



**Consultancy Services to Support Review of the
Irish National SAR Framework
National SAR Plan Analysis Report**

FNC 60231/48761R Issue 6 - Final

**Prepared for the Department of Transport, Tourism and
Sport for Ireland**

SYSTEMS AND ENGINEERING TECHNOLOGY

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Compiled By : Rowan Greenwood

Verified By : Jim McLeod

Approved By : Mick Warren

Signed : *File copy signed*

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Originating Office: FRAZER-NASH CONSULTANCY LIMITED
The Cube, 1 Lower Lamb Street, Bristol, BS1 5UD
T: +44 (0)117 9226242 F: +44 (0)117 9468924 W: www.fnc.co.uk

EXECUTIVE SUMMARY

This report summarises the analysis conducted by Frazer-Nash Consultancy Ltd (Frazer-Nash) in its review of the current Search and Rescue (SAR) system in Ireland and makes recommendations for the changes required to deliver an improved and robust National Search and Rescue Plan (NSP) for Ireland.

The proposed NSP has been developed from the extant Irish National Maritime SAR Framework document amended, where deemed necessary, to address the recommendations of the AQE report on its 'Review of the Oversight of Search and Rescue Aviation Operations in Ireland'¹. Frazer-Nash has liaised with other nations to draw on international experience, reviewing the current strengths and potential weaknesses of changes to the system and ultimately aiming to set the standard for international best practise, against which other nations could potentially measure their own system and future developments.

The Irish National SAR system consists of many varied stakeholder organisations, each with their individual histories, personnel and procedures, which can potentially result in a number of confusing and contradictory vocabularies and definitions, resulting in there being no common 'language' across the system. A common taxonomy of frequently used terms, definitions and abbreviations was established and agreed to establish a consistent understanding across the stakeholders, and is recommended for use by all SAR stakeholders when constructing documents in support of the NSP.

The standards and recommended practices for SAR have their foundation in the International Civil Aviation Organisation (ICAO) and the International Maritime Organisation (IMO), and their respective documents (Annex 12 to the Convention on Civil Aviation, Search and Rescue, and the International Aeronautical Search and Rescue (IAMSAR) Manual). These documents cover aeronautical and maritime SAR matters but do not extend to land SAR, therefore there is an opportunity for improvement to develop the national SAR system to offer strategic guidance for SAR over land, sea and air.

Following the review of SAR framework documents from Cyprus, Denmark, Iceland, Ireland, New Zealand and the UK it was noted that no single consistent model had been used to establish a document structure. To re-baseline the Irish framework against first principles it is recommended that the IAMSAR Manual is used to establish the baseline and develop an appropriate structure. All references to SAR system requirements should be made against the IAMSAR Manual and then developed as appropriate. Developments over the past few decades have taken an organisational oversight function from a simple quality system through human factors considerations and threat and error management to the introduction of Safety Management Systems (SMS) in preparation for a performance-based oversight environment. The introduction of a SAR assurance system may take time to become fully effective and mature but the new NSP introduces robust concepts of strategic, tactical and operational levels of control and defines the inter-entity responsibilities and expectations of SAR assets. This concept must achieve the balance of maintaining the vital good will of volunteer organisations to exercise their skills and operational functions within robust legal guidelines on achieving a declared asset status through demonstrating competencies of those involved and the appropriate published procedures. A national SAR register will therefore define the resources available to the State and the responsibilities of those requesting a SAR asset to exercise its SAR function while maintaining competent standards. Service level agreements and memoranda of understanding should be reviewed and updated as appropriate.

In addition to defining and maintaining strategic SAR policy, the Irish Aeronautical and Maritime Emergency Advisory Committee (IAMEAC) should be reinvigorated to manage the content of the NSP and the requirements for oversight and standardisation. To recognise the change of focus, the committee should be renamed the 'National SAR Committee', and it should be formed from representatives at the appropriate level of the SAR stakeholders. It is recommended that the post of Chair should be a rotational post, rotated between the assistant secretaries for marine and aviation and a senior representative from An Garda Síochána (AGS).

¹ [AQE - Review of the Oversight of Search and Rescue \(SAR\) Aviation Operations in Ireland, Final Report V15 \(not dated\)](#).



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1. FOREWORD

Search and rescue (SAR) is a national obligation arising from a state's signature of various international treaties and conventions, and the provision of a SAR system is vital in maintaining the safety of life of the residents of that state and its visitors. The requirement for the national government to issue strategic guidance to ensure that the SAR system is appropriate to the scale and complexity of that nation's rescue and recovery requirements is therefore a fundamental element in achieving and maintaining these commitments.

Regular updates of the national SAR system are essential, and this review of the National SAR Plan (NSP) is an important step in demonstrating Ireland's commitment to continuous improvement in this demanding and often hostile environment and aims to set the standard in achieving international best practise.

This report details the analysis and methodology conducted and outlines findings and recommendations as appropriate.

1.1 INTRODUCTION

This document reviews six national SAR frameworks in an attempt to identify international best practise. It reviews and updates the roles and responsibilities of the SAR stakeholders in Ireland and ultimately makes recommendations to the SAR Framework Review Group regarding what is required to transition to the next stage; in a demanding environment which requires the demonstration of continuous improvement to maintain the safety and speed of response appropriate to a national SAR system.

The option of the Irish Aviation Authority (IAA) opting-in to the European Aviation Safety Agency (EASA) Basic Regulation for national oversight of SAR will be the subject of a separate working group and review more appropriately chaired by the IAA.

1.2 GLOSSARY

A glossary of SAR definitions and abbreviations has been collated at Annexes A and B to support the review of the Irish National SAR Plan. The glossary establishes a baseline of common understanding at the strategic level, in order to ensure that the Plan is robust, consistent and resilient at all levels.

The definitions have been obtained from various sources including Annex 12 to the Convention on International Aviation [Reference 1], IAMSAR Volume 1 [2], the Irish National Maritime SAR Framework (INMSF) [3], and UK Civil Aviation Publication (CAP) 999 [4].

2. COMPARATIVE GAP ANALYSIS OF EXISTING SAR FRAMEWORK ROLES AGAINST IAMSAR REQUIREMENTS AND BEST PRACTICE MODELS IN OTHER JURISDICTIONS

2.1 INTRODUCTION

A review of the current national SAR system in Ireland was made against two other systems of anticipated similar models, one by data and publications, plus relevant first-hand experience, and the other by a visit of members of the SAR Framework Review Group (SARFReG) to see first-hand how another system works having been recently been through a national review.

2.2 SUMMARY OF SCALE AND COMPLEXITY OF STATE SAR SYSTEM

2.2.1 IRELAND

2.1.1.1 The Irish Coast Guard (IRCG) is a Division of the Department of Transport Tourism and Sport (DTTAS), and is not a legal entity in its own right. The IRCG operates three Rescue Coordination Centres (RCCs) that are staffed on a 24/7 basis as follows:

- ▶ Maritime Rescue Coordination Centre (MRCC) Dublin;
- ▶ Maritime Rescue Sub-Centre (MRSC) Valentia; and,
- ▶ MRSC Malin.

Each of the RCCs has a defined geographical area of responsibility that extends overland and incorporates all designated activities that occur within that geographic area. This includes a defined relationship with a Coast Guard (CG) helicopter Base or Bases, which means that a Base is tasked by a specific RCC.

2.1.1.2 The CG is responsible for the provision, maintenance and operation of a nationwide radio network operating in the Very High Frequency (VHF), High Frequency (HF) and Medium Frequency (MF) bands.

- ▶ Each VHF station is operated by one of the three RCCs and their operation is transferable within the three RCCs;
- ▶ MF and HF aerial sites are situated at the following locations:
 - ▶ Valentia Coast Guard MRSC on site; and,
 - ▶ Malin Head Coast Guard MRSC on site, with a remote HF radio site at Belmullet.

The HF Radio Network is currently being upgraded which will result in an additional site at Rosslare being upgraded. The IRCG HF Network configuration nationally will then be interoperable from any one RCC location.

2.1.1.3 The three RCCs are responsible inter alia for the following outputs:

- ▶ SAR Coordination;
- ▶ Provision of SAR Services (See 1.3.3 of SAR Convention);
- ▶ Search and Recovery Coordination;
- ▶ Provision of Coastal Radio Station services;
- ▶ CG Helicopter Tasking for SAR and selected Commercial Air Transport (CAT) services such as Helicopter Emergency Medical Services HEMS / Air Ambulance (AA);

- ▶ Coordination of third-party support to SAR helicopters, such as Fixed Wing TOP COVER or third party national or international support;
- ▶ Act as a Single Point of Contact (SPOC) to the Mission Control Centre (MCC) for the Irish Search and Rescue Region (SRR) with regard to alerts from Emergency Position-Indicating Radio Beacon (EPIRB), Personal Locator Beacon (PLB) or Emergency Locator Transmitter (ELT);
- ▶ Ship Casualty Pollution Response coordination including Port of Refuge coordination; and,
- ▶ Monitoring and recording all Coast Guard Unit activities including SAR Incident response, training, exercises and administration.

2.1.1.4 IRCG is the tasking authority for all CG helicopter operations. Arrangements governing tasking of helicopters are prescribed in a document entitled Standard Operating Procedures (SOP) which is a joint IRCG/CHC Helicopters (CHCI) publication. This SOP is augmented by SAR Ops Notices which are instructions that address specific SAR scenarios, such as MEDEVAC, TOP COVER, HEMS etc. These documents have been circulated to the Joint RCC (JRCC) Working Group.

IRCG Helicopter services are provided under contract and operate out of four Bases with day and night availability. Flight crews are rostered for 24 hr shift patterns consisting of 15 minutes notice by day and 45 minutes notice by night.

Each SAR helicopter base is directly tasked by a specific (named) RCC, as prescribed in the helicopter Ops SOP, and cannot be tasked by any other RCC unless prior permission is obtained from the designated RCC. The Go/No-Go decision is always vested in the Flight Commander. Of note:

- ▶ Flight Commanders are responsible for routine flight planning and Air Traffic Control (ATC) arrangements;
- ▶ Tasking messages are communicated verbally and updated when helicopter is airborne. Upon tasking the RCC provides advisory information to ATC and requests a special flight forecast – which is emailed directly to all stakeholders. If not received prior to take off it is verbally communicated to the Flight;
- ▶ In-flight comms is maintained via Marine VHF, Tetra and Sat Comms. Flights are tracked via the Automatic Identification System (AIS) or SkyTrax; and,
- ▶ RCCs are responsible for coordination of support services such as Top Cover, Secondary SAR helicopter support, Landing site support, ambulance coordination and other non-standard logistical support arrangements.

Categorisation of SAR missions, as accepted by IAA and CHCI, are defined in the Heli Ops SOP. All other missions are flown under CAT rules. Consequently, CAT Flight Time Limitations (FTLs) are incorporated into the 24 Hr standard shift pattern.

2.1.1.5 Non-SAR Missions are provided on an as-available basis on request to the National Ambulance Service Aviation Desk – referred to as NEOC. NEOC also task Air Corps assets for aero-medical work. NEOC is therefore a separate helicopter tasking agency.

2.1.1.6 An Aeronautical RCC (ARCC) is located at ATC Shannon and an ARCC Sub-Centre (ARSC) is located at ATC Dublin. On receipt of an Aircraft Alert, ARCC/ARSC advise the CG and appropriate SRUs are activated. ARCC retains coordination until the aircraft lands but does not play any role in routine IRCG operations.

If an aircraft accident were to occur at sea the responsibility for SAR would transfer to IRCG. In the case of a land-based accident coordination would transfer to Gardaí.

- 2.1.1.7 IRCG personnel are recruited from either the maritime industry or the Military. All are required to hold qualifications under the convention for the Standards of Training, Certification and Watchkeeping for Seafarers and the majority are Bridge Watchkeepers. They undergo a six-month basic training programme consisting of private study, role understudy at the three RCCs, and a three-week SAR Mission Coordinator (SMC) course at the National Maritime College of Ireland (NMCI). Subject to recommendation they commence duty as RCC watchkeepers after six months. At the end of the six-month period they are eligible to be appointed as SMCs.

Watch leaders, designated as Station Officers (selected by competitive interview) are paid an additional allowance. Within a standard shift cycle all SMC designated Watch Officer carry out all three roles in the RCC on a rolling basis.

All watch officers are required to undergo an SMC refresher course every three years.

Watch Officers undergo Simulator based SMC training in the NMCI and occasionally attend international courses, a process that IRCG wishes to enhance.

- 2.2.1.1 Aviation Training. In 2019 IRCG will be piloting a proposed two-week Aviation Awareness course aimed at all RCC Watch Officers. This course will mirror content included in the Airline Dispatch course with an emphasis on IRCG helicopter Ops. It is envisaged that this course would be registered with, and subject to oversight by, the Irish Aviation Authority (IAA) and be delivered by an Approved Training Organisation.

The NMCI based SMC course is based on International Maritime Organisation (IMO) guidelines and a process for third level recognition has been initiated i.e. Level eight credits.

2.2.2 CANADA

By comparison, the SAR programme in Canada is a Federal programme led by the Minister of National Defence. The SAR program is responsible for developing specialised SAR equipment, supporting the international community and working with other government departments to ensure efficient provision of SAR in Canada.

The role of the Canadian Coast Guard (CCG) is to lead, deliver and maintain preparedness for the maritime component of the SAR program. To ensure that this can be achieved, CCG can call on the following resources:

- ▶ Five Rescue Centres (of which 3 are staffed jointly by CCG and National Defence) which respond to around 7,000 maritime incidents, saving around 2,900 lives per year; and,
- ▶ One hundred and sixteen multitasked vessels, 41 dedicated SAR lifeboats and 4,300 volunteer organisations with an additional 1,200 vessels.

2.2.3 UNITED KINGDOM

Representatives from the SAR Framework Review Group visited the UK National Maritime Operations Centre (NMOC) on 28 March 2019 to gain first-hand experience of how Ireland's nearest neighbour manages its SAR system with its National SAR Plan. Representatives from the Maritime Coastguard Agency (MCA), including the ARCC and MRCC, Civil Aviation Authority (CAA) and the SAR helicopter operator, Bristow Helicopters Ltd briefed on their areas of responsibilities, management overview and inter-entity interactions.

Many factors were involved in the development of the UK SAR Framework. It is worth noting that the UK's historical legacy of providing a SAR service for a large military force led to the establishment of a Distress and Diversion (D&D) cell, separate from the ARCC, to cover

aeronautical SAR responsibilities. The UK ARCC therefore focuses principally on the tasking of aviation assets for SAR purposes: a model that is not directly transferable to the circumstances pertaining to Ireland.

2.3 INTERNATIONAL AERONAUTICAL AND MARITIME SEARCH AND RESCUE MANUAL – SUMMARY

The primary purpose of the IAMSAR Manual is to assist States in meeting their own SAR needs and obligations that they have accepted under the Convention on International Civil Aviation, the International Convention on Maritime Search and Rescue and the International Convention for the Safety of Life at Sea (SOLAS).

The manual is published jointly by the International Civil Aviation Organization (ICAO) and IMO and provide guidelines for a common aviation and maritime approach to the organisation and provision of SAR services.

2.4 INTERNATIONAL STATE SAR FRAMEWORK DOCUMENTATION

National Search and Rescue Plans for the Republic of Cyprus [6], Denmark [7], Iceland [8], New Zealand [9] and the UK [10], along with the extant INMSF [3], were reviewed in support of the Irish SAR Framework Review Group.

None of the documents reviewed were found to follow a standardised structure, nor do they appear to use the IAMSAR Manual as guidance for their framework documents. It cannot therefore be established how much influence the IAMSAR Manual has had on the international stage, but as a co-published document by the UN agencies ICAO and IMO it is considered to be the most robust and effective starting point when constructing a State SAR Framework document with regard to the aeronautical and maritime SAR environments.

The comparison of the IAMSAR structure with other International State SAR documents resulted in the development of the structure for a National SAR Plan recommended at Section 6. This is intended to be a starting point, providing a foundation for Ireland to build upon and then tailor the NSP as relevant to its national SAR system.

3. ROLES AND RESPONSIBILITIES

3.1 GENERAL

The NSP defines the roles and responsibilities of the strategic SAR stakeholders, which in turn cascade to the tactical SAR stakeholders. Generally, operational SAR stakeholders are declared assets to be called upon as appropriate during a SAR tasking. The tactical SAR stakeholders are required to clearly define the operational SAR stakeholders to whom they may make a request to launch, and their working relationships shall be defined in the appropriate published operating manuals with organisational structures in place as necessary.

The definitions of strategic, tactical and operational levels, as relevant to the NSP are:

- ▶ Strategic. The level of management concerned with the strategic and long-term implications of the national and international SAR system, and which establishes the policies and framework within which decisions at the tactical level are taken;
- ▶ Tactical. The level at which SAR operations and training is managed, including issues such as allocation of resources, the procurement of additional resources, if required, and the planning and co-ordination of ongoing operations; and,
- ▶ Operational. The level at which the management of 'hands-on' work is undertaken at the incident site(s) or associated areas.

3.2 GOVERNANCE AND OVERSIGHT

3.2.1 Independent national regulators have legal obligations to determine the minimum applicable legal and safety requirements and to conduct on-going oversight of the relevant entities to ensure that they demonstrate continuous compliance with the published regulations. A similar principle should be applied to the national SAR system regarding the tactical SAR stakeholders who request SAR assets and those operational SAR stakeholders who provide them.

- ▶ Strategic SAR stakeholders are expected to produce a Safety Management System (SMS) or equivalent and demonstrate consideration of, or integration with, the SMS' of tactical and operational SAR stakeholders that they are likely to interact with during SAR training and operations, both nationally and internationally. A training and checking programme shall be developed in line with IAMSAR Vol 1, Chapter 3;
- ▶ Tactical SAR stakeholders are expected to publish 'request to launch' procedures for the declared assets that they are likely to task;
- ▶ Operational SAR stakeholders intending to declare the provision of National SAR assets are expected to publish appropriate training and operational procedures to allow tactical SAR stakeholders to determine the operational capabilities, equipment levels, medical provision and recurrent training requirements appropriate to their SAR environment; they should also:
 - ▶ Publish procedures and techniques in the use of relevant equipment; and,
 - ▶ Develop a safety culture and just reporting culture appropriate to the nature of their SAR environment and publish an annual compliance monitoring programme for auditing purposes.

3.2.2 The introduction and management of a SAR quality assurance system shall initially be controlled through a 'Regulators' Forum' formed to:

- ▶ Determine terms of reference for the group;

- ▶ Establish policy, standards and standing agenda items for discussion between the SAR stakeholders to ensure that a consistent interpretation of the NSP requirement as applicable to each stakeholder is maintained.

3.2.3 The same principle shall be applied to the standard of medical provision across the SAR system, and health and safety matters shall be managed through a health and safety forum. Representatives from all strategic, tactical and operational SAR stakeholders are to be identified to establish, implement and maintain appropriate standards within each organisation.

3.2.4 The SARFReG recently agreed in principle to the development of a national registry of declared SAR assets, which would clearly state the requirements on how to achieve and maintain status as a declared SAR asset.

3.3 STRATEGIC SAR STAKEHOLDER'S ROLES AND RESPONSIBILITIES

The following roles and responsibilities are proposed for Ireland's strategic SAR stakeholders in accordance with the State's National and International SAR obligations.

3.3.1 The Department for Transport, Tourism and Sport

DTTAS is required to establish and maintain the NSP on behalf of the State and delegate the responsibility for search and rescue to the appropriate strategic stakeholders as defined in the NSP.

3.3.2 The Irish Coastguard

The IRCG is required to discharge Ireland's SAR obligations by implementing the NSP for all incidents occurring in the maritime domain, or as otherwise requested by SAR authorities in other domains. The IRCG is responsible for defining the requirements for the SAR helicopter contract and maintaining effective oversight of contractual compliance.

3.3.3 The Irish Aviation Authority

The Safety Regulatory Division (SRD) of the IAA is required to establish, implement and maintain a regulatory framework and oversight programme appropriate to the scale and complexity of the National SAR requirement for civil aviation.

In the absence of EASA regulation for SAR flight operations, the IAA is to establish an equivalent framework to Part-SPA (Subpart SAR) [5], which establishes appropriate guidance and alleviations from EASA regulations to allow SAR operational flights and SAR training flights to operate as a State activity.

The Air Navigation Service Provider (ANSP) of the Operations and Strategy Directorate of the IAA is required to implement the NSP for all aeronautical SAR incidents, operating in accordance with the requirements for an ARCC published in ICAO Annex 12 [1].

3.3.4 An Garda Síochána

As the police and security service for the State of Ireland, AGS is responsible for land-based search and rescue and the coordination of searches and investigations for missing persons. However, it should be noted that IAMSAR Vol 1 Para 2.1.3 states that *"local government authorities and police would typically have the responsibility for land SAR and may not involve an RCC. However, the national SAR system should have arrangements in place for coordination with local authorities for land SAR response, as appropriate"*.

3.3.5 The National SAR Committee

The National SAR Committee is required to advise on Irish strategic SAR policy, and to advise the Minister for Transport, Tourism and Sport on SAR matters as required.

The IAMSAR Manual states (at Vol 1 Para 6.4.3) that SAR coordinating committees would “*improve cooperation among aeronautical, maritime and land SAR communities.*” Therefore, when developed and agreed, the integration of AGS roles and responsibilities for land SAR should be added and clarified for robust integration into the Irish SAR system.

3.4 TACTICAL SAR STAKEHOLDER’S ROLES AND RESPONSIBILITIES

The following roles and responsibilities are proposed for Ireland’s tactical SAR stakeholders with regard to the roles and responsibilities proposed at the strategic level above.

3.4.1 Civil Defence

As a national organisation that includes a Local Authority Structure, Civil Defence is required to provide support and assistance to the primary emergency services and local communities, particularly in times of emergency or distress. Their responsibilities are to operate in accordance with the NSP and the organisation’s published operating procedures.

3.4.2 Community Rescue Boats of Ireland

Community Rescue Boats of Ireland (CRBI) is as a community-based volunteer inshore rescue boat service that has declared its facilities to the IRCG. It is required to operate in accordance with the National SAR Plan and the organisation’s published operating procedures and maintain operating and training standards appropriate to a nationally declared SAR resource.

3.4.3 Defence Force

The Irish Department of Defence has agreed to make its resources available to the SAR Authority within the terms of a Service Level Agreement (SLA). The full range of the services provided to the IRCG under this agreement is contained within an Annex to the NSP. The Defence Forces will also provide Critical Incident Stress Management services to IRCG personnel on request.

3.4.4 Fire Services

The Dublin Fire Brigade has declared its Marine Emergency Fire capability to IRCG. When required to respond, the Brigade should operate in accordance with the NSP and its published operating procedures and maintain sufficient trained personnel to provide two teams of six firefighters ready to respond to fires in a marine environment at any time.

3.4.5 Health Service Executive

The Health Service Executive (HSE) of Ireland is required to operate the ambulance service and manage pre-hospital emergency and intermediate care in Ireland. When applicable, it is required to operate in accordance with the NSP and the HSE’s published procedures.

3.4.6 Irish Cave Rescue Organisation

The Irish Cave Rescue Organisation is a volunteer organisation that has declared itself available to provide cave rescue services throughout Ireland. It is required to develop and maintain operating and training standards appropriate to a nationally declared SAR resource and, when required to respond, to operate in accordance with its published procedures and the NSP.

3.4.7 Irish Mountain Rescue Association

The Irish Mountain Rescue Association is a volunteer organisation comprising specialist teams trained in the provision of mountain rescue services throughout the country. It is required to develop and maintain operating and training standards appropriate to a nationally declared SAR resource and, when required to respond, to operate in accordance with its published procedures and the NSP.

3.4.8 Medico Cork

Medico Cork is the national medical centre for Ireland responsible for dealing with medical emergencies at sea. Medico Cork is required to operate in accordance with the NSP and, as part of the HSE, in accordance with the HSE's published operating procedures.

3.4.9 Royal National Lifeboat Institution

The Royal National Lifeboat Institution (RNLI) is both a voluntary and charitable organisation that provides assets and services dedicated to the purpose of saving lives at sea and, in some circumstances, on inland waters.

The RNLI's responsibilities are to operate in accordance with the NSP and the RNLI's published operating procedures, and to maintain operating and training standards appropriate to a nationally declared SAR resource.

3.4.10 SAR Helicopter Operator

The SAR helicopter operator shall at all times comply with the requirements for SAR operations and training within the IRCG contract and the requirements for civil SAR published by the IAA SRD.

3.4.11 Additional Resources

In addition to the tactical SAR stakeholders listed above additional support for SAR operations and training can be called upon from the following to support declared SAR assets when available and when appropriate:

- ▶ Craft of convenience;
- ▶ Harbour Authorities;
- ▶ Irish Lights; and,
- ▶ Local Authorities Provision of Lifeguard Services.

4. RECOMMENDATIONS TO THE SAR FRAMEWORK REVIEW GROUP

As a result of our independent review, 13 recommendations are submitted in Table 1 in order to demonstrate continuous improvement and update the robustness of the NSP:

No.	Recommendation	Action Office	Status
1	The IAMSAR manual refers to SAR plans as documents which exist at all levels of the national SAR structure to describe goals, arrangements and procedures which support the provision of SAR services. The Irish SAR Framework document should accordingly be renamed as the National SAR Plan to reflect the aeronautical, maritime and land SAR environments.	DTTAS	Closed. This has been incorporated into the National SAR Plan.
2	The new National SAR Plan should follow the structure recommended at Section 5.	DTTAS	Closed. This has been incorporated into the National SAR Plan.
3	A national registry of declared SAR assets should be developed which clearly states the requirements on how to achieve and maintain declared status.	DTTAS	To be addressed as part of NSP Implementation Plan.
4	The roles and responsibilities of SAR stakeholders at all levels should be reviewed to inform the development of the NSP (particularly with regard to ensuring that the list of stakeholders is fully populated).	DTTAS	Closed. This has been incorporated into the National SAR Plan.
5	The NSP should be further developed to include detailed and uniform descriptions of SAR assets, support services and oversight arrangements.	DTTAS / all strategic SAR stakeholders	To be addressed as part of NSP Implementation Plan.
6	A review of the draft NSP should be conducted against the Eleventh Edition of the IAMSAR Manual (due to be published in July 2019).	DTTAS	To be addressed as part of NSP Implementation Plan.
7	Following the publication of IAMSAR Edition 11, a programme of audits of the NSP against Appendix H to IAMSAR Volume 1 ('National Self-Assessment on SAR') should be developed and introduced.	DTTAS	To be addressed as part of NSP Implementation Plan.
8	An over-arching assurance system should be developed that is linked to and integrated with the SMS or equivalent of all strategic SAR stakeholders which should, in turn, acknowledge (and where appropriate, be integrated with) the SMS' of tactical and operational SAR stakeholders that they are likely to interact with during SAR training and operations, both nationally and internationally.	DTTAS / all strategic SAR stakeholders	To be addressed as part of NSP Implementation Plan.
9	All Service Level Agreements / Memoranda of Understanding between SAR Stakeholders should be reviewed and updated as appropriate.	DTTAS / all SAR stakeholders	To be addressed as part of NSP Implementation Plan.
10	A training and checking programme should be developed in line with IAMSAR Vol 1, Chapter 3.	DTTAS	To be addressed as part of NSP Implementation Plan.

No.	Recommendation	Action Office	Status
11	The glossary of frequently used terms, definitions and abbreviations at Annexes A and B should be used by all SAR stakeholders in the production of documents in support of the NSP.	DTTAS / all SAR stakeholders	DTTAS – Closed.
12	The Irish Aeronautical and Maritime Emergency Advisory Committee should be replaced by a 'National SAR Committee', responsible for the management of the content of the NSP, and the requirements for oversight and standardisation. The post of Chair should be a rotational post between the Assistant Secretaries for Marine and Aviation and a senior representative from AGS.	DTTAS / AGS	To be addressed as part of NSP Implementation Plan.
13	The NSP should be reviewed by a suitably qualified and experienced body ² which is independent from the Irish SAR system. The review should assess whether the NSP has suitably addressed the recommendations of the AQE report.	DTTAS	To be addressed as part of NSP Implementation Plan.

Table 1: Recommendations to improve and update the National SAR Plan

² It would be usual practice for the review and closure of audit actions to be carried out by, if possible, the originating organisation.

5. RECOMMENDED NATIONAL SAR PLAN STRUCTURE

The following document structure is the recommended foundation of the NSP. The State should then tailor the final document to the specific requirements of its SAR system to produce a bespoke version relevant to the scale and complexity of the National SAR requirements.

Cover Page

- ▶ Title;
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Table of Contents

Foreword

(The genesis, purpose, limitations and scope of the document/executive summary)

General System Concept – System Components [“what, why and how well”]

- ▶ Determine terms of reference for the group;
- ▶ Scope;
- ▶ Purpose/Policy (including objectives and over-arching principles);
- ▶ International obligations;
- ▶ National legislation;
- ▶ International cooperation;
- ▶ Governance - performance and oversight:
 - ▶ DTTAS;
 - ▶ National SAR Committee (previously IAMEAC);
 - ▶ Other SAR Committees.
- ▶ Risk Management and Safety Culture.

National SAR System

- ▶ Components/resources - Maritime, Aeronautical and Land SAR;
- ▶ Maritime:
 - ▶ SAR Authority;
 - ▶ SAR Region;
 - ▶ SAR management and coordination;
 - ▶ SAR providers;
 - ▶ SAR supports;
- ▶ Aeronautical SAR:

- ▶ SAR Authority;
- ▶ SAR Region;
- ▶ SAR management and coordination;
- ▶ SAR providers; and,
- ▶ SAR supports.
- ▶ Land SAR:
 - ▶ SAR authority;
 - ▶ SAR Region;
 - ▶ SAR management and coordination;
 - ▶ SAR providers; and,
 - ▶ SAR supports.
- ▶ Internal coordination and cooperation across SAR domains (e.g. “virtual JRCC”).

National SAR Plan – Incident Management Guidance (how it's done)

- ▶ Training, qualification and certification of personnel;
- ▶ Communications;
- ▶ Awareness and initial action;
- ▶ Launch of SAR assets;
- ▶ Mission coordination;
- ▶ Search planning and evaluation concepts;
- ▶ Search techniques and operations;
- ▶ Rescue planning and operations;
- ▶ Multiple aircraft SAR operations;
- ▶ Conclusion of SAR operations;
- ▶ Emergency assistance other than SAR (National/international emergencies/crisis response/ other obligations);
- ▶ Supporting services;
- ▶ Improving Services;
- ▶ Media management; and,
- ▶ Operating procedures (outline/expectations to cascade down to tactical/operational levels).

Appendices

Appendix A	Definitions
Appendix B	Abbreviations
Appendix C	International SAR Framework Documentation
Appendix D	References

ANNEX A - DEFINITIONS

The list of definitions is provided in **Table 2** below.

No.	Term	Definition	Reference
1	Aircraft coordinator (ACO)	A person or team who coordinates the involvement of multiple aircraft in SAR operations in support of the SAR mission coordinator and on-scene coordinator	IAMSAR
2	Alert phase	A situation wherein apprehension exists as to the safety of an aircraft or marine vessel and of the persons on board	IAMSAR
3	Alerting post	Any facility intended to serve as an intermediary between a person reporting an emergency and a rescue coordination centre or rescue sub-centre	ICAO, IAMSAR
4	AMVER	Automated Mutual-Assistance Vessel Rescue System. A world-wide ship reporting system for search and rescue	IAMSAR
5	Area control centre (ACC)	An air traffic control facility primarily responsible for providing ATC services to IFR aircraft in controlled areas under its jurisdiction	IAMSAR
6	Area of SAR action	An area of defined dimensions that is established, notified or agreed for the purposes of protecting aircraft during SAR operations and within which SAR operations take place	IAMSAR
7	Automatic identification system (AIS)	A system used by SAR Helicopters, ships and vessel traffic services (VTS), principally for identifying and locating vessels	Proposed
8	Awareness stage	A period during which the SAR system becomes aware of an actual or potential incident	INMSF
9	Captain	Master of a ship or pilot-in-command of an aircraft, commanding officer of a warship or an operator of any other vessel	IAMSAR
10	Coast Earth Station (CES)	Maritime name for an Inmarsat shore-based station linking ship earth stations with terrestrial communications networks	INMSF
11	Coast Guard functions (CGF)	The different responsibilities held and, activities performed, by organisations operationally involved in the maritime domain, in accordance with national legislation	INMSF
12	Conclusion stage	A period during a SAR incident when SAR facilities return to their regular location and prepare for another mission	INMSF
13	Coordinated search pattern	Multi-unit pattern using vessel(s) and aircraft	INMSF
14	Coordination	The bringing together of organisations and elements to ensure effective search and rescue response. One SAR authority must always have overall coordination responsibility and other organisations are to cooperate with this agency to produce the best response possible within available resources	INMSF
15	COSPAS-SARSAT System	A satellite system designed to detect and locate activated distress beacons transmitting in the frequency of 406.0-406.1 MHz	IAMSAR
16	Coverage factor (C)	For parallel sweep searches, Coverage Factor (C) is computed as the ratio of sweep width (W) to track spacing (S). $C = W/S$	INMSF
17	Craft	Any air or sea-surface vehicle, or submersible of any kind or size	IAMSAR
18	Crisis	Ongoing, often unplanned event	INMSF

No.	Term	Definition	Reference
19	Datum	A geographic point, line, or area used as a reference in search planning	INMSF
20	Datum area	Area where it is estimated that the search object is most likely to be located	INMSF
21	Datum line	A line, such as the distressed craft's intended track line or a line of bearing, which defines the centre of the area where it is estimated that the search object is most likely to be located	INMSF
22	Datum point	A point, such as a reported or estimated position, at the centre of the area where it is estimated that the search object is most likely to be located	INMSF
23	Dead reckoning (DR)	Determination of position of a craft by adding to the last fix the craft's course and speed for a given time	INMSF
24	Digital selective calling (DSC)	A technique using digital codes which enables a radio station to establish contact with, and transfer information to, another station or group of stations	IAMSAR
25	Direction finding (DF)	Radiodetermination using the reception of radio waves for the purpose of determining the direction of a station or object	IAMSAR
26	Disaster	An event that overwhelms resources	INMSF
27	Distress alerting	The reporting of a distress incident to a unit which can provide or coordinate assistance	IAMSAR
28	Distress phase	A situation wherein there is reasonable certainty that a vessel or other craft, including an aircraft or a person, is threatened by grave and imminent danger and requires immediate assistance	IAMSAR
29	Ditching	The forced landing of an aircraft on water	ICAO, IAMSAR
30	Drift	The movement of a search object caused by environmental forces	INMSF
31	Emergency	An event that requires immediate response	INMSF
32	Emergency locator transmitter (ELT)	A generic term (related to aircraft) describing equipment which broadcast distinctive signals on designated frequencies and, depending on application, may be automatically activated by impact or be manually activated	IAMSAR
33	Emergency phase	A generic term meaning, as the case may be, uncertainty phase, alert phase or distress phase	ICAO, IAMSAR
34	Emergency position-indicating radio beacon (EPIRB)	A device, usually carried aboard maritime craft, that transmits a signal that alerts search and rescue authorities and enables rescue units to locate the scene of the distress	IAMSAR
35	Fetch	The distance over which the wind blows in a constant direction, without obstruction	INMSF
36	First RCC	RCC affiliated with the shore station that first acknowledges a distress alert, and which will accept responsibility for all subsequent SAR coordination unless and until coordination is transferred to another RCC	INMSF
37	Flight information centre (FIC)	A unit established to provide flight information and alerting services	IAMSAR
38	Forward-looking infrared (FLIR)	An imaging system, mounted on board surface vessels or aircraft, designed to detect thermal energy (heat) emitted by targets and convert it into a visual display	INMSF

No.	Term	Definition	Reference
39	General communications	Operational and public correspondence, traffic other than distress, urgency and safety messages, transmitted or received by radio	IAMSAR
40	Geographic information system (GIS)	A system which captures, stores, analyses, manages and presents data that is linked to location	IAMSAR
41	Global Maritime Distress and Safety System (GMDSS)	A global communications service based upon automated systems, both satellite-based and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners	IAMSAR
42	Global Navigation Satellite System (GNSS)	Worldwide position and time determination system that includes a constellation of satellites providing signals from space that transmit positioning and timing data to GNSS receivers. The receivers then use this data to determine location. GNSS provides global coverage	INMSF
43	Global positioning system (GPS)	A specific satellite-based system used in conjunction with mobile equipment to determine the precise position of the mobile equipment	IAMSAR
44	Ground/Maritime Emergency Service Personnel	Any ground emergency service personnel (such as HM Coastguard, Royal National Lifeboat Institution (RNLI), police, fire, ambulance, Mountain Rescue Team (MRT), Armed Forces personnel, etc.) involved with SAR and whose tasks are to any extent pertinent to helicopter SAR operations	CAP999
45	Initial position error (X)	The estimated probable error of the initially reported position of a SAR incident	INMSF
46	INMARSAT	A system of geostationary satellites for world-wide mobile communications services and which support the Global Maritime Distress and Safety System and other emergency communications systems	IAMSAR
47	Instrument flight rules (IFR)	Rules governing the procedures for conducting instrument flight. Also, a term used by pilots and controllers to indicate type of flight plan	INMSF
48	Integrated Maritime Surveillance (IMS)	IMS is a process that provides for a common information-sharing environment that would enable Member State (MS) Authorities and Commission Agencies to access, maritime surveillance and monitoring data generated by different sectors of activity, deemed necessary for the performance of their duties	INMSF
49	Irish Maritime Domain	That part of the maritime domain encompassed by Irelands Territorial Waters, Exclusive Economic Zone, Continental Shelf, and Search and Rescue Areas, as defined by UNCLOS/SOLAS, together with all cargo and vessels flagged, beneficially owned by, or bound for Ireland, as well as any Area of Operations outside the above that has been declared for an Irish Maritime Operation. Irish waters include the territorial seas, the waters on the landward side of the territorial seas, and the estuaries, rivers, lakes and other inland waters (whether or not artificially created or modified) of the State	INMSF

No.	Term	Definition	Reference
50	Joint rescue coordination centre (JRCC)	A rescue coordination centre responsible for both aeronautical and maritime search and rescue incidents and operations	ICAO / IAMSAR +
51	Knot (kt)	A unit of speed equal to one nautical mile per hour	INMSF
52	Last known position (LKP)	Last witnessed, reported, or computed DR position of a distressed craft	INMSF
53	Leeway (LW)	The movement of a search object through water caused by winds blowing against exposed surfaces	INMSF
54	Limited Search and Rescue (LIMSAR)	A temporary degradation of an all-weather SAR asset due to unserviceable SAR related equipment that reduces the capability of the asset which is controlled through an approved minimum equipment list (MEL); or a temporary reduction of crew qualification or currency (as described in the operations manual)	CAP999
55	Local user terminal (LUT)	An earth receiving station that receives beacon signals relayed by COSPASSARSAT satellites, processes them to determine the location of the beacons and forwards the signals	IAMSAR
56	Locating	The finding of ships, aircraft, units or persons in distress	IAMSAR
57	Long-range identification and tracking (LRIT)	A system which requires certain vessels to automatically transmit their identity, position and date/time at six-hour intervals, in accordance with SOLAS regulation V/19-1	IAMSAR
58	Major Emergency	Cannot be dealt with using normal resources. Multi-agency response to an event that stretches resources to the limit	INMSF
59	Maritime Domain	The Maritime Domain encompasses all areas and objects of, on, under, relating to, adjacent to, or bordering a sea, ocean, or other navigable waterway, including all maritime-related activities, infrastructure, people, cargo and vessels and other conveyances	INMSF
60	Maritime domain awareness (MDA)	The effective understanding of any activity associated with the maritime environment that could impact upon the security, safety, economy or environment.	IAMSAR
61	Maritime Operations Centre (MOC)	The integration of several maritime operational services which are the responsibility of the Coast Guard under one Coast Guard national Marine Operations Centre (MOC). As such, an MOC has national responsibility for (i) Coastal Vessel Traffic Management Services (VTM) (ii) Search and Rescue, (iii) Marine Assistance Service (MAS) as declared by the IMO, (iv) single point of contact (SPOC) for ISPS maritime ship security alerts, (v) national maritime communications centre, (vi) hosts marine emergency room (vii) SPOC for international Coast Guard to Coast Guard and (viii) national marine pollution and ship casualty response coordination centre. It does not perform functions in respect of criminality at sea, fisheries control and security of the State or upholding sovereignty. Navtex Telegraphy system for transmission of maritime safety information, navigation and meteorological warnings and urgent information to ships	INMSF
62	Maritime Safety	The combination of preventive and responsive measures intended to protect the maritime domain against, and limit the effect of, accidental or natural danger, harm, environmental damage, risk or loss	INMSF

No.	Term	Definition	Reference
63	Maritime Situational Awareness (MSA)	Maritime Situational Awareness is the effective understanding of any information and data associated with the global maritime domain that could impact the security, safety, environment or economy of the coastal state	INMSF
64	Mass Rescue	An operation where immediate assistance is required for a large number of persons in distress	INMSF
65	Mass rescue operation (MRO)	Search and rescue services characterized by the need for immediate response to large numbers of persons in distress, such that the capabilities normally available to search and rescue authorities are inadequate	IAMSAR
66	MAYDAY	The international radiotelephony distress signal, repeated three times	INMSF
67	Medical evacuation (Medevac)	Evacuation of a person for medical reasons	CAP999
68	Mission control centre (MCC)	Part of the COSPAS-SARSAT system that accepts alert messages from the local user terminal(s) and other mission control centres to distribute to the appropriate rescue coordination centres or other search and rescue points of contact	IAMSAR
69	NAVAREA	A geographical sea area established for the purpose of coordinating the broadcast of navigational warnings. The term NAVAREA followed by a roman numeral may be used to identify a particular sea area. The delimitation of such areas is not related to and shall not prejudice the delimitation of any boundaries between States	IAMSAR
70	NAVTEX	The system for the broadcast and automatic reception of maritime safety information by means of narrow-band direct-printing telegraphy	IAMSAR
71	North Atlantic Coast Guard Forum	The North Atlantic Coast Guard Forum (NACGF) is an informal organisation, not bound by treaty, bringing together representatives from North Atlantic/North European countries to facilitate multilateral cooperation on matters related to combined operations including search and rescue. The NACGF may also provide a forum for the exchange of technical experiences. Established in 2007, NACGF includes participation by the United States, Canada, Iceland, Ireland, Spain, Portugal, the United Kingdom, France, Belgium, the Netherlands, Germany, Poland, Denmark, Norway, Sweden, Finland, Estonia, Latvia, Lithuania and the Russian Federation	INMSF
72	On-scene	The search area or the actual distress site	INMSF
73	On-scene coordinator (OSC)	A person designated to coordinate search and rescue operations within a specified area.	IAMSAR
74	On-scene endurance	The amount of time a facility may spend at the scene engaged in search and rescue activities	INMSF
75	Operational Level	The level at which the management of hands-on work is undertaken at the incident site(s) or associated areas.	Proposed
76	Operator	A person, organization or enterprise engaged in or offering to engage in an aircraft operation	ICAO

No.	Term	Definition	Reference
77	Oversight	Oversight is the process of verifying that the service provider complies with the applicable regulations and is achieving an acceptable level of safety performance, conducted by the authority delegated by the State	AQE
78	PAN-PAN	The international radiotelephony urgency signal. When repeated three times, indicates uncertainty or alert, followed by nature of urgency	INMSF
79	Personal locator beacon (PLB)	A portable device, manually activated, which transmits a distress signal on 406 MHz, and may have an additional homing signal on a separate frequency	IAMSAR
80	Pilot-in-command	The pilot responsible for the operation and safety of the aircraft during flight time	IAMSAR
81	Place of safety	A location where rescue operations are considered to terminate; where the survivors' safety of life is no longer threatened and where their basic human needs (such as food, shelter and medical needs) can be met; and, a place from which transportation arrangements can be made for the survivors' next or final destination. A place of safety may be on land, or it may be on board a rescue unit or other suitable vessel or facility at sea that can serve as a place of safety until the survivors are disembarked at their next destination	IAMSAR
82	Planning stage	The period during a SAR incident when an effective plan of operations is developed	INMSF
83	Position	A geographical location normally expressed in degrees and minutes of latitude and longitude	INMSF
84	Probability of detection (POD)	The probability of the search object being detected, assuming it was in the areas that were searched. POD is a function of coverage factor, sensor, search conditions and the accuracy with which the search facility navigates its assigned search pattern. Measures sensor effectiveness under the prevailing search conditions	INMSF
85	Rescue	An operation to retrieve persons in distress, provide for their initial medical or other needs, and deliver them to a place of safety	ICAO, IAMSAR
86	Rescue coordination centre (RCC)	A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region	ICAO
87	Rescue Sub-Centre (RSC)	A unit subordinate to a rescue coordination centre, established to complement the latter according to particular provisions of the responsible authorities	ICAO, IAMSAR
88	SafetyNET	A service of INMARSAT enhanced group call (EGC) system specifically designed for promulgation of maritime safety information (MSI) as a part of the Global Maritime Distress and Safety System (GMDSS)	IAMSAR
89	SAR aircraft	An aircraft provided with specialized equipment suitable for the efficient conduct of search and rescue missions	ICAO
90	SAR coordinating communications	Communications necessary for the coordination of facilities participating in a search and rescue operation	IAMSAR
91	SAR coordinator (SC)	One or more persons or agencies within an Administration with overall responsibility for establishing and providing SAR services and ensuring that planning for those services is properly coordinated	IAMSAR

No.	Term	Definition	Reference
92	SAR Crew	The members of crew required to operate a helicopter on a SAR flight, i.e. flight crew – commander/co-pilot, SAR technical crew members – winch operator/winchman; or that combination stated in the company operations manual	CAP999
93	SAR data provider (SDP)	A source for a rescue coordination centre to contact to obtain data to support search and rescue operations, including emergency information from communications equipment registration databases, ship reporting systems and environmental data systems (e.g. weather or sea current)	IAMSAR
94	SAR facility	Any mobile resource, including designated search and rescue units, used to conduct search and rescue operations	ICAO, IAMSAR
95	SAR Flight	Generic term for a flight conducted under a SAR approval i.e. SAR operational flight or SAR training flight	CAP999
96	SAR Framework	A general term used to describe documents which exist at all levels of the national and international search and rescue structure to describe goals, arrangements, and procedures which support the provision of search and rescue services	INMSF
97	SAR mission coordinator (SMC)	The suitably trained or qualified official temporarily assigned to coordinate a response to an actual or apparent distress situation	INMSF
98	SAR Operating Base	An aerodrome at which the SAR crew and the SAR helicopter are normally on stand-by for SAR operations	CAP999
99	SAR Operating Site (on scene)	The position of the survivor(s) or a site selected by the commander for the purpose of conducting a rescue	CAP999
100	SAR Operational Flight	A flight by a helicopter operating under a SAR Approval when tasked by the SAR Tasking Agency, the purpose of which is to locate and deliver to a place of safety persons in distress and recover to base. Procedures for the control and management of the tasking process are to be established and maintained with the SAR tasking agency	CAP999
101	SAR Passenger	A person other than SAR crew carried during a SAR flight whose function is relevant to the task/flight, who is one of the following: <ul style="list-style-type: none"> • specialist rescue or life-saving personnel; • medical personnel; • ill or injured persons and other persons directly involved; • survivors; • ground/maritime emergency service personnel; and • other persons as approved by the CAA. 	CAP999
102	SAR plan	A general term used to describe documents which exist at all levels of the national and international search and rescue structure to describe goals, arrangements and procedures which support the provision of search and rescue services	IAMSAR
103	SAR point of contact (SPOC)	A point of contact for SAR, designated by the national administration, that is responsible for receiving distress alert information and providing the information to appropriate SAR authorities	IAMSAR
104	SAR region (SRR)	An area of defined dimensions, associated with a rescue coordination centre, within which search and rescue services are provided	ICAO, IAMSAR

No.	Term	Definition	Reference
105	SAR Service	The performance of distress monitoring, communication, coordination and search and rescue functions, including provision of medical advice, initial medical assistance, or medical evacuation, through the use of public and private resources, including cooperating aircraft, vessels and other craft and installations	IAMSAR
106	SAR stage	Typical steps in the orderly progression of SAR missions. These are normally Awareness, Initial Action, Planning, Operations, and Mission Conclusion	INMSF
107	SAR sub-region (SRS)	A specified area within a search and rescue region associated with a rescue sub-centre	IAMSAR
108	SAR Tasking Agency	A place where the launch and co-ordination or control of the SAR service takes place, e.g. Aeronautical Rescue Co-ordination Centre	CAP999
109	SAR Technical Crew	A member of the SAR crew (e.g. winch operator, winchman) other than flight crew who is assigned to a helicopter SAR flight for the purpose of operating specific aircraft and role equipment, assisting the flight crew during the mission and attending to any person in need of medical assistance	CAP999
110	SAR Training Flight	A flight conducted for the purpose of training a SAR crew. This includes initial, recurrent and advanced SAR training as defined by the operator and approved by the NAA	CAP999
111	SAR unit (SRU)	A unit composed of trained personnel and provided with equipment suitable for the expeditious conduct of search and rescue operations	IAMSAR
112	Search	An operation normally coordinated by a rescue coordination centre or rescue sub-centre using available personnel and facilities to locate persons in distress	ICAO, IAMSAR
113	Search and Rescue	<p>The all-weather activity of responding to tasking related to locating and recovering persons in distress, potential distress or missing, delivering them to a place of safety and recovering to an operational base.</p> <ul style="list-style-type: none"> Search – An operation normally managed by the Aeronautical Rescue Coordination Centre (ARCC), Maritime Rescue Coordination Centre (MRCC) or Joint Rescue Coordination Centre (JRCC) using available personnel, facilities and equipment to locate persons in distress. Rescue – An operation to retrieve persons in distress, provide for their initial medical or other needs and deliver them to a place of safety 	CAP999
114	Search area	The area determined by the search planner to be searched. This area may be sub-divided into search sub-areas for the purpose of assigning specific responsibilities to the available search facilities	INMSF
115	Search endurance (T)	The amount of "productive" search time available at the scene	INMSF
116	Search object	A ship, aircraft, or other craft missing or in distress or survivors or related search objects or evidence for which a search is being conducted	IAMSAR
117	Search pattern	A procedure assigned to an SRU for searching a specified area	INMSF
118	Search radius	The actual search radius used to plan the search and to assign search facilities. It is usually based on adjustments to the optimal search radius that are needed for operational reasons	INMSF

No.	Term	Definition	Reference
119	Ship reporting system (SRS)	Reporting system which contributes to safety of life at sea, safety and efficiency of navigation and/or protection of the marine environment. This is established under SOLAS regulation V/11 or, for SAR purposes, under chapter 5 of the International Convention on Maritime Search and Rescue, 1979	IAMSAR
120	State of Registry	The State on whose register the aircraft is entered	ICAO
121	Survivor	Person in potential or actual distress, to whom the SAR operational flight is intended to render assistance	CAP999
122	Strategic Level	The level of management that is concerned with the broader and long-term implications of the emergency and which establishes the policies and framework within which decisions at the tactical level are taken.	Proposed
123	Tactical Level	The level at which the emergency is managed, including issues such as: allocation of resources, the procurement of additional resources if required, and the planning and co-ordination of ongoing operations.	Proposed
124	Tasking	A request to launch a SAR asset in accordance with the operational SAR stakeholder's published procedures	Proposed
125	Telemedical assistance service	A medical service permanently staffed by doctors qualified in conducting remote consultations and well versed in the particular nature of treatment on board ship	IAMSAR
126	Top Cover	Aerial assets normally used for communication relay, on-scene command, casualty location, foreign translation, dropping of live-saving articles, SAR support or chase aircraft	Proposed
127	Track spacing (S)	The distance between adjacent parallel search tracks	INMSF
128	Traffic Separation Scheme (TSS)	A routing measure aimed at the separation of opposing streams of (Vessel) traffic by appropriate means and by the establishment of traffic lanes	INMSF
129	Triage	The process of sorting survivors according to medical condition and assigning them priorities for emergency care, treatment, and evacuation	INMSF
130	True air speed (TAS)	The speed an aircraft is travelling through the air mass. TAS corrected for wind equals ground speed	INMSF
131	Uncertainty phase	A situation wherein doubt exists as to the safety of an aircraft or a marine vessel, and of the persons on board	IAMSAR
132	Unnecessary SAR alert (UNSAR)	A message sent by an RCC to the appropriate authorities as a follow-up when the SAR system is unnecessarily activated by a false alert	IAMSAR
133	Vessel	A maritime craft	IAMSAR
134	Vessel monitoring system (VMS)	A tracking system which provides for environmental and fisheries regulatory organizations to monitor the position, time at a position, course and speed of commercial fishing vessels	IAMSAR
135	Vessel tracking	A generic term applied to all forms of vessel track data derived from multiple sources such as ship reporting systems, AIS, LRIT, SAR aircraft, VMS and VTS.	IAMSAR
136	Vessel traffic services (VTS)	A marine traffic monitoring system established by harbour or port authorities to keep track of vessel movements and provide navigational safety in a limited geographical area.	IAMSAR

No.	Term	Definition	Reference
137	Visual flight rules (VFR)	Rules governing procedures for conducting flight under visual meteorological conditions. In addition, used by pilots and controllers to indicate type of flight plan	INMSF

Table 2: Glossary of definitions in support of a review of the Irish National SAR Framework

ANNEX B - ABBREVIATIONS

The list of abbreviations is contained in Table 3 below.

No.	Abbreviation	Definition	Reference
1	A/C	aircraft	IAMSAR
2	ACC	area control centre	IAMSAR
3	ACO	aircraft coordinator	IAMSAR
4	AED	automated external defibrillator	CAP999
5	AFN	aeronautical fixed network	IAMSAR
6	AFTN	aeronautical fixed telecommunications network	IAMSAR
7	AIP	aeronautical information publication	IAMSAR
8	AIS	aeronautical information services	IAMSAR
9	AIS	automatic identification system	IAMSAR
10	AIS-SART	automatic identification system - search and rescue transmitter	IAMSAR
11	ALRS	admiralty list of radio signals	INMSF
12	AM	amplitude modulation	IAMSAR
13	AMC	acceptable means of compliance	CAP999
14	AME	aero medical examiner	CAP999
15	AMS	aeronautical mobile service	IAMSAR
16	AMS(R)S	aeronautical mobile satellite (route) service	IAMSAR
17	AMSS	aeronautical mobile satellite service	IAMSAR
18	AMVER	automated mutual-assistance vessel rescue	IAMSAR
19	ANC	air navigation commission	IAMSAR
20	ANO	air navigation order	CAP999
21	AOC	air operator's certificate	CAP999
22	ARCC	aeronautical rescue coordination centre	IAMSAR
23	ARSC	aeronautical rescue sub-centre	IAMSAR
24	ATC	air traffic control	IAMSAR
25	ATD	actual time of departure	INMSF
26	ATN	aeronautical telecommunications network	IAMSAR
27	ATPL	airline transport pilot's licence	CAP999
28	ATS	air traffic services	IAMSAR
29	C	Coverage factor	INMSF
30	C/S	call sign	IAMSAR
31	CAA	civil aviation authority	CAP999
32	CAP	civil aviation publication	CAP999
33	CAT	Commercial Air Transport	CAP999

No.	Abbreviation	Definition	Reference
34	CES	coast earth station	INMSF
35	CGF	coast guard functions	INMSF
36	CHCI	CHC Helicopters	INMSF
37	COSPAS-SARSAT	COsmicheskaya Sisteyama Poiska Avariynich Sudov (Russian acronym for Space System for Search of Distress Vessels) Search and Rescue Satellite-Aided Tracking	
38	CPL	commercial pilot's licence	CAP999
39	CRM	crew resource management	CAP999
40	CRS	coast radio station	IAMSAR
41	CSS	coordinator surface search (maritime)	INMSF
42	CW	continuous wave	IAMSAR
43	D	datum	INMSF
44	DF	direction finding	IAMSAR
45	DGPS	differential GPS	INMSF
46	DME	distance measuring equipment	IAMSAR
47	DR	dead-reckoning	INMSF
48	DRU	desert rescue unit	IAMSAR
49	DSC	digital selective calling	INMSF
50	DTTaS	Department for Transport, Tourism and Sport	INMSF
51	DWT	dead weight tonnes	INMSF
52	E	east longitude	INMSF
53	EASA	European aviation safety agency	CAP999
54	EASA Ops	EASA air operations regulation	CAP999
55	ELT	Emergency Locator Transmitter	IAMSAR
56	EMSA	European maritime safety agency	INMSF
57	EPIRB	emergency position-indicating radio beacon	IAMSAR
58	ETA	estimated time of arrival	INMSF
59	ETD	estimate time of departure	INMSF
60	EU	European Union	CAP999
61	FV	fishing vessel	INMSF
62	FC	flight crew	CAP999
63	FIC	flight information centre	IAMSAR
64	Fig.	figure	INMSF
65	FIR	flight information region	INMSF
66	FLIR	forward looking infrared	INMSF
67	FM	frequency modulation	IAMSAR
68	FTL	flight time limitations	CAP999

No.	Abbreviation	Definition	Reference
69	GHz	gigahertz	IAMSAR
70	GIS	Geographic information system	IAMSAR
71	GLONASS	global orbiting navigation satellite system	IAMSAR
72	GMDSS	global maritime distress and safety system	IAMSAR
73	GNSS	global navigation satellite systems	IAMSAR
74	GPS	global positioning system	IAMSAR
75	GS	ground speed	INMSF
76	gt	gross tonnes	INMSF
77	HDG	heading	INMSF
78	HEMS	Helicopter Emergency Medical Services	CAP999
79	HF	high frequency	IAMSAR
80	HHO	helicopter hoist operations	CAP999
81	hPa	hectopascals	INMSF
82	I/B	inboard motor	INMSF
83	IAA	Irish Aviation Authority	INMSF
84	IAMSAR	International Aeronautical and Maritime Search and Rescue	CAP999
85	IBRD	international 406 MHz beacon registration database	IAMSAR
86	ICAO	international civil aviation organization	IAMSAR
87	IDE	instruments, data, equipment	CAP999
88	IFR	instrument flight rules	IAMSAR
89	ILS	instrument landing system	IAMSAR
90	IMC	instrument meteorological conditions	IAMSAR
91	IMO	international maritime organization	IAMSAR
92	IMS	Integrated Maritime Surveillance (IMS)	INMSF
93	IMSO	international mobile satellite organization	IAMSAR
94	INMARSAT	International Marine/Maritime Satellite (organization) – Satellite communication service provider for the GMDSS	IAMSAR
95	INMSF	Irish National Maritime SAR Framework	INMSF
96	INS	inertial navigation system	IAMSAR
97	INTERCO	international code of signals	INMSF
98	ITU	international telecommunication union	IAMSAR
99	JRCC	joint (aeronautical and maritime) rescue coordination centre	IAMSAR
100	kHz	kilohertz	IAMSAR
101	Kt	knot (nautical mile per hour)	INMSF
102	LES	land earth station	IAMSAR
103	LIMSAR	limited search and rescue	CAP999

No.	Abbreviation	Definition	Reference
104	LKP	last known position	INMSF
105	LRIT	long-range identification and tracking	IAMSAR
106	LUT	local user terminal	IAMSAR
107	LVO	low visibility operations	CAP999
108	M	degrees magnetic	INMSF
109	MCA	maritime and coastguard agency	CAP999
110	MCC	mission control centre	IAMSAR
111	MDA	maritime domain awareness	IAMSAR
112	Medevac	medical evacuation	CAP999
113	MEL	minimum equipment list	CAP999
114	MF	Medium Frequency	IAMSAR
115	MHz	megahertz	IAMSAR
116	MLR	manual, logs and records	CAP999
117	MMSI	maritime mobile service identity	IAMSAR
118	MOC	Maritime operations centre	INMSF
119	MRCC	Maritime Rescue Coordination Centre	IAMSAR
120	MRO	mass rescue operation	IAMSAR
121	MRSC	Maritime Rescue Sub-Centre	IAMSAR
122	MRT	mountain rescue team	CAP999
123	MRU	mountain rescue unit	IAMSAR
124	MSA	maritime situational awareness	INMSF
125	MSI	maritime safety information	IAMSAR
126	MV	merchant vessel	INMSF
127	NAA	national aviation authority	CAP999
128	NACGF	North Atlantic Coast Guard Forum	IMSF
129	NBDP	narrow-band direct printing	IAMSAR
130	NM	nautical mile	IAMSAR
131	NMOC	(UK) National Maritime Operations Centre	Proposed
132	NOTAM	notice to airmen	IAMSAR
133	NSP	National SAR Plan	Proposed
134	NVIS	night vision imaging systems	CAP999
135	OSC	on-scene coordinator	IAMSAR
136	OSV	offshore supply vessel	IAMSAR
137	Part-CAT	EASA air ops annex iv - commercial air transport operations	CAP999
138	Part-FCL	EASA aircrew regulation annex i - flight crew licensing	CAP999

No.	Abbreviation	Definition	Reference
139	Part-ORO	EASA ops annex iii - organisation requirements for air operations	CAP999
140	Part-SPA	EASA ops annex v - specific approvals	CAP999
141	Part-SPO	EASA ops annex viii - specialised operations	CAP999
142	PLB	personal locator beacon	IAMSAR
143	POD	probability of detection	INMSF
144	PRU	parachute rescue unit	IAMSAR
145	PT	public transport	CAP999
146	R&D	research and development	IAMSAR
147	RANP	regional air navigation plan	IAMSAR
148	RCC	rescue coordination centre	IAMSAR
149	RF	radio frequency	IAMSAR
150	RNLI	Royal National Lifeboat Institution	CAP999
151	RSC	rescue sub-centre	IAMSAR
152	S	track spacing	INMSF
153	SAR	search and rescue	IAMSAR
154	SART	search and rescue radar transponder	IAMSAR
155	SC	SAR coordinator	IAMSAR
156	SCC	SAR coordinating committee	IAMSAR
157	SDP	SAR data provider	IAMSAR
158	SES	ship earth station	IAMSAR
159	SIT REP	situation report	IAMSAR
160	SMC	SAR mission coordinator	IAMSAR
161	SOLAS	(international convention for the) safety of life at sea	IAMSAR
162	SPOC	SAR point of contact	IAMSAR
163	SRR	search and rescue region	IAMSAR
164	SRS	search and rescue sub-region	IAMSAR
165	SRS	ship reporting system	IAMSAR
166	SRU	search and rescue unit	IAMSAR
167	T	search endurance	INMSF
168	TAS	true airspeed	INMSF
169	TC	technical crew	CAP999
170	TLX	Telex	IAMSAR
171	TMAS	telemedical assistance service	IAMSAR
172	TSS	traffic separation scheme	INMSF
173	UHF	ultra-high frequency	IAMSAR
174	UAS	unmanned air systems (drones)	CAA/FAA

No.	Abbreviation	Definition	Reference
175	UIR	upper flight information region	IAMSAR
176	UK	United Kingdom	CAP999
177	UKSRR	UK SAR region	CAP999
178	UNCLOS	United Nations convention on the law of the sea	CAP999
179	USAR	urban search and rescue	IAMSAR
180	UTC	coordinated universal time	IAMSAR
181	VFR	visual flight rules	IAMSAR
182	VHF	very-high frequency	IAMSAR
183	VMC	visual meteorological conditions	IAMSAR
184	VMS	vessel monitoring system	IAMSAR
185	VOR	vhf omnidirectional radio range	IAMSAR
186	VTS	vessel traffic services	IAMSAR
187	WMO	world meteorological organization	IAMSAR
188	X	Initial position error	INMSF

Table 3: List of abbreviations in support of a review of the Irish National SAR Framework

ANNEX C - REFERENCES

1. ICAO: Annex 12 to the Convention on International Aviation; Eighth Edition July 2004
2. IAMSAR: IAMSAR Volume 1; Tenth Edition 2016
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Frazer-Nash Consultancy Ltd

The Cube
1 Lower Lamb Street
Bristol
BS1 5UD

T +44 (0)117 9226242
F +44 (0)117 9468924

www.fnc.co.uk

Offices at:
Bristol, Burton-on-Trent, Dorchester,
Dorking, Glasgow, Plymouth, Warrington
and Adelaide