea are the most expensive vessels in the fleet due to the ongoing lease finance payments.

Vessel	Average Annual Cost (GBP Millions)	Existing Lease Finance
Patricia	3.2	
Galatea	4.1	£1.5m pa to 2022
Pharos	4.3	£1.5m pa to 2023
Granuaile	2.3	
Pole Star	2.8	£0.6m pa to 2020
Alert	1.2	£0.4m pa to 2021
Replacement MFT	4.6	
Replacement MANT	3.5	
Replacement MANT (with helideck)	3.6	
Mair	0.6	
Charter vessel to service type 3 & 4 buoys and respond to emergencies	1.2	

Table 8: Annual cost of each vessel in the GLA fleet and potential replacement vessels

7.2. Centralised Fleet Planning

This approach builds on the advances already made since the C-MAR report of 2009. The process is illustrated at Figure 19 below and develops the systems already in place to harmonise ship schedules at the macro-level (e.g. avoiding overlap of planned periods of non-availability such as docking periods) to a micro-level as introduced at Section 5.6. The output would be a fully integrated fleet schedule which would be actively managed and planned centrally.

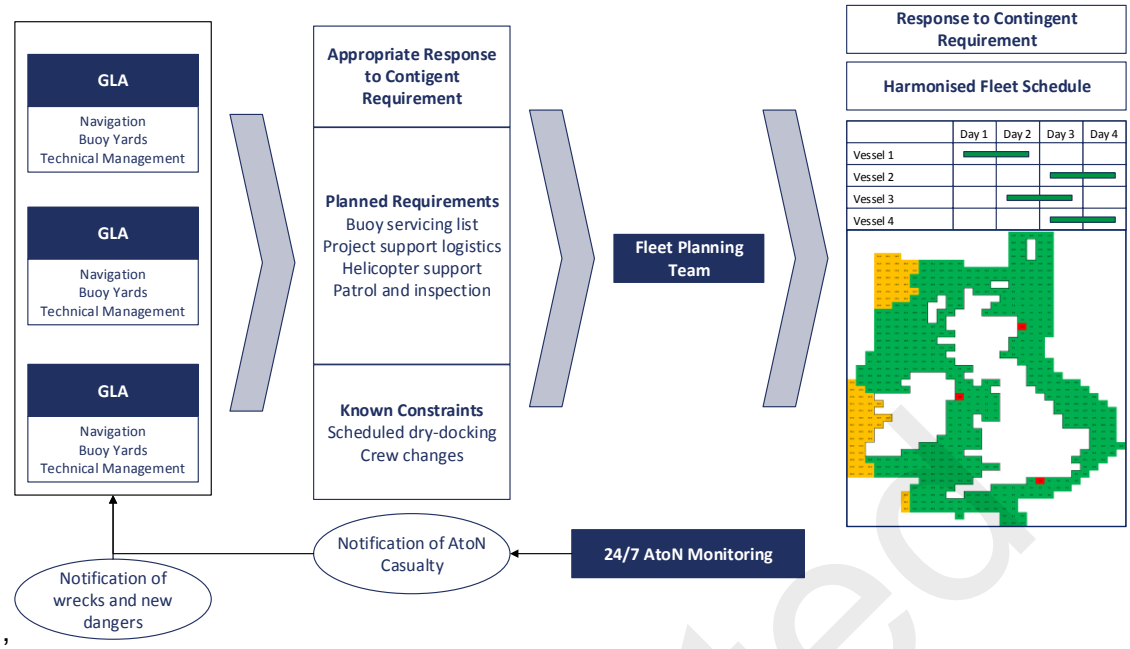

Figure 19: Centralised Fleet Planning

The focus of the Fleet Planning Team would be on delivering the GLA statutory requirements and facilitating, where possible, the broader support activities for which individual GLAs would retain direct responsibility.

7.2.1. Fleet Planning Team Location

As discussed at Section 5.6.2, the ideal option would be to collocate the Team, but we recognise the personnel (and financial) challenges in so doing.

In light of the overall operational risk burden falling predominantly to TH, we recommend that this team is based in Harwich, collocated with the 24/7 AtoN monitoring facility, and led by TH's operations team. Regular and frequent communications will be essential, including the use of regular video conferencing.

After the first year of operation, it would be prudent to consider the appropriateness of rotational leadership (per the Coordinated Fleet Management Group) ensuring that such rotation would neither inadvertently increase overall GLA risk nor overwhelm NLB or CIL with the added burden.

7.2.2. Operating Guidelines

The harmonised schedule would deliver a fleet disposition which enables the GLAs to complete necessary AtoN maintenance, surveys and project support tasks whilst mitigating the risk from wrecks, incidents, new dangers and casualties. The major GLA vessels would, as far as possible, be spaced suitably far apart around the coasts of the UK and Ireland whilst undertaking planned activities. Maintaining such a formation would ensure that the vast

majority of all major AtoNs could be reached by one of the MFTs within a 24 hour response period, as demonstrated in Figure 20.

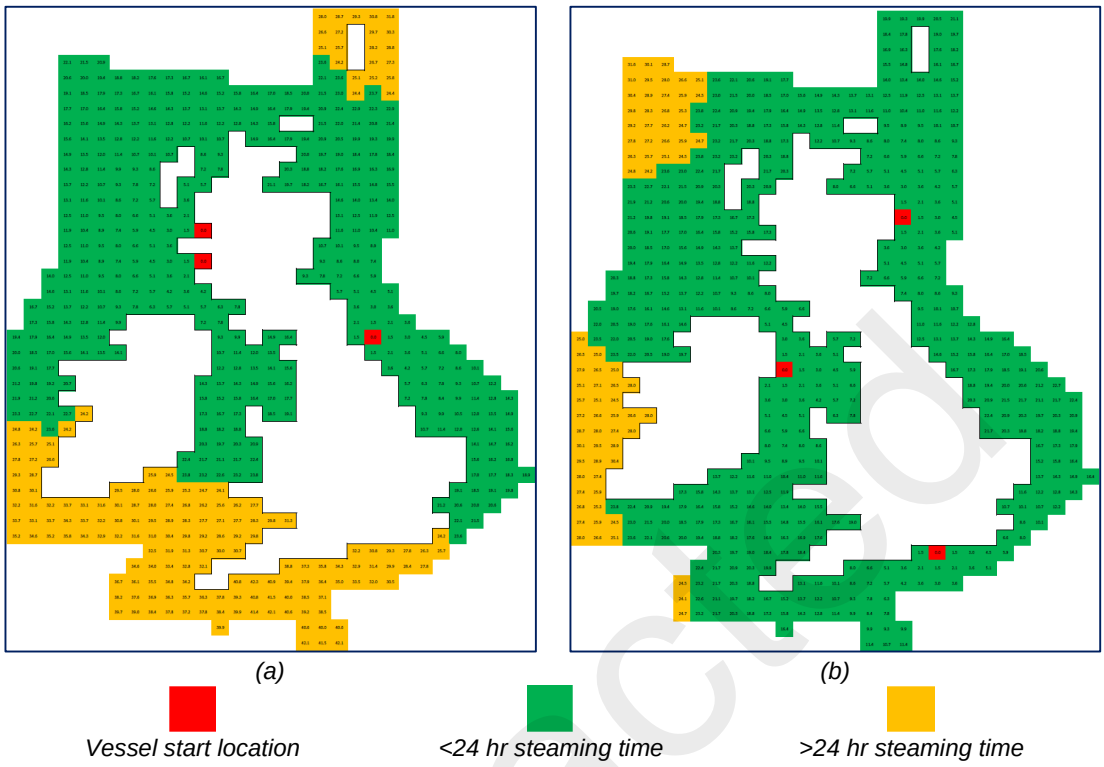

Figure 20: Demonstration of increased risk due to proximity of MFTs (a) and the mitigation of this risk through strategic deployment of the core GLA vessels (b)

It is acknowledged that the optimum situation may be challenged, for example by unforeseen non-availability of an MFT or a response to an incident, wreck, casualty or new danger. As happens with today's fleet management, the consequent re-scheduling of assets must minimise the overall risk. The benefit of this alternative, centralised approach to ship scheduling would be to cause any such re-allocation to be:

- A departure from a position where the inherent risk is already minimised;
- Executed with a better appreciation of the resultant impact on risk profile.

As an example, the following broad guidelines would enable the above to be met:

- All vessels would have areas in which they would routinely operate under normal circumstances.
- An MFT would be positioned in the area with the highest risk and buoy density (Humber to Dover) as a matter of routine. The programme for the other two MFTs would then be adjusted optimally to keep risk as low as possible.

- Additional vessels controlled by the GLAs (owned, chartered and brokered) would be used to further mitigate risk and carry out the maintenance schedule in a timely manner.

We anticipate that the Fleet Planning Team will be able to programme the fleet to complete all AtoN maintenance within the current crewing and rostering arrangements (effectively 12 hour days). Nonetheless, the option of augmenting staff to enable longer work periods during the summer months should be assessed during the first year of operations to define empirically the cost benefit from accepting an uplift in staffing budget in order to realise operational gain. This should be undertaken during Year 1 such that an informed decision might be made alongside the other key considerations (ability to service the Type 2 buoy load and commercial support options).

7.3. The Operational Concept – a Layered Fleet Model

Represented pictorially in Figure 21 below, this comprises four elements:

- A core of three GLA owned and operated MFTs operated in line with the principles described above;
- One or two GLA owned and operated MANTs to support the AtoN maintenance programme;
- Additional support from smaller vessels (SANTs) in the higher risk areas.

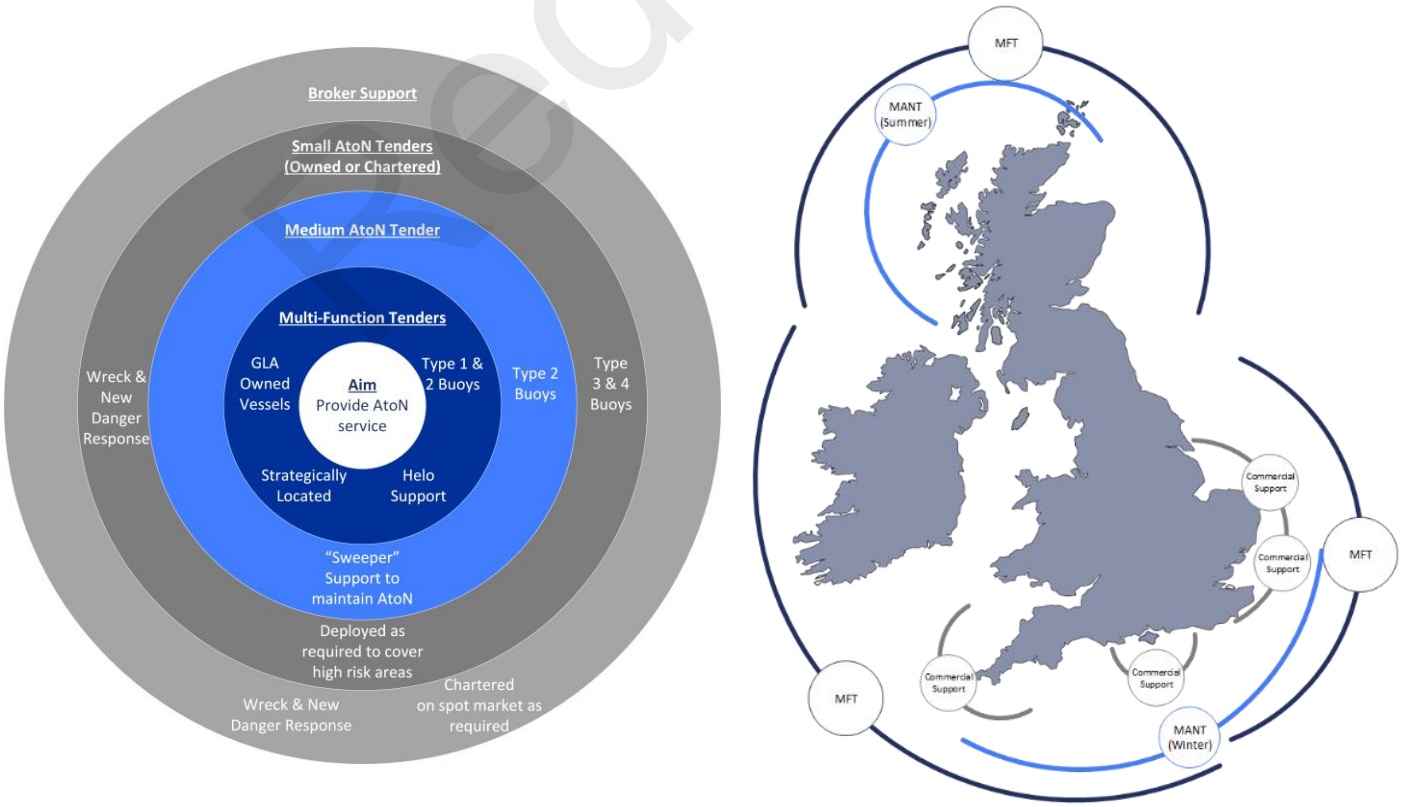

Figure 21: A Layered Fleet Model

7.4. Resilience

In order to safeguard the provision of AtoN there must be inherent resilience against unforeseen events such as loss of a vessel. Table 9 below outlines some examples of how this might be provided from this layered approach:

Issue	Consequence	Mitigation
Loss of Type 1 capable vessel	Potentially unable to achieve planned maintenance of Type 1 buoys or effectively respond to Type 1 casualties	Go to charter market to source a suitable helicopter platform thereby freeing Pharos to perform Type 1 buoy work
Loss of helicopter capable vessel	Unable to support required helicopter operations for lighthouse replenishment and project engineering tasks	Go to charter market to source a suitable helicopter platform or a use one of the remaining helicopter capable vessels in the fleet as a short term backfill
Loss of Type 2 capable vessel	Unable to achieve planned maintenance of Type 2 buoys	Go to temporary extended operations with core fleet or seek short term charter for vessel able to handle Type 2 buoys
Unforeseen operational requirements or incidents that require departure from routine tasking	Fall behind on planned buoy maintenance work, resulting in increased failure rates	Go to temporary extended operations with core fleet or seek short term charters to help meet the annual BSL targets

Table 9: Examples of the resilience in a core GLA fleet comprising three MFTs, one MANT and one SANT

7.5. Commercial Support

The GLAs require a finite number of vessels to conduct routine, planned duties using experienced crews. However, this does not afford the capacity to contend with the contingent demand (wrecks, emerging dangers and navigational defects). Currently, this need is met by a combination of additional, owned assets and commercial charter (MV Mair). It is assessed that the GLAs' core fleet could be supplemented with additional commercial arrangements that would significantly reduce both risk and cost. The challenge is finding the right balance, noting that the conditions and potential support arrangements are different in each area.

As described at Section 5.4.2, this would comprise vessels either on contract under time-charters, held on retainer, or chartered by a broker at short notice on an as-needed basis.

The risks associated with these options may be categorised as reliability, capability and expertise:

- *Reliability*. If the GLAs are to depend on commercial support for the crucial and unpredictable activities driven by an unforeseen contingent incident, then they will require a high degree of confidence in the ability of the vessel(s) to meet the requirement;

- *Capability*. GLA owned vessels carry the equipment necessary for the range of GLA tasking and MV Mair has, over time, adapted and evolved her capability to suit the demand. Any new vessels would likely require some additional equipment to be fitted (e.g. survey suite, RACON);

- *Expertise*. Notwithstanding the high degree of recent personnel turnover, GLA crews are highly trained in their bespoke trade. There are several operators around the UK, Ireland and northern Europe who routinely conduct buoy maintenance but the GLA AtoN role carries additional demands. This would take some time to develop to an acceptable standard.

The inherent degree of risk varies across the span of commercial options. A commercial charter procured against a realistic Statement of Requirement should bring appropriate capabilities but will take time to settle into the GLA *modus operandi.* While Broker Support has considerable attraction from both a savings and a risk reduction perspective, it cannot be relied upon to produce results in all instances.

But commercial options should not be discounted before being subjected to further analysis. Therefore our recommendation is that appropriate market testing, with a view to contracting, is conducted early (within Year 1) to determine the true viability of any of such options. This should include the options of pre-positioning key elements of equipment (see Section 5.4.2) in higher risk areas, for which it might be possible to source an inter-Departmental solution to minimise costs (e.g. the MoD in Portsmouth dockyard). Any resulting arrangements should include clear metrics against which the performance can be measured.

Furthermore, in the case 'Broker Support', arrangements should be made with a suitably-qualified and experienced ship broker for a trial period at the earliest instance. Commercial support of this nature is not replacing any current GLA capability or asset and as such its implementation brings no increase in risk. It is instead a no- or low-cost solution that enhances the GLAs' ability to meet their contingent requirements.

7.6. Potential Fleet Outcomes

Example implementation timelines and ten year cost profiles are provided for each of the following potential Fleet Outcomes in Appendix 13, the source data for these cost profiles is provided at Appendix 14.

7.6.1. Maintaining the Existing Fleet Construct – Fleet Outcome 1

Whilst there will be no cost savings, the level of risk may still be reduced by establishing centralised Fleet Planning. This will require the procurement of a new vessel to replace the ageing Patricia, a process that may take 3-5 years.

The opportunity to generate commercial income remains and may be maximised and the associated risks minimised if managed by the central Fleet

Planning Team. The overall risk, compared with current operations, may be reduced by up to 86%.

Although there is no dependency on brokerage support, this capability should still be investigated as a potential means of mitigating risk in key areas even further.

No savings are realised due to procurement of a new MFT, some risk reduction is possible from the implementation of central Fleet Planning.

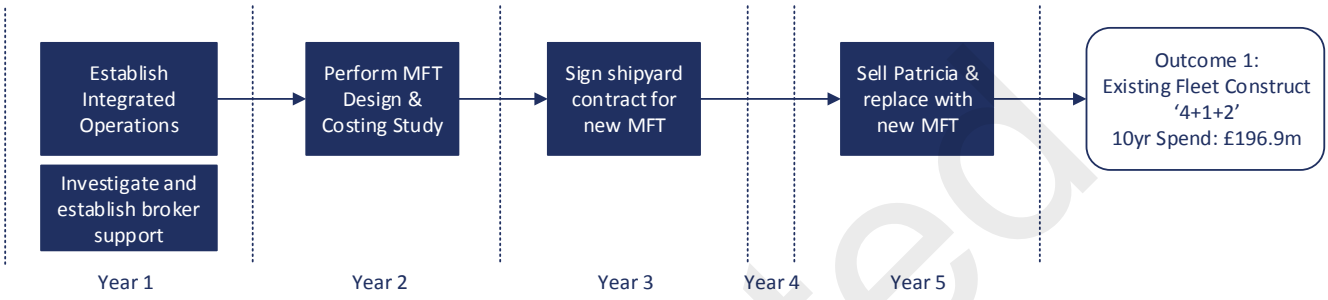

Figure 22: Process of maintaining the Existing Fleet Construct

7.6.2. Minimising Fleet Spend – Fleet Outcomes 2, 3A and 3B

In order to minimise the 10-year fleet spend, Patricia should be sold in Year 1 subject to the central Fleet Planning Team being operational and the GLAs having confidence that the maintenance requirements for all Type 1 and 2 buoys can be met with three MFTs and one MANT. The potential for brokerage support to supplement the contingent response requirements in the high risk areas should be established as a matter of priority.

As well as the greatest potential for savings, this approach results in a relatively short transformation period due to there being no requirement to procure a replacement vessel.

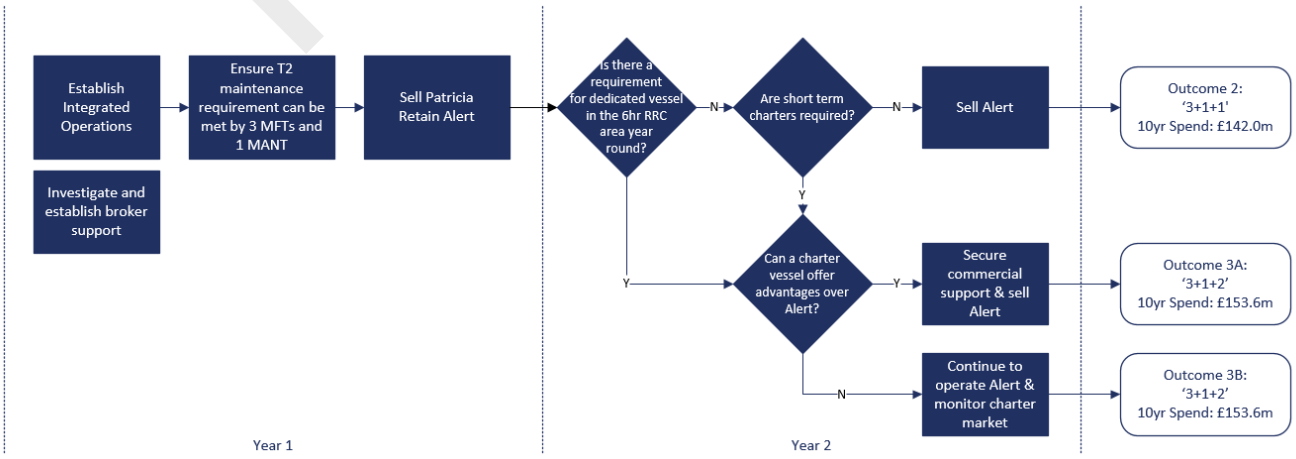

Figure 23: Process of change to minimise the fleet spend

Fleet Outcome 2 Patricia and Alert are sold resulting in the greatest savings of all the outcomes.

Fleet Outcome 3A Patricia and Alert are sold and a charter vessel is sourced for part of the year to support operations in the south east of England.

Fleet Outcome 3B Patricia is sold while Alert remains in operation to provide buoy maintenance and rapid response capabilities in the south east of England.

7.6.3. A Cautious Approach – Fleet Outcomes 4 and 5

If after establishing the central Fleet Planning Team there remain concerns that a reduced fleet of three MFTs and one MANT would not be capable of meeting the Type 1 and 2 buoy servicing requirement, then a more cautious approach may be appropriate.

In the first twelve month period Patricia should be tasked primarily on Type 3 and 4 buoy maintenance and provision of coverage in areas with high contingent risk. Her actual usage should be monitored closely and recorded accurately in order to determine whether or not a new MANT is required. If it transpires, empirically, that no replacement is deemed necessary, then Patricia may be retired.

In parallel the benefit of retaining either Alert or the long term Mair charter must be assessed. In our calculations it is assumed that Alert is sold in the first year.

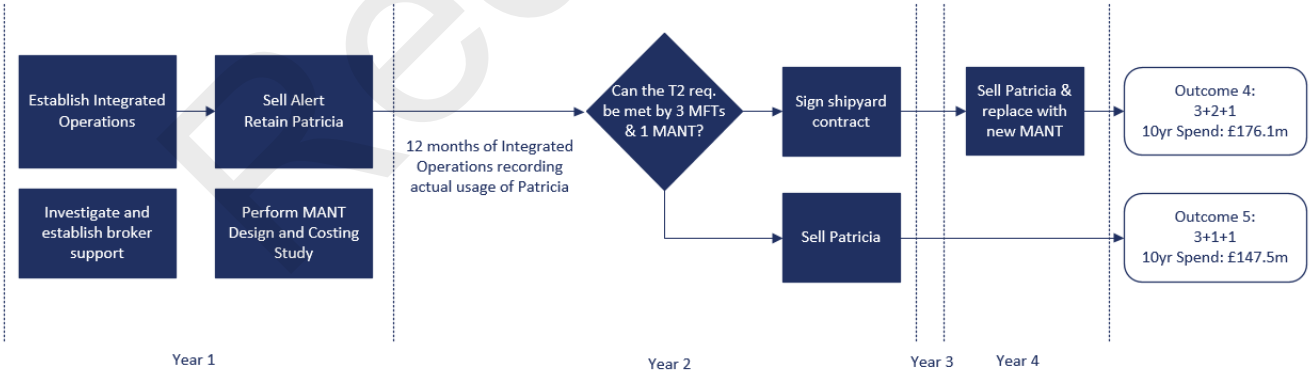

Figure 24: Process of implementation for Fleet Outcomes 4 and 5

Fleet Outcome 4 The Type 2 buoy maintenance requirements are found to be unmanageable without five Type 2 capable vessels, therefore Patricia is replaced with a new MANT resulting in CAPEX costs.

Fleet Outcome 5 After a period of integrated fleet operations, Patricia is sold and not replaced. While resulting in the same fleet as Outcome 2, the savings are reduced due to the extended operation of Patricia.

7.7. Summary of Fleet Outcomes

Table 10 provides a summary of each potential outcome and the associated cost and risk. Figure 25 represents these figures graphically.

	Do Nothing	Maintain Existing Construct	Minimise Fleet Spend		Cautious	
Fleet Outcome	-	1	2	3 A & B	4	5
MFTs	4	4	3	3	3	3
MANTs	1	1	1	1	2	1
Charter / SANTs	2	2	1	2	1	1
Main features	Fleet construct and management remains unchanged	Fleet numbers unchanged Patricia replaced in 2020/21	Early disposal Patricia		Early sell Alert	
			Sell Alert once broker option proved (by end 2017)	Retain Alert **or** sell Alert and replace with time-charter	Patricia replaced in 2020/21	Dispose of Patricia by end 2018
Benefits	No new vessel procurement	Greatest risk reduction	Lowest fleet spend	Greater RRC area coverage	Greater Type 2 capability	Risk of change mitigated
Issues to address	High risk of additional cost or breakdown of Patricia	High CAPEX for replacement vessel	Testing commercial support viability	Testing commercial support viability	High CAPEX for replacement vessel	Testing commercial support viability
10 Year Fleet Spend	£186.3	£196.9m	£142.0m	£153.6m	£176.1m	£147.5m
% Saving from Fleet Outcome 1	5.40%	-	27.90%	22.00%	10.50%	25.10%
Avg. responses outside RRC pa	1.78	0.23	0.67	0.42	0.44	0.67
% change from current situation	-	-86.70%	-62.20%	-76.30%	-75.10%	-62.20%

Table 10: Overview of the key elements of the potential outcomes

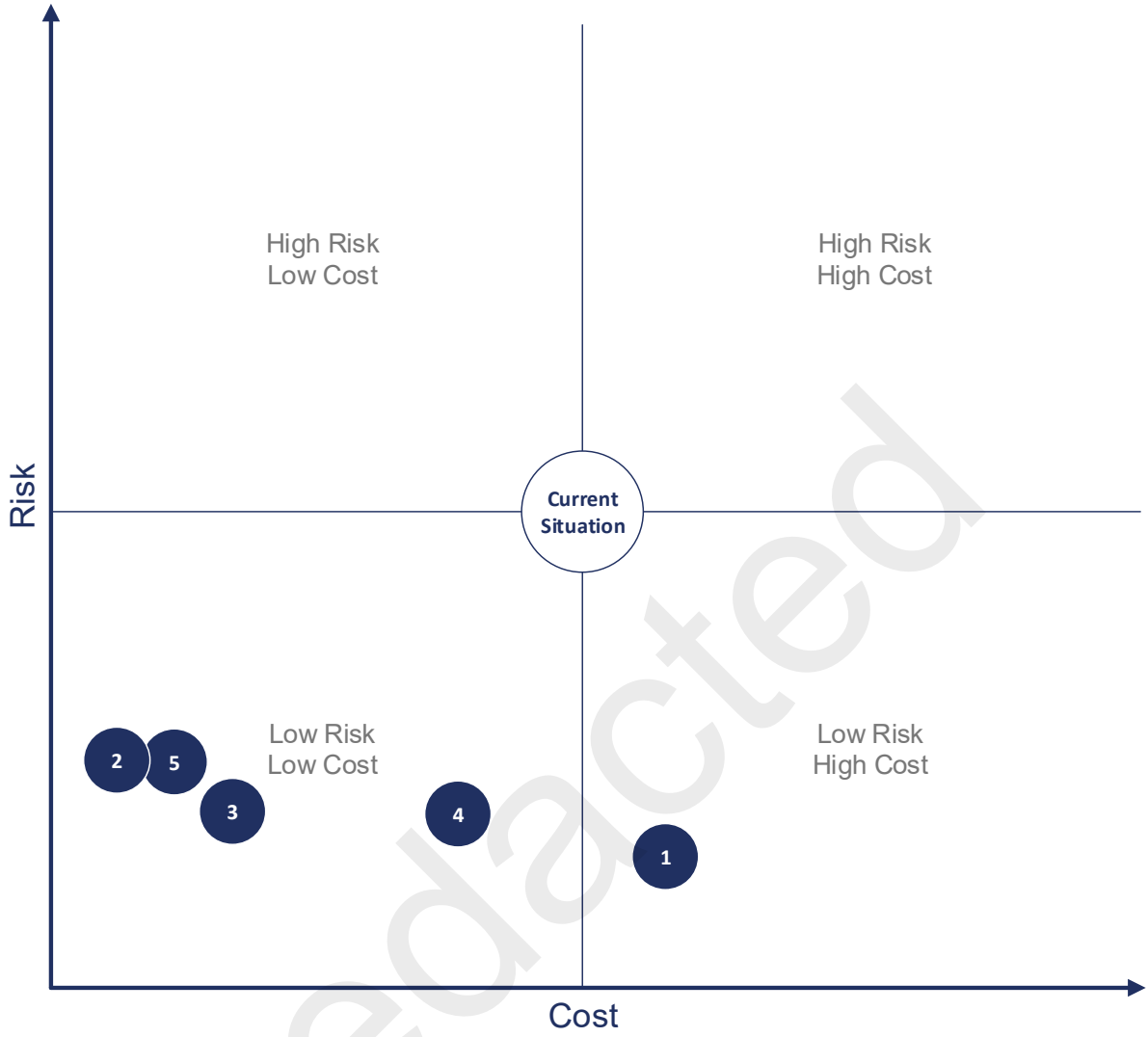

Figure 25: Boston Matrix showing relative risk and cost of each Fleet Outcome

7.7.1. Implications for Commercial Income Generation

Implicit in all Fleet Outcomes except Fleet Outcome 1 (Maintaining the Existing Fleet Construct) is that all vessels that are either GLA owned or under time charter will be working almost exclusively on statutory tasks.

The concept of 'in-sourcing' was introduced at Section 5.6.4 and the financial impact may be derived from Table 10 above. If the OPEX costs over 10 years can be reduced from £196.9m to £166.9m then the requirement to generate approximately £3m per annum from the GLA fleet would be nullified; this would narrow down the range of Fleet Outcomes that are viable.

The funding arrangements for CIL, including the requirements in relation to commercial income generation, are likely to be a limiting factor, but might be balanced by considering an internal charter of the Granuaile to TH.

8. RECOMMENDATIONS

During this review we have completed a thorough analysis of the GLAs' operations in accordance with the requirements of the ITT. This has been progressed through a staged and closely monitored process during which we regularly exposed our findings to scrutiny and test – both by the Project Board and the internal Peer Review Group. The process has led us to the conclusion that there is potential for material adjustments to the current operational approach, with associated savings.

It is also appropriate to set our recommendations in a broader context, looking at the longer term. Fleet Outcomes which reduce the TH fleet in the early years but require complimentary support from NLB and CIL to meet TH's statutory requirements, may be rebalanced in the longer term. For example, when looking ahead to the eventual replacement of Pole Star and Pharos (both of which lie beyond the horizon of this review, but well within the GLAs' strategic field of view), the opportunity will present itself to replace Pole Star with a vessel which is primarily operated by TH, and Pharos with a platform that can still service NLB's helicopter requirement, but that is more aligned to the demands of Type 2, 3 and 4 buoy maintenance, subject to the consideration for resilience within the overall GLA Fleet.

We also recognise that there are elements that remain unproven and therefore recommend adequate testing and evaluation of these before any fundamental decisions are made which are either (a) irreversible or (b) would take a long time and incur significant cost to reverse, particularly if such decisions carry the risk of an adverse impact on the ability of the GLA CEOs to fulfil their statutory obligations.

8.1. Recommended Option

A pre-requisite to achieving an efficient, integrated GLA Fleet is the adoption of centralised fleet planning via a dedicated Fleet Planning Team established in Harwich. We recommend that action is taken to establish such a team at the earliest opportunity in order that detailed planning and scheduling works may be undertaken to prove the ability of the revised fleet construct to deliver the statutory obligations of the GLAs and that suitable management and communication systems may be established.

We recommend that the GLAs move progressively towards the 'Minimising Fleet Spend' (Section 7.6.2) approach with the aim of achieving the 3+1+1 fleet construct of Outcome 2. In progressing towards the 3+1+1 fleet construct it is considered pragmatic to first adopt a 3+1+2 fleet construct of Outcome 3B with both MV Mair and THV Alert being retained to support operations in the high risk sea areas around the south coast of England identified in the Risk Response Criteria.

The 3+1+1 model would comprise a core fleet of the following:

- 3 MFTs
- 1 MANT
- 1 SANT
- Support from commercial vessels through a combination of short term charters and support for contingent operations.

We expect this to be undertaken in a series of discrete steps with each proposed change being subject to prior testing to de-risk the transition to this new construct.

It would be appropriate to test the following underlying assumptions:

a) the viability of fulfilling the Type 2 buoy maintenance and support requirements with only one MANT;

b) the availability of suitable commercial vessels for short term time charter to support maintenance of Type 3 and 4 buoys working in conjunction with a single SANT to support operations around the south coast of England; and,

c) the ability to work with the commercial charter market to meet contingent requirements.

8.2. Detailed Recommendations

Our overarching recommendation is that action is taken to move to an integrated and optimised fleet to meet the requirements of the GLAs as outlined above. In addition, through the course of this review we have identified a number of areas in which we see opportunities to reduce cost and improve operational effectiveness whilst ensuring the safety of all operations. These have been described in this report and are presented in Tables 11, 12 and 13 below.

Table 11 sets out our recommendations which are directed at the optimisation of the fleet and should be progressed without delay.

No.	Name	Detailed Recommendation	Section Ref.
To be completed by end of Year 1			
Fleet Optimisation			
1/1	Commercial Alternatives	Market test viability of commercial options, focused on four high risk areas for the provision of support to contingent requirement for wrecks, casualties and new dangers based on alternatives of: a. Time charter – will include maintenance of AtoN up to type 3 and 4 buoys b. Retainer for call off c. Broker support for call out when required This should prioritise the Solent Area, Dover or Harwich (depending on market findings), and Land's End.	7.5
1/2	Commercial Alternatives	Engage a suitably qualified and experienced ship broker for a trial period, as soon as possible, to explore the 'broker call out' option	7.5
1/3	Scheduling	Develop operating guidelines underpinning a harmonised schedule	7.2.2
1/4	Integrated Operations	Centralise fleet planning, based in Harwich and led by TH's operations team. After 1 year consider the appropriateness of rotating lead	7.1, 7.2
1/5	Risk	Implement means of determining risk routinely carried operationally and share with respective Departments	5.3.5
1/6	Risk	CEOs should provide guidance to their operations teams as to the degree of risk (failure to meet the RRC) that is acceptable	5.3.5
1/7	Risk	CEOs should provide guidance to their operations teams on the process to be followed if acceptable risk looks to be compromised	5.3.5
1/8	Contracted-in support	Assess viability of providing sonar suite (for accurate wreck geo-location) and training for deployment on a vessel that is contracted-in	5.4.2
1/9	AtoN monitoring	Include centralising monitoring on a 24/7 basis in Harwich as an additional element of the tri-GLA review currently underway	5.3.1

Table 11: Schedule of detailed recommendations related to Fleet Optimisation

Table 12 below presents our further recommendations which are independent of the fleet optimisation programme and those of less significance. The recommendations are broadly prioritised for implementation by year.

No.	Name	Detailed Recommendation	Section Ref.
Additional Recommendations			
To be completed by end of Year 1			
1/10	Combined Procurement	Progress options for combining purchase of the more expensive commodities (fuel and lube oil) as well as efficiencies in overall procurement staff effort	7.1
1/11	Contracted-in support	[redacted]	5.4.3
1/12	Hydrographic survey	Deepen the relationship with the MCA Civil Hydrography Programme with a view to bidding for MCA survey work	3.2.9
1/13	Crewing	Continually scrutinise Agency costs to ensure cost effectiveness when compared with FTE	5.3.2
1/14	Crewing	Review manning levels across the GLA fleet to understand apparent inconsistencies and identify any beneficial cross-sharing of ideas	5.3.2
1/15	Seasonality	The option of augmenting staff to enable longer work periods during the summer months should be assessed	7.2.2
1/16	Wreck geo-location	Explore the scope and cost of adapting helicopter capabilities to enhance their use in wreck geo-location	5.4.1
1/17	'GLA Cruises'	Market test interest in conducting cruises onboard GLA vessels (emulating the 'Patricia Voyages')	5.6.1
1/18	Commercial Contracts	Ensure that contractual relationships with local operators are appropriately constructed to ensure that GLAs are not exposed to litigation in the event of a sub-contractor suffering an accident while servicing an AtoN	5.1.4
1/19	Communications suite	GLA vessels would benefit from their own standalone vessel maintenance system held onboard (for stores requisitions etc.)	4.3.3
1/20	Pennant securing	All GLA vessels (and any chartered-in) should use the 'Happy Hooker' to de-risk deck operations	4.3.7
1/21	Stakeholder Interaction	The GLAs and NMIC should pursue a closer relationship	3.2.7
1/22	Hullform	If installed Moon Pools are not used for commercial activities then consideration should be given to installing plating to streamline the hull form	4.3.7
To be completed by end of Year 2			
2/1	Winch	The selection of the type of winch (rope/chain capable) should be considered from a pan-GLA perspective taking into consideration all likely tasking (including commercial)	4.5.2
2/2	Chain handling	Retrospective installation of a hydraulic chain-stopping system on existing vessels should be considered	4.3.4

Table 12: Schedule of additional recommendations

Table 13 below presents our recommendations which have been noted during the course of the review works and which should be considered through any future fleet procurement activities.

No.	Name	Detailed Recommendation	Section Ref.
To be considered in any future procurement			
P/1	Seakeeping	As Ireland will always require their own GLA vessel, Granuaile's replacement must possess excellent seakeeping characteristics in order to meet CIL's statutory requirements	4.5
P/2	Seakeeping	Future procurement for NLB must acknowledge the fact there must be at least one vessel with excellent seakeeping characteristics	4.2.3
P/3	Buoy handling	Any replacement for Patricia does not require the ability to handle Type 1 buoys	4.5.1
P/4	Buoy handling	Any Type 1 vessel crane must have sufficient capacity for buoys weighing up to 14 tonnes, their mooring arrangements and wave induced shock loading up to a specified sea state	4.2.1
P/5	Buoy handling	All GLA vessels should have the capacity to handle up to Type 2 buoys	4.5.1
P/6	Helicopter support	With a fully integrated programming approach, TH has an excess of helicopter support capacity which should be taken into consideration if Patricia is replaced	4.5.1
P/7	Craneage	Consideration should be given to remote operation of cranes using operator harnesses	4.3.1
P/8	Craneage	A knuckle-boom crane should be considered in any future procurement	4.5.2
P/9	Hydrographic Survey Suite	Multibeam sonar is a key facility – for accurate wreck location and for hydrography surveys, especially in the shifting sea bed areas of the southern North Sea	4.3.2
P/10	Chain stopping	A hydraulic chain-stopping system should be included in future GLA vessel designs	4.3.4
P/11	Workboats	For areas where emphasis is placed on the use of workboats to support shoreside facilities (especially where there might be a significant swell), such workboats should be of robust construction	4.3.6
P/12	Ship handling at anchor	The performance of future vessels should consider their behaviour when at anchor; specifically is there a requirement for a stern anchor to reduce yaw?	4.3.7
P/13	UUVs	GLAs monitor developments in air portable UUVs to ascertain their utility in wreck location from a helicopter	5.4.1

Table 13: Schedule of recommendations for consideration in any future procurement

APPENDIX 1 - SCHEDULE OF AREAS FOR FURTHER ASSESSMENT

GLA Fleet Review

Prepared By:	Version:	Title:	Date:
PRO	2	Areas for Further Assessment	01.10.15

HOULDER

Srl No	ITT Category	Sensitivity Name	GLA	Sensitivity Description	Modelling Assumptions	Variation Removing Patricia?	Modelling Considerations Intention of Sensitivity and Focus for Analysis
BL1	N/A	Baseline	All	As Is	1. GLA ships' predominant tasking is in their own areas 2. Vessels may be programmed into another GLA's area only to respond to AtoN casualties, wrecks or new dangers 3. No geographical constraints on cross-boundary operations (e.g. NLB can operate anywhere in TH or CIL areas)	N	1. Assess (baseline) the degree of risk inherent in the current operational laydown 2. Ascertain the baseline vessel utilisation/availability 3. Establish the baseline cost per GLA 4. Assess cost-per-task for each vessel to allow X-GLA comparison
BL2	N/A	Baseline Minus	All	IGC5 Failure	1. GLA ship tasking as for BL1 in their own areas 2. No cross-boundary operations allowed - GLA ships to remain in own waters for routine maintenance tasks and response to AtoN casualties, wrecks or new dangers	Y	1. Models the impact of a total breakdown in the operational coordination currently in place 2. Will define the 'worst case' risk condition with the current fleet 3. Establish the baseline cost per GLA 4. Assess cost-per-task for each vessel to allow X-GLA comparison
BL3	N/A	Baseline Enhanced	All	IGC5 Enhanced	1. Granuaile to conduct routine maintenance on all Type 1 buoys in CIL waters plus TH Type 1 buoys in Irish Sea 2. Granuaile available for casualty response in any GLA area 3. Patricia and Galatea to conduct routine maintenance on all remaining Type 1 buoys 4. Galatea takes lead for Type 1 buoy maintenance east of the Dover Straits; also available for casualty response in any GLA area 5. Patricia to be tasked in English Channel areas, but available for casualty response in any GLA area 6. Remainder of fleet programming as for BL1	Y	1. Investigates the change in risk profile from closer integration of CIL and TH routine operations 2. Patricia is placed in the Channel to mitigate the Solent Risk 3. Will indicate impact on vessel utilisation compared to the baseline condition 4. Establish the baseline cost per GLA 5. Assess cost-per-task for each vessel to allow X-GLA comparison
BL4	N/A	Baseline Plus	ALL	IGC5 Plus	1. Granuaile to conduct routine maintenance on all Type 1 buoys in CIL waters plus TH Type 1 buoys in Irish Sea 2. Granuaile available for casualty response in any GLA area 3. Galatea to conduct routine maintenance on all remaining Type 1 buoys 4. Galatea available for casualty response in any GLA area 5. Patricia to be removed from model and replaced by 1 Type 2-4 capable ship (per Pole Star) stationed in the English Channel 6. Remainder of fleet programming as for BL1	N	1. Develops the BL3 situation to investigate the impact on risk from changing Patricia's capability for a slightly less capable vessel that has neither a helo platform, nor is Type 1 buoy capable 2. As for BL3, Patricia's replacement is positioned in the Channel to mitigate the Solent and Lands End risks 3. Establish the baseline cost per GLA 4. Assess cost-per-task for each vessel to allow X-GLA comparison
1	Vessel Nos/ Capability	VNC 1	TH	Patricia - Single Replacement	1. Replace Patricia with 1 Type 2-4 capable ship (similar to Pole Star) 2. Galatea's principal role is all TH Type 1 buoys & helo support 3. Other ships' tasking per BL 1	N	1. Determines the change to Baseline risk in reducing the TH fleet Type 1 and helo support capabilities 2. Will provide an informed view of the impact on vessel utilisation
2	Vessel Nos/ Capability	VNC 2	TH	Patricia - Multiple Replacement	1. Replace Patricia with 2 Type 2-4 capable ships (both similar to Pole Star) 2. Galatea's principle role is all TH Type 1 buoys & helo support 3. Other ships' tasking per BL 1	N	1. Costs will increase, but risk will reduce bringing some auditable basis to the cost/benefit equation 2. Explore through life OPEX costs/savings 3. Identify residual capacity that might be available for 3PIG
3	Vessel Nos/ Capability	VNC 3	TH	Patricia and Alert - Replacement	1. Sell Patricia and Alert and procure 2 Type 2-4 capable ships (both similar to Pole Star) 2. Galatea's principle role is all TH Type 1 buoys & helo support 3. Other ships' tasking per BL 1	N	1. Change in risk profile from improving Alert's buoy maintenance capability and taking the opportunity to realign TH overall capability balance when Patricia is decommissioned without an overall increase in TH fleet numbers 2. Explore through life OPEX costs/savings

GLA Fleet Review

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Srl No	ITT Category	Sensitivity Name	GLA	Sensitivity Description	Modelling Assumptions	Variation Removing Patricia?	Modelling Considerations Intention of Sensitivity and Focus for Analysis
4	Vessel Nos/ Capability	VNC 4	TH	Patricia and Alert - Replacement	1. Sell Patricia and Alert and procure 3 Type 2-4 capable ships (all similar to Pole Star) 1 of which should be stationed in the Channel (to mitigate the Solent risk) 2. Galatea's principle role is all TH Type 1 buoys & helo support 3. Other ships' tasking per BL 1	N	1. Change in risk profile when compared with VNC 3 2. As for VNC 2, the inclusion of an additional vessel will increase costs but will afford another insight to the cost/benefit equation
5	Vessel Nos/ Capability	VNC 5	NLB	Pharos - Replacement	1. Sell Pharos 2. Procure alternative platform - Type 2-4 & helo capable 3. Other ships' tasking per BL 1	Y	1. Recognises the fact that Pharos' Type 1 Buoy capability is not required in NLB waters 2. Will indicate the change in risk profile compared to the Baseline condition 3. Anticipate that Pole Star will cover all BSL requirements - but vessel utilisation from this sensitivity will prove/disprove 4. Assess OPEX savings from operating smaller vessel
6	Vessel Nos/ Capability	VNC 6	CIL	Granuaile - Replacement	1. Sell Granuaile 2. Procure alternative platform - Type 2-4 & helo capable 3. CIL Type 1 buoys to be managed by TH/NLB 4. Other ships' tasking per BL 1	Y	1. While mindful of the imperative for CIL to generate funding for the Irish Government this sensitivity will disregard the 3PIG challenge in an attempt to investigate a potential means to optimise capabilities/costs 2. Will indicate the impact on CIL and TH (compared to the Baseline condition) 3. Assess OPEX savings from operating smaller vessel
7	Vessel Nos/ Capability	VNC 7	All	Total Integration	1. Any GLA vessel can operate in any area, for routine maintenance as well as response to wrecks/casualties/new dangers	Y	1. Specifically designed to investigate the change in vessel utilisation by adopting a fully integrated approach to planning of BSL completion 2. Determine any adjustment to overall risk profile compared to the Baseline condition
8	Vessel Nos/ Capability	VNC 8	All	Output Based Integrated Operations	1. No modelling yet possible - will be developed in light of findings from earlier VNC sensitivity analyses 2. Statutory requirements will be developed on a capability basis	-	To investigate fleet options independent of the existing constraints of vessel type and capability with a view to informing an optimum solution
9	Ownership	OWS 1	TH	Charter-in Support for South Coast High Risk Areas	1. Include a contract vessel to cover the Solent and Lands End 12 hour response areas; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4) 2. Remainder of GLA fleet modelled as per BL 1	Y	1. Although there will be a increase in cost, the key output will be an indication of the reduced risk in the Solent and Lands End areas 2. Cost of additional charter assumed to be 150% Mair cost
10	Ownership	OWS 2	TH	Charter-in Support for Humber Area	1. Include a contract vessel permanently in the Humber 12 hour response area; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4) 2. Remainder of GLA fleet modelled as per BL 1	Y	1. Although there will be a increase in cost, the key output will be an indication of the reduced risk in the Humber area 2. Cost of additional charter assumed to be 150% Mair cost
11	Ownership	OWS 3	All	Charter-in Support for all Type 4 Buoy Maintenance	1. Modelling of all GLA vessel operations as for BL 1 but excluding Type 4 routine maintenance 2. All Type 4 buoy maintenance to be conducted using minimum number of vessels required to deliver the Buoy Servicing List	Y	1. Should enable total achievement of the BSL (particularly for TH where it has been incomplete) 2. Resulting vessel residual capacity would be available for 3PIG 3. Investigates the risk impact of an increased commercialisation of operations 4. Cost of additional charter assumed to be 150% Mair cost 5. Investigate potential OPEX saving dependent on reduced vessel utilisation

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Prepared By:	Version:	Title:	Date:
PRO	2	Areas for Further Assessment	01.10.15

Srl No	ITT Category	Sensitivity Name	GLA	Sensitivity Description	Modelling Assumptions	Variation Removing Patricia?	Modelling Considerations Intention of Sensitivity and Focus for Analysis
12	Ownership	OWS 4	All	Charter-in Support for all Type 3 & 4 Buoy Maintenance	1. Modelling of all GLA vessel operations as for BL 1 but excluding Types 3&4 routine maintenance 2. All Type 3&4 buoy maintenance to be conducted using minimum number of vessels required to deliver the Buoy Servicing List	Y	1. Should enable total achievement of the BSL (particularly for TH where it has been incomplete) 2. Resulting vessel residual capacity would be available for 3PIG 3. Investigates the risk impact of an increased commercialisation of operations 4. Cost of additional charter assumed to be 150% Mair cost 5. Investigate potential OPEX saving dependent on reduced vessel utilisation
13	Ownership	OWS 5	NLB	Charter-in Helo Support platform	1. Modelling of GLA vessels to be as per BL 1 - except Pharos which is to be removed from model 2. Include a contract vessel in Pharos' place, on contract for number of days for which helo is allocated per tri-service helo contract	Y	1. Impact on risk borne particularly by NLB when compared to the Baseline condition
14	Ownership	OWS 6	All	Charter in Support for all T1 buoys	Discounted on account of lack of capability / expertise in market place that would be required to meet peak tasking requirements	N/A	N/A
15	Operational Management	OM 1	All	24/7 Monitoring	**Operational modelling not applicable** **Output driven by financial modelling** 1. Shut down NLB and CIL monitoring facilities - with redundancies 2. Increase TH (Harwich) coverage from current silent hours to 24/7 3. Include software updates (to improve/ensure system compatibility)	N/A	1. To facilitate potential efficiencies in management of the service 2. Assess overall benefit from cost of change vs OPEX savings 3. Cost of software adjustments to ensure full compatibility
16	Operational Management	OM 2	All	Seasonality	**Operational modelling not applicable** **Output driven by financial modelling** 1. Increase necessary manning levels to deliver round the clock operations during clement weather window 2. Increased levels to be April to October 3. Vessel operations modelled as for BL 1	N/A	To assess the costs and benefits of scheduling GLA vessel operations to avoid the inefficiencies associated with working during winter months
17	Operational Management	OM 3	All	24/7 Operations	**Operational modelling not applicable** **Output driven by financial modelling** 1. Increase necessary manning levels to deliver round the clock operations 2. Vessel operations modelled as for BL 1	N/A	To assess the costs and benefits of operating the GLA vessels 24/7
18	Operational Management	OM 4	All	Manning and Rostering	**Operational modelling not applicable** **Output driven by financial modelling** 1. Review manning and rostering and compare across the fleet	N/A	To explore areas where greater coherence/alignment might be appropriate to achieve efficiencies
19	Operational Management	OM 5	All	Centralised Crewing	**Operational modelling not applicable** **Output driven by fincancial modelling** 1. Replace day to day crew management with a single team 2. Will require accurate organogram for each GLA Crew Management team, including %age of time spend on non-Crew Management tasks	N/A	1. To explore potential savings in management costs while facilitating efficiencies in crew rostering 2. Assess overall benefit from cost of change vs OPEX savings

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Srl No	ITT Category	Sensitivity Name	GLA	Sensitivity Description	Modelling Assumptions	Variation Removing Patricia?	Modelling Considerations Intention of Sensitivity and Focus for Analysis
20	Operational Management	OM 6	All	Combined Procurement	**Operational modelling not applicable** **Output from financial modelling** Combine GLA procurement processes (for GLA fleet only) to increase buying power - especially for items such as lube oil, fuel and spare parts	N/A	To facilitate efficiencies in procurement acoss the fleet
21	Operational Management	OM 7	All	Centralised Technical Management	**Operational modelling not applicable** **Output driven by fincancial modelling** 1. Replace day to day technical management with a single team 2. Will require accurate organogram for each GLA Tech Management team, including %age of time spend on non-Tech Management tasks	N/A	To explore potential savings in management costs whiles facilitating efficiences and savings in technical support (and procurement)
22	Operational Management	OM 8	All	Centralised Operations Management	**Operational modelling not applicable** **Output driven by fincancial modelling** 1. Replace day to day operational control and programming of ships with a single team 2. Will require accurate organogram for each GLA Op Management team, including %age of time spend on non-Operational Management tasks	N/A	1. Will be used to investigate viability of the following: a. The greater efficiency (lower vessel utilisation) that would be achievable b. The centralised team would manage residual capacity as a whole rather than on a GLA by GLA basis c. Specifically, the Irish funding challenge would be addressed using residual capacity across the entire Fleet rather than exclusively with Granuaile d. NLB and TH commercial income generation targets would be as per 2015/16
23	Operational Management	OM 9	All	Centralised Fleet Management	**Operational modelling not applicable** **Output driven by financial modelling** 1. Introduce a single, centralised organisation charged with overall management of the fleet (operationally, technically (including procurement) and crewing)	N/A	1. To investigate the viability and benefits of centralising all fleet management functions for all GLA assets
24	Operational Management	OM 10	All	Outsource entire fleet to third party or parties	**Operational modelling not applicable** **Output driven by financial modelling**	N/A	To assess the potential costs and risks associated with a fully outsourced management service for the GLA fleet

APPENDIX 2 - SCHEDULE OF ASSUMPTIONS

GLA Fleet Review

Prepared By:	Version:	Date:	Title:
CGB	2	12.11.15	Schedule of Assumptions

HOULDER

Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AOM1	Operational Management	Tri-GLA Helo Contract	All	Any significant adjustment to the recently awarded tri-GLA helo contract is unrealistic before the contract is re-tendered.	Discussions with GLA representatives.
AOM2	Operational Management	Helo Ops. Criteria	All	The helideck operations criteria applied are identical to those proposed by the Helicopter Certification Agency.	Expressed by NLB representatives.
AOM3	Operational Management	FR Analysis Sheet	TH	The FR statistics presented in "FR Vessel Analysis Sheet" represent a realistic and repeatable condition.	Ref. Document: <GLA Documentation><Statistical Analysis><TH><FR Vessel Analysis Sheet>
AOM4	Operational Management	Granuaile Excess Capacity	CIL	Granuaile is available for income generation for between 100 and 120 days per annum.	1. Expressed at contract initiation meeting and during visit to Granuaile & Dun Laoghaire. 2. Review of TUDS report found <GLA Documentation><Statistical Analysis><CIL><TUDS><TUDS EXCEL 5 year>
AOM5	Operational Management	BSL Cooperation	All	GLA teams liaise when preparing the annual buoy servicing list schedule to deconflict major programming elements (e.g. ship docking and repair periods). The level and degree of programme sharing and harmonisation does not flow down to preparation of detailed schedules.	Discussions with GLA representatives.
AOM6	Operational Management	Annual Completion	All	The maintenance schedule developed at the start of the annual planning cycle assumes 100% completion of the tasks within that year.	
AOM7	Operational Management	Pole Star Programming	NLB	Pole Star is capable of completing the entire annual routine NLB buoy maintenance load (that requires use of a ship) within a year.	Expressed by crew of the Pole Star and NLB representatives.
AVC1	Vessel Capabilities	Replacement Vessel	TH	Any replacement for Patricia or Alert will require at least Type 2 buoy capability and should be based broadly on Pole Star's capabilities	Based on discussions with TH representatives indicating the Alert is not sufficiently capable as she cannot handle T2 buoys and does not maintain speed in heavy weather.

GLA Fleet Review

Prepared By:	Version:	Date:	Title:
CGB	2	12.11.15	Schedule of Assumptions

HOULDER

Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AVC2	Vessel Ownership	Charter-in Support	TH	Pricing of any contract that emulates Mair's should be based on the most likely market outcome and not on the pre-existing contract	TH have procured an exceptionally good contract that is unlikely to be repeatable
AVC3	Vessel Capabilities	NLB Chain Winch Preference	NLB	NLB's preference is for a chain winch vice rope winch, largely as it affords access to income generation opportunities.	Expressed by NLB representatives during visit to Pharos.
AVC4	Vessel Capabilities	CIL Helo Requirement	CIL	The Requirement for Granuaile to support helo ops will co-terminate with the completion of the capital improvement programme (2021/22). CIL will still require some ship support to helo operations although this will be limited and may be provided by another GLA vessel.	Expressed by CIL representatives during visit to Granuaile & Dun Laoghaire.
AOR1	Operational & Risk Modelling	NLB Wrecks & New Dangers Inputs	NLB	The comments "assessed no action required" and "provided advice to SOSREP" indicate that no vessel action was necessary for the particular incident. A total of 3 wrecks & new dangers were responded to over five years, giving an average of 0.6/year.	Ref. Document: <GLA Documentation><Statistical Analysis><NLB><NLB Wrecks & New Danger Summary 2010 Onwards>
AOR2	Operational & Risk Modelling	TH Wrecks & New Dangers Inputs	TH	The number of wrecks and new dangers in TH waters are determined by averaging the recorded values over three years.	Ref. Documents: <GLA Documentation><Statistical Analysis><TH><2010-11 Wrecks & Casualties> & <2013-14 Wrecks & Casualties> & <2014-15 Wrecks & Casualties>
AOR3	Operational & Risk Modelling	CIL Wrecks & New Dangers Inputs	CIL	Three wrecks were recorded in the one year of available data, so an average of 3 wrecks per year is assumed. Incidents and new dangers are generally not attended by vessels.	Ref. Document: <GLA Documentation><Statistical Analysis><CIL><Wreck New Danger>

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Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AOR4	Operational & Risk Modelling	Spread of Wrecks and New Dangers	All	The spread of wrecks and new dangers is based upon the Risk Response Criteria, with more assumed to occur in high risk areas. The 6 hour response areas are assumed to have 4 times as many occurrences than the 24+ areas due to higher traffic and shallower water etc.	Ref. Document: <GLA Documentation><Joint Policy><Risk Response Criteria 19 February 2014>
AOR5	Operational & Risk Modelling	NLB Casualty Responses	NLB	The same proportion of casualties are responded to by a vessel as is the average for TH & CIL (53.25%).	Review of all casualty data on the shared portal.
AOR6	Operational & Risk Modelling	T1 and T2 Casualty Split	All	T1 and T2 buoys have the same failure rate. The number of T1 failures in an area is therefore proportionate to the number of T1 buoys.	
AOR7	Operational & Risk Modelling	Task Times	All	The time to perform each task can be taken from the TUDS data as the total task time divided by the number of tasks. This is assumed to be the same across all three GLAs.	Based on review of TUDS data from the three GLAs.

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Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AOR8	Operational & Risk Modelling	Base Vessel Utilisation	All	The base utilisation for each vessel is the utilisation without responding to casualties, wrecks and new dangers. When a new vessel is added to the model the task times are redistributed according to the following: - Times remain the same for existing vessels and the average is applied to the new vessel: bunkering, personnel transfer, statutory services & audits, training, repairs, weather bound, committee inspection, loading & discharging. - Time split based on the number of vessels: hydro surveys, project engineering tasks, miscellaneous. - Removed tasks: DD&R, emergency hazards, AtoN casualites, contractual obligations, buoys (contract/extraneous), anchorage and alongside. - Tasks redistributed based on how many AtoNs are in each area and how much time each vessel spends in that area: buoys (statutory), MFA tows, MFA moorings & maintenance, LH replenishment, beacons/perches, AtoN monitoring, local light inspection. The utilisation due to steaming is based on the original steaming time and the number of tasks removed from the base utilisation.	Based on review of TUDS data from the three GLAs.
AOR9	Operational & Risk Modelling	Vessel Capabilities	All	- Alert, Mair, and Pole Star cannot perform Type 1 buoy maintenance or casualty response. - All vessels are type 2-4 buoy capable, i.e. the model does not differentiate between type 2-4 buoys. - All vessels are capable of responding to wrecks and new dangers.	

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HOULDER

Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AOR10	Operational & Risk Modelling	Routine Tasking Areas	All	The time each vessels spends in each area is based on the 2015-17 TH Vessel Operations Resource Plan. Time is further divided into the sub areas within the GLA areas according the amount of buoys in each sub area relative to the total number of buoys in the GLA area.	Ref. Document: <GLA Documentation><Operational Management><2015-17 TH Vessel Operations Resource Plan (ORP)>
AFM1	Financial Modelling	Risk Response Charter	TH	Cost for Lands End, Humber and Solent charter vessels for risk response only is [redacted] per day	Broker advice
AFM2	Financial Modelling	Time Charter	All	Cost for a Type 3 & 4 capable vessel on time charter is [redacted] per day (excluding fuel)	Broker advice
AFM3	Financial Modelling	Time Charter - Fuel	All	Fuel and lubricants cost for a Type 3&4 capable vessel is [redacted] pa	Pole Star actuals 2015
AFM4	Financial Modelling	Vessel costs - General	All	Comprise staff costs, non-staff costs, lease costs, dry dock and repair and other capital costs.	GLA management information
AFM5	Financial Modelling	Vessel costs - Patricia	TH	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) , Lease costs ([redacted] pa), Dry dock and repair ([redacted] in 10 years) and other capital costs [redacted] - all constant	GLA management information
AFM6	Financial Modelling	Vessel costs - Galatea	TH	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) constant, Lease costs ([redacted] pa up to and including 2022), Dry dock and repair ([redacted] in 10 years) and other capital costs ([redacted] in 10 years)	GLA management information
AFM7	Financial Modelling	Vessel costs - Alert	TH	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) constant, Lease costs ([redacted] pa up to and including 2021), Dry dock and repair ([redacted] in 10 years) and other capital costs ([redacted] in 10 years)	GLA management information

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Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AFM8	Financial Modelling	Vessel costs - Pharos	NLB	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) constant, Lease costs ([redacted] pa up to mid-2023), Dry dock and repair ([redacted] in 10 years) and other capital costs ([redacted] in 10 years)	GLA management information
AFM9	Financial Modelling	Vessel costs - Pole Star	NLB	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) constant, Lease costs ([redacted] pa up to and including 2020), Dry dock and repair ([redacted] in 10 years) and other capital costs ([redacted] in 10 years)	GLA management information
AFM10	Financial Modelling	Vessel costs - Granuaile	CIL	Staff costs ([redacted] pa), Non-staff costs ([redacted] pa) constant, Lease costs ([redacted] pa), Dry dock and repair ([redacted] in 10 years) and other capital costs ([redacted] in 10 years)	GLA management information
AFM11	Financial Modelling	Vessel costs - Mair	TH	All in cost of [redacted] pa rising to [redacted] pa by 2026	GLA management information
AFM12	Financial Modelling	Vessel costs - Type 2 Capable		Operating cost assumptions as for Pole Star. Lease cost pa is [redacted] based on a 15 year loan period and [redacted] interest pa. Earliest availability is FY 2018. Purchase price for the vessel [redacted].	Broker advised
AFM13	Financial Modelling	Vessel costs - Type 2 Capable Helo		Operating cost assumptions as for Pole Star. Lease cost pa is [redacted] based on a 15 year loan period and [redacted] interest pa. Earliest availability is FY 2018. Purchase price for the vessel [redacted].	Broker advised
AFM14	Financial Modelling	Vessel values	All	Vessel sale values have been based on the 2015 Braemar valuations then applying a percentage adjustment for 'Market Forces' with increases in value expected from 2016 onwards and applying a [redacted] reducing balance depreciation.	Braemar 2015 valuations plus broker advice on likely trends over review period.
AFM15	Financial Modelling	BL4 & VNC1	TH	Patricia sold in 2018 to allow 2 years lead time for new build replacement vessel. Full year of costs in 2018 for new build vessel.	

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Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AFM16	Financial Modelling	VNC2	TH	Patricia sold in 2018 to allow 2 years lead time for new build replacement vessel. Full year of costs in 2018 for two new build vessels.	
AFM17	Financial Modelling	VNC3	TH	Patricia sold in 2018 to allow 2 years lead time for new build replacement vessel. Full year of costs in 2018 for new build vessel. Alert is sold at the end of its lease in 2022. Replaced by a new build vessel whose full year costs commence in 2022.	
AFM18	Financial Modelling	VNC4	TH	Patricia sold in 2018 to allow 2 years lead time for new build replacement vessel. Full year of costs in 2018 for two new build vessels.Alert is sold at the end of its lease in 2022. Replaced by a third new build vessel whose full year costs commence in 2022.	
AFM19	Financial Modelling	VNC5	NLB	Pharos is sold at the end of its lease in 2023. Proceeds received in 2024 [redacted]. New build Helo capable vessel is brought into service in 2024.	
AFM20	Financial Modelling	VNC6	CIL	Granuaile sold at the earliest opportunity, ([redacted] proceeds in 2018) to allow new build replacement into service in 2018.	
AFM21	Financial Modelling	VNC8a	All	Patricia and Alert are sold in 2017 earning net proceeds of [redacted] and [redacted] respectively. One vessel is chartered in and a broker service commenced.	
AFM22	Financial Modelling	VNC8b	All	Patricia and Alert are sold in 2017 earning net proceeds of [redacted] and [redacted] respectively. A broker service commenced.	
AFM23	Financial Modelling	OWS	All	Charter-in vessel commences in 2017 for the full 10 year period.	

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Srl No	Category	Name	GLA	Assumption	Basis for Assumption
AFM24	Financial Modelling	OM1	All	Saves 1 fte net. Two GLAs lose 1 fte and 1 gains 1. Based on average officer pay, grossed up by [redacted] for on costs.	Houlder estimates
AFM25	Financial Modelling	OM2	All	Assumes 40 agency staff for 7 months of the year as an incremental cost. Agency labour rate equals average loaded staff cost for crew.	Houlder estimates
AFM26	Financial Modelling	OM3	All	10 additional ftes for each of the following vessels: Galatea, Pharos, Pole Star and Granuaile.	Houlder estimates
AFM27	Financial Modelling	OM4	All	Not costed	
AFM28	Financial Modelling	OM6	All	Possible saving of 4 ftes from distributed procurement departments. Assumes modest savings on 3rd party spend (est [redacted] pa)	Houlder estimates

APPENDIX 3 - SCHEDULE OF CONSTRAINTS

GLA Fleet Review

Prepared By:	Version:	Date:	Title:
PRO	2.1	03.02.15	Schedule of Constraints

HOULDER

Srl No	Category	Constraint Name	GLA	Constraint Description	Implications	Barrier
1	Constitutional	Irish Flagged Vessel	CIL	Granuaile, and any replacement, must remain under Irish Flag	CIL must continue to operate their own vessel	Government Policy
2	Constitutional	Commercial Income Competition	All	The GLAs shall not unfairly compete with other suppliers when pursuing commercial opportunities		Government Policy
3	Constitutional	Procurement for Commercial Income	All	Capital investment must be for the purpose of delivering the statutory AtoN service.	Ships must not be procured for the sole purpose of Commercial Income Generation.	Primary legislation
4	Constitutional	Government Objectives	All	Options will not be considered if they breach UK or Irish Government objectives	For example, vessels must not be flagged in foreign states.	Government Policy
5	Legislation	Irish DOC	CIL	Irish legislation requires any vessel operating under their Flag to host the Document of Compliance (DOC) physically within Ireland	1. Technical and crewing management functions for an Irish flagged vessel must be based in Ireland 2. Operational control may take place in a different jurisdiction	Primary legislation
6	Legislation	Granuaile State Asset	CIL	Granuaile is considered a State asset by the Irish Government and can be called upon for emergency towing, search & rescue, and oil spill response.	CIL must continue to operate their own vessel	Government Policy
7	Legislation	Statutory Requirements	All	Options must meet the statutory requirements of the GLAs	Recommended fleet options must enable the GLAs to deliver their statutory obligations	Purpose of GLAs
8	Legislation	Treasury Rules	All	Any recommendations made must not breach HM Treasury Rules or the Irish Public Spending Code	1. Recommendations including tax avoidance schemes etc must not be included 2. Any Options that propose vessel sale or purchase need to be mindful of the appropriate procurement regulations	Legislation or rules beyond DfT/DTTAS control
9	Ownership	Pole Star Lease	NLB	Pole Star is under a lease agreement until 2020.	Costs associated with early lease termination	Cost assessment
10	Ownership	Pharos Lease	NLB	Pharos is under a lease agreement until 2023.	Costs associated with early lease termination	Cost assessment

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Prepared By:	Version:	Date:	Title:
PRO	2.1	03.02.15	Schedule of Constraints

HOULDER

Srl No	Category	Constraint Name	GLA	Constraint Description	Implications	Barrier
11	Ownership	Galatea Lease	TH	Galatea is under a lease agreement until 2022	Costs associated with early lease termination	Cost assessment
12	Ownership	Alert Lease	TH	Alert is under a lease agreement until 2021	Costs associated with early lease termination	Cost assessment
13	Review Scope	Tri-GLA Model	All	The review is not to consider changes to the Tri-GLA model	1. The three GLAs may not be unified 2. The GLAs may not be privatised	Project scope
14	Review Scope	AtoN Provision	All	The review is not to consider changes to the level of AtoN provided by the GLAs		Project scope
15	Review Scope	AtoN Hardware	All	The review is not to consider changes to the AtoN hardware currently in use by the GLAs	The recommended fleet must have the capability to handle the AtoN currently in use	Project scope
16	Vessel Number and Capability	Patricia's Age	TH	1. At 33 years old Patricia is approaching the end of her cost effective life 2. The next special survey is due in 2020 and Patricia is likely to be removed from service at, or before, this date	Any recommendations should accommodate the probable removal of Patricia from the GLA fleet	Life expiry assumed
17	General Lighthouse Fund	Funding Model	All	No adjustment is to be made to the current pooled funding model regarding the generation (or level) of Light Dues		Project scope
18	General Lighthouse Fund	Commercial Income	All	The funding arrangements of CIL work in Ireland relies on CIL earning commercial income	1. Options should not undermine CIL funding principles 2. Options that alter the balance of GLAs' opportunities to earn commercial income could impact on GLA targets and UK-IRL agreements	Cost assessment / Government Policy

Barriers Key	
Fixed Constraint	Cannot be breached
Significant Constraint	Would be time-consuming to alter and/or require agreement from third parties
Reviewable Constraint	With compelling evidence, constraint could be reviewed and amended in time if agreed by all relevant parties

APPENDIX 4 - SCHEDULE OF KEY FINDINGS

GLA Fleet Review

Prepared By:	Version:	Date:	Title:
SAH	2.1	03.02.15	Schedule of Key Findings

HOULDER

Srl No	Category	Name	GLA	Finding
KFN01	Vessel Numbers & Capabilities	NLB Excess Capability and Capacity	NLB	Pharos does not require the ability to handle T1 buoys in the role required by NLB. Key requirements are to support helicopter operations and for good seakeeping characteristics. Pole Star has the ability to complete the full annual buoy servicing list for NLB.
KFN02	Vessel Numbers & Capabilities	CIL Excess Capacity	CIL	The CIL requirement for support to AtoNs does not require a vessel full time providing significant opportunites during the year for the Granuaile to be deployed elsewhere.
KFN03	Vessel Numbers & Capabilities	Risk Response Criteria	TH	Trinity House does not have the resources effectively to cover the 6 and 12 hour response areas within its sea areas as specified in the Risk Response Criteria.
KFN04	Vessel Numbers & Capabilities	High Risk Areas	TH	In high risk areas the Risk Response Criteria can only be met by having one or more vessels available in the area at all times
KFN05	Vessel Numbers & Capabilities	Support to Helo Contract	All	While the Tri-GLA helo contract is an excellent move towards greater integration and current programming suits the current fleet's capability, the attribution of hours to GLA (in a number of short periods interspersed through the year) may become a barrier to the most effective programming options
KFN06	Vessel Numbers & Capabilities	Integrated Operations	All	It is more effective to operate an integrated GLA Fleet than three separate fleets. For a given fleet composition, the inherent risks may be reduced. There are also opportunities to optimise the overall fleet composition and operation.
KFN07	Vessel Numbers & Capabilities	Commercial Support	All	There would appear to be scope to build on the highly successful (and cost efficient) model of MV Mair.
KFN08	Vessel Numbers & Capabilities	Commercial Support	All	There are three basic options for the provision of support by commercial vessels: - Time charter - Payment of a retainer to provide a rapid response - Reliance on broker support to secure a vessel at short notice and when required.
KFC01	Vessel Capabilities	T1 Buoy Handling	All	The safe handling of Type 1 buoys requires specialist vessels not generally available on the open charter market. Planned activities should be undertaken using specially equipped GLA owned vessels.
KFC02	Vessel Capabilities	T2 Buoy Handling	All	Regular maintenance of Type 2 buoys requires a purpose built vessel and special skills and experience best delivered by a vessel owned and operated by the GLAs. Support may be provided by other vessels in emergency situations.
KFC03	Vessel Capabilities	Capability Spread	All	The current capability spread across the GLA fleet is sub-optimal: - NLB is capable of handling Type 1 buoys (a Major capability) but there are none in Scottish waters - TH has an excess of capability to handle Type 1 buoys and to operate helos (both major capabilities) - At present, Granuaile is a good fit for CIL, but her helo capability exceeds requirement post 2021
KFC04	Vessel Capabilities	General Requirement	All	All GLA operated vessels should be capable of handling Type 2 to 4 buoys

GLA Fleet Review

Prepared By:	Version:	Date:	Title:
SAH	2.1	03.02.15	Schedule of Key Findings

HOULDER

Srl No	Category	Name	GLA	Finding
KFC05	Vessel Capabilities	Patricia's Age	TH	Due to increasing cost and challenge of maintenance, it is likely that Patricia will become uneconomical to operate and should be retired during the 10 year period of this review.
KFC06	Vessel Capabilities	Alert Capabilities	TH	The effective service speed of Alert is much lower than anticipated and rapid intervention is not possible. The inability to handle Type 2 buoys is a significant shortcoming requiring support from other GLA assets which is inefficient
KFC07	Vessel Capabilities	Mair	TH	The service delivered by the Mair under commercial charter to Trinity House is efficient, reliable and cost effective.
KFM01	Operational Management	Third Party Income Generation	All	The requirement to generate income through chartering out vessels introduces additional risk into the combined GLA operations. The additional risk may affect the operations of GLAs other than the one generating the income; it is unclear how this is assessed in taking decisions regarding the operational use of vessels.
KFM02	Operational Management	Co-Operation	All	There is a high (and well established) level of co-operation between the individuals in each GLA responsible for delivering AtoN support. However there is a sense that this may be personality dependent.
KFM03	Operational Management	Integration Opportunities	All	Integration opportunities have scope for greater development; for example monitoring of incidents which could be centralised 24/7
KFM04	Operational Management	AtoN Support Requirements	All	The requirement for the GLA Fleet to deliver support to AtoNs may be split broadly into two parts: Planned maintenance of AtoNs and Response to casualties, wreck and new danger.
KFM05	Operational Management	Sea Areas 9, 10 and 11	TH	The shallow seas and shifting sands encountered in the busy seaways of the southern North Sea, Dover Straits and English Channel require constant monitoring and unscheduled intervention which, whilst not included in the contingent requirement, requires prompt action to ensure navigational safety
KFM06	Operational Management	Seasonality and Sea Conditions	All	Greater output could be achieved from the available GLA fleet through programming to limit downtime during winter months and longer working days during summer months.
KFM07	Operational Management	24 Hour Operations	All	Greater output could be achieved from the available GLA vessels with additional crew to facilitate 24 hour operations
KFM08	Operational Management	Virtual AtoN	All	Virtual AIS AtoNs represent a useful facility, but should only be considered as an adjunct to 'real' facilities, predominantly as many vessels do not have the navigational systems necessary to display such e-updates
KFM09	Operational Management	Stakeholder Co-Operation	All	Closer integration with the MCA would bear fruit, specifically concerning the shared interest in surveying waters around the UK.
KFM10	Operational Management	Stakeholder Satisfaction	All	The majority of external stakeholders are content with the level of service provided by the GLAs
KFR01	Risk	Responsibility	All	Responsibility and the legal liability for the delivery of the AtoN service lies with the Chief Executives of each GLA.
KFR02	Risk	Determining Risk	All	Determination of the risk inherent in day-to-day delivery of the AtoN service is difficult.

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Prepared By:	Version:	Date:	Title:
SAH	2.1	03.02.15	Schedule of Key Findings

HOULDER

Srl No	Category	Name	GLA	Finding
KFR03	Risk	High Risk Areas	All	The key risk is the ability to respond to the contingent requirements to address casualties, wrecks and new danger
KFR04	Risk	Current Risk	All	The level of risk managed by TH is very significantly greater than that of either CIL or NLB
KFR05	Risk	IALA Requirements	All	The current IALA requirements for AtoN uptime are readily achievable

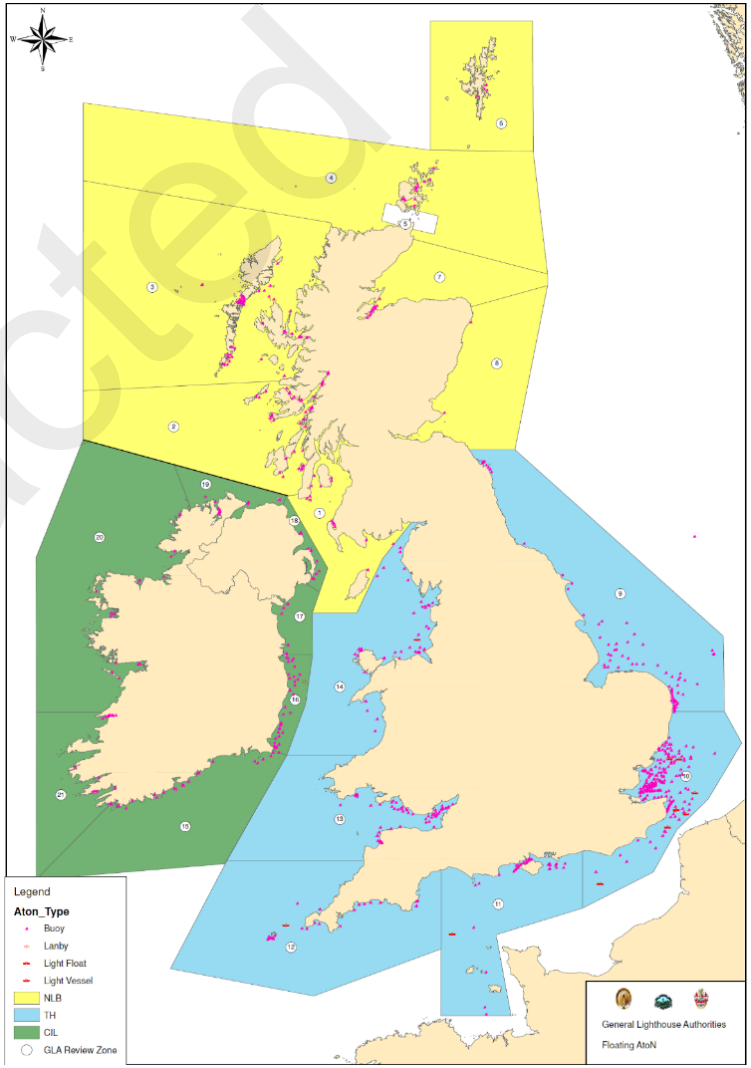
APPENDIX 5 - MODELLING APPROACH PRESENTATIONS

GLA Fleet Review			HOULDER
Document Title: Description of Approach to Operational Modelling	**Revision:** 01 – Issued to Client	**Reference:** P/623/130829	**Date:** 6th October 2015

OVERVIEW

The model has been developed to support the analysis of alternative fleet constructs in terms of both vessel number and key capability and provide a risk-based assessment of the ability to respond to contingent requirements to enable comparison with existing operations.

- The probabilities of buoy casualties and wrecks are derived from a statistical analysis of historical failures recorded by the GLAs and are divided by sea areas. The target response time to wrecks is taken from the Risk Response Criteria.
- The aim of the model is to establish the level of exposure or risk that each of the three GLAs carries for each fleet construct. To this end the model calculates, over a given time period, the probability that a wreck is not responded to within the risk response criteria, total buoy downtimes, and vessel utilisation.
- The risk is calculated by running a high number (,000s) vessel response assessments for each fleet construct.
- The user is able to control which areas each vessel works in, the amount of time they spend in each area over the time period and the capability of the vessels.
- The model can be run to represent any time duration.
- The model in its current form uses the 21 GLA sea areas, these have been further subdivided to give greater accuracy in areas in which a response time of under 6 hours is mandated.
- A maximum of 12 different vessels can be modelled at any time.



The 21 GLA areas used in the model

INPUTS

A number of inputs are required for the model, they are largely based either on historical data or the characteristics of the fleet of vessels to be assessed.

The following inputs will be developed for each fleet option based on the number and capability of each vessel together with any constraints on location.

- **Vessel Base Utilisations** are the total utilisations of each vessel on planned maintenance and other work excluding emergency responses such as to wrecks, new dangers and casualties.
- **Area Probabilities Matrix** indicates how long each vessel will spend in each area over the time period, as a percentage.
- **Capability Matrix** inputs the capabilities of each vessel and therefore which events they are able to respond to, e.g. THV Alert will not respond to Type 1 buoy casualties.
- **Vessel Speed** is the operational speed of the vessels.
- **Vessel Response Matrix** controls which vessels will respond to events in which of the 21 areas, allowing different levels of fleet integration to be analysed.

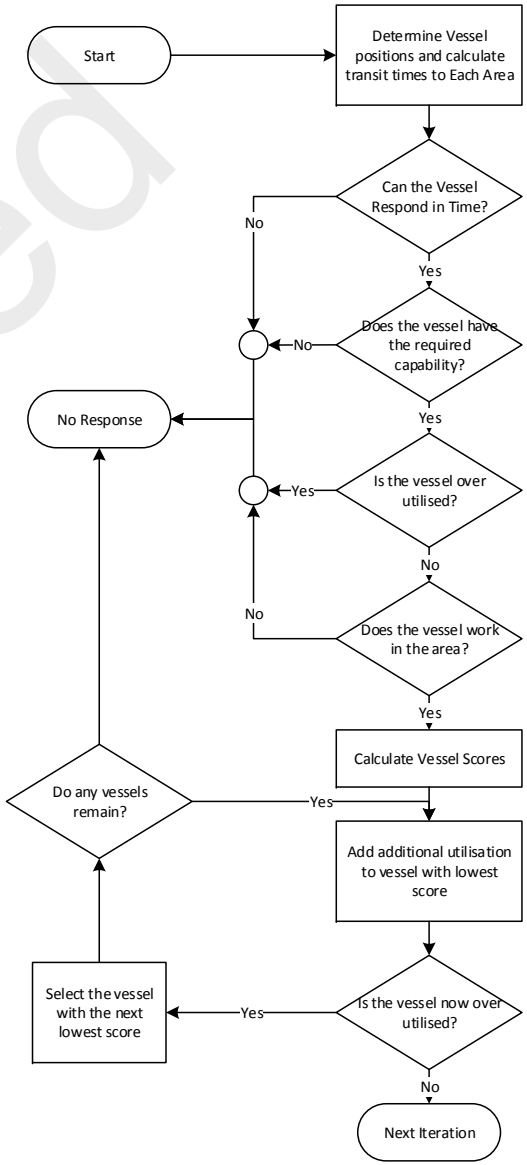
The following inputs are based on historic data and will remain the same for all fleet assessments

- **Yearly Events** is the number of wrecks or casualties that occur in each area per year based on historical averages.
- **Area Response Times** are the target times for the vessel to respond to a contingent requirement based on the Risk Response Criteria.
- **Task Time** is the time taken to complete each task, i.e. deploy wreck marks, fix a casualty etc.

PROCESS

An algorithm has been developed to select the most appropriate vessel to respond to each event from the remaining vessels. This is based both on their total utilisation and the time it takes them to travel to the event.

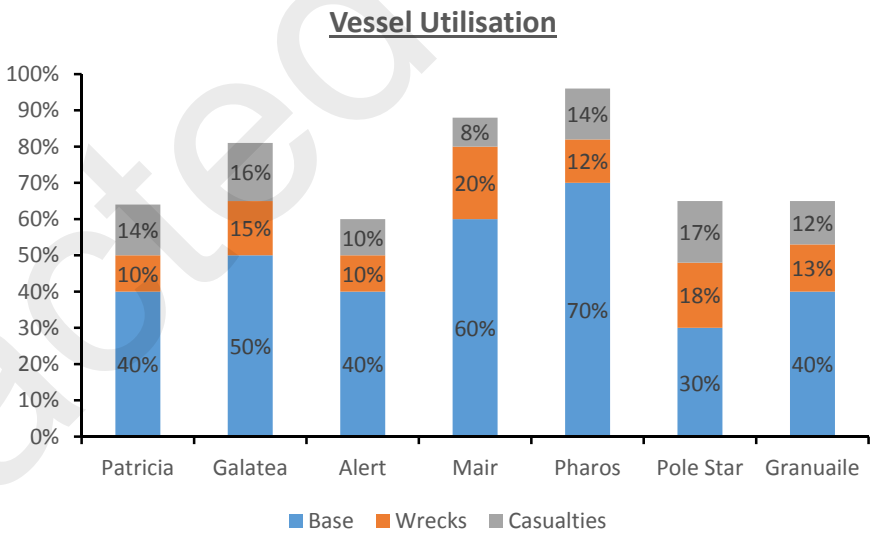
- For each period the transit time for each vessel to each area is calculated, the routes are found by a shortest path algorithm (Dijkstra). Vessels are then eliminated from responding to events in each area as appropriate based on the following questions:
    - Can the vessel respond in time? – from **Area Response Times**
    - Does the vessel have the correct capability? – from the **Capability Matrix**
    - Is the vessel over utilised? – from the base utilisation plus accumulated utilisation after each iteration
    - Does the vessel work in the area? – from the **Vessel Response Matrix**
- The selected vessel's utilisation is increased by the amount of time it takes to travel to the event, carry out the task and return to its original position.
- If the selected vessel becomes over utilised then another vessel is selected for the task. If all the options are exhausted and no available vessels remain then there a nil response is recorded.



OUTPUTS

The model will present the overall vessel utilisation for each vessel in the fleet under consideration, the total buoy uptime for comparison with IALA criteria coupled with an assessment of the risk being carried by each GLA in terms of the number of wrecks and casualties which could not be reached within the times stated in the Risk Response Criteria

Utilisation – The vessel time required to respond to an event is the time to for a vessel to travel to the event, carry out maintenance and return to its original position. This time is added to the vessel's total operational time at the end of each iteration. This is totalled over the whole time period to calculate the vessel's utilisation.



Buoy Downtimes (hrs)	5759
Buoy Uptime	99.91%

No Response	
Wrecks	Casualties
9.8%	0.0%

Buoy Downtime – the buoy downtime for a casualty is assumed to be the transit time (one way) and the task time. Totalling this over one year will enable comparison of performance with the IALA criteria.

No Responses – if it is determined that no vessel is able to respond to an event based on the input criteria and the positioning of the vessels at the time of the event then the event is recorded as 'no response'. These are summed to give the total number of contingent events over the time period to which it was not possible to respond with the time stated in the Risk Response Criteria providing a measure of the risk carried by each GLA.

GLA Fleet Review			HOULDER
Document Title: Description of Approach to Financial Modelling	**Revision:** 01 – Issued to Client	**Reference:** P/623/130829	**Date:** 6th October 2015

OVERVIEW

The financial model has been developed to support the development of recommendations for the GLA fleet by providing the anticipated CAPEX and OPEX costs of different fleet constructs in terms of vessel numbers, ownership and management over the 10 year review period.

- The model builds from the bottom up, vessel by vessel to give a consolidated picture.
- Each vessel has its own financial data sheet – current fleet and alternative vessels.
- A baseline position is created by selecting the current fleet.
- Alternative fleet compositions can also be selected.
- Each alternative fleet option will give rise to a saving or additional cost against the baseline.
- The most important output is the net cash impact over the 10 year review period.
- A baseline level of contributions to the General Lighthouse Fund ("GLF") is assumed as a basis for assessing the movement in reserves over the 10 year review period

GLA Fleet Review			HOULDER
Document Title: Description of Approach to Financial Modelling	**Revision:** 01 – Issued to Client	**Reference:** P/623/130829	**Date:** 6th October 2015

PROCESS

The financial model draws on a input from the GLAs, Houlder's ship broking and charter market subject matter expert and assessment of external market information. The following approach has been adopted in assessing the relative financial cost of each option under consideration.

1. Review financial data provided by the GLAs and re-present to ensure a like-for-like assessment across the fleet
2. Identify the true annual operating costs for each vessel
3. Receive input from ship broker on:
    - Current sale values of GLA vessels
    - Current purchase prices for alternative vessels
    - Typical daily charter rates for GLA vessels available to generate third party income
    - Typical daily charter rates for alternative vessels required to support the works for the GLAs
4. Establish baseline costs over the ten year period – years ending 31 March 2017 to 31 March 2026 inclusive
5. Vary model parameters to reflect the options presented in the agreed Areas For Further Assessment
6. Use each GLA's own source financial data and validate this as the modelling evolves
7. Gather and use external market data as required for assessing alternatives
8. Expenditure has been included on a cash basis e.g. dry dock and repairs have not been spread over a 5 year period. This enables us to look at net expenditure over the 10 year review period and the variance against the baseline.
9. For the initial assessment the proposed fleet changes will be made from the outset without reference to the time required for procurement of alternative vessels or charters or the efficient disposal of existing vessels.

GLA Fleet Review

HOULDER

Document Title:	Revision:	Reference:	Date:
Description of Approach to Financial Modelling	01 – Issued to Client	P/623/130829	6th October 2015

INPUTS

For each vessel the following key variables have been considered:

- Staff costs
- Non-staff costs
- Dry Docking and Repair
- Lease costs

For each alternative the following additional aspects were considered:

- Vessel numbers/Capability
  - Sale Value
  - Purchase price – assume interest free loan repayable in equal instalments over a 10 year period
  - Transition costs e.g. redundancies, termination fees
- Ownership
  - Annual service contract fees
- Operational management
  - Revised operating costs – noting that some of the options proposed have negligible impact on expenditure

Note: Houlder is relying on the validity of financial data provided by each of the GLAs. We have built into the modelling process opportunities for each GLA to double-check the underlying financial data and assumptions.

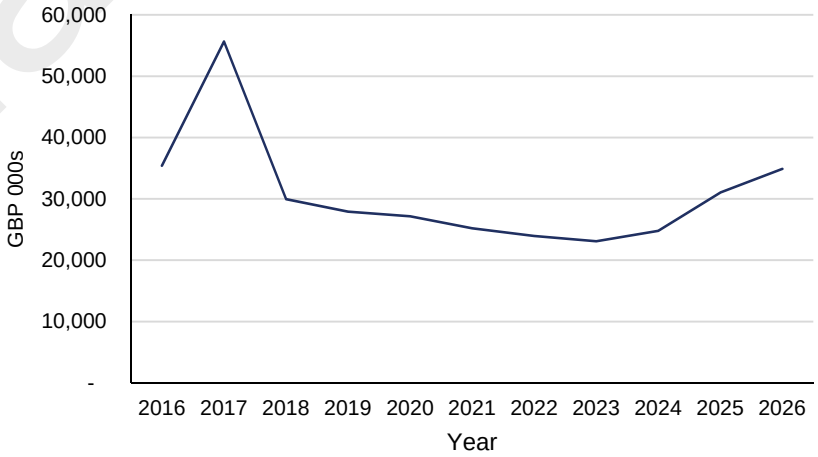
OUTPUTS

The following output variables have been modelled for the options under consideration.

10 year fleet spend – Total expenditure on a given fleet option over the full review period

Reserve balance – working capital balance retained by the GLF over the full review period based on a baseline level of funding

Output can be shown graphically as the expected movement of the GLF reserve fund balance.



Example graphical output of expected GLF reserve balance movement over 10 years

APPENDIX 6 - ADDITIONAL CAPABILITIES

Activity	In Current Fleet		
	Current Fleet capable of this activity	If not, anticipated ease of fitting (Easy, Medium, Hard)	Likely cost (L/M/H)
Physical presence around the coast	Y	-	-
Availability to support MCA, IRCG and other agencies	Y	-	-
Hydrographic survey for MCA, Infomar or Marine Scotland	Y[1]	-	-
Hydrographic surveys for commercial clients	Y	-	-
[redacted]	Y[2]	-	-
[redacted]	Y	-	-
Target towing (MoD)	Y	-	-
On Scene Commander capability	N	M (comms)	L
Command and control space for improved on scene commander operations by own vessel staff or embarked staff (MoD/HMCG)	Y	-	-
SOSREP support	Y	-	-
Support for under resourced Local Lighthouse Authorities	Y	-	-
Service local authority buoys and government agency (Water Utilities) buoys	Y	-	-
Laying and recovery of wave rider buoys for CEFAS (Centre for Environment Fisheries and Aquaculture Science)	Y	-	-
Laying and recovery of FLiDAR buoys (offshore wind measurement buoys)	Y	-	-
Moorings	Y	-	-
Pollution response	Y	-	-
Emergency towing[3]	Y	-	-
ETV capability	N[4]	H	H
Wreck investigation and recovery	Y	-	-

[1] This assumes that the GLA is purely providing a platform and that the client will provide specialist surveyors
[2] Potential requirement for deck strengthening
[3] Within the constraints of bollard pull
[4] Assuming the requisite bollard pull requirements of MCA and IRCG

Activity	In Current Fleet		
	Current Fleet capable of this activity	If not, anticipated ease of fitting (Easy, Medium, Hard)	Likely cost (L/M/H)
Servicing of Navigational and ODAS Buoys[5]	Y	-	-
Support at Offshore Renewables Installations	Y	-	-
Wind Farm Turbine Walk to Work	N	E	M/H
Laying mattresses	Y	-	-
Removal of construction generators	Y	-	-
Recovery of disused cables	Y	-	-
Launching and recovery of Autonomous Underwater Vehicles (Scottish Marine Science)	Y	-	-
Offshore platform structure survey support	Y	-	-
Subsea Operations	Y	-	-
ROV deployment	Y	-	-
Grab sampling and camera sledge work	Y	-	-
Cable and pipeline survey	Y	-	-
Cable and pipeline repair	N	M	M
Trenching	N	M	M
Recovery of lost equipment	Y	-	-
Bentic/grab sampling	Y	-	-
Vibrocore	Y	-	-
Cable Laying	Y[6]	-	-
Training	Y	-	-
Firefighting (fixed system FiFi Class 1) capability	N	M	M
Pollution response[7]	Y	-	-
Border agency support	Y	-	-
Fishery monitoring	Y	-	-

[5] Pharos fully capable; Granuaile will be capable once winch upgrade complete (during Financial Year 15/16); other ships constrained by winch capacity vs deep sea moorings
[6] Modification potentially required for more substantial cables
[7] Probable scenario is ship providing platform for specialist personnel and equipment

Activity	In Current Fleet		
	Current Fleet capable of this activity	If not, anticipated ease of fitting (Easy, Medium, Hard)	Likely cost (L/M/H)
Active reporting for NMIC	Y	-	-
Coastal Hydrography Programme support	Y	-	-
Marine Mammal survey	Y	-	-
Underwater and surface filming activity	Y	-	-
EU directive implementation support	N	E	L
CISE directive implementation support	Y	-	-
Maritime Surveillance and Security	Y	-	-
Offshore aquaculture support	Y	-	-
Helicopter support	Y	-	-
Underwater research support	Y	-	-

APPENDIX 7 - LIGHTS ADVISORY COMMITTEE INPUT INTO THE REVIEW

Lights Advisory Committee

UK Chamber of Shipping
30 Park Street
London SE1 9EQ
Telephone: 020 7417 2822

To: Houlder Ltd

From: Lights Advisory Committee

Copy: Project Board

Date: 2 September 2015

LIGHTS ADVISORY COMMITTEE (LAC) INPUT TO THE GLA FLEET REVIEW

The LAC recognises and fully supports the legal obligation that the GLAs have in maintaining safety by the provision, maintenance and repair of AtoNs including electronic AtoNs. The safety and quality performance of the GLAs is of a high international standard and has never been questioned by the LAC. In the context of funding and costs the GLF and the operating companies of the GLAs obtain full cost recovery by a 'User Pays' scheme by means of a levy on shipowners known as Light Dues. Light Dues have historically over a very considerable period of time allowed the GLAs to act like a public service provider funded not centrally, and subject to Treasury control but remotely by DfT and with funds raised by means of – a charge which by the payers is perceived as - a discriminatory 'tax' on shipowners. Consequently from the viewpoint of both UK and foreign owners it has always been seen as an unpopular charge. It is acknowledged that perhaps 80% of funding is derived from foreign owners and given LD represents a secure source of external funding it difficult to see sufficiently strong or persuasive political case, at the present time, for a fundamental change in the UK's system. However in the medium term it could be argued that the archaic system should be modernised and funded centrally removing an unpopular tax on the shipping industry and increasing UK's attractiveness and competitiveness. The cost to the Exchequer of about £70m p.a. would be a small percentage of DfT spend.

It can be argued that the funding model has created over a long period of time an entrenched an overly conservative and commercially risk averse culture with the three GLAs. But of note recently, since the Atkins Report in 2010 very significant improvements have been made and the RPI-x formula has proven very effective in delivering cost-savings on an ongoing basis. In essence despite recent corrective action and notable improvements the GLA's fleet is still constituted and functions as a publically funded non-commercial service provider. The User Pays system is unpopular in Europe and is not widely replicated in other jurisdictions and so from an international perspective the UK system looks dated.

As a result the GLAs are accustomed to owning and operating their own fleet of vessels and although this is the current situation the LAC does not believe that the GLAs necessarily need to own and, or operate a fleet of vessels in order to meet their obligations. It is only one way of providing the service. Other options and lower cost alternatives should be fully explored.

The Invitation to Tender detailed the requirements of the review in particular in paragraphs 1 and 2, the Background and Specification respectively. The LAC would encourage the review team to look carefully at the following aspects and alternative means and models for delivering the maritime element of service, including by:

- an owned fleet
- an owned fleet supplemented by chartered tonnage
- a contracted-out fleet*
- the use of chartered tonnage or contract services for some specific tasks or groups of tasks
- the use of stand-by cover or spot hire for emergencies and unforeseen tasks

* It is recognised that the Triennial Review 2013 ruled-out contracting-out the entire fleet but for completeness analysis should not exclude the existence of this option.

Any combination of the above models with a greater reliance being placed on commercial sources to support a core 'owned fleet' might be a viable option.

And is it suggested the following issues should be addressed:

1. What is the excess capacity of the current fleet? Is the excess capacity of the current fleet fully justified and proportionate to the risk criteria? The Fleet capacity or requirement should reflect that required performing statutory tasks only. Commercial work may be taken into account but should not be factored in to the basic requirement. Commercial work should utilise surplus capacity only.

2. To what extent do the current fleet operating areas divided as they are in three distinct geographical areas under three separate GLA inhibit efficient deployment of resources? What duplication of resources and tasking exists? What additional operational efficiencies would increased flexibility produce?

3. Would greater operational efficiencies be possible if these fundamentals were changed, for example if the areas of responsibility redefined? Should the number of local aids to navigation under local control be increased? Would the contracting-out of buoy clusters or multiple buoy clusters be feasible?

4. Are all tasks undertaken by the current fleet necessary? There is concern that the physical status deterioration/condition of the assets does not justify the commercial cost of MFTs' being employed almost continuously on a maintenance programme comprising lighthouse visits and buoy lifting?

5. Could service intervals for some assets be extended? Servicing routines should utilise remote monitoring technology and possibly defect, as opposed to planned, maintenance.

6. Can the operating hours of ship operations be extended by improved manning? Improved ship design?

7. The fast response craft is under-utilised and is a high cost asset with little flexibility. What options might be available to remove or reduce reliance on this tender?

8. What commercial resources are available to assist in meeting the required tasks of the GLAs in terms of capacity, capability and cost? Could the out-sourcing of blocks of tasks be a cost effective in reducing the workload of the GLAs.

9. Can more use be made of 'Virtual Aids' in order to increase the 'response time' required from the fleet?

10. It is important that the Risk Response Criteria is not used to justify or reverse engineer a higher level of fleet provision than that actually required for core tasks in the future. The assumptions concern safety critical issues and the criteria are robust; nevertheless the methodology should be challenged from a risk management point of view. How is the probability of an incident occurring factored-in? How do the criteria fit with the historic data of incidents and response times? What is the correlation between shipping densities over a period with incidents requiring a response by a GLA?

11. How critical are the emergency response times given the availability of complimentary AtoN options such as visual aids, AIS, and other external AtoN developments and navigational and traffic factors?

12. Is the size and disposition of the fleet management organisation appropriate for a fleet of this size? How much duplication exists between the three GLAs?

13. If monitoring was centralised for the full 24/7 could tasking be centralised as well? Would this result in saving and more efficient use of assets?

14. Is the current method of reporting ship usage (TUDS) a good representation of the efficiency of the fleet utilisation? TUDS appears not to differentiate between buoy and lighthouse work. Such tasking should be differentiated.

APPENDIX 8 - SUMMARY OF DEPLOYED GLA BUOYS

Table A8.1 below provides a summary of the number and type of buoys deployed in each GLA sea area. This data was extracted from the 'Capability Requirement Table' as provided on the shared portal in September 2015.

Area	GLA	Type 1	Type 2	Type 3	Type 4	Total
1	NLB		15	2		**17**
2			43	6		**49**
3		1	38	20	5	**64**
4			14			**14**
5						**0**
6			4			**4**
7			11	2		**13**
8			2			**2**
9	TH	14	54	10	1	**79**
10		26	139	27	8	**200**
11		10	26	4	1	**41**
12		4	21	3		**28**
13		5	43	6	6	**60**
14		2	26	11	1	**40**
15	CIL	2	11	7		**20**
16		3	27	4		**34**
17			3	4		**7**
18		2	4	6		**12**
19		1	5	6		**12**
20			8	7		**15**
21			10	5		**15**
Total		**70**	**504**	**130**	**22**	**726**

Table A8.1: A summary of GLA buoys deployed in each sea area

APPENDIX 9 - TECHNICAL SHIP VISIT REPORT

The following summarise key points arising from the ship visits.

TRINITY HOUSE

THV Alert

Visited on Wednesday 5 Aug 15, moored alongside the wharf in Harwich.

The vessel is relatively small with a length of 39.3 metres and a beam of 8 metres. Although quite fast for a vessel of this size and able to achieve 17 knots in favourable conditions, this drops off considerably in only moderate sea states. Her cruising speed is 12 knots.

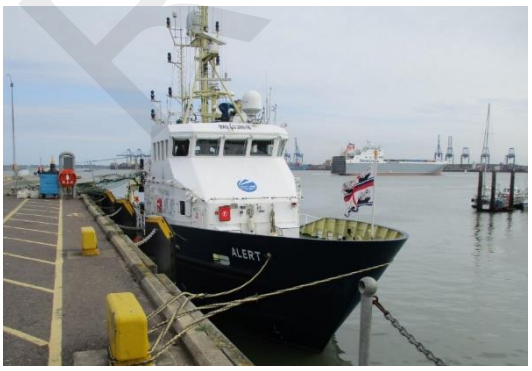
The crew comprises 6 and the vessel remains alongside overnight. Catering is by members of the crew on rotation.

Alert's Bollard Pull is 28 tonnes and the main propulsion machinery is provided by 2 engines each generating 1492 kW. The drive is direct through a gearbox to a variable pitch propeller and the vessel has a bow thruster. Power is provided by two generators each producing 155 kW.

There are two cranes, 3.5 tonnes and 2.2 tonnes. This denies the ability to service Type 2 buoys.

The overall condition of the vessel was good with obvious care being taken by the Officers and crew. There is an extensive hydrographic survey suite including sonar and side scan radar.

Alert's planned maintenance was up to date and the stores ordering process working adequately with no indication of shortage of spares due to paperwork being delayed by 'office intervention'.



Alert alongside in Harwich

Small aft deck working area

Limited deck space on Alert

Type 3 Buoy on deck covered in black plastic to stop the UV

The whole engine room was very clean.

THV Galatea

Visited on Monday 10 Aug 15 at sea off Northumberland.

Galatea was built in 2007 and is being well maintained.

The deck is serviced by a 30 tonne Liebherr Crane that dominates the deck. This is situated on the port side of the vessel and, due to its long reach (30 tonne @ 22 metres), most buoy work is carried out on the starboard side. We were advised that due to the length of the boom, working with the buoys in rough weather can be a tricky operation.

There is a 2-week maintenance period each year, the dates for which are deconflicted with the other GLAs.

The layout of the bridge is good and serviceable and the ship's company are content with the cabins and messing arrangements.

The standard option is for the 2nd Officer to climb to the top of the buoy to check the electrics; it is recommended that use of a man lift ('Cherry Picker') be considered from a safety perspective as well as ease of handling maintenance tools.

It was stated that the ship did not perform particularly well in strong seas (not observed given the benign weather conditions during our time onboard); also that when at anchor in a moderate sea state, DP had to be activated to keep her steady.

In discussion with both Trinity House and Galatea's Captain it became apparent that hardly any contract work was undertaken. The vessel has full DP2 capabilities so would be attractive to the charter market.

The fuel figures were average for this type of vessel with these Wartsila Diesel Generator sets.

The main engine configuration is 'father and son' with 3 engines producing 1710kVa and 2 engines producing 860kVa. This allows optimum load sharing to give good fuel economy, and a diesel engine is easier maintained and more efficient if full load is applied.

There is a towing winch on-board with a 40 tonne pull. The vessel is registered with a 33 tonne bollard pull (at a rough estimate this would allow Galatea to hold/tow a vessel up to 3000 tonnes in a 40 knot wind).

Galatea has multibeam hydrographic capabilities, PosMV positioning and sidescan sonar.

Her helicopter deck will take a Class "D" up to 12.5 m. with a maximum load of 3200kg. However larger helicopters could be used to lift heavier loads from the under slinging area at the stern. Rotary wing re-fuelling equipment is installed.

As can be seen here the deck maintenance/painting is very good with good attention to detail.

Vents are an area that show if a vessel is being well maintained.

Here the rubber seal and grease nipples are free of paint.

Helicopter area is well maintained and signed correctly.

Davits and falls well maintained with wires greased.

Forecastle area, clean and tidy

Area at the vessel's side where buoy work and chain maintenance is carried out. Only superficial damage to the paintwork was noticed.

Area for storing Type 1 Buoy. Note the good condition of the working deck

The second Type 1 Buoy pod alongside a sinker

The Karm Forks

The picture to the right is a Type 2 Buoy on deck, alongside a wreck marker buoy. These are serviced and awaiting deployment. Note the large electrical installation on the top. The Electrical installations are now solar powered and once the buoy is brought on-board the electrical work is carried out by a member of the ship's staff. Often the Second Officer carries out this function and is helped by the Electro-Technical Officer if necessary.

Galatea holds a vast quantity of chain (estimated to be in excess of 200 tonnes), much more than any of the other vessels in the GLAs. This weight will impact fuel consumption of and the need for it to be carried merits consideration.

Spare wreck buoys carried on-board. These are composite so have relatively no weight. Carried below deck for U-V protection.

Engine room protected by CO_2

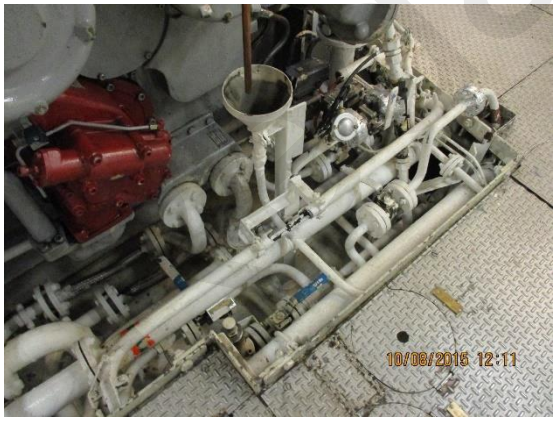
DP room aft showing one of the Rolls Royce Stern Azimuths (above)

VFD

The Engine room(s) are well laid out and very neat and tidy. All paintwork is fresh and the bilges are clean and free from water and/or oil. The planned maintemance is up to date.

One of the 5 Wartsila Main Generator Units

Purifier area – kept clean despite the challenge of such a space



Engine room bilges are clean and free of oil/water.

Liebherr Deck Crane

The installed moon pool is seldom used. In future designs the requirement for such a capability should be carefully considered as fuel consumption and vessel speed are compromised.

THV Patricia.

Visited from Monday 17 Aug to Wednesday 15 Aug 15 in the Bristol Channel.

Patricia was built in 1982 and is being well maintained and in very good condition for a vessel of this age. The Planned Maintenance is up to date with no outstanding 'Memorandum' or 'Conditions of Class'.

The vessel is diesel electric powered with a 'father and son' configuration. The 4 larger units are in good working order but one of the smaller units is increasingly being cannibalised to keep the other one running.

The 4 larger units are Ruston 6RKcZ producing 750kW and the two smaller units are 4AP230Z producing just 240 kW.

The lack of spares for these engines highlights the problem the vessel has in ordering spares. This also applies to electrical spares as much of the equipment is out of date and not supported; it is self-evident that any obsolescent and unsupportable equipment that is necessary to enable Patricia to meet her obligations will potentially require expensive replacement.

The vessel has a bow thruster of 690 kW power and two fixed pitch propellers.

Patricia also has a 20 tonne derrick and a 30 tonne towing winch. Bollard pull is rated at 28 tonnes.

There are two 9m workboats onboard and a RIB with a small outboard motor.

The Hydrographic survey equipment is comprehensive with sidescan sonar.

The working deck is relatively small and well protected with a wooden covering to both stop damage to the deck and buoy (which is also safer underfoot when wet).

There is a helicopter flight deck aft which had a D value of 11.9m and a maximum load of 10,000kg.

Forward smaller unit with parts missing.

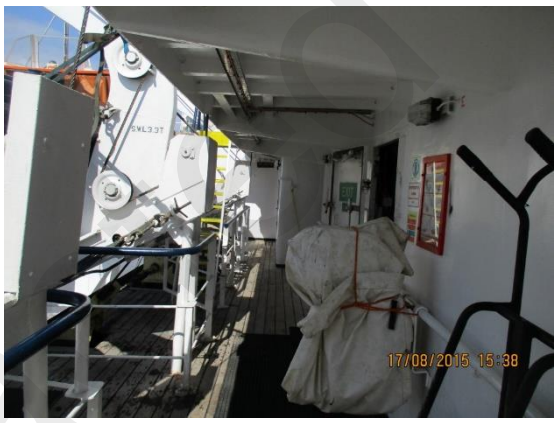
Helicopter deck aft

The accommodation decks are in very good condition

Accommodation decks and accommodation alleyways are well maintained.

Upper deck areas well maintained

Lifeboat deck



Good all-round maintenance

Again maintenance of a high standard

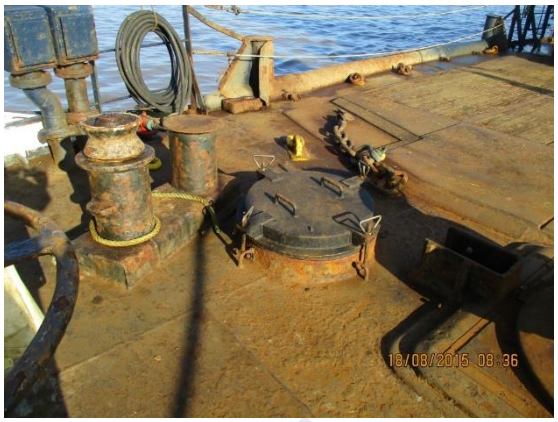
Two sinkers on the working deck ready for deployment when required

Main working deck forward showing wooden covering and chain winch

Forecastle area

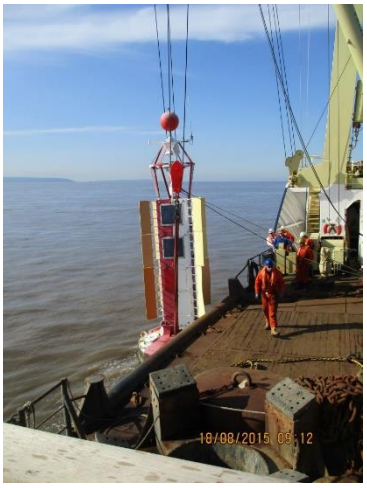
Lifting Davit area and controls

Main deck showing signs of aging but still acceptable

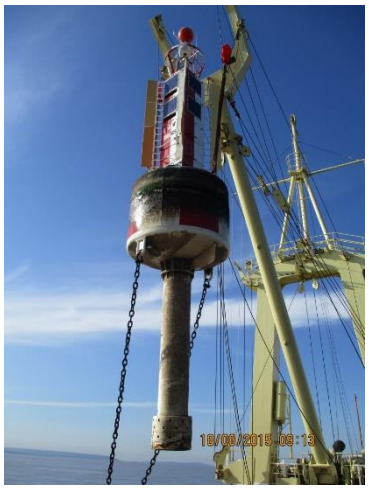


Deck area showing a good maintenance standard

The Buoy placed alongside the vessel for cleaning and is also ready for hoisting onto the deck once cleaning is complete



A Type 1 Buoy being lifted on deck



The Buoy located in a cradle on deck and ready to have the electrical system checked by a member of ship's staff

Main Engine uptakes in exceptional condition and very clean

One of the two boilers onboard

Engine room in good condition

Pipework and bilges very clean

Air compressors well maintained

Very clean purifier room

One of the Ruston 6RKcZ 750kW Engines

General Engine room photograph showing the condition

Shafting

Engine room(s) division bulkhead

Accommodation is well maintained

MV Mair

Visited on Tuesday 22 Sep 15 moored in Barry Harbour.

As this vessel is on contract to deliver a mandated service, the focus of this visit was to witness the span of her capabilities and engage the owner. To these ends, no material report is submitted.

NORTHERN LIGHTHOUSE BOARD

NLV Pole Star

Visited on Tuesday 11 Aug 15 at sea off Stranraer.

Pole Star was built in 2000 and is showing some degree of wear.

We were allowed free access to all areas and it became apparent that paint had been used liberally (and in some areas it appeared that this had been without appropriate maintenance having been carried out beforehand). It became very obvious that the crew were hard pressed to conduct vessel maintenance with buoy work taking priority. Although the combination of statutory operations and Scottish climate conspire against weather-deck ship husbandry, it would be advisable if at all possible to programme an additional bespoke period for such maintenance activity.

When compared with Galatea, the small size of the aft deck was very apparent. The working deck of Pole Star is only 90m^2 and at times it would appear to be only just large enough. The deck crew were very well prepared for the work inhand of lifting a Type 2 buoy; the crane operator had no additional tasks and spent a lot of his time waiting for the next activity (also witnessed onboard Galatea). Pole Star is suitable for Type 2 buoys and smaller and is equipped with an 18 tonne capacity crane which is entirely adequate for Type 2 buoy operations.

The vessel has DP1 capability which is adequate for the work that she undertakes.

Pole Star is smaller than NLV Pharos and so is ideally suited to go into locations with shallow water – areas Pharos cannot go.

There is a hydrographic survey suite on-board along with good wreck finding ability.

The engine room was very clean and tidy with the planned maintenance up to date.

The bridge layout was good save for the azimuth mirrors being inboard of the superstructure and window surrounds. These ideally should be placed outside, so there is no ‘wooding’ of the line of sight.

The maintenance of the buoys (apart from cleaning) is again left to the Second Officer.

Fuel figures obtained are within the normal range of these engines taking into account the vessel's age. As the vessel has engines of all the same size minimal optimisation can be achieved.

It was stated more than once that the vessel is very poor in moderate seas. The question of a stern anchor was raised.

Aft of the Bridge Deck

Aft working Deck

Forecastle area.

Buoy partly cleaned, scraped of kelp and crustations ready for water blasting

Operation of the chain holding equipment – a guillotine

The Type 2 buoy lifted from Loch Ryan for cleaning and for the chain to be gauged.

The sinker being lifted and checked

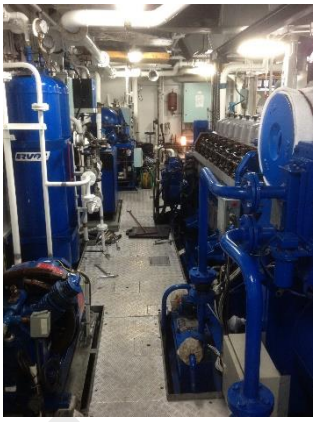
Thruster machinery

One of the main diesel generators

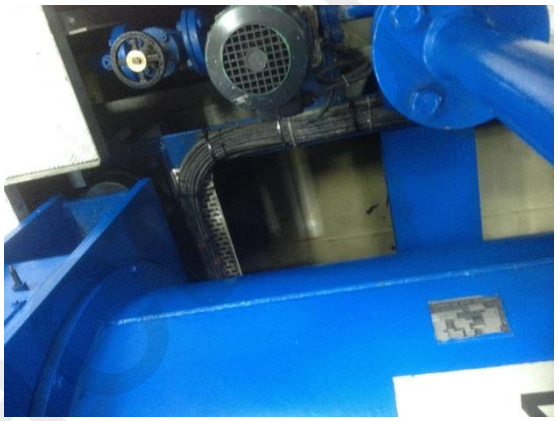
The vessel has 3 Cummings/Wartsila 920kW Main Diesel Generators

The Engine room showing one of the main generating sets

This one was undergoing maintenance work



The Engine Room bilges were very clean



The workshop is well stocked and clean

Large towing winch aft

NLV Pharos

Visited on Tuesday/Wednesday 11 and 12 Aug 15 in dry dock in Greenock.

A sister vessel to THV Gatatea, Pharos appears to have been kept in the same good condition. The vessel was built in 2007 and is 84.25 mtrs long with a beam of 16.5 mtrs.

She has the same 30 tonne crane that is difficult to work with as the boom is solid. A knuckle boom would be more servisable.

The Engine room propulsion layout like Galatea is a 'father /son' arrangement with 3 Wartsila engines developing 1440kW and 2 developing 720 kW. These drive alternators that power the 2 azipods and the two bowthrusters. Control is by Variable Frequency Drive(s) (VFD)

Like Galatea there is a large forward flight deck which can take a Class D aircraft of up to 12.5 m. with a maximum load of 3200kg. However larger helicopters could be used to lift heavier loads from the under slinging area at the stern. There is no re-fuelling equipment installed.

Pharos has a towing winch of 30 tonnes and bollard pull of 37.5 tonnes.

The vessel has wreck finding equipment and hydrographic survey equipment similar to THV Galatea.

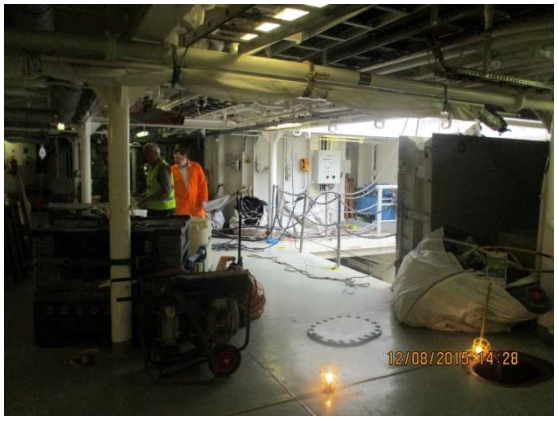
She is classed by Lloyds Register as a DP2 vessel.

The vessel is being well maintained with all areas clean and tidy.

The aft working deck showing the large crane

Twin tunnel thruster forward

Forward machinery space showing one of the thruster motors



The “tween” deck showing equipment stowage and access hatch

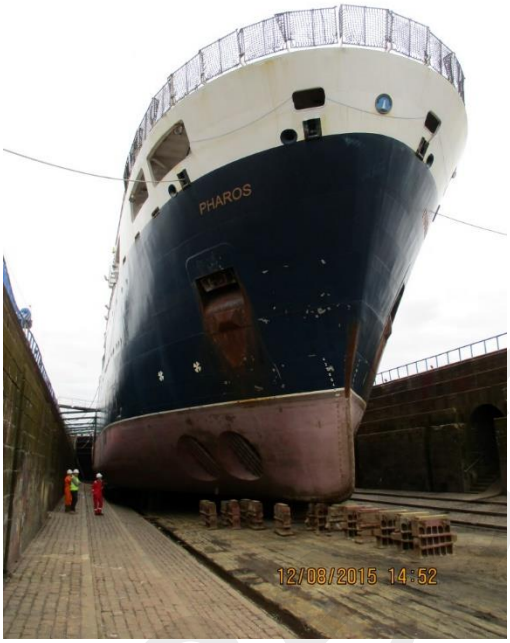
Deck workshop area - clean, light and airy

Purifier space in the main engine room - well maintained and very clean

One of the ‘father’ main engines

General view in the engine room showing one of the ME coolers

General engine room view showing the cleanliness



The vessel is in good condition throughout and is being well maintained.

COMMISSIONERS OF IRISH LIGHTS

CIL Granuaile

Visited on Thursday 13 Aug 15 alongside inn Killybegs on the west coast of Ireland, with a short period at sea in Donegal Bay.

The vessel was built in 2000 and used a a forerunner to Galatea and Pharos.

The vessel is fitted with DP1. All Planned Maintenance is up to date and general condition very good.

Granuaile is 80 metres in length with a beam of 16.1 metres.

Her Engine room plant is set out as 4 equally sized diesel generator sets, each unit being 700kW capacity.

Propulsion is via 2 x 1100kW VFD driven gearboxes driving Schottel rudder propellers.

There is a bow thruster motor driving an Elliot White Gill water jet producing 11kW thrust.

She has a large crane on the aft deck with a capacity of 20 tonnes at a 20 metre outreach. It is heave compensated and has two independent falls.

The helicopter platform is similar to the two later vessels and can take a Class D up to 12.5 m. with a maximum load of 3200kg. Larger helicopters could be used to lift heavier loads from the under slinging area at the stern. There is re-fuelling equipment on-board.

On the forecastle there are two winches holding water and fuel lines for servicing lighthouses.

On the aft deck there is a 30 tonne towing winch and the vessel has a 40 tonne bollard pull.

The vessel has comprehensive hydrograph survey equipment and a moon pool. Diving support services are available.

A large capacity anti-heeling system is onboard to assist with sea-keeping qualities.

The condition of the ship is noticeably better than the others in the report.

Part of the Intgrated Bridge Management System

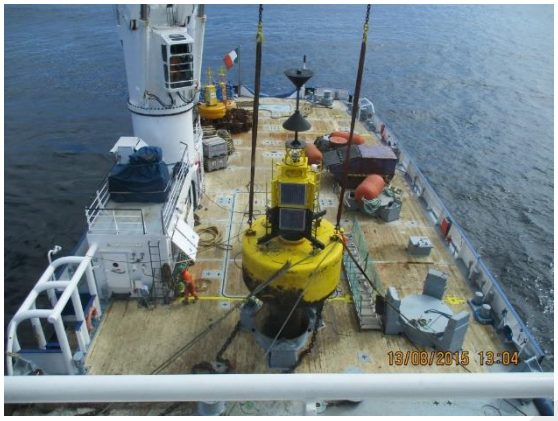
Good use of space on the bridge

Helecopter landing area forward

From the helicopter deck looking aft. Maintenance is very good

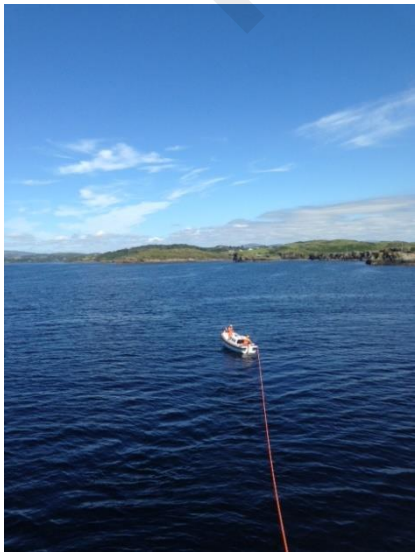
Working deck aft showing the large 20 tonne Crane

Condition of the working deck is exceptionally good considering the vessel's age



Type 2 buoy being serviced onboard. The 2nd Officer does the maintenance .

The flexible water pipe for servicing light houses



Granuaile's service craft towing the flexible water hose to the lighthouse ashore.

The crew below feeding the hose to the boat in the water.

Deck Maintenance was outstanding

Deck maintenance was exceptional

One of the 5 Main Generator Engines

The Engine room was very clean and tidy

Engine Room Workshop

Sea Water Pump area on the Engine Room lower level.
All clean and well painted

Tween deck level

Equipment neatly stowed in the Upper Tween Deck

Granuaile alongside Killybegs Wharf

GENERAL OBSERVATIONS

Procurement

We saw scope for increased efficiencies in procurement of the major items that are common across the fleet – predominantly lubricating oils and fuel. Under an integrated ship management operations, this leveraging of buying power would be extended to other consumables and spares and exercised by a single buying team.

Spare Buoys

During our visits to Harwich, Swansea and Dun Laoghaire we observed a vast array of different types of buoys in various states of maintenance and condition. Establishing a common database of all buoys could reap benefits allowing 1 GLA potentially to deploy a buoy from a fellow GLA, potentially reducing the buoy maintenance burden.

Efficiency of the Maintenance Regime

As recorded above, Planned Maintenance had been carried out satisfactory on all vessels. Good record-keeping was in place and the various Offices within the GLAs had received regular updates. This would indicate that the Superintendents were fully aware of the vessels condition.

It is for consideration that a move more towards a Condition Based Monitoring approach could be financially advantageous.

APPENDIX 10 - MARINT SHIP BROKER REPORT

APPENDIX 11 - RESULTS OF MODELLING AREAS FOR FURTHER ASSESSMENT

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
BL1	Baseline	As Is	Inc. Patricia

Assumptions

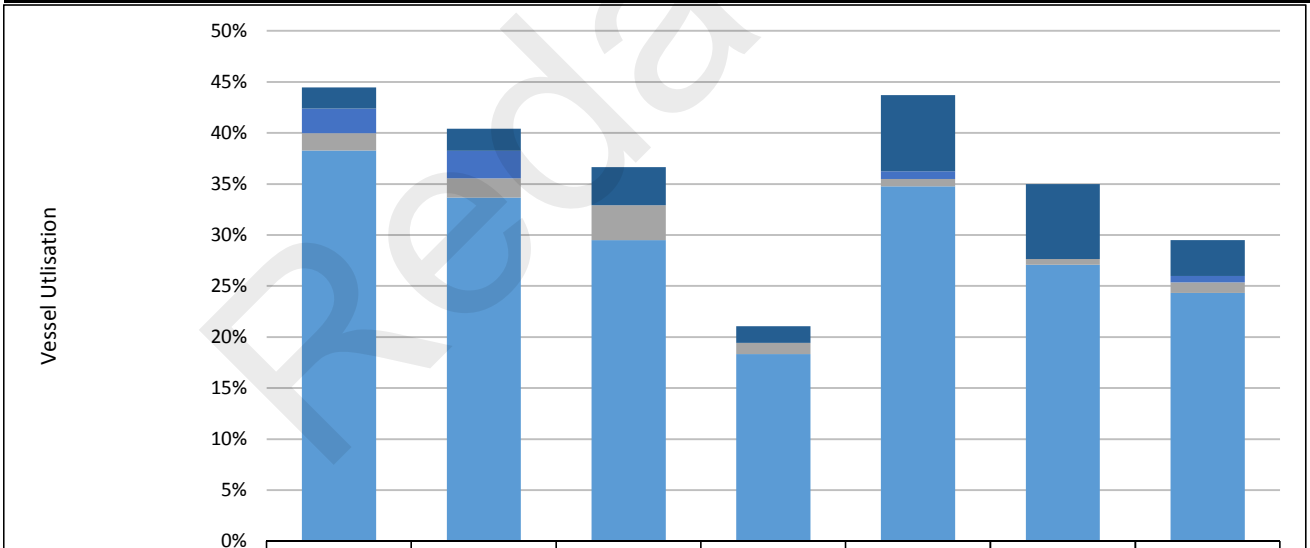
1. GLA ships' predominant tasking is in their own areas
2. Vessels may be programmed into another GLA's area only to respond to AtoN casualties, wrecks or new dangers
3. No geographical constraints on cross-boundary operations

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.76	0.01	0.00	1.78	-	-	-	-
Buoy Uptime (%)	T1	99.94	N/A	99.98	99.94	-	-	-	-
	T2+	99.98	99.94	99.97	99.97	-	-	-	-
10 Year Fleet Spend (GBP 000's)		£93,920	£72,434	£23,131	£189,485	-	-	-	-



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.06%	2.16%	3.74%	1.64%	7.45%	7.32%	3.50%
Type 1 Casualties	2.42%	2.70%	0.00%	0.00%	0.76%	0.00%	0.64%
Wrecks and New Dangers	1.71%	1.88%	3.39%	1.10%	0.73%	0.57%	1.02%
Base	38.26%	33.68%	29.51%	18.33%	34.76%	27.08%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
BL2	Baseline Minus	IGC5 Failure	Inc. Patricia

Assumptions

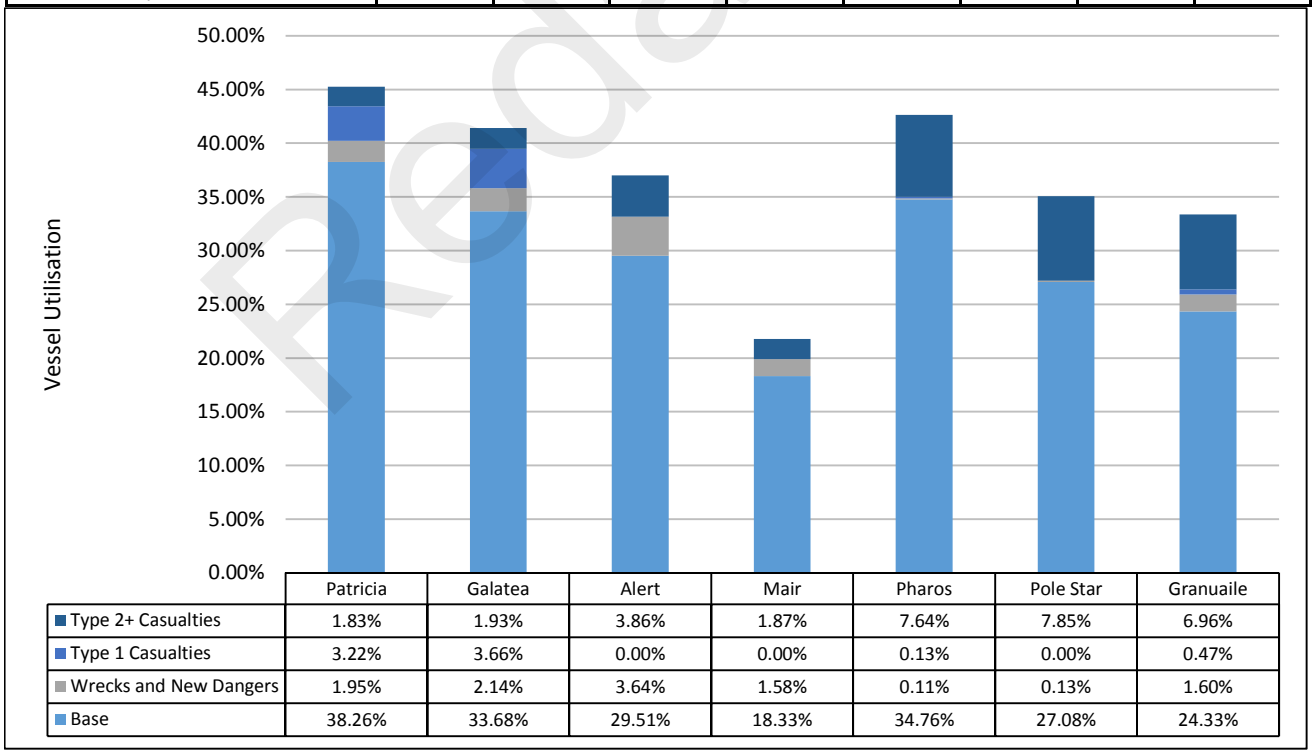
1. GLA ship tasking as for BL1 in their own areas
2. No cross-boundary operations allowed - GLA ships to remain in own waters for routine maintenance tasks and response to AtoN casualties, wrecks or new dangers

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	TH Only
2	Galatea	TH	12	Y	TH Only	TH Only
3	Alert	TH	12	N	10	TH Only
4	Mair	TH	9	N	11-14	TH Only
5	Pharos	NLB	12.5	Y	NLB Only	NLB Only
6	Pole Star	NLB	12	N	NLB Only	NLB Only
7	Granuaile	CIL	10	Y	CIL Only	CIL Only
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.22	0.01	0.10	2.33	26.1%	30.5%	>100%	31.3%
Buoy Uptime (%)	T1	99.93	N/A	99.94	99.94	-0.01%	N/A	-0.04%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£72,434	£23,131	£189,485	0.0%	0.0%	0.0%	0.0%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	1.83%	1.93%	3.86%	1.87%	7.64%	7.85%	6.96%
Type 1 Casualties	3.22%	3.66%	0.00%	0.00%	0.13%	0.00%	0.47%
Wrecks and New Dangers	1.95%	2.14%	3.64%	1.58%	0.11%	0.13%	1.60%
Base	38.26%	33.68%	29.51%	18.33%	34.76%	27.08%	24.33%

MODELLING INPUT & OUTPUT			
SRL. No	**Name**	**Description**	**Variation**
BL2	Baseline Minus	IGC5 Failure	Patricia Removed

Assumptions

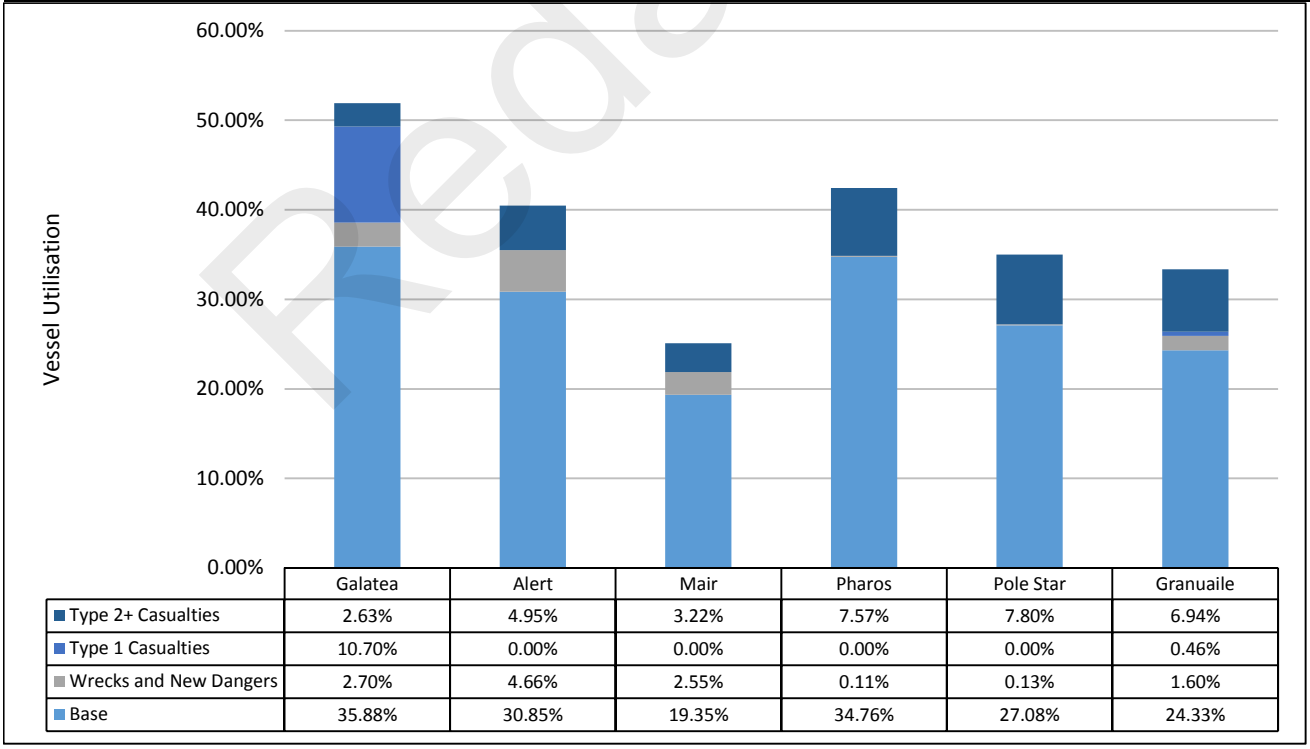
1. GLA ship tasking as for BL1 in their own areas
2. No cross-boundary operations allowed - GLA ships to remain in own waters for routine maintenance tasks and response to AtoN casualties, wrecks or new dangers

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	TH Only	TH Only
2	Alert	TH	12	N	10	TH Only
3	Mair	TH	9	N	11-14	TH Only
4	Pharos	NLB	12.5	Y	NLB Only	NLB Only
5	Pole Star	NLB	12	N	NLB Only	NLB Only
6	Granuaile	CIL	10	Y	CIL Only	CIL Only
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	**NLB**	**CIL**	**Overall**	**TH**	**NLB**	**CIL**	**Overall**
Responses outside RRC p.a.		2.22	0.01	0.10	2.33	26.1%	30.5%	>100%	31.3%
Buoy Uptime (%)	T1	99.90	N/A	99.97	99.94	-0.04%	N/A	-0.01%	0.00%
	T2+	99.98	99.94	99.96	99.97	0.00%	0.00%	-0.01%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.63%	4.95%	3.22%	7.57%	7.80%	6.94%
Type 1 Casualties	10.70%	0.00%	0.00%	0.00%	0.00%	0.46%
Wrecks and New Dangers	2.70%	4.66%	2.55%	0.11%	0.13%	1.60%
Base	35.88%	30.85%	19.35%	34.76%	27.08%	24.33%

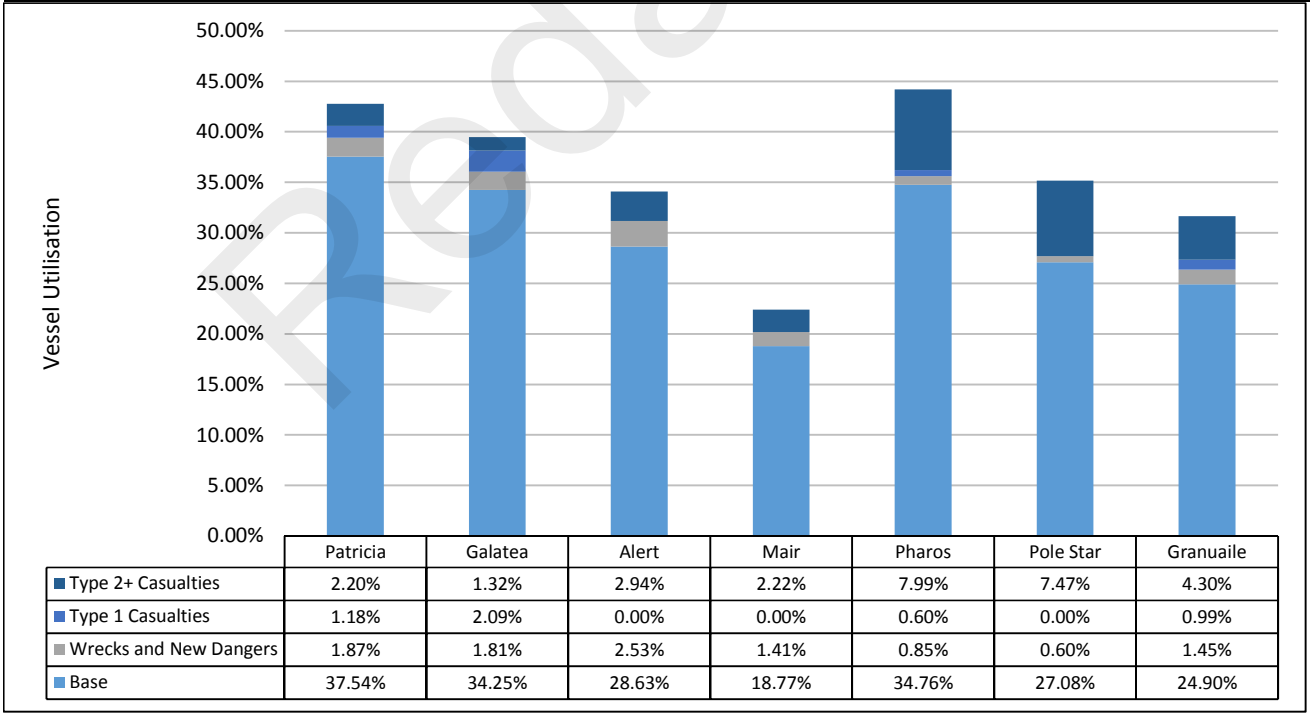
MODELLING INPUT & OUTPUT			
SRL. No	**Name**	**Description**	**Variation**
BL3	Baseline Enhanced	IGC5 Enhanced	Inc. Patricia
Assumptions			
1. Granuaile to conduct routine maintenance on all Type 1 buoys in CIL waters plus TH Type 1 buoys in Irish Sea, 2. Granuaile available for casualty response in any GLA area, 3. Patricia and Galatea to conduct routine maintenance on all remaining Type 1 buoys, 4. Galatea takes lead for Type 1 buoy maintenance east of the Dover Straits; also available for casualty response in any GLA area, 5. Patricia to be tasked in English Channel areas, but available for casualty response in any GLA area, 6. Remainder of fleet programming as for BL1			

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	10-13	All
2	Galatea	TH	12	Y	9-11	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		3.12	0.01	0.09	3.22	76.8%	29.6%	3011.8%	81.5%
Buoy Uptime (%)	T1	99.96	N/A	99.97	99.96	0.01%	N/A	0.00%	0.01%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£72,434	£23,131	£189,485	0.0%	0.0%	0.0%	0.0%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.20%	1.32%	2.94%	2.22%	7.99%	7.47%	4.30%
Type 1 Casualties	1.18%	2.09%	0.00%	0.00%	0.60%	0.00%	0.99%
Wrecks and New Dangers	1.87%	1.81%	2.53%	1.41%	0.85%	0.60%	1.45%
Base	37.54%	34.25%	28.63%	18.77%	34.76%	27.08%	24.90%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
BL3	Baseline Enhanced	IGC5 Enhanced	Patricia Removed

Assumptions

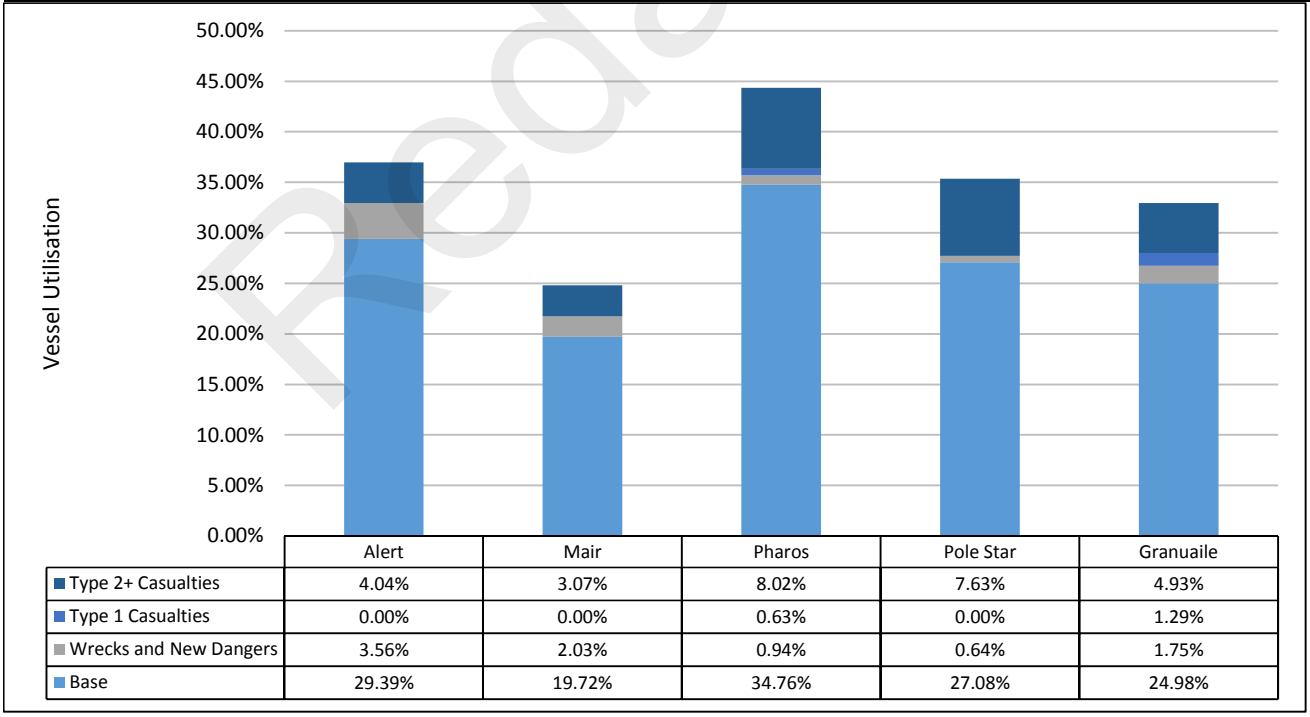
1. Granuaile to conduct routine maintenance on all Type 1 buoys in CIL waters plus TH Type 1 buoys in Irish Sea, 2. Granuaile available for casualty response in any GLA area, 3. Patricia and Galatea to conduct routine maintenance on all remaining Type 1 buoys, 4. Galatea takes lead for Type 1 buoy maintenance east of the Dover Straits; also available for casualty response in any GLA area, 5. Patricia to be tasked in English Channel areas, but available for casualty response in any GLA area, 6. Remainder of fleet programming as for BL1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	9-11	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	Pharos	NLB	12.5	Y	NLB Only	All
5	Pole Star	NLB	12	N	NLB Only	All
6	Granuaile	CIL	10	Y	CIL Only	All
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.30	0.01	0.01	2.31	30.4%	-3.4%	113.8%	30.3%
Buoy Uptime (%)	T1	99.94	N/A	99.97	99.96	0.00%	N/A	0.00%	0.01%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	4.04%	3.07%	8.02%	7.63%	4.93%
Type 1 Casualties	0.00%	0.00%	0.63%	0.00%	1.29%
Wrecks and New Dangers	3.56%	2.03%	0.94%	0.64%	1.75%
Base	29.39%	19.72%	34.76%	27.08%	24.98%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
BL4	Baseline Plus	IGC5 Plus	Inc. Patricia

Assumptions

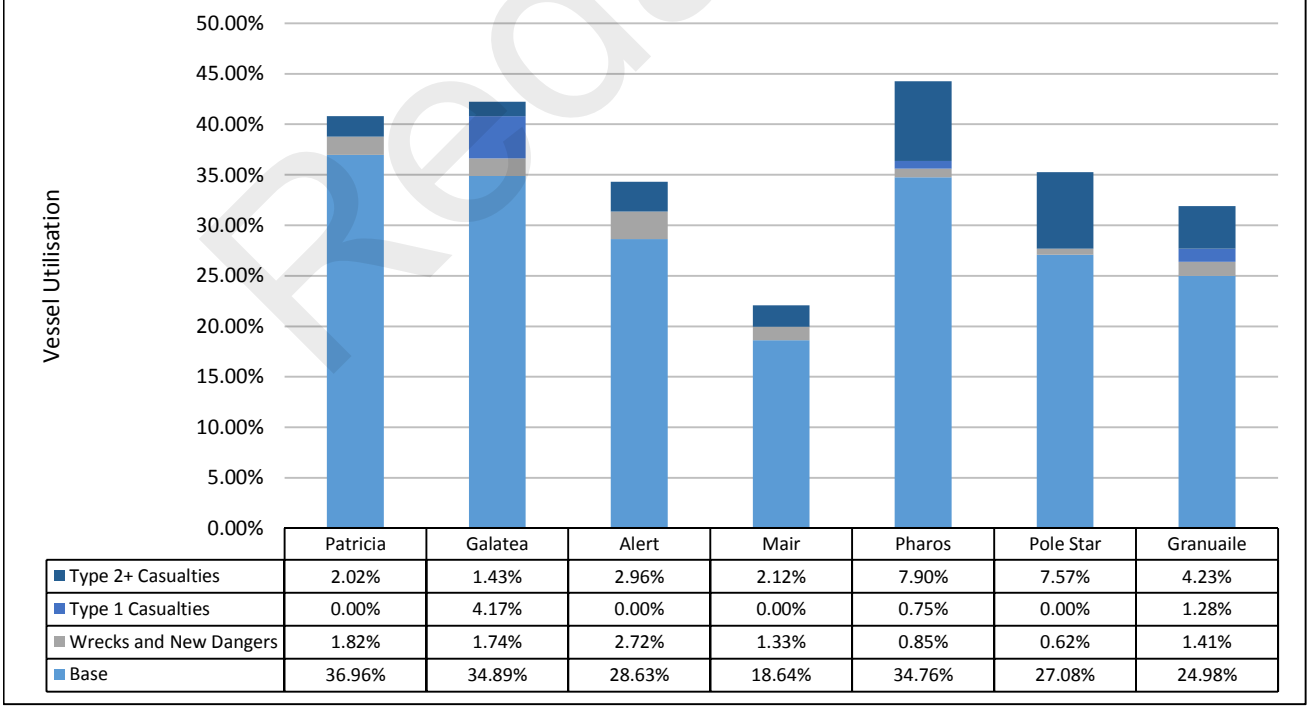
1. Granuaile to conduct routine maintenance on all Type 1 buoys in CIL waters plus TH Type 1 buoys in Irish Sea; 2. Granuaile available for casualty response in any GLA area; 3. Galatea to conduct routine maintenance on all remaining Type 1 buoys; 4. Galatea available for casualty response in any GLA area; 5. Patricia to be removed from model and replaced by 1 Type 2-4 capable ship (per Pole Star) stationed in the English Channel; 6. Remainder of fleet programming as for BL1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 2-4 Vessel	TH	12	N	10-12	All
2	Galatea	TH	12	Y	9-12	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12	Y	NLB Only	All
6	Pole Star	NLB	10	N	NLB Only	All
7	Granuaile	CIL	10	Y	13-21	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.41	0.01	0.01	1.42	-20.2%	0.1%	70.4%	-20.0%
Buoy Uptime (%)	T1	99.94	N/A	99.97	99.95	0.00%	N/A	0.00%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£95,870	£72,434	£23,131	£191,436	2.1%	0.0%	0.0%	1.0%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.02%	1.43%	2.96%	2.12%	7.90%	7.57%	4.23%
Type 1 Casualties	0.00%	4.17%	0.00%	0.00%	0.75%	0.00%	1.28%
Wrecks and New Dangers	1.82%	1.74%	2.72%	1.33%	0.85%	0.62%	1.41%
Base	36.96%	34.89%	28.63%	18.64%	34.76%	27.08%	24.98%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
1	VNC1	Patricia Single Replacement	N/A

Assumptions

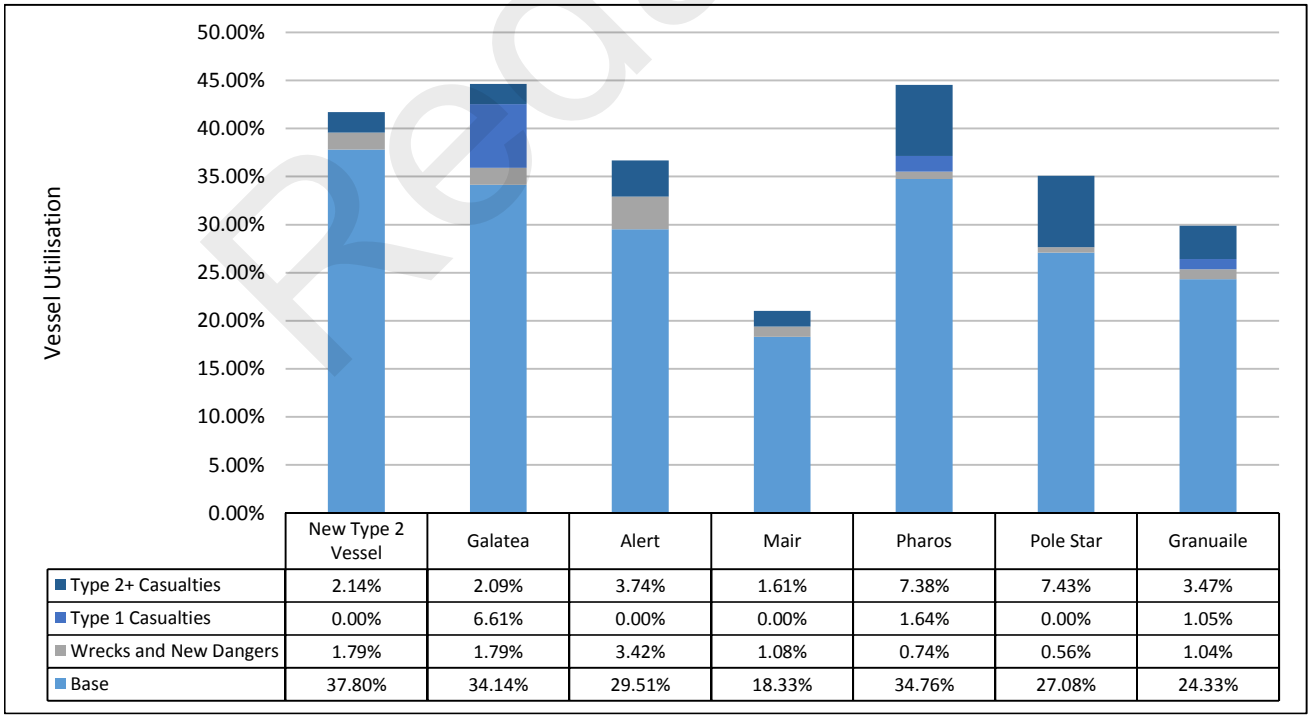
1. Replace Patricia with 1 Type 2-4 capable ship (similar to Pole Star)
2. Galatea's principal role is all TH Type 1 buoys & helo support
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 2-4 Vessel	TH	12	N	9-14	All
2	Galatea	TH	12	Y	9-14	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.76	0.01	0.00	1.77	-0.4%	0.0%	-11.8%	-0.4%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.92	-0.02%	N/A	0.00%	-0.02%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£95,870	£72,434	£23,131	£191,436	2.1%	0.0%	0.0%	1.0%



	New Type 2 Vessel	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.14%	2.09%	3.74%	1.61%	7.38%	7.43%	3.47%
Type 1 Casualties	0.00%	6.61%	0.00%	0.00%	1.64%	0.00%	1.05%
Wrecks and New Dangers	1.79%	1.79%	3.42%	1.08%	0.74%	0.56%	1.04%
Base	37.80%	34.14%	29.51%	18.33%	34.76%	27.08%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
2	VNC2	Patricia Multiple Replacement	N/A

Assumptions

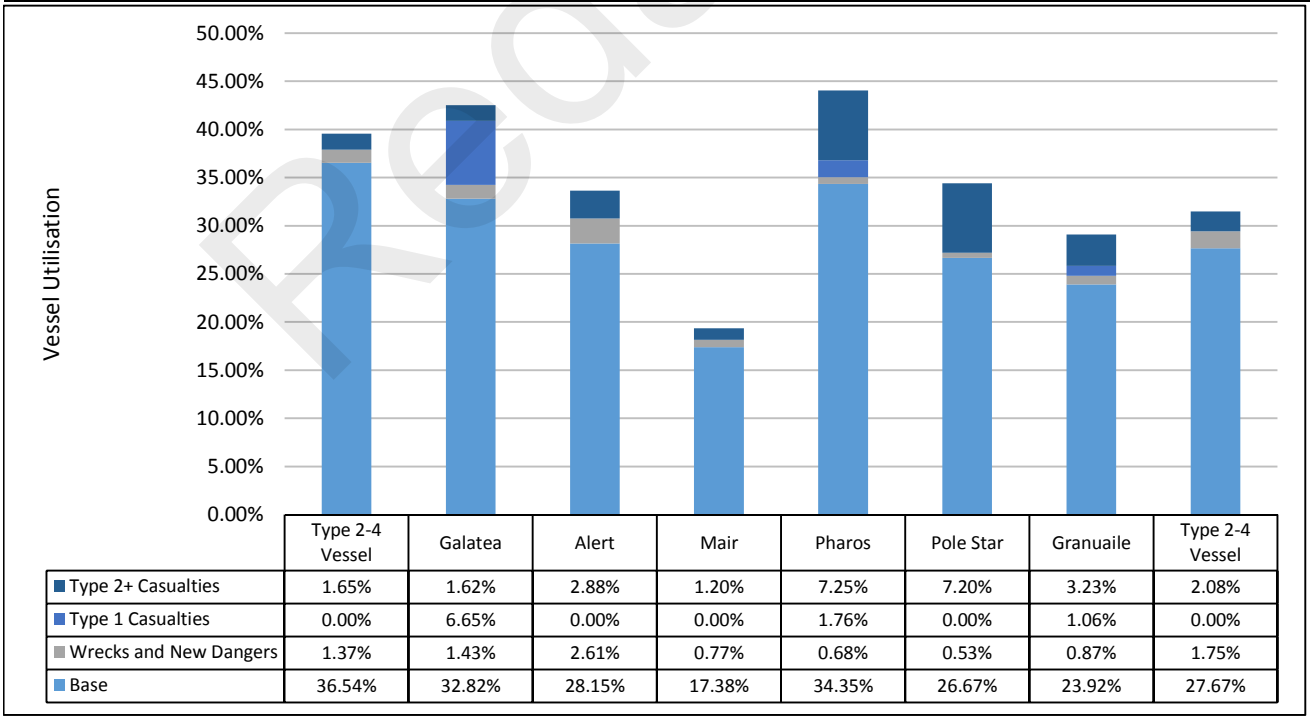
1. Replace Patricia with 2 Type 2-4 capable ships (both similar to Pole Star)
2. Galatea's principle role is all TH Type 1 buoys & helo support
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 2-4 Vessel	TH	12	N	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8	Type 2-4 Vessel	TH	12	N	TH Only	All
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.30	0.01	0.00	1.31	-26.2%	-11.6%	-37.0%	-26.2%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.92	-0.02%	N/A	0.00%	-0.02%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£127,583	£72,434	£23,131	£223,148	35.8%	0.0%	0.0%	17.8%



	Type 2-4 Vessel	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Vessel
Type 2+ Casualties	1.65%	1.62%	2.88%	1.20%	7.25%	7.20%	3.23%	2.08%
Type 1 Casualties	0.00%	6.65%	0.00%	0.00%	1.76%	0.00%	1.06%	0.00%
Wrecks and New Dangers	1.37%	1.43%	2.61%	0.77%	0.68%	0.53%	0.87%	1.75%
Base	36.54%	32.82%	28.15%	17.38%	34.35%	26.67%	23.92%	27.67%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
3	VNC3	Patricia & Alert Replacement	N/A

Assumptions

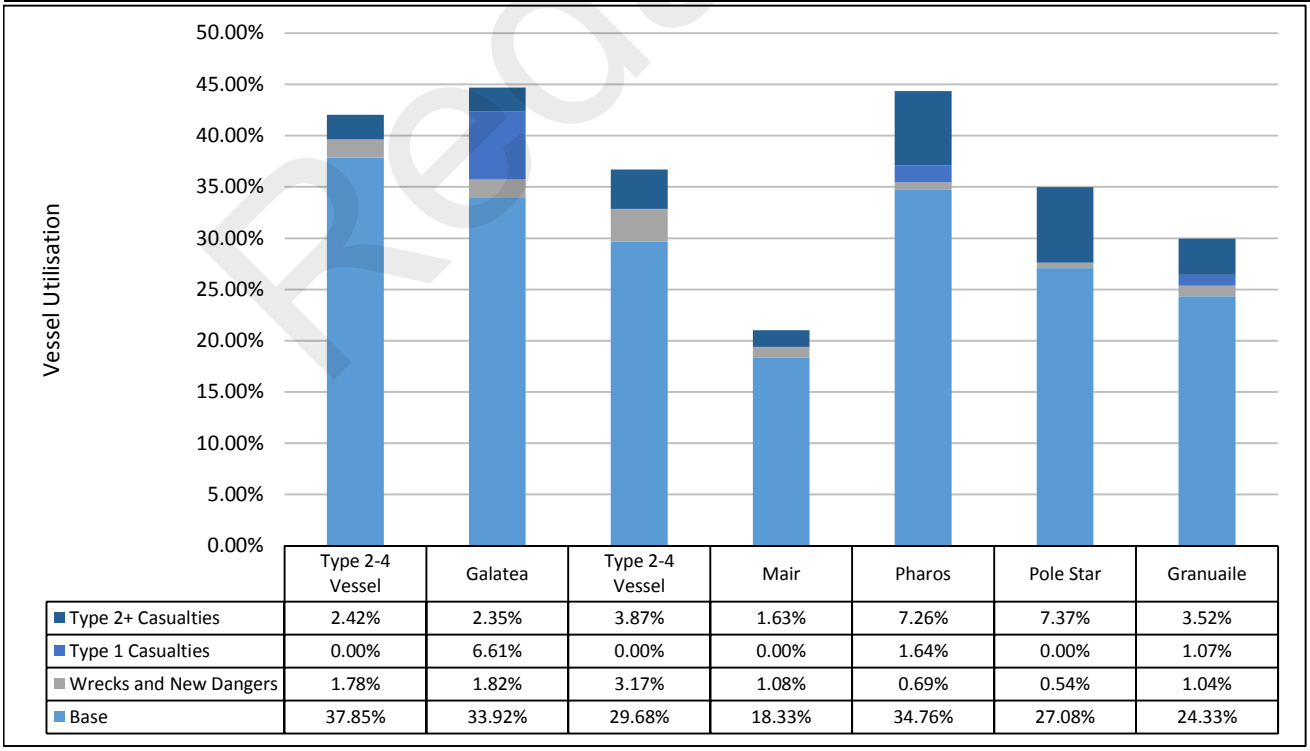
1. Sell Patricia and Alert and procure 2 Type 2-4 capable ships (all similar to Pole Star) 1 of which should be stationed in the Channel (to mitigate the Solent risk)
2. Galatea's principle role is all TH Type 1 buoys & helo support
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 2-4 Vessel	TH	12	N	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Type 2-4 Vessel	TH	12	N	9-10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.31	0.01	0.00	2.32	31.1%	-21.1%	-9.4%	30.8%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.92	-0.02%	N/A	0.00%	-0.02%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£103,702	£72,434	£23,131	£199,267	10.4%	0.0%	0.0%	5.2%



	Type 2-4 Vessel	Galatea	Type 2-4 Vessel	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.42%	2.35%	3.87%	1.63%	7.26%	7.37%	3.52%
Type 1 Casualties	0.00%	6.61%	0.00%	0.00%	1.64%	0.00%	1.07%
Wrecks and New Dangers	1.78%	1.82%	3.17%	1.08%	0.69%	0.54%	1.04%
Base	37.85%	33.92%	29.68%	18.33%	34.76%	27.08%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
4	VNC4	Patricia & Alert Replacement	N/A

Assumptions

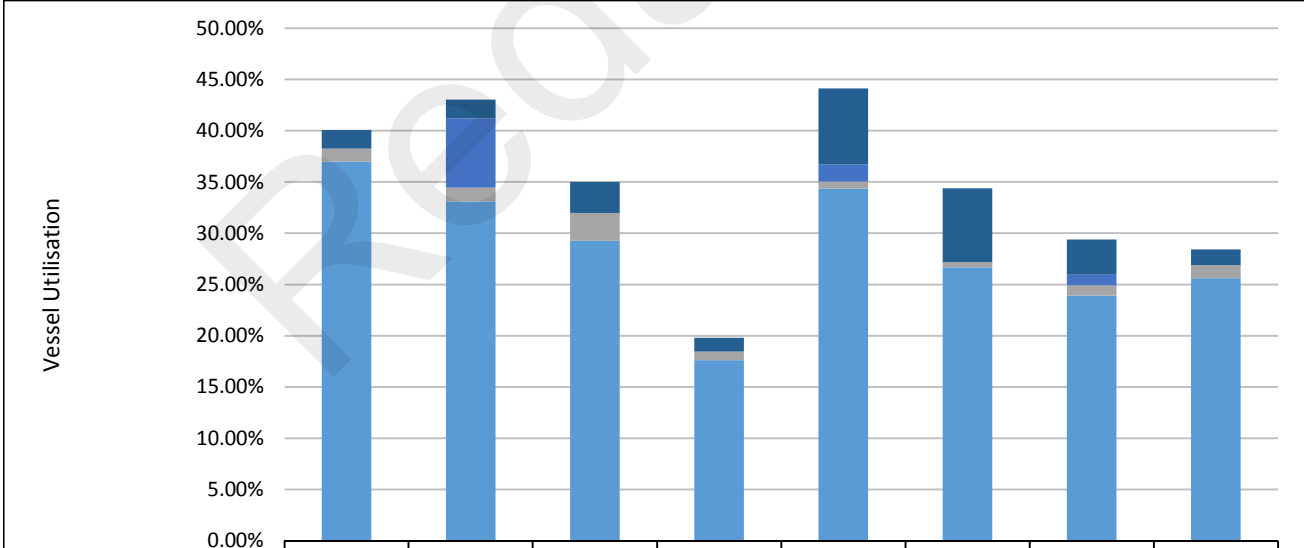
1. Sell Patricia and Alert and procure 3 Type 2-4 capable ships (all similar to Pole Star) 1 of which should be stationed in the Channel (to mitigate the Solent risk)
2. Galatea's principle role is all TH Type 1 buoys & helo support
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 2-4 Vessel	TH	12	N	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Type 2-4 Vessel	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12	Y	NLB Only	All
6	Pole Star	NLB	10	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8	Type 2-4 Vessel	TH	12	N	10-12	All
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.47	0.01	0.00	1.48	-16.5%	-21.1%	-29.6%	-16.5%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.92	-0.02%	N/A	0.00%	-0.02%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£128,344	£72,434	£23,131	£223,910	36.7%	0.0%	0.0%	18.2%



	Type 2-4 Vessel	Galatea	Type 2-4 Vessel	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Vessel
Type 2+ Casualties	1.81%	1.82%	3.02%	1.34%	7.41%	7.20%	3.43%	1.51%
Type 1 Casualties	0.00%	6.75%	0.00%	0.00%	1.65%	0.00%	1.03%	0.00%
Wrecks and New Dangers	1.30%	1.37%	2.72%	0.84%	0.70%	0.51%	1.00%	1.29%
Base	36.96%	33.09%	29.27%	17.61%	34.35%	26.67%	23.92%	25.61%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
5	VNC5	Pharos Replacement	Inc. Patricia

Assumptions

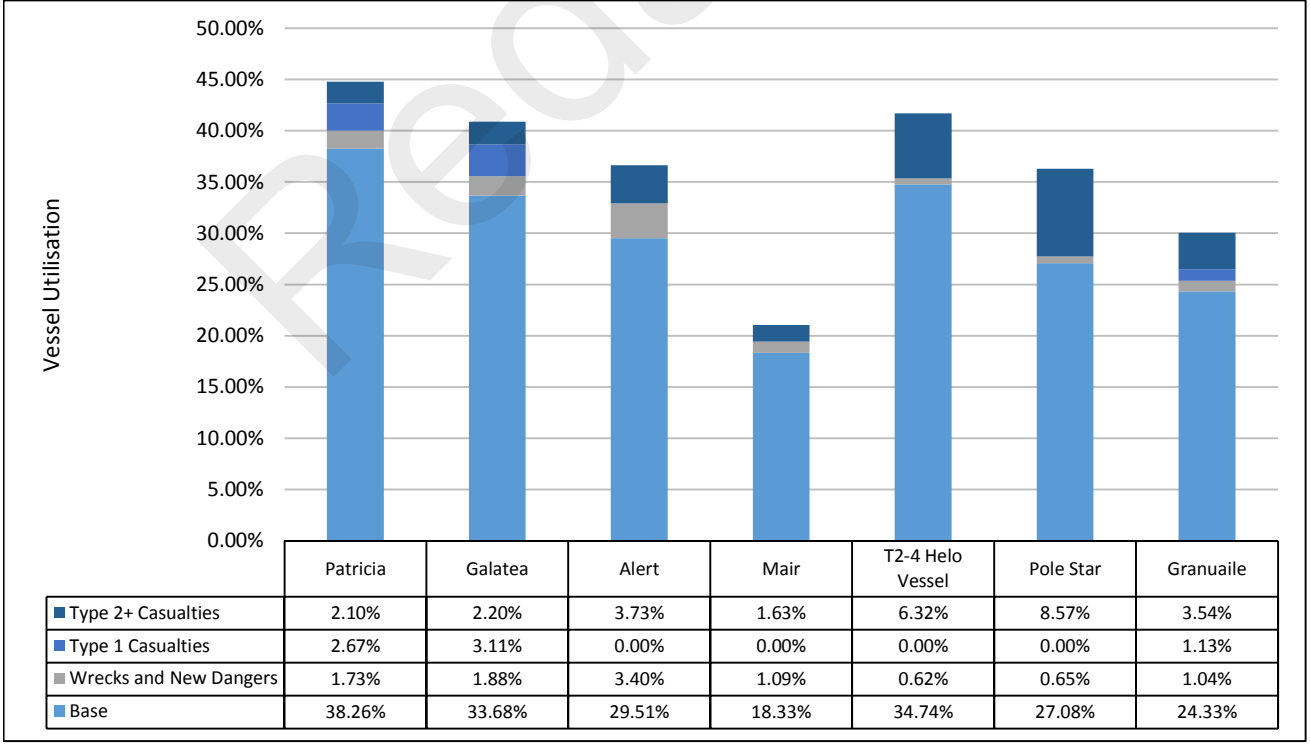
1. Sell Pharos
2. Procure alternative platform - Type 2-4 & helo capable
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	T2-4 Helo Vessel	NLB	12	N	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.77	0.01	0.00	1.78	0.2%	6.7%	-5.4%	0.2%
Buoy Uptime (%)	T1	99.94	N/A	99.97	99.94	0.00%	N/A	0.00%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£59,847	£23,131	£176,899	0.0%	-17.4%	0.0%	-6.6%



	Patricia	Galatea	Alert	Mair	T2-4 Helo Vessel	Pole Star	Granuaile
Type 2+ Casualties	2.10%	2.20%	3.73%	1.63%	6.32%	8.57%	3.54%
Type 1 Casualties	2.67%	3.11%	0.00%	0.00%	0.00%	0.00%	1.13%
Wrecks and New Dangers	1.73%	1.88%	3.40%	1.09%	0.62%	0.65%	1.04%
Base	38.26%	33.68%	29.51%	18.33%	34.74%	27.08%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
5	VNC5	Pharos Replacement	Patricia Removed

Assumptions

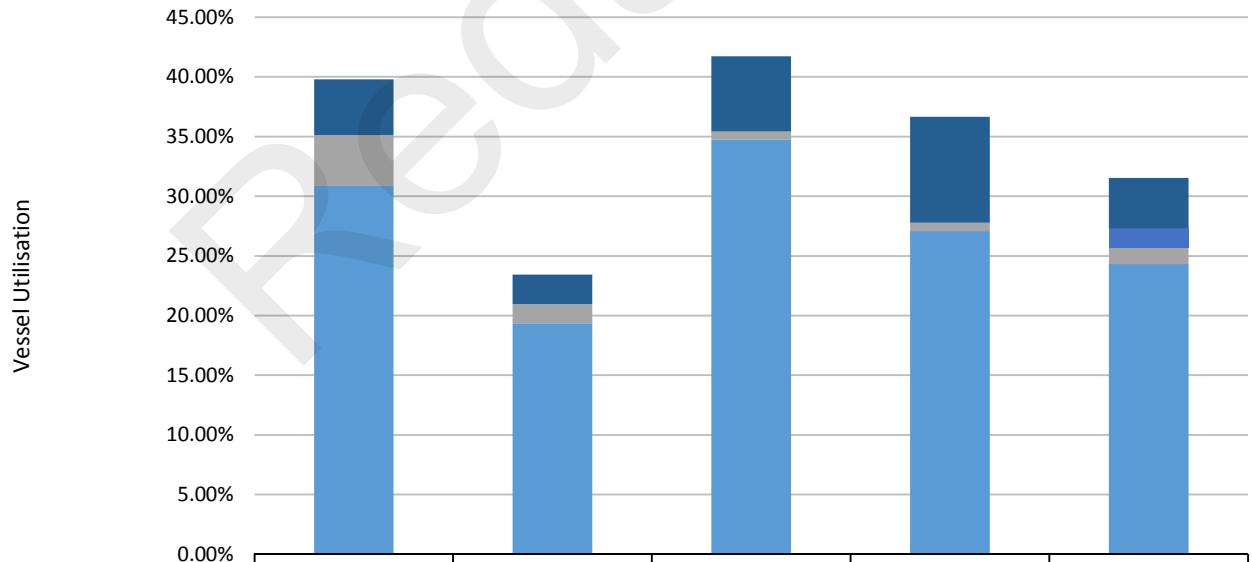
1. Sell Pharos
2. Procure alternative platform - Type 2-4 & helo capable
3. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	TH Only	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	T2-4 Helo Vessel	NLB	12	N	NLB Only	All
5	Pole Star	NLB	12	N	NLB Only	All
6	Granuaile	CIL	10	Y	CIL Only	All
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.46	0.01	0.00	2.48	39.6%	13.6%	50.2%	39.5%
Buoy Uptime (%)	T1	99.91	N/A	99.97	99.94	-0.03%	N/A	-0.01%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)									



	Alert	Mair	T2-4 Helo Vessel	Pole Star	Granuaile
Type 2+ Casualties	4.66%	2.45%	6.30%	8.88%	4.21%
Type 1 Casualties	0.00%	0.00%	0.00%	0.00%	1.68%
Wrecks and New Dangers	4.28%	1.63%	0.69%	0.70%	1.33%
Base	30.85%	19.35%	34.74%	27.08%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
6	VNC6	Granuaile Replacement	Inc. Patricia

Assumptions

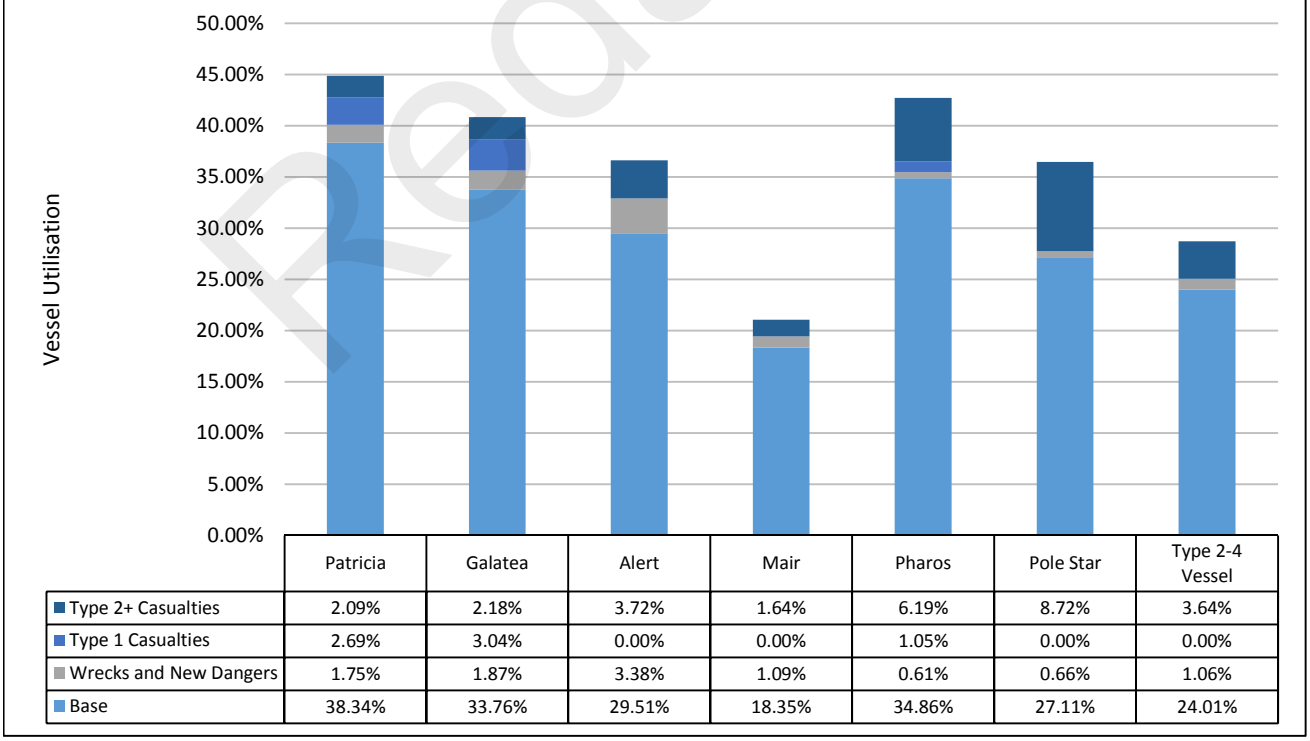
1. Sell Granuaile
2. Procure alternative platform - Type 2-4 & helo capable
3. CIL Type 1 buoys to be managed by TH/NLB
4. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	9-14 & 16	All
2	Galatea	TH	12	Y	9-15	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	1-8 & 18-19	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Type 2-4 Vessel	CIL	10	N	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.75	0.01	0.00	1.76	-0.7%	4.3%	-3.7%	-0.7%
Buoy Uptime (%)	T1	99.94	N/A	99.97	99.94	0.00%	N/A	-0.01%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£72,434	£24,919	£191,273	0.0%	0.0%	7.7%	0.9%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Type 2-4 Vessel
Type 2+ Casualties	2.09%	2.18%	3.72%	1.64%	6.19%	8.72%	3.64%
Type 1 Casualties	2.69%	3.04%	0.00%	0.00%	1.05%	0.00%	0.00%
Wrecks and New Dangers	1.75%	1.87%	3.38%	1.09%	0.61%	0.66%	1.06%
Base	38.34%	33.76%	29.51%	18.35%	34.86%	27.11%	24.01%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
6	VNC6	Granuaile Replacement	Patricia Removed

Assumptions

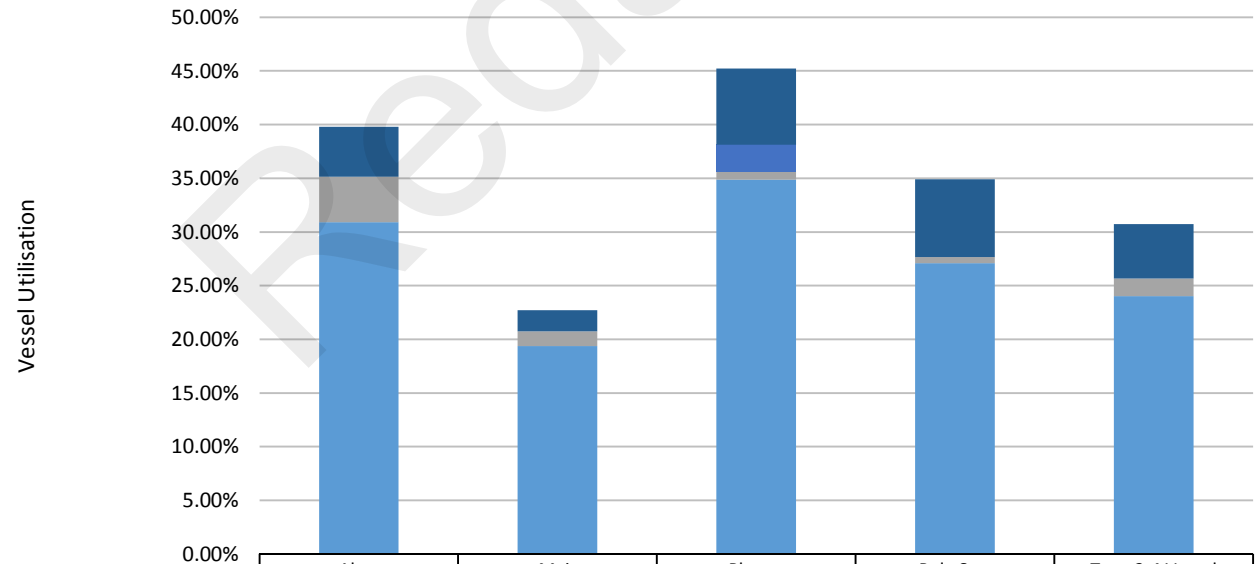
1. Sell Granuaile
2. Procure alternative platform - Type 2-4 & helo capable
3. CIL Type 1 buoys to be managed by TH/NLB
4. Other ships' tasking per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	9-15	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	Pharos	NLB	12.5	Y	1-8 & 18-19	All
5	Pole Star	NLB	12	N	NLB Only	All
6	Type 2-4 Vessel	CIL	10	N	CIL Only	All
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.38	0.01	0.00	2.39	34.9%	7.5%	9.8%	34.7%
Buoy Uptime (%)	T1	99.91	N/A	99.96	99.94	-0.03%	N/A	-0.01%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Alert	Mair	Pharos	Pole Star	Type 2-4 Vessel
Type 2+ Casualties	4.63%	1.96%	7.09%	7.25%	5.06%
Type 1 Casualties	0.00%	0.00%	2.53%	0.00%	0.00%
Wrecks and New Dangers	4.24%	1.38%	0.73%	0.54%	1.65%
Base	30.92%	19.36%	34.86%	27.11%	24.01%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
7	VNC7	Total Integration	Inc. Patricia

Assumptions

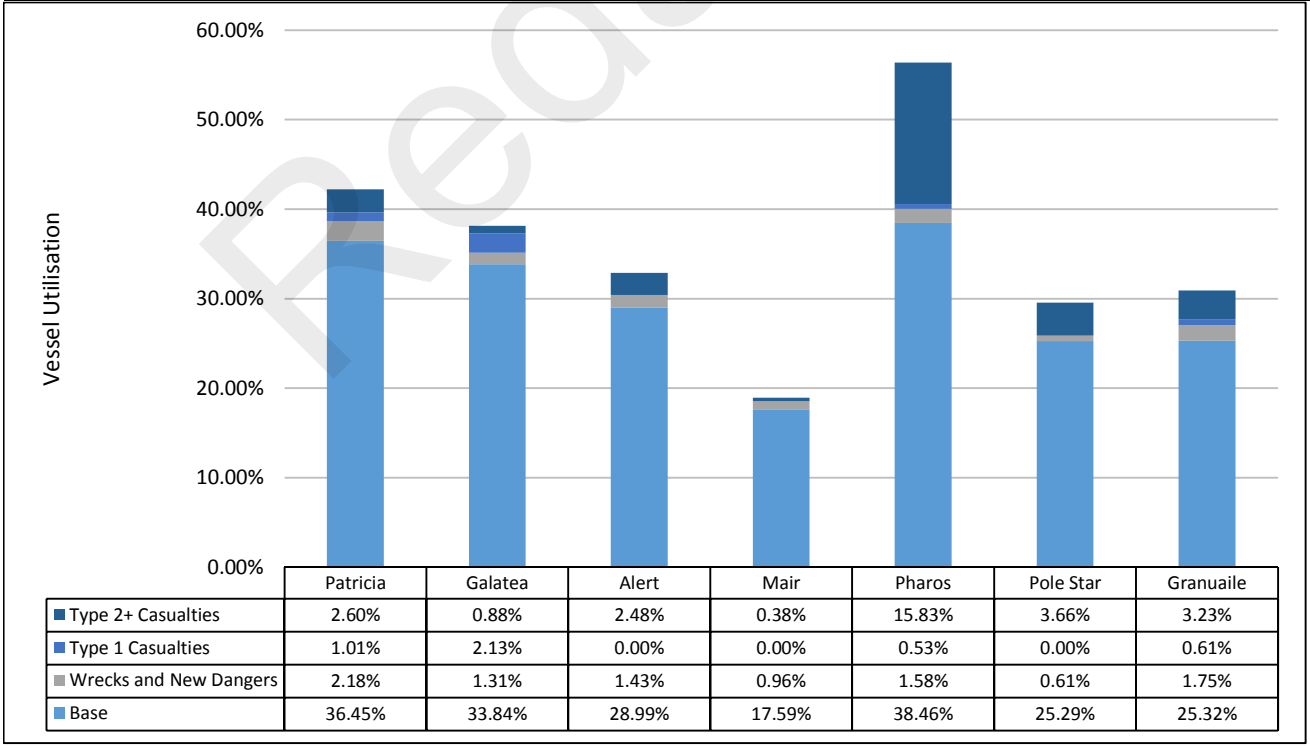
1. Any GLA vessel can operate in any area, for routine maintenance as well as response to wrecks/casualties/new dangers

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	11-12	All
2	Galatea	TH	12	Y	9-10	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	9 & 11	All
5	Pharos	NLB	12.5	Y	1-3 & 18-19	All
6	Pole Star	NLB	12	N	4-8	All
7	Granuaile	CIL	10	Y	12-17	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		0.93	0.00	0.00	0.93	-47.4%	-95.4%	-43.4%	-47.6%
Buoy Uptime (%)	T1	99.96	N/A	99.98	99.96	0.02%	N/A	0.00%	0.02%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£72,434	£23,131	£189,485	0.0%	0.0%	0.0%	0.0%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	2.60%	0.88%	2.48%	0.38%	15.83%	3.66%	3.23%
Type 1 Casualties	1.01%	2.13%	0.00%	0.00%	0.53%	0.00%	0.61%
Wrecks and New Dangers	2.18%	1.31%	1.43%	0.96%	1.58%	0.61%	1.75%
Base	36.45%	33.84%	28.99%	17.59%	38.46%	25.29%	25.32%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
7	VNC7	Total Integration	Patricia Removed

Assumptions

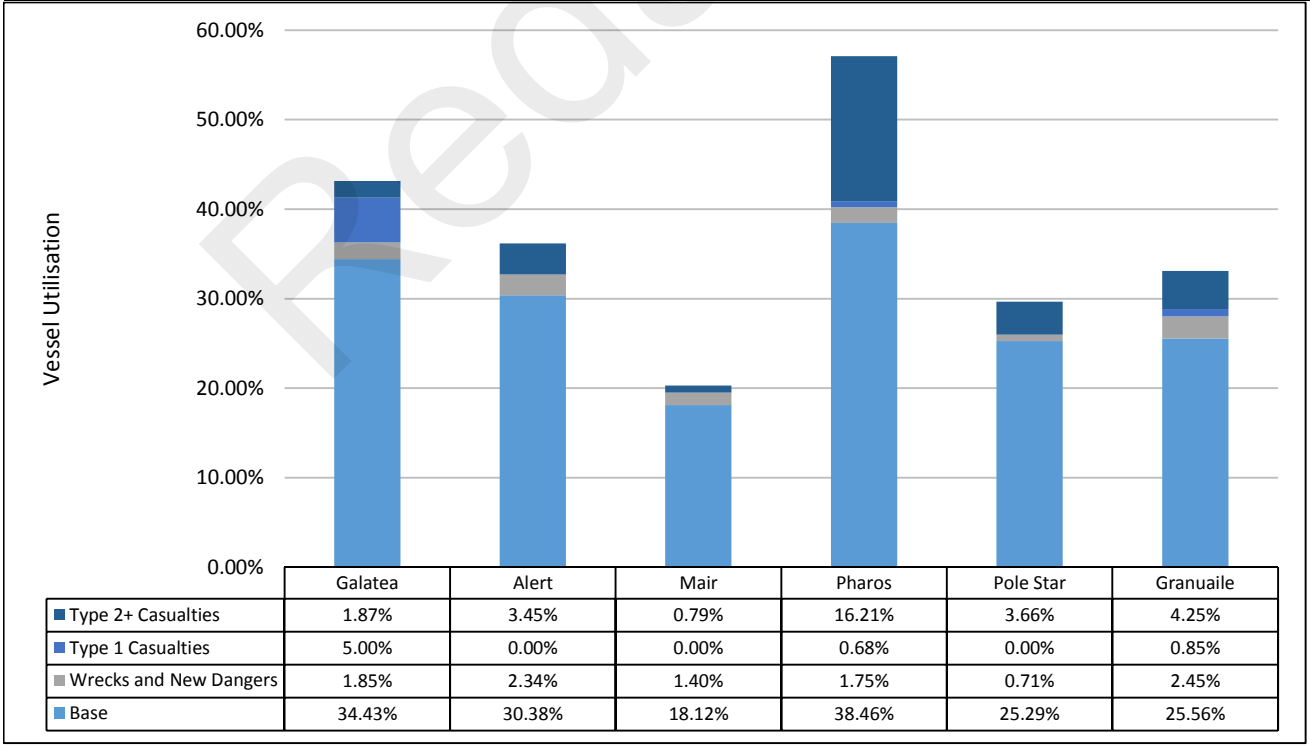
1. Any GLA vessel can operate in any area, for routine maintenance as well as response to wrecks/casualties/new dangers

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	9-10	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	9 & 11	All
4	Pharos	NLB	12.5	Y	1-3 & 18-19	All
5	Pole Star	NLB	12	N	4-8	All
6	Granuaile	CIL	10	Y	12-17	All
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.62	0.00	0.00	1.62	-8.4%	-94.3%	-19.9%	-8.8%
Buoy Uptime (%)	T1	99.94	N/A	99.98	99.96	0.00%	N/A	0.00%	0.02%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile
Type 2+ Casualties	1.87%	3.45%	0.79%	16.21%	3.66%	4.25%
Type 1 Casualties	5.00%	0.00%	0.00%	0.68%	0.00%	0.85%
Wrecks and New Dangers	1.85%	2.34%	1.40%	1.75%	0.71%	2.45%
Base	34.43%	30.38%	18.12%	38.46%	25.29%	25.56%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
8a	VNC8a	Output Based Integrated Ops.	Charter & Broker

Assumptions

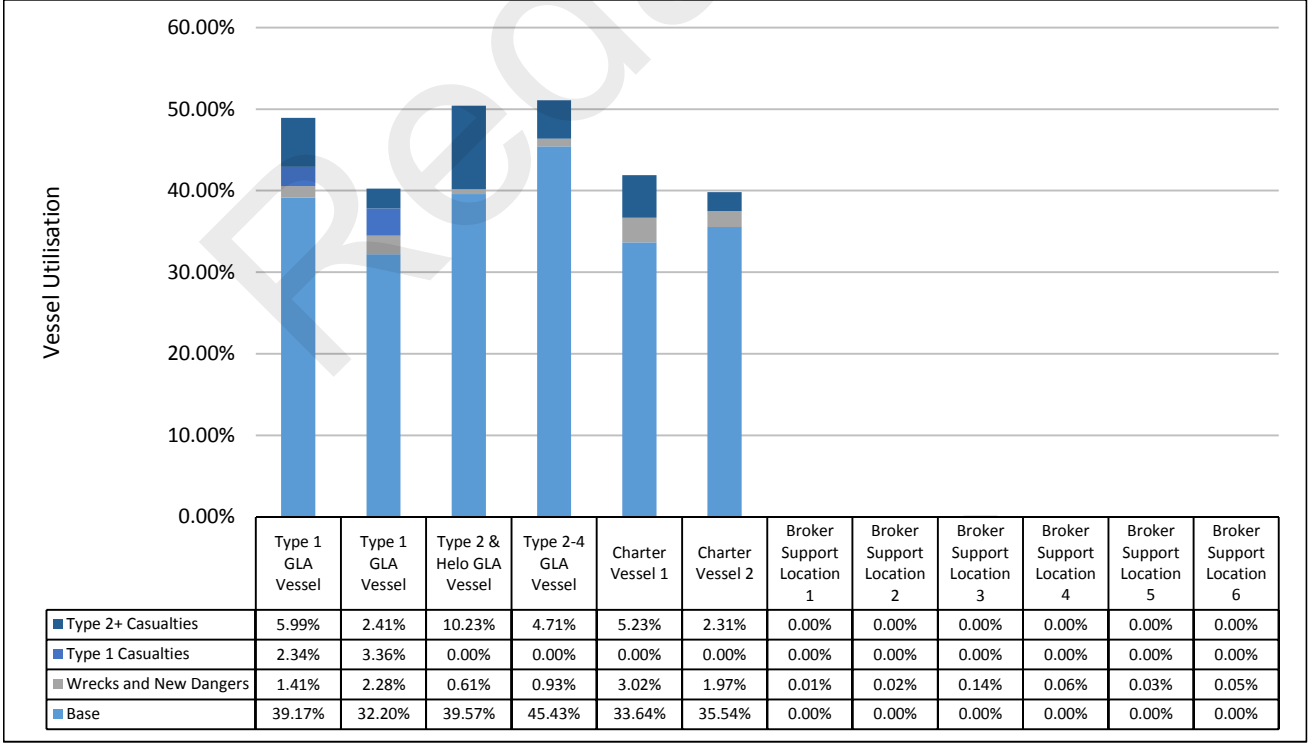
1. The three GLA's operate a four ship integrated fleet: one T1 vessel in high risk areas 9 & 10; one T1 vessel in Irish Waters, the Irish Sea and South Coast; one T2 & Helo capable vessel in Scottish Waters; and one Type 2-4 "sweeper vessel". / 2. Two time charters in the Bristol Channel and outer Thames Estuary. / 3. Broker support to secure short notice vessel charters in high risk areas: Bristol Channel, Land's End, Solent, Dover, Thames Estuary and the Humber.

INPUT

Vessel	Vessel	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 1 GLA Vessel	12	Y	11-21	All
2	Type 1 GLA Vessel	12	Y	9-10	All
3	Type 2 & Helo GLA Vessel	12	N	2-8	All
4	Type 2-4 GLA Vessel	12	N	1-4, 6-8, 10-12	All
5	Charter Vessel 1	12	N	Bristol Channel	All
6	Charter Vessel 2	12	N	Thames Estuary	All
7	Broker Support Location 1	12	N	Bristol Channel	All
8	Broker Support Location 2	12	N	Land's End	All
9	Broker Support Location 3	12	N	Solent	All
10	Broker Support Location 4	12	N	Dover	All
11	Broker Support Location 5	12	N	Thames Estuary	All
12	Broker Support Location 6	12	N	Humber	All

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		0.27	0.00	0.00	0.27	-84.8%	-80.3%	-87.5%	-84.7%
Buoy Uptime (%)	T1	99.95	N/A	99.97	99.96	0.01%	N/A	-0.01%	0.02%
	T2+	99.98	99.94	99.97	99.97	0.00%	-0.01%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£57,723	£72,434	£23,131	£153,288	-38.5%	0.0%	0.0%	-19.1%



	Type 1 GLA Vessel	Type 1 GLA Vessel	Type 2 & Helo GLA Vessel	Type 2-4 GLA Vessel	Charter Vessel 1	Charter Vessel 2	Broker Support Location 1	Broker Support Location 2	Broker Support Location 3	Broker Support Location 4	Broker Support Location 5	Broker Support Location 6
Type 2+ Casualties	5.99%	2.41%	10.23%	4.71%	5.23%	2.31%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Type 1 Casualties	2.34%	3.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Wrecks and New Dangers	1.41%	2.28%	0.61%	0.93%	3.02%	1.97%	0.01%	0.02%	0.14%	0.06%	0.03%	0.05%
Base	39.17%	32.20%	39.57%	45.43%	33.64%	35.54%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
8b	VNC8b	Output Based Integrated Ops.	Broker Only

Assumptions

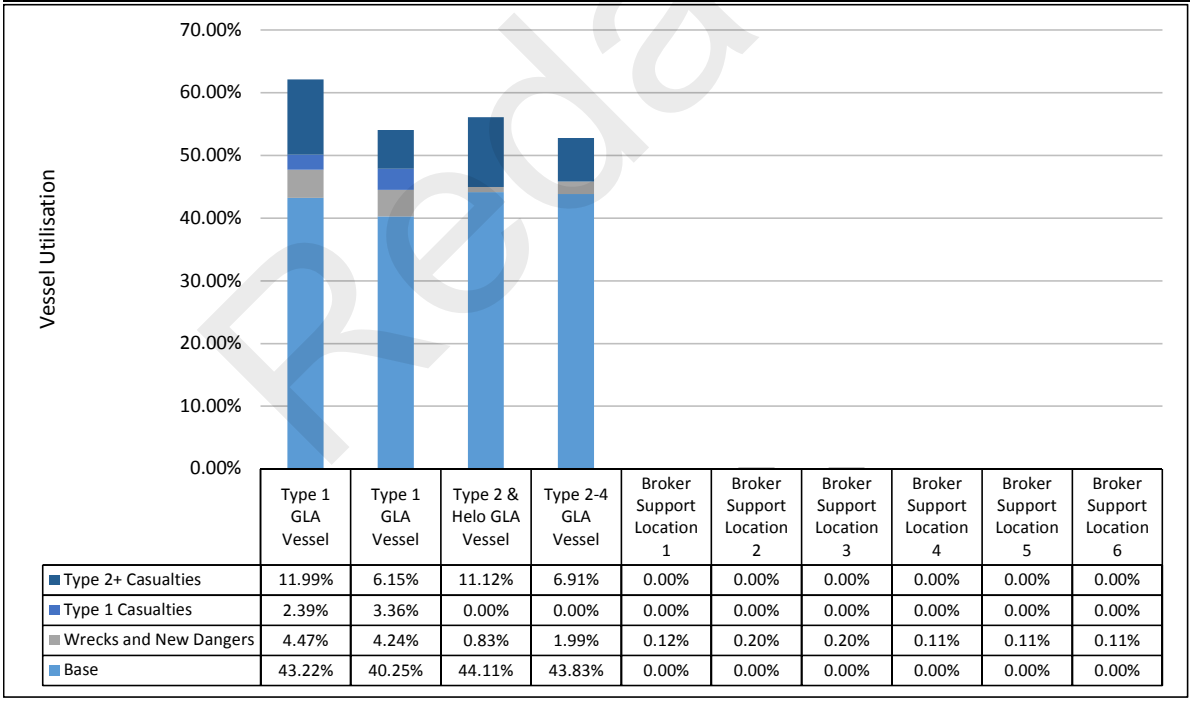
1. The three GLA's operate a four ship integrated fleet: one T1 vessel in high risk areas 9 & 10; one T1 vessel in Irish Waters, the Irish Sea and South Coast; one T2 & Helo capable vessel in Scottish Waters; and one Type 2-4 "sweeper vessel".
2. Broker support to secure short notice vessel charters in high risk areas: Bristol Channel, Land's End, Solent, Dover, Thames Estuary and the Humber.

INPUT

Vessel	Vessel	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Type 1 GLA Vessel	12	Y	11-21	All
2	Type 1 GLA Vessel	12	Y	9-10	All
3	Type 2 & Helo GLA Vessel	12	N	2-8	All
4	Type 2-4 GLA Vessel	12	N	1-4, 6-8, 10-12	All
5	Broker Support Location 1	12	N	Bristol Channel	All
6	Broker Support Location 2	12	N	Land's End	All
7	Broker Support Location 3	12	N	Solent	All
8	Broker Support Location 4	12	N	Dover	All
9	Broker Support Location 5	12	N	Thames Estuary	All
10	Broker Support Location 6	12	N	Humber	All
11					
12					

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		0.69	0.00	0.01	0.70	-60.9%	-76.3%	73.6%	-60.8%
Buoy Uptime (%)	T1	99.95	N/A	99.97	99.96	0.01%	N/A	-0.01%	0.02%
	T2+	99.98	99.94	99.97	99.97	-0.01%	-0.01%	-0.01%	0.00%
10 Year Fleet Spend (GBP 000's)		£39,900	£72,434	£23,131	£135,465	-57.5%	0.0%	0.0%	-28.5%



	Type 1 GLA Vessel	Type 1 GLA Vessel	Type 2 & Helo GLA Vessel	Type 2-4 GLA Vessel	Broker Support Location 1	Broker Support Location 2	Broker Support Location 3	Broker Support Location 4	Broker Support Location 5	Broker Support Location 6
Type 2+ Casualties	11.99%	6.15%	11.12%	6.91%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Type 1 Casualties	2.39%	3.36%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Wrecks and New Dangers	4.47%	4.24%	0.83%	1.99%	0.12%	0.20%	0.20%	0.11%	0.11%	0.11%
Base	43.22%	40.25%	44.11%	43.83%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
9	OWS1	Charter-in for South Coast High Risk Areas	Inc. Patricia

Assumptions

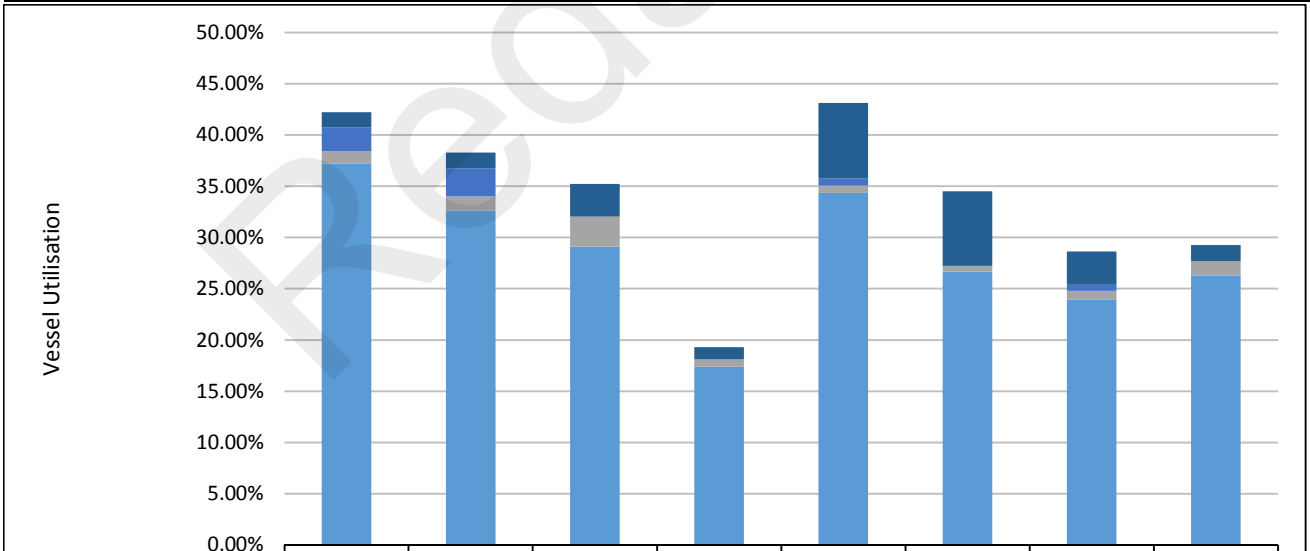
1. Include a contract vessel to cover the Solent and Lands End 12 hour response areas; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4)
2. Remainder of GLA fleet modelled as per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12.5	Y	NLB Only	All
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8	Type 2-4 Charter	TH	12	N	8	All
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.11	0.01	0.00	1.12	-37.1%	-2.8%	-27.9%	-36.9%
Buoy Uptime (%)	T1	99.94	N/A	99.98	99.94	0.00%	N/A	0.00%	0.00%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£105,713	£72,434	£23,131	£201,278	12.6%	0.0%	0.0%	6.2%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Charter
Type 2+ Casualties	1.46%	1.53%	3.16%	1.19%	7.38%	7.29%	3.22%	1.57%
Type 1 Casualties	2.36%	2.76%	0.00%	0.00%	0.69%	0.00%	0.61%	0.00%
Wrecks and New Dangers	1.22%	1.36%	2.95%	0.73%	0.71%	0.55%	0.87%	1.46%
Base	37.18%	32.63%	29.10%	17.39%	34.35%	26.67%	23.92%	26.25%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
9	OWS1	Charter-in for South Coast High Risk Areas	Patricia Removed

Assumptions

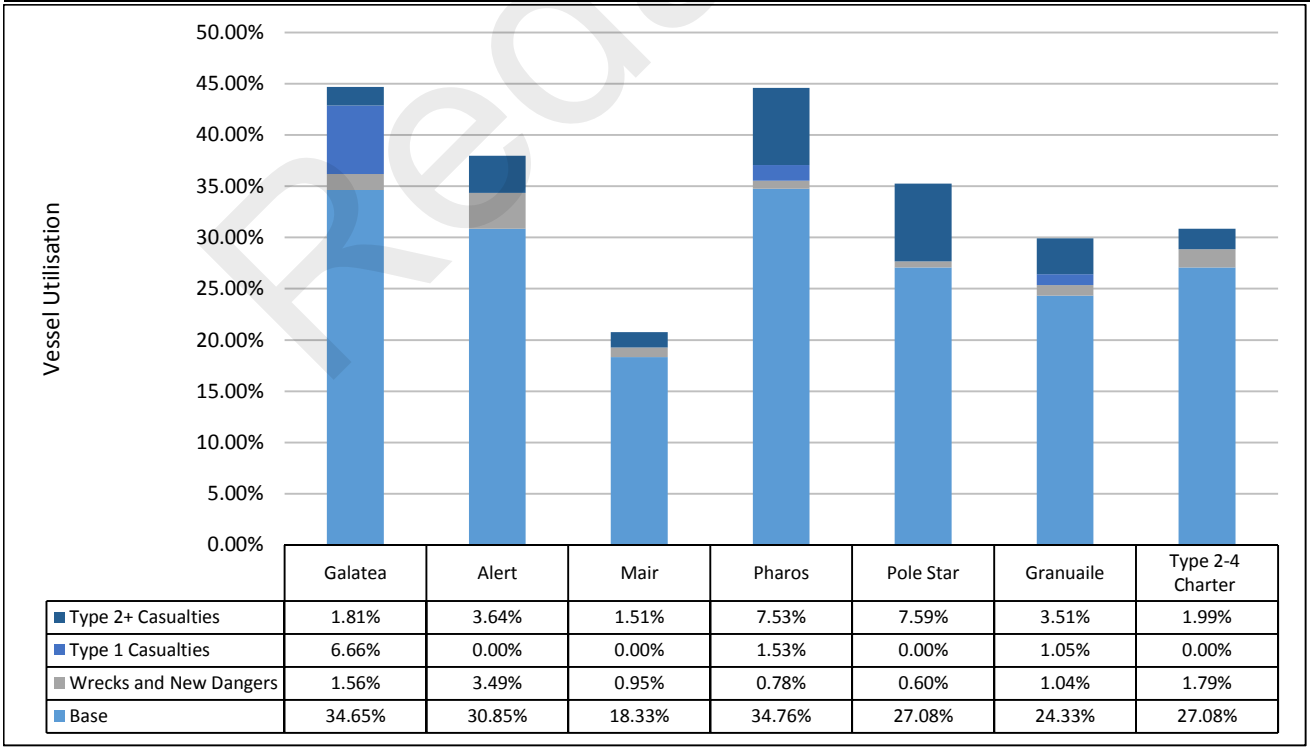
1. Include a contract vessel to cover the Solent and Lands End 12 hour response areas; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4)
2. Remainder of GLA fleet modelled as per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	TH Only	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	Pharos	NLB	12.5	Y	NLB Only	All
5	Pole Star	NLB	12	N	NLB Only	All
6	Granuaile	CIL	10	Y	CIL Only	All
7	Type 2-4 Charter	TH	12	N	8	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.47	0.01	0.00	1.48	-16.8%	8.5%	9.4%	-16.6%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.94	-0.02%	N/A	0.00%	0.00%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Charter
Type 2+ Casualties	1.81%	3.64%	1.51%	7.53%	7.59%	3.51%	1.99%
Type 1 Casualties	6.66%	0.00%	0.00%	1.53%	0.00%	1.05%	0.00%
Wrecks and New Dangers	1.56%	3.49%	0.95%	0.78%	0.60%	1.04%	1.79%
Base	34.65%	30.85%	18.33%	34.76%	27.08%	24.33%	27.08%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
10	OWS2	Charter-in for Humber area	Inc. Patricia

Assumptions

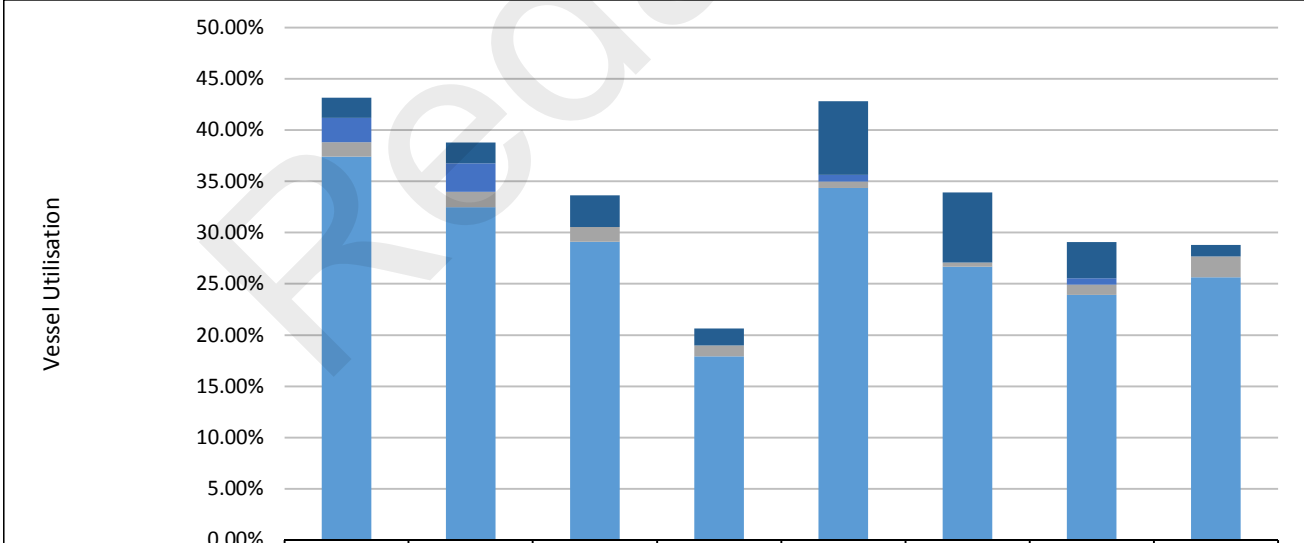
1. Include a contract vessel permanently in the Humber 12 hour response area; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4)
2. Remainder of GLA fleet modelled as per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Pharos	NLB	12	Y	NLB Only	All
6	Pole Star	NLB	10	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8	Type 2-4 Charter	TH	12	N	11-12	All
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.28	0.00	0.00	1.28	-27.7%	-84.1%	-9.4%	-27.9%
Buoy Uptime (%)	T1	99.94	N/A	99.98	99.94	0.00%	N/A	0.00%	0.00%
	T2+	99.99	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£105,713	£72,434	£23,131	£201,278	12.6%	0.0%	0.0%	6.2%



	Patricia	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Charter
Type 2+ Casualties	1.98%	2.03%	3.09%	1.65%	7.20%	6.84%	3.52%	1.11%
Type 1 Casualties	2.36%	2.77%	0.00%	0.00%	0.66%	0.00%	0.62%	0.00%
Wrecks and New Dangers	1.42%	1.49%	1.45%	1.08%	0.61%	0.41%	1.01%	2.03%
Base	37.41%	32.48%	29.10%	17.92%	34.35%	26.67%	23.92%	25.64%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
10	OWS2	Charter-in for Humber area	Patricia Removed

Assumptions

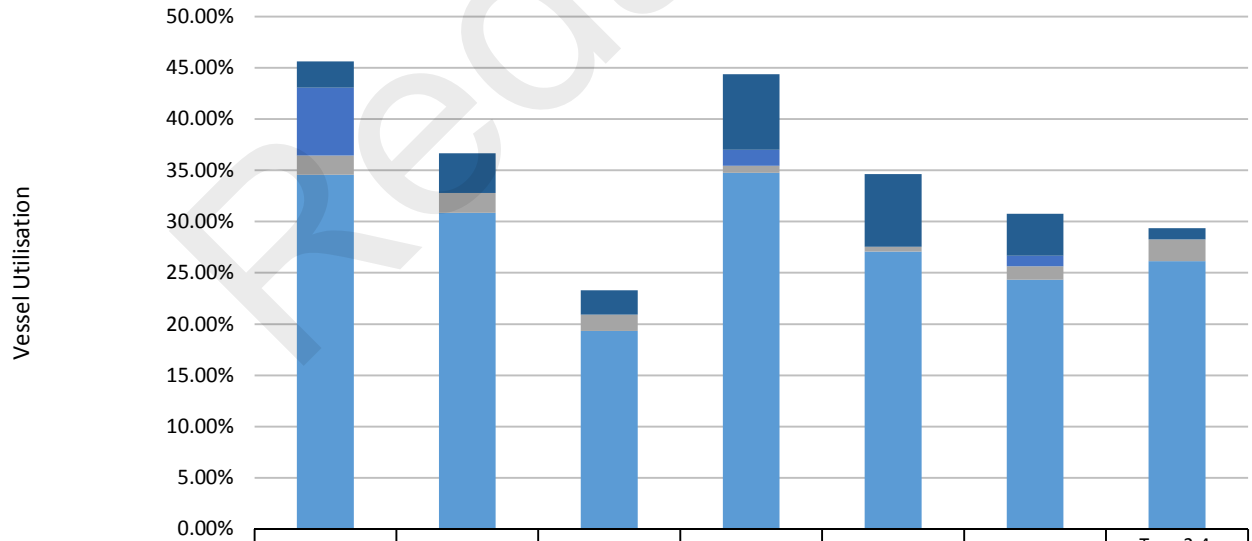
1. Include a contract vessel permanently in the Humber 12 hour response area; primary tasking for emergency response; secondary tasking for routine AtoN maintenance (Types 2-4)
2. Remainder of GLA fleet modelled as per BL 1

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	TH Only	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	Pharos	NLB	12	Y	NLB Only	All
5	Pole Star	NLB	10	N	NLB Only	All
6	Granuaile	CIL	10	Y	CIL Only	All
7	Type 2-4 Charter	TH	12	N	11-12	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.84	0.00	0.00	1.84	4.2%	-83.8%	55.6%	3.8%
Buoy Uptime (%)	T1	99.92	N/A	99.97	99.94	-0.02%	N/A	0.00%	0.00%
	T2+	99.98	99.94	99.97	99.97	0.00%	0.00%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Galatea	Alert	Mair	Pharos	Pole Star	Granuaile	Type 2-4 Charter
Type 2+ Casualties	2.57%	3.85%	2.36%	7.37%	7.11%	4.07%	1.11%
Type 1 Casualties	6.60%	0.00%	0.00%	1.56%	0.00%	1.03%	0.00%
Wrecks and New Dangers	1.87%	1.95%	1.59%	0.68%	0.45%	1.32%	2.12%
Base	34.58%	30.85%	19.35%	34.76%	27.08%	24.33%	26.13%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
13	OWS5	Charter-in Helo Support Platform	Inc. Patricia

Assumptions

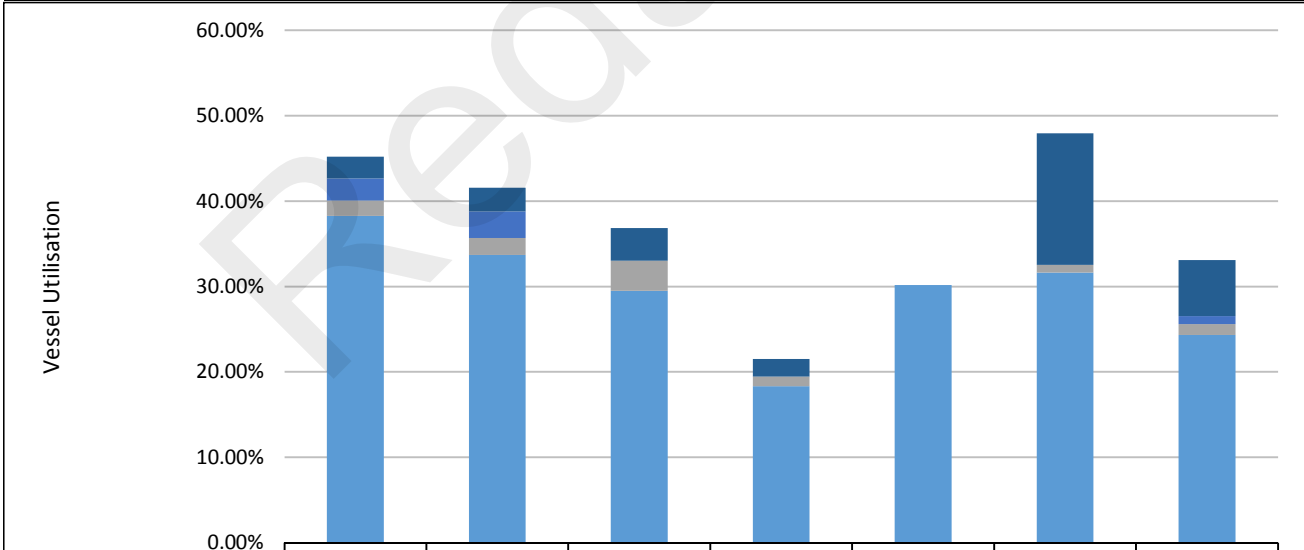
1. Modelling of GLA vessels to be as per BL 1 - except Pharos which is to be removed from model
2. Include a contract vessel in Pharos' place, on contract for number of days for which helo is allocated per tri-service helo contract. This vessel will not respond to wrecks or casualties.

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Patricia	TH	12	Y	TH Only	All
2	Galatea	TH	12	Y	TH Only	All
3	Alert	TH	12	N	10	All
4	Mair	TH	9	N	11-14	All
5	Helo Contract Vessel	NLB	12	N	NLB Only	None
6	Pole Star	NLB	12	N	NLB Only	All
7	Granuaile	CIL	10	Y	CIL Only	All
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		1.84	0.02	0.01	1.86	4.4%	70.6%	>100%	5.0%
Buoy Uptime (%)	T1	99.94	N/A	99.97	99.94	0.00%	N/A	0.00%	0.00%
	T2+	99.98	99.93	99.97	99.97	0.00%	-0.01%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		£93,920	£74,006	£23,131	£191,058	0.0%	2.2%	0.0%	0.8%



	Patricia	Galatea	Alert	Mair	Helo Contract Vessel	Pole Star	Granuaile
Type 2+ Casualties	2.55%	2.75%	3.83%	2.04%	0.00%	15.38%	6.55%
Type 1 Casualties	2.57%	3.12%	0.00%	0.00%	0.00%	0.00%	0.94%
Wrecks and New Dangers	1.80%	2.00%	3.49%	1.14%	0.00%	0.90%	1.28%
Base	38.26%	33.68%	29.51%	18.33%	30.18%	31.64%	24.33%

MODELLING INPUT & OUTPUT

SRL. No	Name	Description	Variation
13	OWS5	Charter-in Helo Support Platform	Patricia Removed

Assumptions

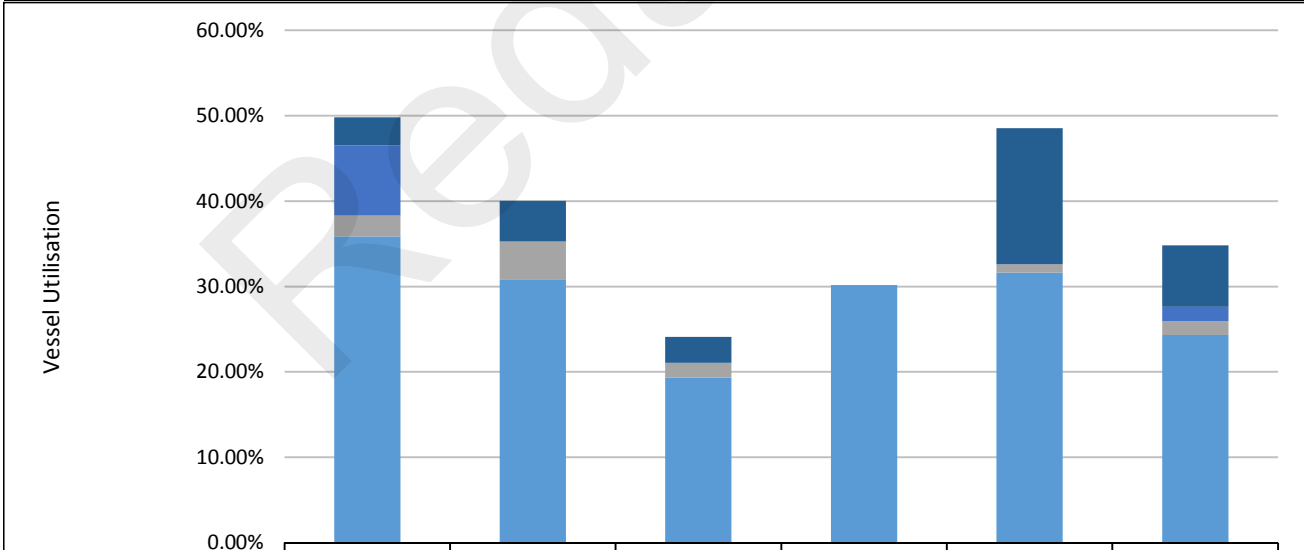
1. Modelling of GLA vessels to be as per BL 1 - except Pharos which is to be removed from model
2. Include a contract vessel in Pharos' place, on contract for number of days for which helo is allocated per tri-service helo contract. This vessel will not respond to wrecks or casualties.

INPUT

Vessel	Name	GLA	Speed	T1 Capable?	Routine Areas	Wreck & Cslt. Response Areas
1	Galatea	TH	12	Y	TH Only	All
2	Alert	TH	12	N	10	All
3	Mair	TH	9	N	11-14	All
4	Helo Contract Vessel	NLB	12	N	NLB Only	None
5	Pole Star	NLB	12	N	NLB Only	All
6	Granuaile	CIL	10	Y	CIL Only	All
7						
8						
9						
10						
11						
12						

OUTPUT

		Absolute				Change from BL1			
		TH	NLB	CIL	Overall	TH	NLB	CIL	Overall
Responses outside RRC p.a.		2.58	0.02	0.01	2.61	46.6%	83.5%	>100%	47.1%
Buoy Uptime (%)	T1	99.91	N/A	99.97	99.94	-0.03%	N/A	-0.01%	0.00%
	T2+	99.98	99.93	99.97	99.97	0.00%	-0.01%	0.00%	0.00%
10 Year Fleet Spend (GBP 000's)		N/A							



	Galatea	Alert	Mair	Helo Contract Vessel	Pole Star	Granuaile
Type 2+ Casualties	3.32%	4.79%	3.03%	0.00%	15.89%	7.21%
Type 1 Casualties	8.20%	0.00%	0.00%	0.00%	0.00%	1.66%
Wrecks and New Dangers	2.41%	4.40%	1.72%	0.00%	0.98%	1.62%
Base	35.88%	30.85%	19.35%	30.18%	31.64%	24.33%

APPENDIX 12 - ANALYSIS OF AREAS FOR FURTHER ASSESSMENT

Risk Cost Overview

The relative change in risk and cost from the baseline case (BL1) for each of the fleet constructs examined is represented in the Boston Matrix shown in Figure A10.1. The two 'Output Based' fleet constructs, VNC8A and B, are shown to bring the highest reduction in both risk and cost.

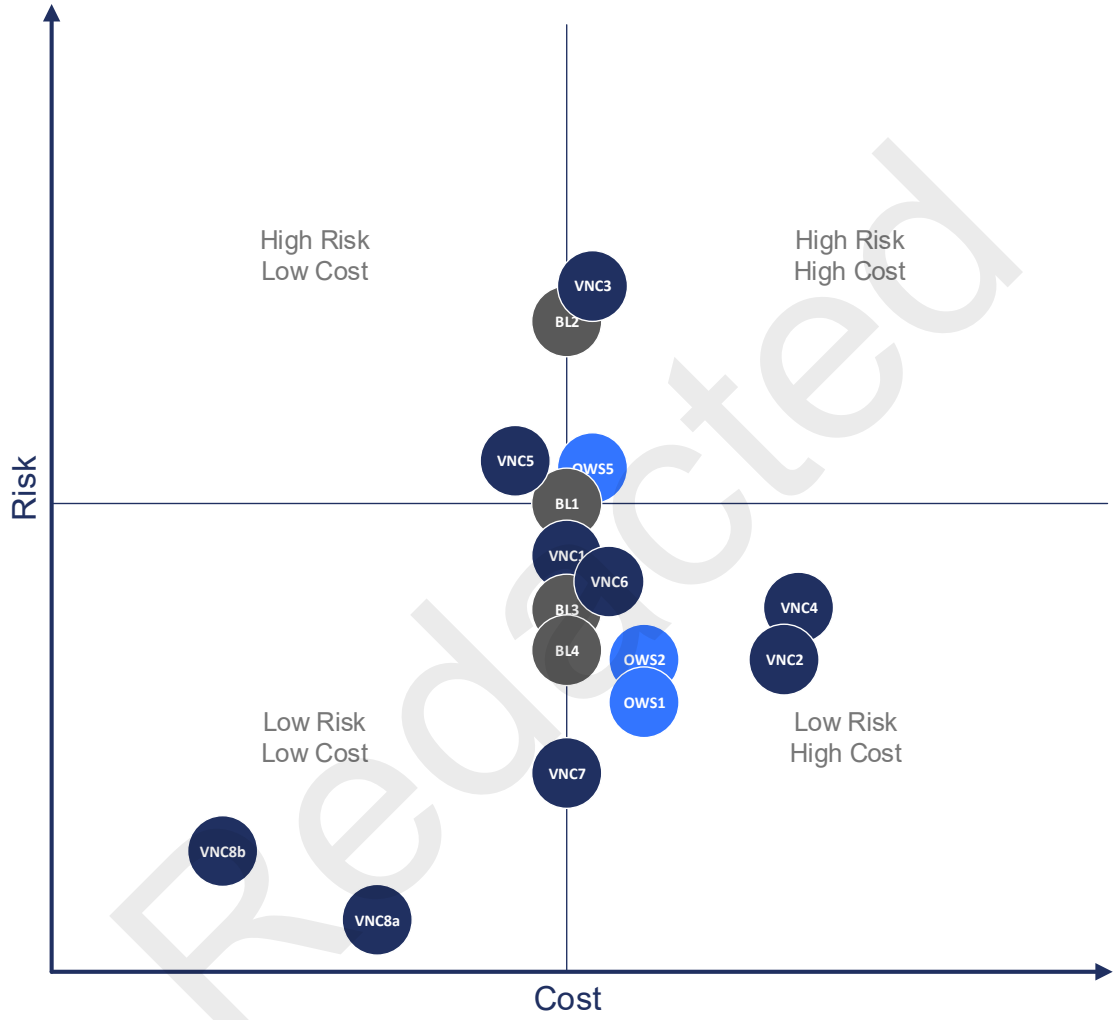


Figure A10.1: Boston matrix showing relative change in risk and cost from the baseline case for each area for further assessment

Operational Risk

Figure A10.2 shows the number of wreck and new danger responses expected to be outside the assigned RRC per annum for each of the sensitivities analysed. It is clear that the risk carried by TH in all cases is significantly greater than that carried by either CIL or NLB. This is the case to such an extent that the overall risk carried by the three organisations is effectively that carried by TH.

The two sensitivities which resulted in the highest operational risk, BL2 and VNC3, highlight two important drivers for the fleet. The first is to maintain strong integration

between the three GLAs, as demonstrated in BL2 where the risk increases for all parties when cross-boundary operations cease. The second displayed the importance of effective programming, specifically that a vessel must always be located in GLA sea area 10 (Thames and Dover) to mitigate the risk in the 6 hour RRC response area. The sensitivity in question, VNC3, involved replacing Alert and Patricia with two MANTs however only one of these was programmed in both areas 9 and 10, resulting in the increased operational risk.

The sensitivities which resulted in the lowest operational risk were those that involved integrated programming of the fleet. Namely VNC7 in which any GLA vessel of the existing fleet could operate in any area for routine maintenance, namely an integrated approach to programming the existing fleet. This sensitivity was key to developing the 'Output Based Integrated Operations' solution of VNC8a and VNC8b.

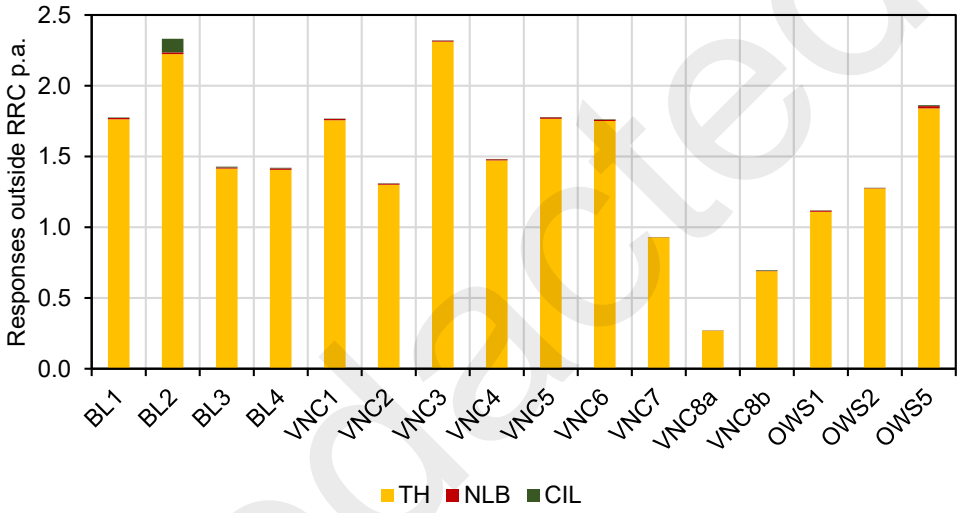


Figure A10.2: Responses to wrecks and new dangers outside the Risk Response Criteria per annum

AtoN Buoy Availability

Figure A10.3 below shows the availability of the GLA's inventory of AtoN buoys over a one year period.

The availability of all buoys (Type 1 & Types 2-4) exceeds the IALA requirements in all cases modelled. The requirements are 99.8%, 99.0% and 97.0% for Category 1, 2 and 3 AtoN respectively, where Category 1 is assigned to buoys of the highest navigational importance. Due to the large number of aids to navigation deployed by the three GLAs it would be highly unlikely that any of them fail to meet these criteria. However, it is clear that from a navigational safety point of view it is vital that AtoN casualties are responded to in a timely manner.

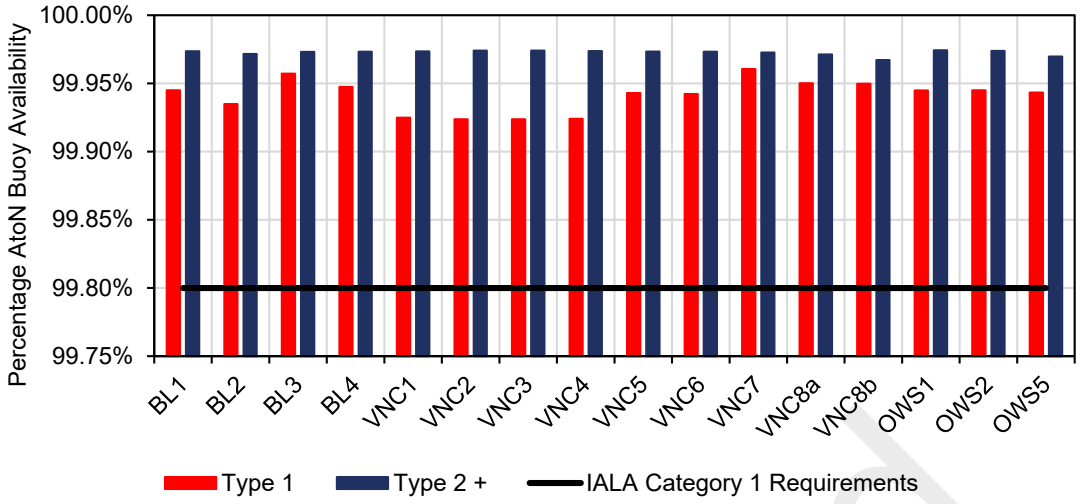


Figure A10.3: Percentage AtoN buoy availability against IALA Category 1 Requirements

Fleet Costs

The fleet costs are presented in Figure A10.4 as the change in ten year fleet spend from BL1. Since the baseline case includes no new vessel procurement, the result is that most sensitivities show an increase in cost. One exception is VNC5, replacement of Pharos with a helicopter capable MANT. The others are the two variations of VNC8 in which a core fleet of four GLA vessels is supported by commercial arrangements.

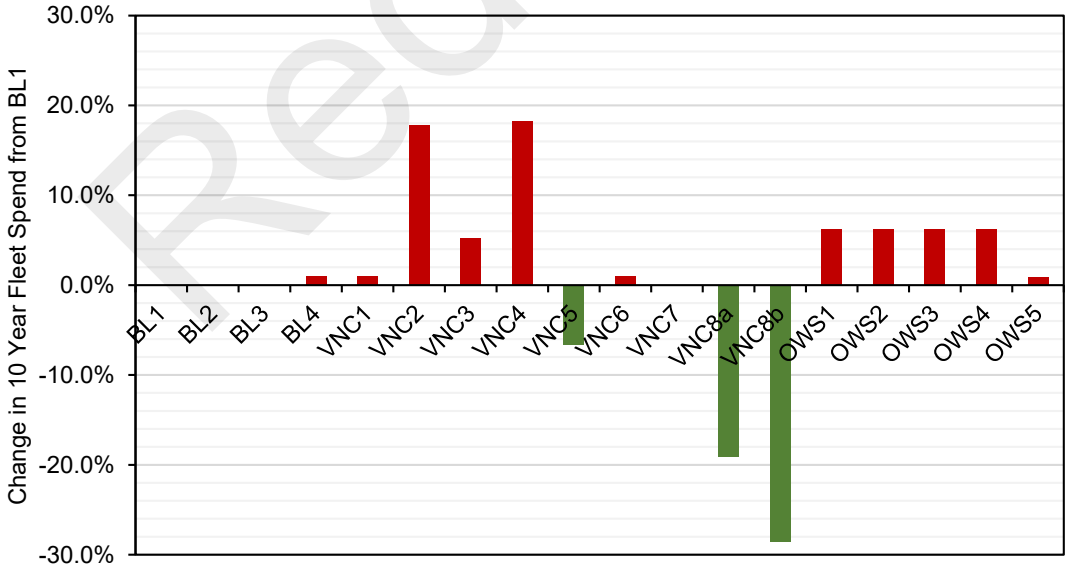


Figure A10.4: Percentage change in 10 year fleet spend in each area for further assessment from baseline case

Since the financial model was developed to determine the cost of different fleet constructs in terms of vessel number, capability and ownership, the operational management sensitivities were assessed separately. Table A10.1 presents an

estimated cost or saving of each aspect of the operational management that was examined over the ten year review period. . It should be stressed that these figures are rough order of magnitude and are based on the assumptions listed in Appendix 2.

Serial	Name	(Cost)/Saving	Appendix 2 Assumption Ref.
OM1	Central 24/7 AtoN Monitoring	£0.53m	AFM24
OM2	Seasonality	(£6.28m)	AFM25
OM3	24/7 Operations	(£16.19m)	AFM26
OM4	Manning and Rostering	Not quantified	-
OM5	Centralised Crewing	Not quantified	-
OM6	Combined Procurement	£1.81m[1]	AFM28
OM7-9	Centralised Ship Management	Not quantified	-

Table A10.1: 10 year (cost)/saving of Operational Management sensitivities

[1] £500k is ascribed to an improvement in 3rd party spend and £1.31M to a reduced cost base (assuming a loaded staff cost of £32,825 p.a.)

APPENDIX 13 - FLEET OUTCOMES IMPLEMENTATION TIMELINES AND COST PROFILE

The following implementation timelines and resulting ten year cost profiles are indicative of the process that may be taken to reach each potential fleet outcome.

Maintaining Existing Fleet Construct

Fleet Outcome 1

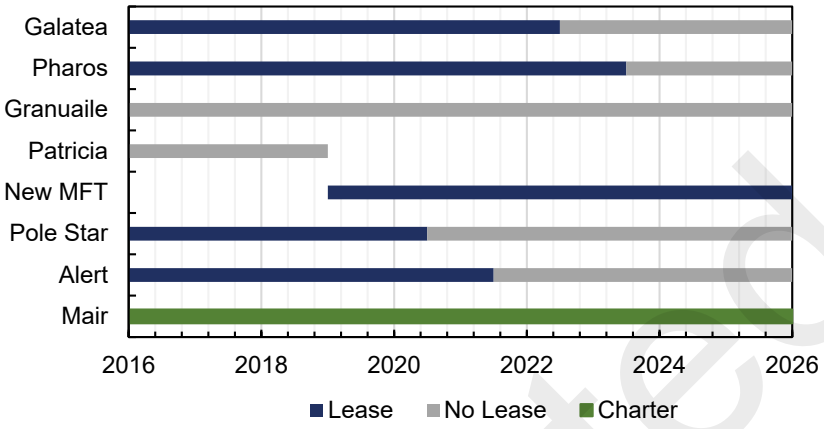


Figure A12.1: Implementation timeline for Fleet Outcome 1

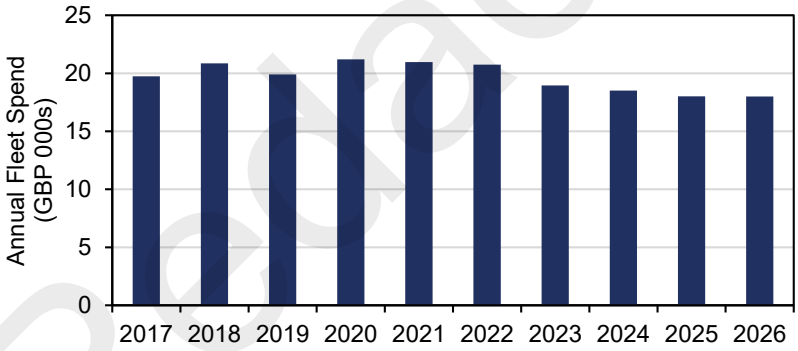


Figure A12.2: Ten year cost profile for Fleet Outcome 1

Minimising Fleet Spend

Fleet Outcome 2

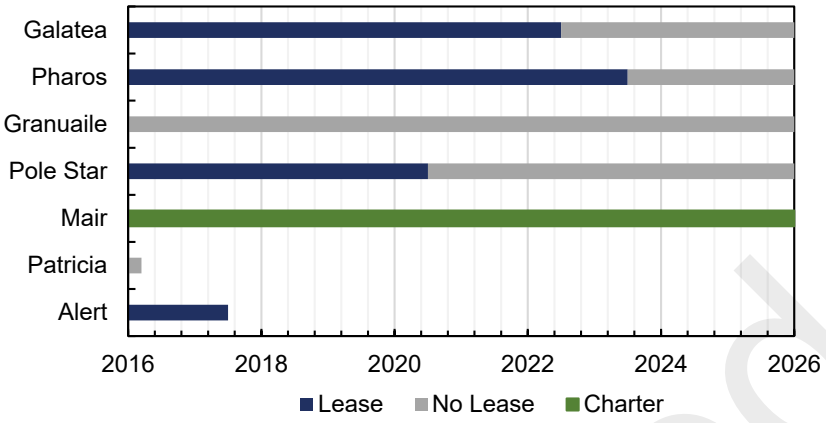


Figure A12.3: Implementation timeline for Fleet Outcome 2

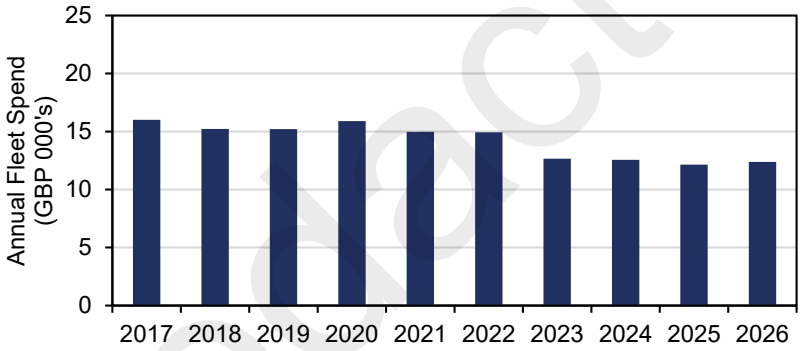


Figure A12.4: Ten year cost profile for Fleet Outcome 2

Fleet Outcome 3A

Note that the implementation timeline and ten year cost profile has not been included for Fleet Outcome 3B due to the flexibility of the dates at which Alert may, or may not, be replaced by a time-charter.

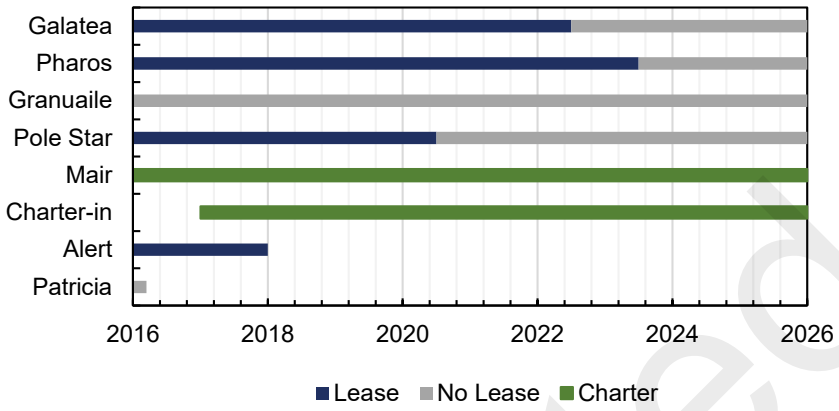


Figure A12.5: Implementation timeline for Fleet Outcome 3A

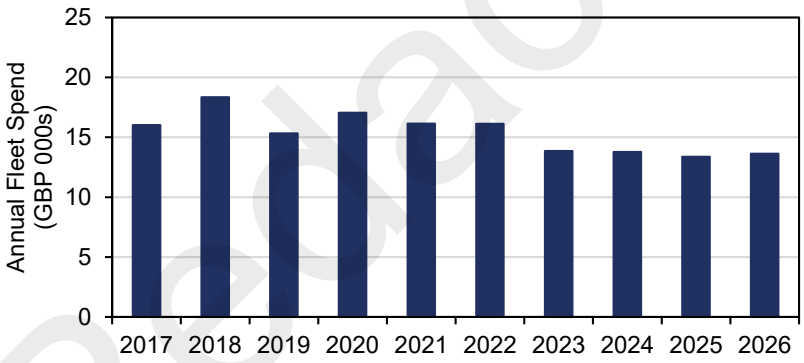


Figure A12.6: Ten year cost profile for Fleet Outcome 3A

Cautious Approach

Fleet Outcome 4

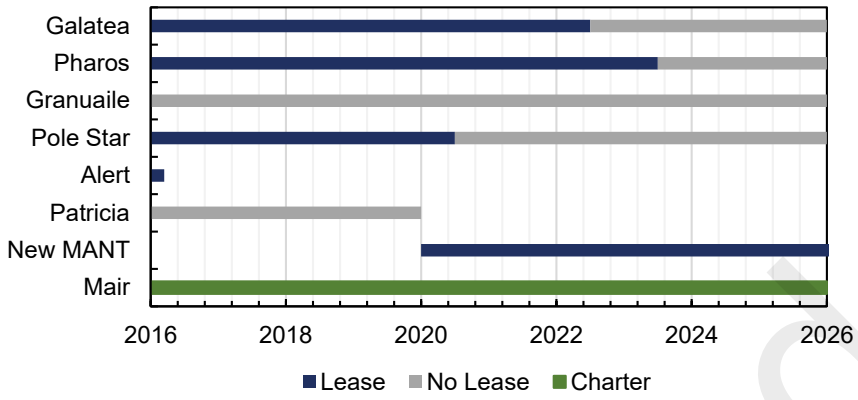


Figure A12.7: Implementation timeline for Fleet Outcome 4

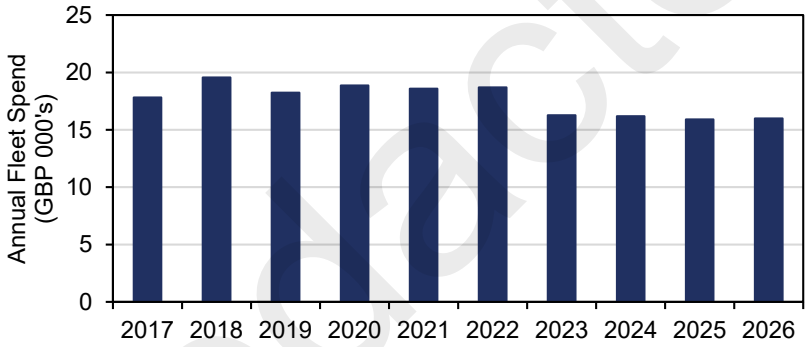


Figure A12.8: Ten year cost profile for Fleet Outcome 4

Fleet Outcome 5

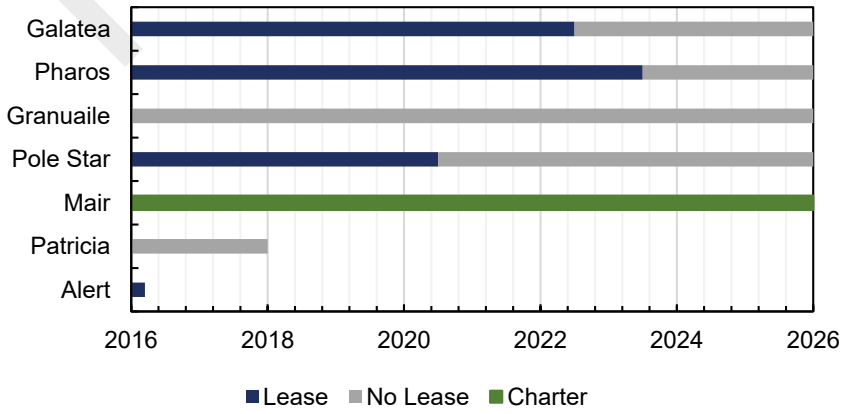


Figure A12.9: Implementation timeline for Fleet Outcome 5

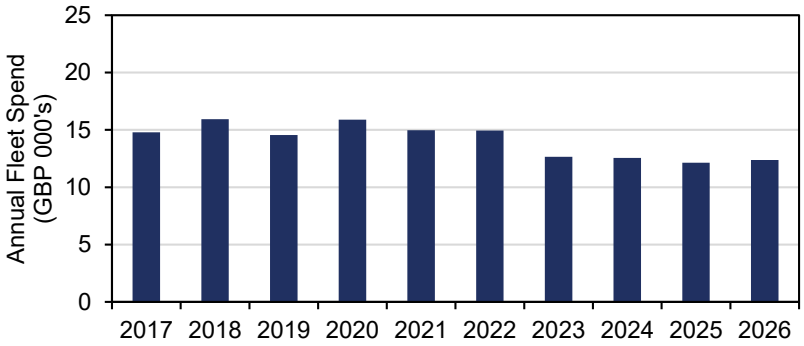


Figure A12.10: Ten year cost profile for Fleet Outcome 5

APPENDIX 14 - FINANCIAL MODELLING OF FLEET OUTCOMES

GLA Fleet Review

Financial Modelling Outputs for Fleet Outcomes

HOULDER

FLEET OUTCOME 1 "4+1+2"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*	3,029	3,629	3,029								**9,687**
TH	Sell Patricia						- 640							- **640**
TH	New MFT						4,665	4,665	4,665	5,385	4,665	4,965	4,665	**33,673**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*	1,508	1,283	1,663	1,283	1,333	1,138	913	1,293	913	963	**12,290**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*19,543*	*19,587*	19,745	20,851	19,903	21,202	20,965	20,739	18,954	18,514	18,019	18,006	**196,899**

FLEET OUTCOME 2 "3+1+1"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*											-
TH	Sell Patricia			- 701										- **701**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*	1,508										**1,508**
TH	Sell Alert				- 719									- **719**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*16,514*	*19,587*	16,015	15,220	15,211	15,894	14,968	14,937	12,656	12,556	12,141	12,379	*141,977*

FLEET OUTCOME 3A "3+1+1"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*											-
TH	Sell Patricia			- 701										- **701**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*	1,508	1,283									**2,791**
TH	Sell Alert					- 1,023								- **1,023**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
TH	Charter-in Solent				1,122	1,138	1,154	1,170	1,186	1,203	1,220	1,237	1,255	**10,685**
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*16,514*	*19,587*	16,015	18,344	15,325	17,048	16,137	16,123	13,859	13,776	13,379	13,634	**153,641**

FLEET OUTCOME 3B "3+1+1"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*											-
TH	Sell Patricia			- 701										- **701**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*	1,508	1,283	1,663	1,283	1,333	1,138	913	1,293	913	963	**12,290**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*16,514*	*19,587*	16,015	17,222	16,874	17,177	16,301	16,075	13,569	13,849	13,054	13,342	**153,478**

FLEET OUTCOME 4 "3+2+1"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*	3,029	3,629	3,029								**9,687**
TH	Sell Patricia						- 640							- **640**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*											-
TH	Sell Alert			- 417										- **417**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
TH	New MANT						3,616	3,616	3,766	3,616	3,626	3,766	3,616	**25,619**
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*19,543*	*19,587*	17,819	19,568	18,240	18,870	18,583	18,702	16,272	16,182	15,907	15,994	**176,138**

FLEET OUTCOME 5 "3+1+1"

GLA	Vessel	*2015*	*2016*	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2017-2026
TH	Patricia	*3,029*	*3,329*	3,029	3,629									**6,658**
TH	Sell Patricia					- 659								- **659**
TH	Galatea	*4,524*	*4,524*	4,524	5,244	4,524	4,824	4,524	4,524	3,064	3,784	3,064	3,364	**41,440**
TH	Alert	*1,283*	*1,333*											
TH	Sell Alert			- 417										- **417**
TH	Mair	*531*	*547*	563	580	598	616	634	653	673	693	714	735	**6,458**
TH	Charter-in Solent													-
NLB	Pharos	*4,389*	*4,582*	5,062	4,649	4,673	4,717	4,817	5,167	3,952	3,187	3,187	3,287	**42,700**
NLB	Pole Star	*2,727*	*3,214*	2,928	2,970	3,286	3,023	2,862	2,462	2,472	2,762	2,462	2,862	**28,087**
CIL	Granuaile	*3,060*	*2,058*	2,131	2,496	2,131	2,715	2,131	2,131	2,496	2,131	2,715	2,131	**23,204**
Fleet Spend		*16,514*	*19,587*	17,819	19,568	14,551	15,894	14,968	14,937	12,656	12,556	12,141	12,379	**147,470**