STATE SAFETY PLAN 2017–2020

Dublin Airport: Photo by Tony Lane, IAA

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SECTION ONE: INTRODUCTION

Aer Lingus Airbus A320: Photo by Michael Kelly (michaelkelly@inbox.com)

Purpose of the Plan

As part of the State Safety Programme the IAA Safety Regulation Division (SRD) produces the State Safety Plan (SSp) on behalf of the State. The purpose of the SSp is to provide a strategic direction to safety management at State level and to outline to all stakeholders where the IAA SRD will target resources in the next four years as part of the risk and performance based approach to safety management.

This Plan contains safety actions (both new and ongoing) to address key safety risks in aviation identified from the analysis of safety performance at national, European and global levels. This analysis informs the development of risk profiles across different sectors of aviation, which helps to identify, and prioritise, the safety issues addressed in the Plan. This continuously evolving process responds to changes in the safety performance achieved and to changes in the associated risk profiles.

Many States, including Ireland, EASA and ICAO publish annual safety performance reports. The Irish, EASA and ICAO reports are available on;

https://www.iaa.ie/safety/safety-performance1

https://www.easa.europa.eu/document-library/general-publications

http://www.icao.int/safety/Pages/Safety-Report.aspx

Link to Global Safety Plans

As aviation is a global business that requires States to co-ordinate efforts to improve safety, the State Safety Plan for Ireland is developed with due regard for international safety priorities and in particular with due regard for the EASA European Plan for Aviation Safety and the ICAO Global Aviation Safety Plan.

The European Plan for Aviation Safety (www.easa.eu.int) addresses safety management from a European perspective and includes several actions to address specific risks including recommended actions for EU Member States. The IAA has adopted these EASA recommendations and included them in this Plan. Cross-references are provided to the EPAS for individual actions where relevant.

At the global level, ICAO published the Global Aviation Safety Plan (2017-2019) (www.ICAO.int). The relevant objectives and priorities of the GASP are also considered in the development of this Plan and these are also highlighted in the text where applicable.

Safety Priorities

The State Safety Plan is developed in the context of the IAA SRD strategic priorities, which include the following:

- To be acknowledged globally as a leading State in the effective implementation of risk-based safety management in regulation and oversight to the appropriate ICAO and EU standards, including effective safety promotion.
- To be efficient and innovative by continuously engaging with stakeholders and implementing lean processes, enabled by new digital technologies.
- To develop and implement ‘the state of the art’ in risk management practices and make them available for the benefit of the global community
- To facilitate competitiveness, innovation and emerging technologies to the benefit of Irish and global aviation.

These strategic priorities guide the actions that the IAA SRD takes to address safety management and are reflected in the actions included in this State Safety Plan.

The actions in this Plan are implemented within the existing safety oversight and safety management system in Ireland, and many of the actions have the effect of transforming this system or of re-affirming the effectiveness of the existing system or systems.

The Plan includes actions at the systemic level for the State. The State must continuously monitor the safety performance of the civil aviation system and ensure that the actions taken at the State level, including actions related to compliance monitoring and risk management, contribute to improving safety.

These actions enable Irish civil aviation stakeholders to operate safely, and provide necessary assurances of this at a global level to facilitate international operations. These actions also support innovation by providing the basis for which both the State and the stakeholder are equipped to manage new or emerging safety risks.

The plan includes actions that address safety improvements at the operational level, which are actions taken as a result of lessons learned from operational occurrences. These actions may include rule-making, policy, targeted safety oversight/safety analysis and safety promotion. Separate sections are provided to address Commercial and General Aviation in order to make the information more accessible to stakeholders.

Systemic Issues

- State Safety Programme (SSP)
- Safety Management Systems (SMS)
- SSP/SMS collaboration
- Safety Performance Indicators
- Occurrence Reporting
- Risk and Performance based oversight
- Digitisation
- Complex Operating Models

Commercial Aviation

- Loss of Control - Inflight
- Controlled Flight Into Terrain
- Mid-Air Collision
- Runway Safety
- Ground Operations
- Fire, Smoke and Fumes
- Birdstrikes
- Laser Attacks
- Offshore helicopter operations

General Aviation

- Airspace Infringements
- Mid-Air Collision in uncontrolled airspace
- Paragliding
- Safety Promotion in GA
- Drones
- Flight Planning
- Air Displays
- Dangerous Goods

Summary of the Actions in the Plan

Since its inception in 2010 there have been a total of 48 risk topics addressed in the Plan with 178 associated actions to address the safety issues. The individual action items in the Plan are aligned with the four pillars of the State Safety Programme for Ireland as defined in Annex 19, as follows:

Safety Policy, includes policy as promulgated through regulations or policy statements

Safety Risk Management, includes tasks relating to the establishment of safety management requirements for service providers and agreement on the measurement of safety performance

Safety Assurance, includes tasks related to targeted safety oversight and safety risk assessments

Safety Promotion, includes tasks related to provision of training and guidance to aviation professionals as well as safety awareness to the general public.

Note that Amendment 1 to Annex 19 has made changes to the SSP framework structure and these changes will be reflected in the alignment of actions in State Safety Plan when it becomes applicable in 2018.

Figure 1 shows how the 178 actions of the Plan since it's inception break down between the different SSP Pillars.

Almost two thirds of all actions included in the Plan since it's inception have been completed. The current version of the Plan has a total of 63 open or ongoing actions, broken down as shown in Figure 2.

The breakdown of the actions in the current Plan by section and SSP Pillar is shown in Figure 3.

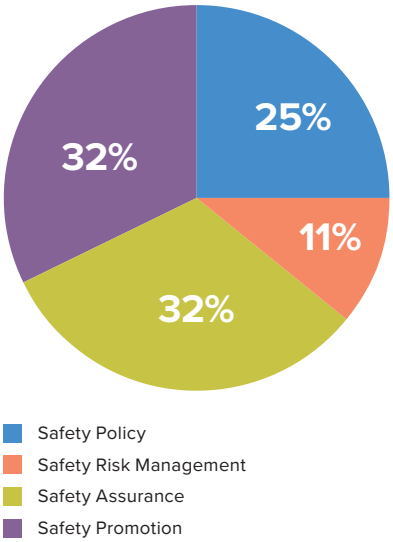


Figure 1: **Breakdown of all SSp actions by SSP framework pillar**

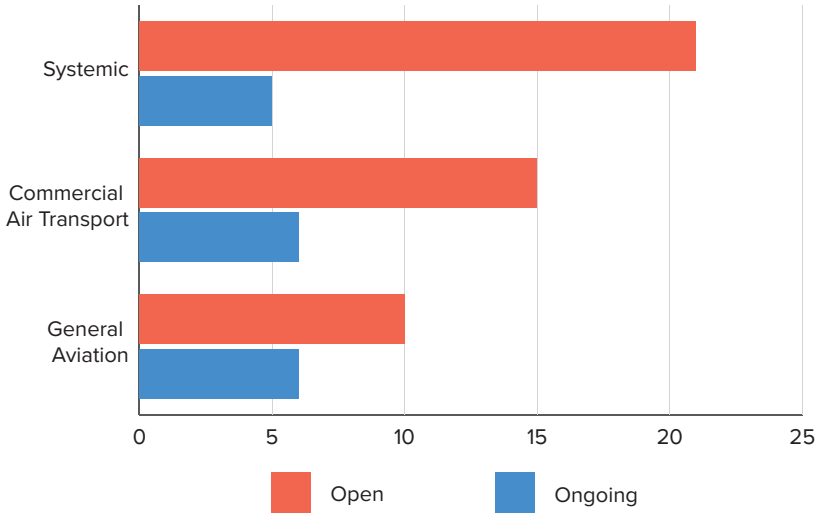


Figure 2: **Breakdown of current State Safety Plan actions by section**

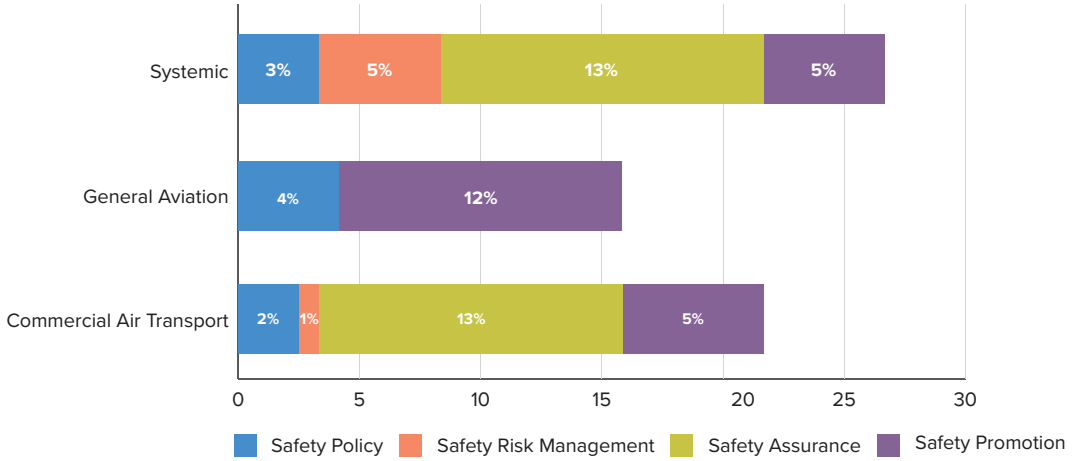


Figure 3: **Breakdown of current actions by section and SSP pillar**

Measuring the success of the State Safety Plan

Whereas the summary data above gives an indication of the progress of the actions included in the State Safety Plan, an indicative measure of the success of the Plan may be found in the ultimate safety outcomes, namely in the rate of accidents and serious incidents in the Irish civil aviation system. The trends analyses of intermediate outcomes, such as precursors to accidents, will also provide evidence of success and some of this preliminary data is provided in the appendices.

The IAA publishes measures of these key safety indicators in the Annual Safety Review, as well as on the IAA website. In addition the IAA is an active participant in the EASA Network of Analysts which continues to identify key risks and measures for use as part of EU Member States safety management programmes.

Great care is needed in drawing specific inferences from outcome based safety data. The attribution of any apparent trends to actions in this Plan, can only be established using a complex measurement system, coupled with forensic analysis of the influence of external factors or the influence of other actions that are not part of this Plan. Nevertheless the actions of the Plan seek to improve safety and the outcome based measures provide an indication (if not absolute measure) of whether the summary of actions taken are helping to improve safety.

The summary of accidents and serious incidents for Irish registered aircraft involved in commercial air transport and aircraft involved in general aviation is shown in Table 1:

Irish registered CAT aircraft			
Year	**Fatal Accident**	**Non-fatal Accident**	**Serious Incident**
2011-2015 (avg)	0	4.8	19.4
2016	0	2	14
Aircraft involved in General Aviation			
2011-2015 (avg)	0.6	9	2
2016	2	6	2

Table 1: **Summary of accidents and serious incidents**

For further breakdown of these statistics including event categorisation details please refer to the IAA Annual Safety Review (https://www.iaa.ie/safety)

SECTION TWO: SYSTEMIC RISKS SUMMARY

Ramp at Cork Airport: Photo by Brendan King, IAA

Summary of Objectives and Actions

State Safety Programme - M.002

The State Safety Programme (SSP) is an integrated set of regulations and activities aimed at improving safety in the State. The objective is to achieve an acceptable level of safety of aviation services and products delivered by aviation service providers. The actions in this plan are focused on ensuring that Ireland meets the 2022 target established in the ICAO Global Aviation Safety Plan. The Irish SSP is almost complete well in advance of the ICAO targets, however EASA rulemaking delays associated with SMS regulations in the airworthiness domain, means that full implementation of the SSP will not be possible until end 2020.

ACTIONS		TARGET DATE
Safety Policy	**M.002 a)**: Implement elements of the EASA European Plan for Aviation Safety that apply to national authorities. **EPAS Reference:** App G	**Ongoing**
	M.002 c): Implement the SSP for Ireland in accordance with the ICAO GASP mid-term objectives **EPAS Reference:** RMT.0251	**Q4 2020**
	M.002 d): Update the State Safety Programme document to align with latest issue of European Aviation Safety Program and Amendment 1 to Annex 19. **EPAS Reference:** MST.001	**Q4 2018**

Safety Management Systems - M.004

A Safety Management System (SMS) provides aviation service providers with a systematic way to identify hazards and control risks while maintaining assurance that these risk controls are effective. This Plan targets the implementation of SMS across all domains in the Irish civil aviation system by the end of 2020, subject to the availability of SMS requirements in airworthiness domain in accordance with the EASA rulemaking programme.

ACTIONS		TARGET DATE
Safety Promotion	**M.004 b)**: Include SMS promotional material developed by ESSI Teams, EASA and SMICG in Annual SMS training. **EPAS Reference:** MST.002	**Ongoing**
Risk Management	**M.004 g)**: Develop SMS requirements in airworthiness. **EPAS Reference:** RMT.0251	**Q4 2020**
Safety Assurance	**M.004 h)**: Develop suitable tools to measure the effectiveness of safety management by approved organisations in all domains	**Q4 2017**

Safety Performance Indicators - M.003

Safety Performance Indicators are metrics used to express the level of safety performance achieved in the aviation system and are usually linked to safety performance targets. The expected benefits of the actions in this Plan are that a standardised list of SPI's will be developed for use in civil aviation in all EU Member States and implemented in Ireland by the end of 2017.

ACTIONS		TARGET DATE
Risk Management	**M.003 a):** Development of standard safety performance indicators across Europe. **EASA Reference:** SPT.060	**Q4 2017**

Occurrence Reporting - M.005

The IAA has implemented occurrence reporting systems in the State for collection of both mandatory and voluntary occurrence reports. New Regulation (EU) 376/2014 became applicable in November 2015 and includes, inter alia, mandatory reporting requirements for the general aviation community for the first time. The actions in this Plan aim to ensure this community is fully aware of the new mandatory reporting obligations, as well as continuing to encourage the voluntary sharing of safety occurrences by those not subject to the mandatory provisions in the regulation and to develop improvements in safety culture through occurrence reporting.

ACTIONS		TARGET DATE
Safety Assurance	**M.005 f)**: Participate in EASA occurrence reporting survey of States and support the EASA NoA with the subsequent analysis. **EPAS Reference:** MST.023	**Q4 2017**
	M.005 g): Use the results of oversight of occurrence reporting as a performance indicator of the safety culture of an organisation. **EPAS Reference:** MST.023	**Ongoing**
Safety Promotion	**M.005 c)**: Encourage the sharing of Safety information within the GA community.	**Ongoing**
	M.005 h): Provide training to inspectorate staff on the use of the new EU Event Risk Classification Scheme	**Q2 2018**
	M.005 i): Promote the use of EU Event Risk Classification Scheme by regulated entities	**Q4 2018**

Implementation of Risk and Performance Based Oversight - M.010

A key feature of safety management at the State level is the use of performance based regulations and risk and performance based oversight methodologies to compliment traditional prescriptive rulemaking and compliance based oversight activities. The IAA target is to implement the tools to enable performance based oversight in Ireland across all domains using a phased approach, and to ensure IAA SRD staff are fully competent to properly discharge their safety oversight responsibilities by the end of 2020.

ACTIONS		TARGET DATE
Safety Assurance	**M.010 c):** Develop the tools to support risk and performance based oversight in air navigation services and aerodromes domains.	**Q4 2017**
	M.010 d): Develop the tools to support risk and performance based oversight in airworthiness domain.	**Q4 2019**
	M.010e): Develop sector level risk profiles which will be used to inform the IAA oversight planning at the strategic level.	**Q4 2018**
Safety Promotion	**M.010 f):** Ensure that relevant staff in the safety regulation department are fully trained to properly discharge their safety oversight responsibilities in a risk and performance based regulatory environment.	**Q4 2020**

Implementation of eBusiness and Digitisation in IAA SRD - M.006

The implementation of an integrated information system is a key enabler of the risk and performance based safety oversight approach. Through innovation and active use of technology, the IAA SRD will build on its position as a world-leading aviation safety organisation to deliver dynamic, effective regulatory practices and maximise business activity within the digital environment. The new eBusiness platform will greatly enhance the access to, and availability of, data to support risk and performance based oversight. The target is to implement the new eBusiness model across all IAA SRD domains by the end of 2019.

ACTIONS		TARGET DATE
Safety Assurance	**M.006 b):** Implement an integrated audit management system in the domains of Aerodromes and Air Navigation Services.	**Q4 2019**
	M.006 c): Develop applications to facilitate sharing of data to support risk and performance based oversight as part of the IAA digitisation project.	**Q4 2018**

Enhanced collaboration between SSP and SMS - M.011

The State Safety Program is complimentary to the Safety Management Systems implemented by the civil aviation organisations and service providers. The IAA wishes to ensure closer collaboration between the State SSP and organisations SMS for the purposes of enhancing the overall safety performance in the State. The objective of closer collaboration between SSP and SMS is to ensure that safety intelligence is mutually shared between organisations and the State in more effective manner. As part of the process the IAA is actively participating in the EASA Data4Safety programme and the IAA will enhance its current safety analysis capability to include Big Data analytics. The target is to implement the relevant methodologies and processes by end 2019.

ACTIONS		TARGET DATE
Safety Assurance	**M.011 a)**: Target the key risks identified in this Plan, including RI, RE, LOC-I, MAC, CFIT and precursor events as part of SMS oversight.	**Ongoing**
	M.011 c): Establish the methodology, tools and processes to facilitate the data sharing between SSP and service providers SMS	**Q4 2019**
	M.011 e): Enhance current safety analysis capabilities, including the development of Big Data analytics	**Q4 2019**
Risk Management	**M.011 b)**: Promote the benefits of FDM and ensure that the standardised indicators (including RE, MAC, CFIT, LOC-I) and associated event triggers are implemented and monitored as part of the SMS. **EPAS Reference:** MST.003	**Q4 2017**
	M.011 d): Ensure that Human Factors principles are fully integrated into SMS processes.	**Q4 2018**

Complex or Novel business models.

Due to the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators has increased, as has the geographic spread of the associated operational and management processes. The objective is to ensure that organisations under the oversight of the IAA that have complex or novel business models address all the associated risks as part of their Safety Management Systems and to ensure that the IAA collaborates fully with other States where high levels of activities are performed (eg outstations, extended workbench etc). The target is to implement, or oversee the implementation of, the relevant processes by end 2018.

ACTIONS		TARGET DATE
Safety Assurance	**M.012 a)**: Implement cooperative oversight with other States and disseminate best practices. **EPAS Reference:** MST.021	**Q4 2018**
	M.012 b): Ensure oversight of complex organisations includes assessment of the governance structure, in particular, influence of external financial stakeholders and/or corporate management. Assist in the development of, and implement, best EU practices in this regard. **EPAS Reference:** MST.019	**Q4 2017**
	M.012 c): Ensure SMSs of complex operators capture new hazards that are introduced by different employment models, increased mobility of pilots, use of non-certified service providers and long-term leasing. **EPAS Reference:** MST.022	**Q4 2017**

Detailed summaries of the progress and actions for each of these risk areas are provided in Appendix 1.

SECTION THREE: COMMERCIAL AIR TRANSPORT SUMMARY

Ryanair Boeing 737-800: Photo by Ryanair

Summary of Objectives and Actions

The key safety risks included in the Plan reflect the highest risk category for fatal accidents in Ireland, Europe and worldwide.

The overall objective in each case is to reduce the number of accidents and serious incidents attributed to the key risks addressed in this section for commercial air transport operations. The IAA will monitor the safety performance of approved Irish organisations in order to measure the effectiveness of the actions in the Plan. Risk Registers are used to help identify the main safety issues addressed in the plan.

The following is a brief description of each of the safety risks included in the Plan, along with the current actions being taken to address the risks involved. Reference is included in the list to the associated actions in the European Plan for Aviation Safety (EPAS), where relevant.

Loss of Control – Inflight (LOC-I) – FOD.001

Loss of control usually occurs because the aircraft enters a flight regime which is outside its normal envelope, the more serious occurrences of which may be associated with an element of surprise (startle effect) for the flight crew involved. EASA has reported that LOC-I is the risk area with the most frequent fatal accidents, both in Europe and worldwide with on average, three fatal accidents every year related to LOC-I worldwide and one every second year involving an EASA MS operator. The actions in the Plan currently focus on Loss of Control Prevention and Recovery Training for operators and flight training organisations.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.001 d)**: Promote the new EU regulations concerning Loss of Control Prevention and Recovery Training. **EPAS Reference:** SPT.012	**Q4 2018**
	FOD.001 e): Promulgate latest EASA publications (policies/SIB's) concerning LOC-I and monitor the implementation.	**Ongoing**
Safety Assurance	**FOD.001 f)**: Use the EHFAG regulatory inspectors HF competency framework in assessing CBT programs.	**Q4 2017**

Controlled Flight Into Terrain (CFIT) – FOD.003

CFIT is an event where an airworthy aircraft under the complete control of the flight crew is inadvertently flown into terrain, water or an obstacle. The flight crew is generally unaware of the danger through loss of situational awareness (eg navigational error, technical problem, other distraction) until it is too late. The highest risks are present during Non-Precision Approach (NPA) and thus the actions in the Plan currently focus on the implementation of approach with vertical guidance procedures at Irish airports licensed for CAT operations.

ACTIONS		TARGET DATE
Safety Policy	**FOD.003 c)**: Irish airports licensed for commercial air transport to provide non-precision instrumented approaches that contain vertical guidance. **EPAS Reference:** MST.006	**Q4 2018**

Mid-Air Collision (MAC) – ASD.001

Mid-Air Collisions (MAC) are accidents where two or more aircraft come into contact with each other in the air. While the likelihood of an event is low the consequences of any event are extremely high (major loss of life). Near Mid-Air collision (eg Airprox) is one of the main causes attributed to serious incidents both in Europe. The Actions in the Plan currently focus on implementing European recommendations to address this risk (eg EAPAIRR), assessment of recent detailed safety analyses of MAC events and new actions to address infringements by military aircraft over the high seas and commercial operations in uncontrolled airspace

ACTIONS		TARGET DATE
Safety Assurance	**ASD.001 b)**: Monitor the level of implementation of recommendations for service providers contained in the EAPAIRR. **EPAS Reference:** MST.010	**Ongoing**
	ASD.001 g): Perform an analysis of ATM related occurrence reports and develop an ATM safety risk profile.	**Q4 2018**
	ASD.001 e): Review EASA technical analysis on occurrences over the high seas involving military aircraft and implement relevant recommendations. **EPAS Reference:** MST.024	**Q4 2017**
Risk Management	**ASD.001 f)**: Ensure that Irish operators fully address the risks associated with operations into uncontrolled airspace in their safety management systems	**Q4 2017**

Runway Safety – FOD.002, M.007

There are two specific safety risks in the area of runway safety, runway incursion and runway excursion. A runway incursion (RI) is any occurrence at an aerodrome involving the incorrect presence of an aircraft vehicle or person on the protected area of a surface designated for the landing and take-off of an aircraft. A runway excursion (RE) is an event in which an aircraft veers off or overruns the runway surface during either take-off or landing. One of the key mitigating actions was the establishment of the Runway Safety Teams and the IAA will monitor the effectiveness of these teams in reducing the risks. Other actions in the Plan are to monitor the implementation of European recommendations to improve runway safety (eg EAPPRI, EAPPRE, SIB's) and to share information on effective measures with EASA.

ACTIONS		TARGET DATE
Safety Assurance	**FOD.002 k)**: Monitor the implementation of recommendations in EASA SIB 2014-20 "Aeroplane Operations in Crosswind Conditions" with Irish AOC holders.	**Q4 2017**
	FOD.002 f): Where practicable, ensure that specific joint training and familiarisation in the prevention of runway excursions, is provided to Pilots, Air Traffic Controllers and Aerodrome Operator staff (EAPPRE 3.1.4).	**Q4 2017**
	FOD.002 j): Monitor the implementation of EAPPRE recommendations for service providers. **EPAS References:** MST.007, SPT.075	**Ongoing**

Safety Promotion	**FOD.002 c)**: Share actions and measures in use at national level to address the safety risk of runway excursions and participate in EASA initiatives to share best practice and coordinate actions.	**Ongoing**
Safety Assurance	**M.007 b)**: Audit the effectiveness of the local runway safety teams (including effectiveness of SMS in reducing RI precursor events). **EPAS Reference:** MST.011	**Ongoing**
	M.007 c): Review the level of implementation of recommendations for service providers contained in the EAPRRI as part of the oversight cycle **EPAS Reference:** MST.014	**Ongoing**

Safety of Ground Operations - FOD.004

Analysis of global accidents has shown that there has been a steady rise in accidents caused either during or as a result of ground operations. Ground operations involve all aspects of aircraft handling at the airport as well as aircraft movement around the aerodrome, except when on active runways. The risk of fatality or injury to persons is low however the impact in terms of delays and disruption to air traffic at an aerodrome and damage to aircraft are high. Previous actions in the Plan addressed loading and aircraft de-icing issues and currently the Plan includes actions for the newly established aerodrome movements safety review group to help identify and mitigate the main risks.

ACTIONS		TARGET DATE
Safety Assurance	**FOD.004 e)**: Analyse ramp and taxiway occurrence reports and develop associated risk mitigating measures. **EPAS Reference:** MST.018	**Q4 2017**

Fire, Smoke and Fumes - M.009

Uncontrolled fire on board an aircraft, especially when it is in flight, represents one of the most severe hazards in aviation. Aircraft fire can lead to loss of control, either as a result of structural or control system failure, or as a result of crew incapacitation, and can also lead to significant casualties on the ground if evacuation and emergency response actions are ineffective. The actions in the Plan are currently focused on addressing the risks posed by the carriage of lithium batteries as well as addressing latest updated guidance provided under the auspices of the Royal Aeronautical Society (RAeS).

ACTIONS		TARGET DATE
Safety Promotion	**M.009 c)**: Promulgate EASA guidance for operators and passengers on Lithium Battery Safety and follow up with Irish operators during oversight activities to ensure that this guidance is incorporated as appropriate. **EPAS Reference:** MST.005, SPT.069	**Q4 2017**
Safety Assurance	**M.009 b)**: Review the updated guidance in RAeS document “Smoke, Fire and Fumes in Transport Aircraft” and address any areas of concern for the civil aviation system in Ireland. **EPAS Reference:** MST.005	**Q4 2017**

Birdstrikes - AED.002

Bird strikes may cause significant damage to an aircraft structure or flight controls, and aircraft engines (especially jet-engines) are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes which may lead to an accident. Whereas the IAA has taken specific actions to mitigate this safety risk at national level over the past few years the current Plan is focused on encouraging more globally lead initiatives through the auspices of ICAO.

ACTIONS		TARGET DATE
Safety Assurance	**AED.002 c)**: Encourage ICAO to provide global statistics from the ICAO IBIS system and review recommendations arising from the ICAO Wildlife Strike Reduction Symposium 2017 for application in Ireland.	**Q4 2017**

Laser Attacks - FOD.019

There has been a noticeable increase of malicious laser attacks on aircraft pilots both in Ireland and across Europe and the rest of the world. More serious laser attacks can cause eye injury to pilots or flash blindness in the cockpit thereby endangering the pilot's ability to properly operate an aircraft during critical flight phases. The relevant legislation to criminalise laser attacks on aircraft has been enacted in Ireland and the current actions in the Plan are focused on providing the latest international best practices guidance to assist flight crews in dealing with the risk.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.019 c)**: Review SAE guidance for pilots on Laser interference and provide any necessary updates to guidance currently published in Ireland.	**Q4 2018**

Offshore Helicopter Operations - FOD.024

Helicopter Operations in an Offshore environment include flights that are performed mostly over water, and where takeoffs and/or landings may be performed on helipads located in remote coastal locations, or, on helidecks located on offshore platforms or on ships. The European Plan for Aviation Safety (EPAS) includes offshore helicopter operations and includes actions to address safety issues, such as technical failures, crash survivability, helicopter ditching, terrain and obstacle avoidance, human factors etc. The actions in this Plan currently focus on review of oversight structure for helicopter operators that engage in both civil (CAT/HEMS) and State (eg SAR) activities to ensure there are no gaps in safety oversight. Also, a recent EASA analysis of Offshore Helicopter accidents and serious incidents is under review to identify any risk mitigating actions that may be applicable to the Irish civil aviation system.

ACTIONS		TARGET DATE
Safety Policy	**FOD.024 a)**: Perform a comprehensive review of the safety oversight structure for helicopter operations in Ireland that involve both civil and state functions.	**Q4 2017**
Safety Assurance	**FOD.024 b)**: Review the EASA analysis of Offshore Helicopter Operations in detail, and implement any actions necessary to address specific risks applicable to Irish offshore helicopter operations	**Q4 2018**

Detailed summaries of the progress and actions for each of these risks areas are provided in Appendix 2.

SECTION FOUR: GENERAL AVIATIONS SUMMARY

Team Raven Display Team: Photo by Frank Grealish (IrishAirPics.com)

Summary of Objectives and Actions

The General Aviation community includes wide ranging and diverse recreation and sporting activities across a wide spectrum of aircraft types and operations (including light fixed wing aeroplanes, light helicopters, microlights, gyroplanes, gliders, paragliders, balloons etc).

The key risks for general aviation are identified from the safety analysis of accidents and incidents in the State as well as from issues that emerge during regulatory oversight activities. The IAA Annual Safety Review includes performance reports on the GA community and this review contributes to the identification of the key safety risks included in this Plan.

The relatively low level of safety data in this area means that it is not possible at this time to develop safety performance targets for General Aviation. Consequently the objectives of the actions in the Plan are aimed at providing better awareness and training to GA pilots in order to minimize the risks of having accidents or serious incidents due to the hazards addressed in this Plan.

A Risk Register for General Aviation is used to help identify the main safety issues addressed in the Plan. Many of the actions in the Plan are devised and implemented via the General Aviation Safety Council of Ireland, which includes representatives of the various GA activities, as well as IAA (service provider and regulator) and the air accident investigation unit.

The following is a brief description of each of the safety risks included in the Plan, along with the current actions being taken to address the risks involved. Reference is included in the list to the associated actions in the European Plan for Aviation Safety (EPAS), where relevant.

Airspace Infringements by GA aircraft – FOD.017

An airspace infringement occurs when an aircraft enters controlled airspace without receiving the appropriate ATC clearance. The problem of airspace infringement is a serious risk to aviation safety and the risk is particularly serious when the infringing aircraft involved is a GA light aircraft, as the majority of these aircraft are not required to carry appropriate transponder equipment used to ensure appropriate separation of aircraft. The current actions in the Plan are focused on the elimination of GA infringement hotspots through revised airspace design and awareness initiatives.

ACTIONS		TARGET DATE
Safety Policy	**FOD.017 a)**: Review airspace design issues at airspace infringement hotspots with a view to implementing measures to reduce airspace infringements by GA aircraft. **EPAS Reference:** MST.016	**Q4 2017**

Mid Air Collision of GA aircraft in Class G airspace – FOD.020

Mid Air collisions involving CAT operations were discussed in the previous Chapter of this Plan. This chapter deals with the same subject but the focus is on the prevention of mid-air collisions between general aviation aircraft flying outside of controlled airspace without the benefit of air traffic control services. The actions in the Plan are focused on improved guidance for flying at unattended airfields and improved information for GA community on published aeronautical charts.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.020 a)**: Develop improved AIP guidance for VFR traffic at unattended airfields.	**Q4 2017**
	FOD.020 b): Introduce improved symbology in Aeronautical Charts (eg ATZ) for GA airfields and high density GA activity areas. **EPAS Reference:** SPT.044	**Q2 2017**

Paragliding activities – FOD.016

A paraglider is a wide canopy resembling a parachute that is attached to a person's body by a harness in order to allow them to glide through the air. Paragliding activities involves various types of self-regulated free-flying paragliding activities and State regulated powered paragliding activities. The IAA has published updated policies and guidance in this area in 2016 and the Plan is currently focused on the publication of policy concerning the provision of Irish licenses to pilots involved in powered parachuting.

ACTIONS		TARGET DATE
Safety Policy	**FOD.016 c)**: Develop and publish criteria for the licensing of pilots involved in powered paragliding in Ireland.	**Q4 2017**
	FOD.016 c): Update published policy and highlight the dangers of operating single seat non-type certified GA aircraft outside manufacturer recommended weight limits.	**Q4 2017**

Safety Information for GA Maintenance – AWSD.006

One of the top causal factors for both fatal and non-fatal accidents involving GA aircraft is system component failures (SCF), whether it be the engine itself or other system component failures critical to safety of flight (eg fuel, oil, landing gear etc). The current actions in the Plan are aimed to ensure that those involved in maintaining GA light aircraft (often the owner/pilots themselves) are made aware of airworthiness related safety information available from both within and outside of Ireland.

ACTIONS		TARGET DATE
Safety Promotion	**AWSD.006 a)**: Provide safety information concerning aircraft equipment failure and maintenance for dissemination to the Irish general aviation community.	**Ongoing**

Small Remotely Piloted Aircraft Systems/Drones – FOD.009

The proliferation of the use of drones represents an emerging risk to both commercial and general aviation. The focus on this section of the Plan is on small drones (ie those weighing less than 150 Kgs). Significant progress was made in Ireland in this area in the last two years, including updated regulations, the implementation of a drone licensing system and major media promotion events in the run up to Christmas 2015/2016. The raising of public awareness to the regulations and hazards associated with drone operations will continue over the next few years as will the IAA continued participation with EC lead safety initiative (JARUS) to help develop a standardised EU wide approach to this risk.

ACTIONS		TARGET DATE
Safety Policy	**FOD.009 c)**: Participate in the development of appropriate policy and guidance concerning the operation of drones through its collaboration in the Joint Authorities for Rulemaking of Unmanned Systems Group (JARUS	**Ongoing**
Safety Promotion	**FOD.009 f)**: Provide relevant public guidance to raise awareness of the regulatory requirements and safety hazards associated with operating drones.	**Q4 2017**

Safety Information for General Aviation – FOD.014, FOD.015

The European General Aviation Safety Team (EGAST) and the European Helicopter Safety Team (EHST) were instigated in 2006 as a voluntary safety partnership between industry associations and authorities from across Europe to facilitate the sharing best practices, improve data sources, and promote safety. Although both EGAST and EHEST are now discontinued and their functions absorbed into the EASA Safety Management process, their repositories of safety information are maintained. The Plan includes ongoing tasks to review the safety information provided by the new EASA Safety Promotion Network, along with existing information from EGAST and EHEST, and ensure the promulgation of this material to the General Aviation and Helicopter community using, in the main, public safety information events and electronic media.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.014 a)**: Promote EASA/EGAST Safety Material to general aviation community in Ireland. **EASA Reference:** MST.002	**Ongoing**
	FOD.014 b): Organise/facilitate regular general aviation safety events for fixed wing operators.	**Ongoing**
	FOD.015 a): Promote EASA/EHEST/IHST Safety Material to GA community in Ireland. **EASA Reference:** MST.002	**Ongoing**
	FOD.015 b): Organise/facilitate regular general aviation safety events for helicopter operators. **EASA Reference:** MST.015	**Ongoing**

Planning for GA flights in uncontrolled airspace – FOD.021

The risk of inadequate planning for the conduct of a GA flight in uncontrolled airspace exposes the GA pilot to additional risk of death or serious injury following a survivable accident or emergency landing. GASCI has already issued a Safety Leaflet to promote the buddy system for GA pilots and the current actions in the plan are focused on providing guidance to GA pilots on the need to consider the carriage of appropriate equipment and clothing as part of the pre-flight planning process.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.021 b)**: Develop and promulgate guidance information to GA pilots on flight planning.	**Q2 2017**

Conduct of Airshows – FOD.022

The fatal accident in 2015 during an air display aircraft in Shoreham, UK, has highlighted the risks posed to participants, spectators and the non-involved public, during the conduct of air displays. Whereas there have been no accidents or serious incidents in Ireland during air displays, the IAA has updated the relevant policies and procedures in 2016 and the current actions in this Plan are aimed to ensure specialist training is provided to IAA inspectorate staff involved in the process.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.022b)**: Provide specialist training to inspectorate staff involved in investigating requests for permit to conduct an airshow.	**Q4 2017**
	FOD.022 c): Ensure the EGAST Safety Leaflet GA 11 “Safety at Flying Displays and events: A guide for pilots” is promulgated to GA pilots in Ireland	**Q4 2017**

Carriage of Dangerous Goods – FOD.023

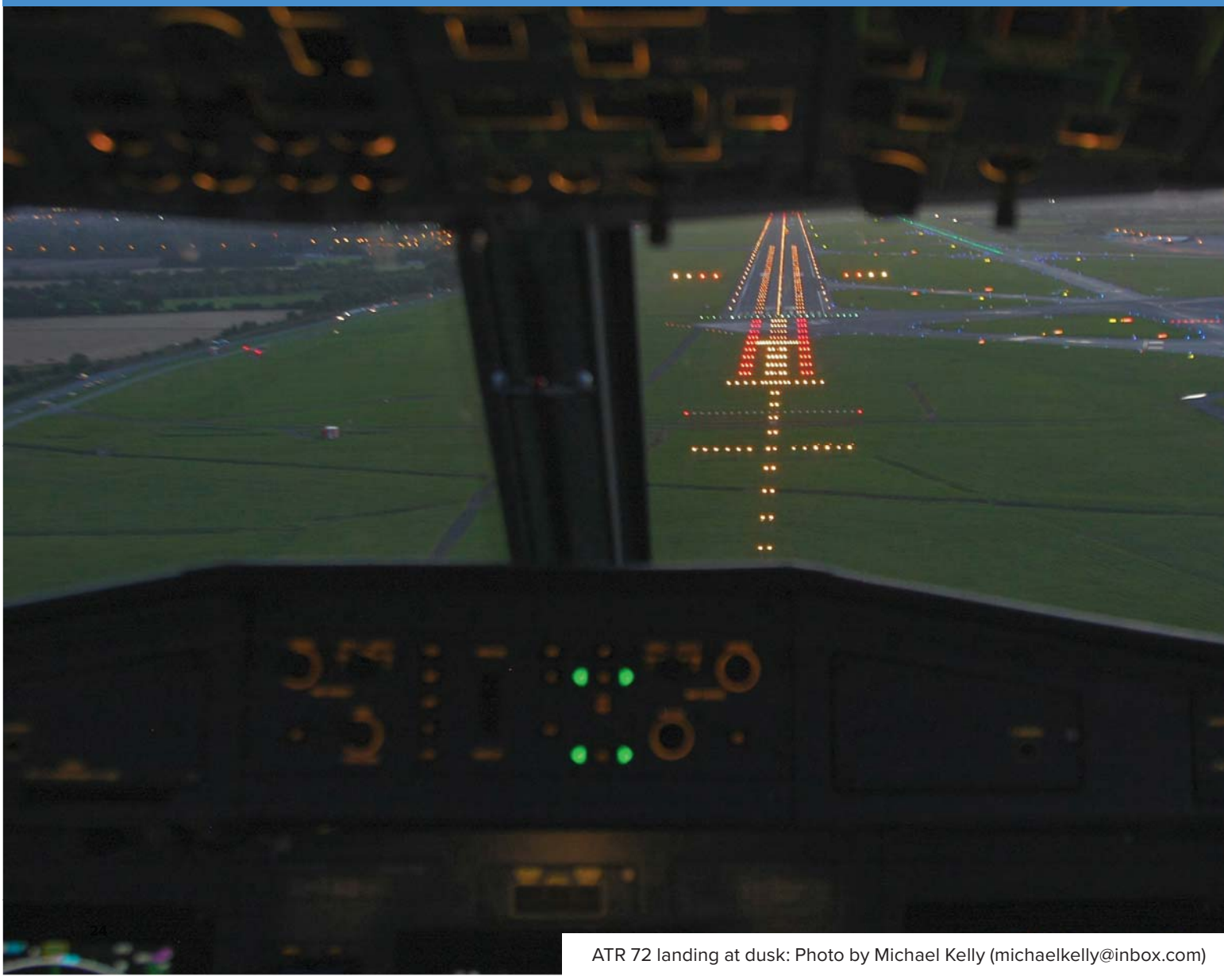
The carriage of Dangerous Goods is permitted on board commercial aircraft in accordance with strict rules and procedures coupled with robust organisational safety management processes. EASA has noted a growing trend for the carriage of dangerous goods on general aviation aircraft. Without the back-up of organisational safety management systems, general aviation pilots may unwittingly carry dangerous goods on their aircraft, without adequate knowledge and experience of the risks involved to themselves or their aircraft and occupants.

ACTIONS		TARGET DATE
Safety Promotion	**FOD.023 a)**: Review the existing guidance provided on the carriage of dangerous goods on aircraft and determine if specific guidance for GA pilots is required.	**Q4 2017**

Detailed summaries of the progress and actions for each of these risk areas are provided in Appendix 3.

Chipmunks Air Display: Photo by Frank Grealish (IrishAirPics.com)

APPENDIX ONE: SYSTEMIC RISKS DETAILS



ATR 72 landing at dusk: Photo by Michael Kelly (michaelkelly@inbox.com)

M.002: Implementation of State Safety Programme

Safety Issue

ICAO Standards and Recommended Practices (SARPs) require the implementation of State Safety Programmes in Annex 19, effective since November 2013. The incomplete or ineffective implementation of the SSP represents a risk to effective safety management in the State.

The State Safety Programme (SSP) is an integrated set of regulations and activities aimed at improving safety in the State. The objective is to achieve an acceptable level of safety of aviation services and products delivered by aviation service providers. The actions in this plan are focused on ensuring that Ireland meets the targets established in the ICAO Global Aviation Safety Plan mid-term objectives for the implementation of SSP.

Current Status

The following table shows the objectives for States contained in the ICAO GASP 2017-2019 along with the status of Ireland against these objectives:

Safety Objective	Timeline	Status for Ireland
Effective Safety Oversight – EI Score > 60%	Near-term 2017	Completed – EI score 94.5%, 2nd Place in EU and 7th place in World per latest ICAO league table.
SSP Implementation	Mid-term2022	Almost 90% completed. Outstanding issues part of Pan-European initiatives in conjunction with EASA.
Predictive risk management	Long-term 2028	Work beginning in conjunction with EASA

The documentation of the SSP for Ireland was last updated in January 2015. A further update of the SSP document is planned to align with Amendment 1 to Annex 19 and the forthcoming update to ICAO Safety Management Manual (Doc 9859), as well as the latest issue of the European Aviation Safety Program.

In addition, the State Safety Plan for Ireland includes recommended actions for EU Member States contained in the European Plan for Aviation Safety (EPAS).

The IAA provides regular updates to EASA on the status of the national State Safety Programme, as well as the status of action items for EU Member States identified in the EASA EPAS.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will continue to implement the elements of the EASA European Plan for Aviation Safety that apply to national authorities. **EPAS Reference:** App 1	**Ongoing**
c)	The IAA will work, in conjunction with EASA as appropriate, to ensure that the full implementation of the SSP for Ireland is accomplished in accordance with the ICAO GASP 2017-2019 mid-term objectives. **EPAS Reference:** RMT.02517	**Q4 2020**
d)	The IAA will update the State Safety Programme document as necessary to align with Amendment 1 of Annex 19 and latest issue of European Aviation Safety Programme. **EPAS Reference:** MST.001	**Q4 2018**

M.004: Implementation of SMS

Safety Issue

ICAO standards and EU Implementing rules require the implementation of Safety Management Systems (SMS) in aviation organisations. The lack of effective implementation of SMS could reduce the ability of organisations to improve safety performance.

An SMS provides aviation service providers with a systematic way to identify hazards and control risks while maintaining assurance that these risk controls are effective. This Plan targets the implementation of SMS across all domains in the Irish civil aviation system in line with the ICAO GASP mid-term objectives, and this has been achieved in all domains with the exception of airworthiness, which is dependant of the availability of implementing rules for SMS in the EASA rulemaking programme (RMT.0251) targeted for 2020.

Current Status

ICAO has published standards and recommended practices concerning safety management systems in Annex 19, effective November 2013. This annex consolidates the SMS requirements for all aviation disciplines, including those previously contained in other Annexes (eg Annex 1, 6 etc). EU regulations have been amended to include provisions for the implementation of SMS standards in all organisations with the exception of airworthiness, which is scheduled for completion in 2020 (EASA RMT.0251).

Best practice guidance in the area of safety management for commercial air transport operations has been published by ICAO in Doc 9859 Safety Management Manual and provided by the Safety Management International Collaboration Group (SMICG). In Europe ECAST and EHEST published guidance material on the implementation of SMS in the airborne domain. The IAA was an active participant in both ECAST and EHEST (recently disbanded) and is now an active participant in the new EASA Safety Management TEB as well as the SMICG. The IAA provides SMS training (week-long courses) for the benefit of both IAA staff and Irish industry, which uses the above referenced guidance material to promote SMS best practice.

The IAA has engaged with its FAB partner (UKCAA) in the implementation of Regulation (EU) No 390/2013 and on the harmonisation of SMSs within the FAB. This work led to the establishment of the RP II performance targets and associated performance monitoring in the context of the FAB. Interface arrangements, endorsed by both UKCAA and IAA, have been established in order to harmonise the SMS activities of the main ANSP's involved in the FAB (Action f) is closed).

The IAA continues to monitor the effectiveness of safety management in organisations in the State. The Effectiveness of Safety Management (EoSM) tool has been used in the ANS domain (ref also EASA Decision 2013/032/R and the associated AMC/GM). This tool has also been tailored to suit the Air Operators domain and used to assess the effectiveness of safety management of AOC holders. In addition the SMICG tool "SMS Compliance and Best Practices" has been distributed to Irish AOC's for their completion. The IAA is currently planning to develop and use appropriate EoSM tools for all other domains.

No new or amended action items are required for this version of the Plan.

EXISTING ACTIONS		TARGET DATE
b)	The IAA will include SMS promotional material developed by ESSI Teams, EASA and SMICG in Annual SMS training delivered by the IAA. **EPAS Reference:** MST.002	**Ongoing**
g)	The IAA will work with EASA for the development of SMS requirements in airworthiness. **EPAS Reference:** RMT.0251	**Q4 2020**
h)	The IAA will develop suitable tools to measure the effectiveness of safety management by approved organisations in all domains	**Q4 2017**

CLOSED ACTIONS	
f)	The IAA will promote the harmonisation of SMS approaches in the context of the FAB in consultation with the UK CAA and will work with UKCAA on the implementation of Regulation (EC) No 390/2014 **EPAS Reference:** SPT.059

M.003: Publication of safety performance indicators (SPIs)

Safety Issue

Measurement of safety performance requires the identification of relevant indicators. As aviation is a global business, the lack of standardised approach to development of SPI's among States (both in EU and worldwide) could diminish the ability of States to harmonise safety data analysis and associated risk management strategies.

Safety Performance Indicators are metrics used to express the level of safety performance achieved in the aviation system and are usually linked to safety performance targets. The expected benefits of the actions in this Plan are that a standardised list of SPI's will be developed for use in civil aviation in all EU Member States and implemented in Ireland.

Current Status

In 2011 EASA established a Network of Analysts (NoA) to help perform safety analysis and to help identify existing or emerging risks to be included in the European Plan for Aviation Safety. The NoA has established a working group on SPIs with the primary aim of identifying common SPIs across Europe and to provide guidance material on the development of SPIs. The work of the SPI working group will continue through 2017 and will be informed also by the related guidance emerging from the Safety Management International Collaboration Group (SM ICG). The IAA plays an active part in the work of the NoA and SMICG.

In the ATM domain, specific SPIs have been agreed and published in European regulation. EASA is continuing to develop and populate safety (key) performance indicators to measure ATM safety performance and to provide continuous monitoring and verification of the ANSPs performance achieved safety levels and trends (Ref also EPAS SPT.063).

The IAA has established SPI's at national level and publishes high level safety outcome based safety performance indicators in the Annual Safety Performance Review and on the IAA website. More granular SPIs for various sectors of the industry and individual organisations are provided to the relevant stakeholders. The IAA recognises the benefits of developing a common standardised list of SPI's at EU level and will continue to develop SPIs in line with EASA standards as they emerge, including the assessment of the benefits of FDM-based indicators for addressing national safety priorities (see also new Risk M.011 below)

No new or amended action items are required for this version of the Plan.

EXISTING ACTIONS		TARGET DATE
a)	Participate in the development of standard safety performance indicators across Europe through participation in the EASA Network of Analysts working group. **EASA Reference:** SPT.060	**Q4 2017**

M.005: Safety Culture and Occurrence Reporting

Safety Issue

Effective safety management is contingent on the timely availability of safety data from organisations and persons involved in civil aviation, which in turn is heavily dependent on a positive safety culture. The lack of timely reporting or poor safety culture reduces the ability to analyse and mitigate safety risks and to share vital safety information.

The objectives of the actions in this section of the Plan are to:

- assist organisations and persons experiencing difficulties implementing the new Regulation (EU) 376/2014
- promote voluntary reporting for those not subject to mandatory reporting requirements
- develop improvements in safety culture through occurrence reporting.

Current Status

New Regulation (EU) 376/2014 became effective on 15th November 2015 and includes provisions for the implementation of mandatory and voluntary occurrence reporting in both organisations and States, including the requirement for mandatory reporting for those involved in general aviation for the first time. This regulation places new responsibilities on organisations to provide ADREP/ECCAIRS compatible reports and includes the General Aviation community under the mandatory occurrence reporting system for the first time. The IAA recognises that the new responsibilities which may require systems/procedure development and training and will provide assistance to organisations and persons experiencing difficulties implementing the new requirements.

The IAA has established an online voluntary reporting system in 2011 and whereas the general public and industry personnel have made good use of this system, the general aviation community have not. The mandatory reporting requirements of the new Regulation (EU) 376/2014 applies to general aviation, however, those involved in operating the Basic Regulation Annex II aircraft are currently excluded. The General Aviation Safety Council of Ireland (GASCI) was established in 2012, with the 'promote the safety of General Aviation in Ireland'. To achieve this, GASCI seeks to identify flight safety risks and minimise them through education, training and shared experience amongst the Aviation Community. GASCI has provided guidance to the GA community on the new mandatory requirements in the regulation and will continue to encourage voluntary reporting by those not subject to the mandatory provisions.

The European Plan for Aviation Safety (ref SPT.067) advises that the EASA Network of Analysts will provide a focal point for EU wide assessment of safety culture which will include States survey of occurrence reporting as part of the process. The IAA conducted it's own EU wide occurrence reporting survey in 2013 and has agreed to support the EASA NoA with the analysis of the results of the EASA survey. In addition the IAA has used, and will continue to use the results of the oversight of occurrence reporting as a performance indicator of the safety culture of an organisation.

The new European Event Risk Classification Scheme for use by EU Member States will be introduced in 2017, in order to provide EU standardisation in this area. The IAA will provide relevant training to appropriate inspectorate staff in the use of the new ERCS and will also promote it's use by regulated entities (New Action Items h) and i) refer).

NEW ACTIONS		TARGET DATE
h)	The IAA will provide relevant training to inspectorate staff on the use of the new EU Event Risk Classification Scheme	Q2 2018
i)	The IAA will promote the use of EU Event Risk Classification Scheme by regulated entities	Q4 2018

EXISTING ACTIONS		TARGET DATE
c)	The IAA will work with GASCI to encourage the sharing of Safety information within the GA community, at GASCI safety evenings and Club Fly-in events and via GASCI website and facebook.	Ongoing

f)	The IAA will participate in the EASA occurrence reporting survey of States and support the EASA NoA with the subsequent analysis. **EPAS Reference:** MST.023	**Q4 2017**
g)	The IAA will use the results of oversight of occurrence reporting as a performance indicator of the safety culture of an organisation. **EPAS Reference:** MST.023	**Ongoing**

CLOSED ACTIONS

e)	The IAA will work with GASCI to provide guidance to GA community on the requirements of the new EU Occurrence Reporting Regulation No. 376/2014 and to encourage voluntary reporting by those not subject to the mandatory requirements *(eg BR Annex II operators).	

M.010: Implementation of Risk and Performance Based Oversight

Safety Issue

The IAA plans to implement risk and performance based oversight as a key element of safety management in Ireland in order to target resources in the more critical safety areas. The lack of, or ineffective implementation of, risk and performance based oversight could result in the targeting of resources in the wrong areas.

A key feature of safety management at the State level is the use of performance (objective) based regulations and risk and performance based oversight methodologies to compliment traditional prescriptive rulemaking and compliance based oversight activities. The IAA target is to implement risk and performance based oversight in Ireland in the domains of operations, air navigation services and aerodrome domains by end by end 2017 and in airworthiness domain by end 2020.

Current Status

The concept of risk and performance based oversight provides greater flexibility for both the State and the service provider to target areas of greater concern. It is planned to compliment the compliance based oversight methods by targeting resources of both the State and the service provider towards areas of greatest risk to safety.

The full implementation of performance based oversight in the IAA is a medium term project which requires:

- Risk and performance measurement systems and structures
- Data collection and analysis systems
- Data quality verification processes
- Personnel training
- Roll-out planning
- Change management

Some of the core data collection and analysis elements are already in place in Ireland (eg mandatory occurrence reporting collection and analysis schemes) and this data is currently used to inform compliance based oversight approach in some cases. However, a considerable amount of work is required to make the transformational changes (across people, process, systems, data and culture) to fully implement risk and performance based oversight.

In 2014 the IAA established an organisation risk and performance assessment structure based on three pillars; organisation intrinsic risk profile, organisation compliance profile and organisation performance profile and uses these assessments as part of the oversight planning process. Whereas this structure was developed to support complex organisations and activities, it was envisaged that some tailoring would be needed to reflect the different level of risk exposure found in different sectors of civil aviation. Consequently, the IAA is currently developing sector level risk profiles which will be used to inform the IAA oversight planning at the strategic level (new action e) below).

An effective risk and performance based oversight approach is dependent on the implementation of Safety Management System in the organisation. The requirements for SMS in airworthiness domains is subject to EU rulemaking (ref also M.003 above) and due in 2020. Consequently the roll-out of the measurement structure in the airworthiness domain is extended to end 2020 (ref Action Item d) below).

The IAA has initiated an eBusiness and digitisation project, the intent of which is to provide an on-line services environment for regulated entities and will provide enhanced capabilities in the risk and performance based oversight process. Refer to Chapter M.006 of this Plan for more details.

The implementation of risk and performance based oversight and the oversight of performance based regulations require new competencies for staff in the IAA safety regulation department. The IAA will review and update current staff training programs to ensure relevant training is provided to staff that need it (new Action Item g) below)).

NEW ACTIONS		TARGET DATE
e)	The IAA will develop sector level risk profiles which will be used to inform the IAA oversight planning at the strategic level.	**Q4 2018**
f)	The IAA will ensure that relevant staff in the safety regulation department are fully trained to properly discharge their safety oversight responsibilities in a risk and performance based regulatory environment.	**Q4 2020**

EXISTING ACTIONS		TARGET DATE
c)	The IAA will develop the tools to support risk and performance based oversight in air navigation services and aerodromes domains based on assessment of organisation risk profile, organisation compliance profile and organisation performance profile.	**Q4 2017**
d)	The IAA will develop the tools to support risk and performance based oversight in airworthiness based on assessment of organisation risk profile, organisation compliance profile and organisation performance profile.	**Q4 2020**

ASL Airlines Boeing 737-300: Photo by Joe Heeney (joedc29@hotmail.com)

M.006: eBusiness and Digitisation

Safety Issue

Failure to implement an integrated Information System to allow more effective and efficient management of compliance and safety related data could diminish the ability to perform effective safety analysis to support risk and performance based oversight.

The implementation of an integrated information system is a key enabler of the risk and performance based safety oversight approach. One of the key aims of this system is to facilitate quick access to safety information, including safety data and oversight audit results and associated trends, which will be used, along with other measures, to develop the compliance profiles of the relevant service provider. The target is to implement the ebusiness model across all domains in the IAA SRD by end 2019.

Current Status

Previous versions of this Plan reported on the enterprise resource planning (ERP) system in IAA SRD, with specific modules implemented to support aircraft registration and safety oversight functions in personnel licensing, aircraft maintenance, continued airworthiness, flight operations and security. The ERP project is now superseded by a new eBusiness and Digitisation project in IAA SRD with a vastly expanded scope to introduce eBusiness into all possible IAA SRD functions.

Through innovation and active use of technology, the IAA SRD will build on its position as a world-leading aviation safety organisation to deliver dynamic, effective regulatory practices and maximise business activity within the digital environment.

Business processes such as the acceptance of applications for the approval, registration, certification or licensing of both individuals and organisations will now be captured and tracked through digital means, with IAA inspectors and technical staff also equipped and trained to exercise oversight activity using digital platforms both at home and abroad.

Whilst the new business processes will greatly enhance the IAA SRD client relationships, the new eBusiness platform will also greatly enhance the access to, and availability of, safety information to support risk and performance based oversight. It will include a state of the art business intelligence system, that will provide faster access to better quality data from the audit management process and greatly enhance the data collecting and data sharing mechanisms (eg for operational performance and activity data).

The implementation of an integrated audit management system in the domains of Aerodromes and Air Navigation Services is now integrated into the eBusiness project and therefore action b) is amended accordingly. A new action c) is added to address the need to work with stakeholders to develop relevant applications within the eBusiness project to facilitate the sharing of data to support risk and performance based oversight.

NEW ACTIONS		TARGET DATE
c)	The IAA will work with stakeholders to develop applications to facilitate the sharing of data to support risk and performance based oversight as part of the IAA digitisation project.	Q4 2018

EXISTING ACTIONS		TARGET DATE
b)	The IAA will implement an integrated audit management system in the domains of Aerodromes and Air Navigation Services.	Q4 2019

M.011: Enhanced collaboration between SSP and SMS

Safety Issue

The State Safety Program is complimentary to the Safety Management Systems implemented by the civil aviation organisations and service providers (regulated entities). Closer collaboration between the safety assurance processes in the SSP and the safety assurance processes in the regulated entities SMS will greatly enhance the ability of the overall safety system to identify the key areas of safety concern. Failure to collaborate between SSP and SMS could lead to a divergence in approach between the State and individual organisations.

The objective of closer collaboration between SSP and SMS is to ensure that safety intelligence is mutually shared between organisations and the State in more effective manner. The target is to implement the relevant methodologies and processes by end 2019.

Current Status

The IAA wishes to ensure closer collaboration between the State SSP and organisations SMS for the purposes of enhancing the overall safety performance in the State. Whereas the occurrence reporting system is a key enabler of safety management, the IAA will encourage the use of other sources of safety data (eg air operators FDM) to enhance the risk management and safety assurance processes.

The actions are focused on developing the methodologies and processes for ensuring closer collaboration on a two way basis to ensure that:

- The high level risks identified at State level (eg in this Plan) are properly considered by the regulated entities as part of their safety management processes.
- The use of data available from existing recording equipment (eg FDM) is fully integrated into the safety management process.
- The risks identified in the safety management systems implemented by the organisations SMS are fed back to the State to ensure that lessons learned can be considered within the safety management processes at State level and appropriately shared with other affected stakeholders.
- The integration of Human Factors principles into the safety management processes.
- The enhancement of current safety analysis processes to include Big Data analytics.

EASA has launched the Data4Safety programme which will involve both State regulator and regulated entities in a collaborative project to implement Big Data analytics into aviation safety analysis. The IAA is actively involved in this project at both Steering Board and Technical Board level and will support the work of task teams as and when required.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will target the key risks identified in this Plan, including RE, LOC-I, MAC, CFIT and precursor events as part of AOC Holder SMS oversight.	**Ongoing**
b)	The IAA will establish regular dialogue with aircraft operators to promote the benefits of FDM and ensure that the standardised indicators (including RE, MAC, CFIT, LOC-I) and associated event triggers published by the European Authorities Co-ordination Group on Flight Data Monitoring (EAFDM) are implemented and monitored as part of the SMS. **EPAS Reference:** MST.003	**Q4 2017**
c)	The IAA, in conjunction with industry, will establish the methodology, tools and processes to facilitate the collection of relevant safety data from the regulated entities SMS, over and above the current data provided under the mandatory and voluntary occurrence reporting schemes.	**Q4 2019**
d)	The IAA will work with organisations to ensure that Human Factors principles are fully integrated into Safety Management processes.	**Q4 2018**
e)	The IAA will develop the processes and systems necessary to enhance the current safety analysis capabilities including the development of Big Data analytics	**Q4 2019**

M.012: Complex or Novel Operational Models

Safety Issue

Due to the increased complexity of the aviation industry, the number of interfaces between organisations, their contracted services and regulators has increased, as has the geographic spread of the associated operational and management processes. Failure to adequately address the safety risks arising from the introduction and ongoing management of safety by organisations with complex business models, or novel work practices, could have a detrimental effect on the current high level of safety.

The objective is to ensure that organisations under the oversight of the IAA that have complex or novel business models address all the associated risks as part of their Safety Management Systems and to ensure that the IAA collaborates fully with other States where high levels activities are performed (eg outstations, extended workbench etc). The target is to implement, or oversee the implementation of, the relevant processes by end 2018.

Current Status

The aviation industry in general, and Irish industry in particular, has always been to the forefront in developing new and innovative ideas to advance civil aviation, whilst ensuring the high levels of safety are retained. This is achieved through robust risk management processes that identify and assess the hazards associated with any new idea and ensuring the associated risks are well managed. In the recent past in parallel with trends in other non-aviation related industries, complex business models and novel work practices have emerged and the actions in this chapter of the Plan are designed to address the associated safety issues. The European Plan for Aviation Safety (EPAS) has also recognised the growth of these complex models in the European context and some of the actions in this chapter are designed to address actions for EU Member States arising from EPAS.

One of the first challenges to address is the geographic spread of activities and development of operational bases or extended workbenches or other services outside of the Ireland. The IAA has already developed the relevant risk based oversight audit plans to accommodate these complex arrangements, however, the IAA also appreciates the value of cooperating on oversight activities with other States in which activities take place. The best practices employed thus far by the IAA includes, advising other MS of audit activities in that State and inviting that State to participate in the audit as observers, provision of an IAA safety review of a particular organisation on request, provision of safety information concerning specific risks on request etc. The IAA would also encourage reciprocal arrangements from other States whose organisation have bases in Ireland. (Action a) below refers).

Another challenge to be addressed is the complex organisational structures employed by many modern organisations to ensure that the management personnel have the relevant control of the business and resources to enable them to meet their obligations. The EPAS encourages EU Member State NAA's to have a thorough understanding of operators' governance structure, in particular, influence of financial stakeholders and of the controlling management personnel, where such personnel are located outside the scope of approval. The best practice currently employed by the IAA is to only accept applications from an organisation that has established a company in Ireland with access to all the resources it needs to fulfil it's obligations and the ability to operate with full autonomy from any parent/sister company or other financial interests. Further EU guidance is expected on this topic in 2017 and the IAA will assist in the development of this guidance and adopt any relevant recommendations that arise (Action b) below).

The Safety Management Systems required for approved organisations (ref also to Chapter M.004 for further details) include, inter alia, a risk management process to ensure all the risks applicable to that particular organisation are fully addressed. The IAA oversees the implementation of Safety Management Systems and will ensure that for complex organisations or for organisations employing novel business practices, that any new hazards are identified and addressed. The EPAS has recommended the following hazards be included; different employment models within an individual operator, increased mobility of pilots, safety-critical services provided by non-certified service providers and (long-term) leasing. The IAA will review the risk processes of relevant organisations in Ireland to ensure that these hazards are being addressed and will provide relevant information to EASA when requested.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will implement cooperative oversight and disseminate best practices on how NAAs can better work together and participate in the oversight of organisations/ persons certified by another Member State. **EPAS Reference:** MST.021.	**Q4 2018**
b)	The IAA will ensure it has a thorough understanding of operators' governance structure, in particular, influence of financial stakeholders and of the controlling management personnel, where such personnel are located outside the scope of approval. The IAA will also assist in the development of, and implement, best EU practices in this regard. **EPAS Reference:** MST.019	**Q4 2017**
c)	Management systems of the operator should capture new hazards that are introduced by different employment models within an individual operator, increased mobility of pilots, safety-critical services provided by non-certified service providers and (long-term) leasing. The IAA will ensure this happens through SMS oversight activities and provide relevant updates to the Agency when requested. **EPAS Reference:** MST.022	**Q4 2017**

APPENDIX TWO: COMMERCIAL AIR TRANSPORT

Norwegian Airlines International (NAI) B737-800: Photo by NAI

FOD.001: Loss of Control in flight

Safety Issue

Both ICAO and EASA have identified that although the loss of control of an aircraft in flight (LOC-I) is a relatively rare event, based on studies of accident data over the past 10 years, it has been found that the highest proportion of fatal accidents were attributed to LOC-I events across many different sectors in aviation.

Although LOC-I related accidents or serious incidents are thankfully rare in the Irish civil aviation system, LOC-I remains one of the key risks to fatal accidents in aviation and it is therefore included in this Plan. The expected benefits of these actions are that there will be no LOC-I related accidents or serious incidents involving Irish commercial aircraft. The main focus of the current actions are to help prevent LOC-I events from occurring particularly following aircraft upset events.

Current Status

Numerous studies of LOC-I related accidents have shown that the problem of LOC-I is a complex one to address. Events such as deviation from flight path, abnormal airspeeds or aircraft stall can lead to fatal accidents if not handled correctly. Systems failure, ground handling errors or environmental conditions can also be contributing factors. A critical factor is the ability of the crew to anticipate the undesired behaviour of the aircraft, or once the undesirable state has commenced, to prevent it's deterioration.

Recent global efforts to address LOC-I include updated training requirements in ICAO Annexes 1, 6, PANS-TRG (DOC 9868) and in addition ICAO developed Doc 10011 "Manual on aeroplane Upset Prevention and Recovery Training (UPRT)", to support these new provisions applicable to the training of aeroplane pilots.

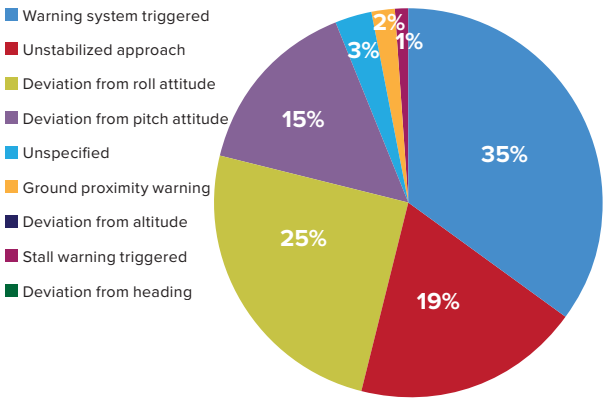
The European regulatory framework includes recurrent and conversion training provisions related to UPRT which were applicable since 2016. Ongoing rulemaking projects to address UPRT and loss of control during go-around and climb are due for delivery in 2018. The IAA has been pro-actively working with operators and training organisations to assist in the implementation of the UPRT regulations (Action item d)).

The implementation of competency based training programmes can also assist in addressing this risk. The European Human Factors Advisory Group (EHFAG) published the Regulatory Inspector Human Factors Competency Framework in 2014, which may be used to determine a set of relevant competencies for a particular role that best enhances the performance of an individual in relation to the task. The IAA will use this document when assessing training organisations implementing competency based training programmes (Action item f) below). At this time no Irish ATO is yet approved for competency based training.

The IAA has implemented an operational oversight process with associated procedures and checklist to target LOC-I events for Irish AOC Holders, including review of the AOC holders SMS/FDM activities (ie SPI analysis/trends, mitigation actions) to address the precursors to LOC-I occurrences (see action in Chapter M.011) .

The IAA continues to share information on LOC-I events with EASA. In addition the IAA monitors the implementation of guidance contained in related EASA SIB's on an ongoing basis, albeit that some of this guidance has migrated into published AMC/GM.

A breakdown of the LOC-I reports received by the IAA in 2016 from all sources is shown in the following figure. The main causes of LOC-I events were triggering of speed warning systems, unstable approach or deviation from pitch or roll attitude. The vast majority of events were low risk which means that the events were short term exceedances (eg speed or attitude) possible due to turbulence or minor procedural errors. There were no high risk cases reported (eg cases of severe exceedance or startle effect).



	EXISTING ACTIONS	TARGET DATE
d)	The IAA will promote the new EU regulations concerning Loss of Control Prevention and Recovery Training and will provide guidance to individual Irish operators and approved training organisations on the implementation of these requirements. **EPAS Reference:** SPT.012	**Q4 2018**
e)	The IAA will review and promulgate latest EASA publications (policies/SIB's) concerning LOC-I and monitor the implementation of recommendations applicable to the Irish civil aviation system.	**Ongoing**
f)	The IAA will use the EHFAG regulatory inspectors HF competency framework in assessing training organisations implementing competency based training programmes.	**Q4 2017**

FOD.003: Controlled Flight into Terrain

Safety Issue

Both ICAO and EASA have identified Controlled Flight Into Terrain (CFIT) as one of the main contributory causes to fatal and non-fatal accidents across all sectors of civil aviation.

CFIT is an event where an airworthy aircraft under the complete control of the flight crew is inadvertently flown into terrain, water or an obstacle. CFIT related accidents or serious incidents are thankfully rare in the Irish civil aviation system, nevertheless CFIT remains one of the common causes of fatal accidents in aviation and it is therefore included in this Plan. The expected benefits of these actions are that there are no CFIT related accidents or serious incidents involving Irish commercial aircraft. The current actions are focused on mitigating the risk by ensuring the precursor events are appropriately monitored under Safety Management Systems, and by supporting and encouraging the implementation of APV approaches in Irish airports licensed for commercial operations.

Current Status

The majority of fatal CFIT accidents occur during the approach phase of flight (nearly 70% for global fatal CFIT accidents), and most of these involve the aircraft being lined up with the runway but incorrectly positioned in the vertical plane. Of the fatal CFIT accidents that occur during the approach phase of flight, more than half involve non-precision, visual/circling or user-defined approaches.

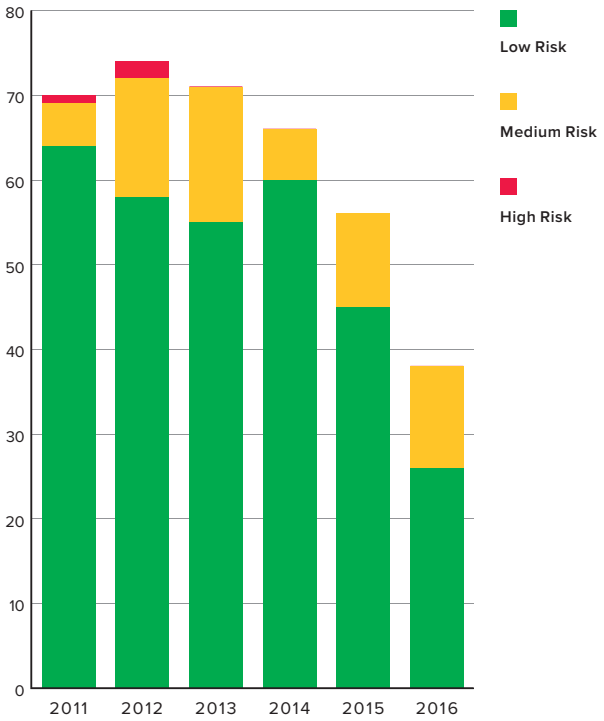
The majority of fatal CFIT accidents involve aircraft not equipped with functioning Terrain Awareness Warning Systems. In addition, TAWS effectiveness is dependent on use of accurate position information. EASA is currently focussed on introducing new regulation to mandate installation of TAWS on commercial transport aircraft currently not mandated (ie on aircraft less than 5700 kgs MTOM that are able to carry 6 to 9 passengers (due 2016)).

In Ireland, the IAA provides Electronic Terrain And Obstacle Data (ETOD), for use by industry stakeholders, such as GPS and FMS database suppliers. The ETOD helps to eliminate database transfer errors in on-board TAWS equipment and thereby helps minimise CFIT occurrences.

The IAA has implemented an operational oversight process with associated procedures and checklist to target CFIT for Irish AOC Holders, including review of the AOC holders SMS/FDM activities (ie SPI analysis/trends, mitigation actions) to address the precursors to CFIT occurrences (see chapter M.011 above). The IAA also continues to participate in EASA Survey's of Member States to share information on actions and measures in use in the State to address CFIT.

ICAO has recommended the implementation of area navigation and approach procedures with vertical guidance for all Instrument runway ends, either as the primary approach or as a back-up for a precision approach. EASA Opinion 10/2016 on PBN includes the objective that PBN approach procedures with vertical guidance (APV) that conform to the requirements of the RNP approach specification (RNP APCH) be implemented at all instrument runway ends (IREs) which are not served by precision approach procedures before 30 January 2020. The IAA has been actively assisting and encouraging the delivery of the Irish PBN implementation plan, which is currently scheduled to be completed well in advance of the EU proposed targets.

The chart below shows the relatively low level of reports of CFIT events received under the Mandatory Occurrence Reporting scheme and the declining trend evident since 2012. Most of the events were low risk reflecting momentary TAWS alerts (eg during unstable or turbulent conditions) during which the flight crew remained fully aware of, and in control of the situation



EXISTING ACTIONS		TARGET DATE
c)	The IAA will work with service providers to ensure that Irish airports licensed for commercial air transport provide non-precision instrumented approaches that contain vertical guidance. **EPAS Reference:** MST.006	**Q4 2018**

Stobart Air ATR 72: Photo by Tony Lane, IAA

ASD.001: Mid-Air Collisions

Safety Issue

Mid-Air Collisions (MAC) are accidents where two or more aircraft come into contact with each other in the air. While the likelihood of an event is low the consequences of any event are extremely high (major loss of life) and therefore the aim is to reduce the level of safety incidents that may be a contributory factor in a mid-air collision event.

The expected benefits of the actions in this Plan are that there will be no MAC related accidents or serious incidents, due to failures in the Irish Civil Aviation system and involving Irish commercial operators or any operator flying in Irish airspace. In addition the actions are focused on reducing the level of MAC precursor events such as TCAS RA, airprox, loss of separation, level bust, airspace infringements and ATC issues.

Current Status

MAC events are a common reported occurrence category by Irish operators (including those related to TCAS RA activation). The vast majority of these reports do not have any potential accident outcome; however MAC is included in this plan based on the catastrophic consequences of an actual mid-air collision.

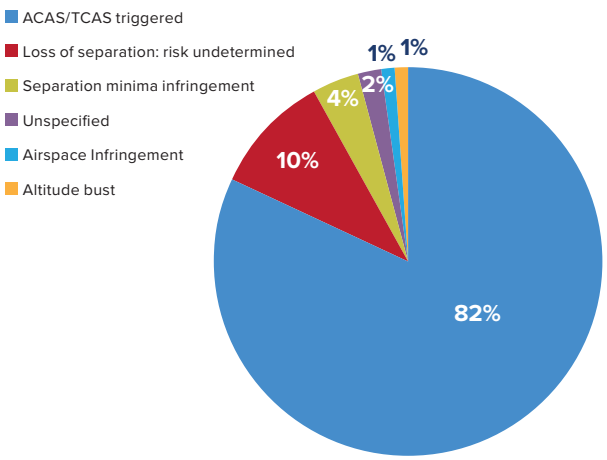
The European Action Plan for Airspace Infringement Risk Reduction (EAPAIRR) was developed in 2009 to reduce the number of airspace infringements which, in the worst-case scenario, could end in a mid-air collision. The plan contains action items for the main stakeholders – the airspace users, regulators, military, training organisations, Eurocontrol, the air navigation service providers and related services such as metrological data. The IAA has completed all of the thirteen recommended and proposed actions for regulators included in the plan. The IAA has reviewed the implementation of the EAPAIRR recommendations for service providers in the State and found it to be substantially complete, where relevant. In many cases the EAPAIRR recommendations are now integrated into the regulatory oversight process so that ongoing monitoring of EAPAIRR recommendations will be performed as part of standard surveillance activities. Action b) is retained in the Plan for the moment but is now reflected as an ongoing task.

The IAA has implemented an operational oversight process with associated procedures and checklist to target MAC events for Irish AOC Holders, including review of the AOC holders SMS/FDM activities (ie SPI analysis/trends, mitigation actions) to address the precursors to MAC occurrences and will continue to do so (see also chapter M.011 above).

The graph opposite shows that breakdown of the MAC related events reported to the IAA under the Mandatory Occurrence Reporting scheme in 2016. The main cause of MAC reports were due to triggering of ACAS RA. Over 70% of the ACAS events were classified as low risk indicating that minimal crew intervention was required to resolve the traffic conflict.

Several EU MS have reported an increase in loss of separation occurrences involving civil and military aircraft and more particularly an increase in non-cooperative military traffic over the high seas. Although not a regular occurrence in Irish airspace, the IAA has nonetheless received reports of airspace infringements by non-co-operative military aircraft in the Shannon FIR. An EASA technical analysis “Report on occurrences over the high seas involving military aircraft in 2014” contains a number of recommendations for the EU Member States and these are currently under review in Ireland for relevant action (action item e) below). These recommendations include:

- endorse and fully apply Circular 330;
- closely coordinate to develop, harmonise and publish operational requirements and instructions for state aircraft to ensure that ‘due regard’ for civil aircraft is always maintained;
- develop and harmonise civil/military coordination procedures for ATM at EU level;
- report relevant occurrences to EASA; and
- facilitate/make primary surveillance radar data available in military units to civil ATC units.



The EASA NoA performed a detailed analysis to identify the main causes and consequences of MAC events to help develop further means to mitigate against this hazard. The IAA completed a detailed analysis of this report in 2016 (Action d) is closed). The main recommendations in the airborne domain are already addressed in this Plan (eg actions to address Airspace Infringements and MAC involving GA, flights by CAT aircraft in un-controlled airspace, drones). The report also identifies several causal factors for MAC accidents and incidents in the ground ATM domain. The IAA has initiated a study of ATM related events reported to IAA with the aim to develop an ATM safety risk profile and to identify appropriate actions to address the risks in this domain (New Action g) below).

NEW ACTIONS		TARGET DATE
g)	The IAA will perform an analysis of ATM related occurrences reported to the IAA and develop an ATM safety risk profile in order to guide safety actions to address the key risks.	**Q4 2018**

EXISTING ACTIONS		TARGET DATE
b)	The IAA will review the level of implementation of recommendations for service providers contained in the EAPAIRR as part of the oversight cycle. **EPAS Reference:** MST.010	**Ongoing**
e)	The IAA will review the recommendations for EU Member States contained in EASA technical analysis "Report on occurrences over the high seas involving military aircraft in 2014" and implement these recommendations as appropriate, in conjunction with relevant State authorities. **EPAS Reference:** MST.024	**Q4 2017**
f)	The IAA will ensure that Irish operators fully address the risks associated with operations into uncontrolled airspace in their safety management system	**Q4 2017**

CLOSED ACTIONS	
d)	The IAA will review the EASA NoA detailed analysis of MAC related events in order to identify the main causes and consequences and to help develop further means to mitigate against this hazard

M.007: Runway Incursions

Safety Issue

A runway incursion (RI) is any occurrence at an aerodrome involving the incorrect presence of an aircraft vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft. Runway Incursions have been recognised for some time as a key risk in aviation safety and led to the publication of the European Action Plan for the Prevention of Runway Incursions.

The number of runway incursions that occur in Ireland are relatively low however the issue is addressed in this Plan because of the potential for catastrophic accident when they occur, especially in busy airports. The expected benefits of the actions in this Plan are that there will be no RI related accidents or serious incidents attributed to Irish commercial operators or at Irish runways. In addition the actions are focused on reducing the level of RI precursor events such as stopbar violations, inadequate airport markings, complex runway operations, ATC issues and loss of situational awareness.

Current Status

A great deal of work has been performed on runway incursions over the past 10 years and the focus on this key risk has contributed towards improvements in the global rate of Runway Incursion related safety events in recent years, as reported by ICAO and EASA. One of the key EU initiatives was the development of the European Action Plan for the prevention of Runway Incursions (EAPPRI) which contains several recommendations for all stakeholders (ie regulators and service providers) to help mitigate the risk of an RI event. The EU research into RI related safety events has also highlighted that the risk of a runway incursion in highly dependent on the local characteristics of each individual airport.

The current actions in this Plan mainly derive from the recommendations of the EAPPRI. The IAA has implemented all of the nine recommendations for regulators included in Section 1.7 of the EAPPRI, and has reviewed the implementation of EAPPRI recommendations for service providers (eg Air Operators, ANSP, Aerodromes etc) during oversight activities. The IAA has found that the implementation of EAPPRI recommendations is substantially complete in many areas. The IAA continues to monitor this subject through the integration of relevant tasks into the regulatory oversight programme. With the passage of time many of the recommendations have been included as AMC/GM in the regulatory framework (eg Regulation (EU) 139/2014 (Aerodromes)) which will form part of the normal compliance monitoring activities. In view of the foregoing action c) below is retained in the Plan as an ongoing task.

One of the key elements of the Plan was the establishment of Local Runway Safety Teams and these have now been established at certified aerodromes in Ireland. The IAA audits the effectiveness of the Local Runway Safety Teams in reducing RI events as part of the annual oversight programme.

The IAA Runway Incursions Action Group led by IAA SRD was re-constituted in 2015 to deal with the broader issue of aerodrome movements and consequently broaden stakeholder involvement to include airport authorities. This reconstituted group will enhance the ability to investigate runway incursion incidents. This group has an extended remit to investigate ground collisions or near collision events that occur anywhere in the aerodrome (ref also to chapter FOD.004 in this Plan).

EXISTING ACTIONS		TARGET DATE
b)	The IAA will audit the effectiveness of the local runway safety teams (including effectiveness of SMS in reducing RI precursor events). **EPAS Reference:** MST.011	**Ongoing**
c)	The IAA will review the level of implementation of recommendations for service providers contained in the EAPRRI as part of the oversight cycle **EPAS Reference:** MST.014	**Q4 2017**

FOD.002: Runway Excursions

Safety Issue

A runway excursion (RE) is an event in which an aircraft veers off or overruns the runway surface during either take-off or landing. Runway Excursions (RE) have been identified by both ICAO and EASA as one of the most common causes of accidents reported annually, in the European region and worldwide.

RE related accidents or serious incidents are thankfully rare in the Irish civil aviation system, nevertheless RE remains one of the common causes of accidents in aviation and it is therefore included in this Plan. The expected benefits of these actions are that there will be no RE related accidents or serious incidents involving Irish commercial aircraft. In addition the actions are focused on reducing the number of precursor events for RE, such as abnormal runway contact, deep landing, high speed touchdown and unstable approaches.

Current Status

The European Action Plan for the Prevention of Runway Excursions (EAPPRE), was published on 1st January 2013. The Action Plan contains detailed recommended actions and associated guidance material intended for implementation by the relevant stakeholder organisations (including regulators, aircraft and airport operators, ANSP's etc) with the aim of reducing the rate of runway excursions.

The IAA has implemented all the recommendations for regulators of the EAPPRE, albeit, the implementation of joint training exercises involving operatives at ANS, Aerodromes and Flight Operations remains challenging in view of the limited number of RE events that actually occur in the State. The IAA has reviewed the implementation of EAPPRE recommendations for operators and other service providers during oversight audits. The IAA has found that the implementation of EAPPRE recommendations is substantially complete in many areas. The IAA continues to monitor this subject through the integration of relevant tasks into the regulatory oversight programme. With the passage of time many of the recommendations have been included as AMC/GM in the regulatory framework (eg Regulation (EU) 139/2014 (Aerodromes). In view of the foregoing action j) below is retained in the Plan for the moment as an ongoing task.

The IAA is monitoring EASA Rulemaking plans in this area (eg RMT.0570, RMT.0296) and has reviewed available EASA guidance. EASA SIB 2014-20 addresses aeroplane operations in crosswind conditions. The IAA will review the implementation of the recommendations of this SIB with Irish AOC holders during the current oversight cycle (action item k) below).

EXISTING ACTIONS		TARGET DATE
c)	Share actions and measures in use at national level to address this safety risk and participate in EASA initiatives to share best practice and coordinate actions.	**Ongoing**
f)	Where practicable, the IAA will ensure that specific joint training and familiarisation in the prevention of runway excursions, is provided to Pilots, Air Traffic Controllers and Aerodrome Operator staff (EAPPRE 3.1.4).	**Q4 2017**
j)	The IAA will monitor the implementation of EAPPRE recommendations for service providers during oversight audits. **EPAS References:** MST.007, SPT.075	**Ongoing**
k)	Review the implementation of recommendations in EASA SIB 2014-20 "Aeroplane Operations in Crosswind Conditions" with Irish AOC holders during the current oversight cycle.	**Q4 2017**

FOD.004: Safety of Ground Operations

Safety Issue

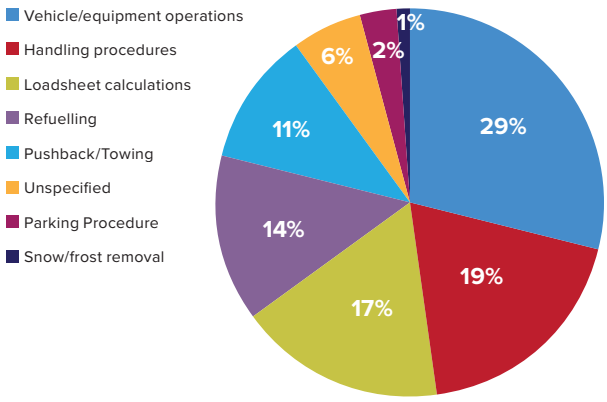
Analysis of global accidents has shown that there has been a steady rise in accidents caused either during or as a result of ground operations. EASA has reported that this is the second highest category for commercial air transport accidents between 2003 and 2012. The IAA wishes to improve the safety of ground operations in Ireland.

Ground operations involve all aspects of aircraft handling at the airport as well as aircraft movement around the aerodrome, except when on active runways. The expected benefits of these actions are that there will be no ground related accidents or serious incidents at Irish international airports. In addition the actions are focused on reducing the level of ground operations related events such as unreported damage, loading errors, inadequate de-icing, fuelling issues and dangerous goods issues.

Current Status

Damage from ground-related occurrences results in both safety risk and economic cost for all organisations involved. The IAA has been targeting this area for specific focus for the past few years, including targeted oversight of the key risk areas, establishment of quarterly safety review meetings with ground operations post holders etc.

The main types of ground operations events reported to the IAA are ground handling (~45%), ground collision (~25%) and aircraft loading issues (16%). The chart below gives a breakdown of the ground handling operations related events reported in 2016.



The IAA Aerodrome Movements Safety Review Group was established in 2016 and is currently performing a detailed assessment of all aerodrome related occurrences in order to identify and address the main causes. The group involves personnel from aerodromes, operations, ATC and safety analysis and will provide specific focus on ground collisions or near miss events on the apron or taxiways, as well as examining and promoting mitigating measures including structural, technological, operational and training.

EXISTING ACTIONS		TARGET DATE
e)	The IAA will review ramp and taxiway events (collisions and near collisions) and develop/promote mitigating measures, including structural, technological, operational and training. **EPAS Reference:** MST.018	**Q4 2017**

M.009: Fire Smoke and Fumes

Safety Issue

Uncontrolled fire on board an aircraft, especially when it is in flight, represents one of the most severe hazards in aviation. This issue was added by EASA as a key risk area for commercial transport in the European Aviation Safety Plan 2014-2017.

Whereas much work has been done to mitigate against this hazard over the past two decades the issue has been brought back into focus in recent years due to increasing reports of fire and smoke related events (eg due to lithium battery fires). The expected benefits of the actions in this Plan are that there will be no smoke/fire related accidents or serious incidents involving Irish AOC holders.

Current Status

In-flight fire can ultimately lead to loss of control, either as a result of structural or control system failure, or as a result of crew incapacitation. Fire on the ground can take hold rapidly and lead to significant casualties if evacuation and emergency response is not swift enough. Smoke or fumes, whether they are associated with fire or not, can lead to passenger and crew incapacitation.

In 2013 the Royal Aeronautical Society paper "Smoke, Fire and Fumes in Transport Aircraft" was updated. The paper serves as a reference document on current risk and proposed mitigations for smoke and fire events on commercial transport aeroplanes. In the updated edition a new section on lithium batteries, composite materials and predictive technologies has been added together with new recommendations to reflect the current risks.

The recommendations to reduce the severity and effects of in-flight fires focus on:

- Equipment design and airworthiness;
- Protective equipment;
- Maintenance;
- Pilot procedures;
- Flight and cabin crew training.

The review of the RAeS document for potential actions for this Plan is currently underway.

EASA published guidance material for operators and passengers concerning Lithium Battery Safety in 2016. The IAA will ensure this guidance material is promulgated fully within the Irish civil aviation system and will follow up with operators during oversight activities to ensure that the EASA guidance is incorporated as appropriate (action c) below).

EXISTING ACTIONS		TARGET DATE
b)	The IAA will review the updated guidance in RAeS document "Smoke, Fire and Fumes in Transport Aircraft" and address any areas of concern for the civil aviation system in Ireland. **EPAS Reference:** MST.005	**Q4 2017**
c)	The IAA will promulgate EASA guidance for operators and passengers on Lithium Battery Safety and will follow up with Irish operators during oversight activities to ensure that this guidance is incorporated as appropriate. **EPAS Reference:** MST.005, SPT.069	**Q4 2017**

AED.002: Bird Strike Hazard

Safety Issue

Bird strikes may cause significant damage to an aircraft structure or flight controls, and aircraft engines (especially jet-engines) are vulnerable to the loss of thrust which can follow the ingestion of birds into engine air intakes which may lead to an accident.

This Plan addresses the hazards to aviation from bird strikes particularly during take-off, initial climb, approach and landing phase of flight, in and around the vicinity of airports. The expected benefits of these actions are that there will be no bird strike related accidents or serious incidents involving commercial aircraft operating in Ireland. Additionally, Ireland will work with EASA to establish pan-European actions to address this hazard.

Current Status

ICAO Annex 14 requires States to collect and collate reports of bird strikes on aircraft and to report the annual statistics to the ICAO bird strike information system (IBIS). The IAA chairs the National Bird Hazard Committee in Ireland which reviews bird strike analysis reports and assesses the effectiveness of mitigation measures in use in the State.

Analysis has shown that Bird strikes may occur during any phase of flight but are most likely during the take-off, initial climb, approach and landing phases because of the greater numbers of birds in flight at lower levels. Bird strikes can cause significant damage to aircraft, although thankfully fatal accidents due to bird strikes are a rare event. EASA NoA analysis of 10 year's worth of data in the ECR shows over 46,000 birdstrike occurrences, resulting in 50 accidents, 7 of which were fatal. The EASA NoA report also shows the top 50 airports involved, none of which were Irish airports.

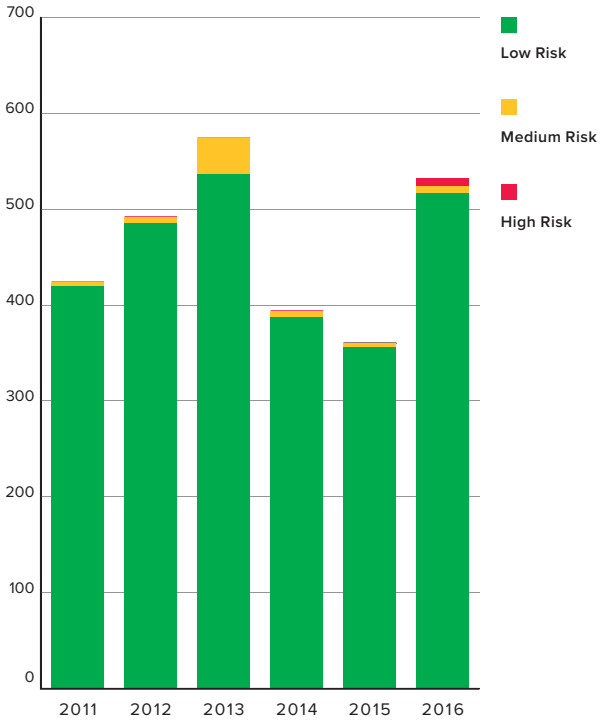
In Ireland Bird Strikes is one of the top reported occurrences in the mandatory occurrence reporting system. The graph opposite includes Birdstrikes that occurred to Irish registered aircraft flying both in Ireland and abroad. Thankfully, the vast majority of these reports led to only minor or no damage to the aircraft involved.

Ireland's aerodromes are required to conduct risk assessments on the bird hazard in the airport's environs and mitigate any bird hazards through a wildlife management and control procedure. The IAA performs an annual analysis of bird strikes at Irish Aerodromes. One of the main findings of this analysis has shown that the number of confirmed bird strikes is significantly higher from June to October (inclusive), which coincides with the breeding season. There was no apparent increase in bird strike rate in line with increasing traffic levels.

One of the key issues the IAA addressed in 2013 is the threat caused by man-made hazards such as mass release of birds (eg racing pigeons).

The IAA has been actively seeking greater global action to address this problem. In particular the IAA would like to see more global statistics published from the ICAO IBIS system (the last such report was published in 2008). ICAO has announced a Wildlife Strike Reduction Symposium for May 2017.

The IAA has raised the hazard of Birdstrikes at the European Aviation Safety Advisors Committee (EASAC) in order to encourage a pan European approach to the problem. EASA has already published guidance leaflets on this subject (eg EGAST Safety Leaflet GA6) and the EASA NoA has conducted an EU wide study of Birdstrikes reported to the ECR. The European Plan for Aviation Safety 2017-2021 action RMT.0671 has been established to improve overall safety in relation to bird ingestion through design improvements.



EXISTING ACTIONS		TARGET DATE
c)	The IAA will encourage ICAO (via ABIS representative at ICAO) to provide global statistics from the ICAO IBIS system and will review recommendations arising from the ICAO Wildlife Strike Reduction Symposium for application in Ireland.	Q4 2018

CHC Sikorski S92A: Photo by Joe Heeney (joedc29@hotmail.com)

FOD.019: Laser attacks

Safety Issue

There has been a noticeable increase of malicious laser attacks on aircraft pilots both in Ireland and across Europe and the rest of the world. More serious laser attacks can cause eye injury to pilots or flash blindness in the cockpit thereby endangering the pilot's ability to properly operate an aircraft during critical flight phases.

The effects of laser strikes on aircraft pilots can range from low risk distractions to higher risk flash blindness in the cockpit and possibly temporary or permanent eye damage to crews. The expected benefits of these actions are that there will be no laser related accidents or serious incidents involving Irish AOC holders and that the number of reported laser attacks on aircraft in Ireland is reduced.

Current Status

Under certain conditions, laser lights directed at aircraft can be a hazard. The most likely scenario is when a bright visible laser light causes distraction or temporary flash blindness to a pilot, during a critical phase of flight such as landing or takeoff. It is far less likely, though still possible, that a visible or invisible beam could cause permanent harm to a pilot's eyes. The severity of the risk is also greater as the aircraft gets closer to the source of the attack on the ground.

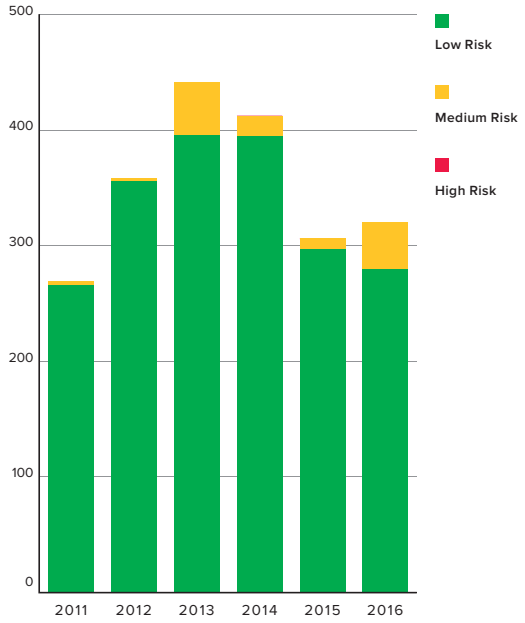
Note that fixed lasers or temporary laser shows related to entertainment events can also be hazardous to aircraft in flight however this hazard is not included in the Plan because it is largely controlled through normal IAA approval and oversight activities.

The graph includes Laser attacks on Irish registered aircraft flying in Ireland and abroad. Thankfully, the vast majority of these reports led to only minor distraction to the flight crews involved.

Aviation hazards from laser attacks can be minimized or eliminated in two primary ways. First, the deliberate pointing of lasers at aircraft by members of the public is now an offence under Irish law and offenders can be prosecuted. Second, pilots should have awareness of laser/aviation hazards and knowledge of basic recovery procedures in case of laser or bright light exposure.

The IAA also continues to address Pilot/aircrew hazard reduction measures such as education and training. In 2011 the IAA issued a General Advisory Memorandum (GAM 01/11) that provided guidance to industry of this emerging and growing threat. The IAA has worked with Irish AOC Holders to ensure that their flight SOP's and associated crew training plans address the hazard of laser attacks and has included this specific risk in the appropriate oversight evaluation checklist.

In the USA, the SAE G-10T Laser Hazards Subcommittee is working on Aerospace Recommended Practice document ARP5598, "Laser Visual Interference - Pilot Operational Procedures." This document will provide information for pilots on recognising and recovering from a laser attack. The IAA will review this guidance when available and provide any necessary updates to currently published guidance.



EXISTING ACTIONS		TARGET DATE
c)	Review SAE ARP5598 "Laser Visual Interference - Pilot Operational Procedures" and provide any necessary updates to currently published IAA guidance on this subject.	Q4 2018

FOD.024: Helicopter Offshore Operations

Safety Issue

This issue addresses Helicopter Operations in an Offshore environment, where flights are performed mostly over water, and takeoffs and/or landings may be performed on helipads located in remote coastal locations, or, on helidecks located on offshore platforms or on ships.

Offshore helicopter operations present specific hazards and associated risk profile that may require dedicated actions. The expected benefits of the actions in this Plan are that there will be no accidents or serious incidents during offshore helicopter civil aviation operations in Ireland.

Current Status

The European Plan for Aviation Safety (EPAS) has identified offshore helicopter operations as one of the key risks in European Civil Aviation. An EASA analysis of over thirty years of worldwide data has shown that there are on average over 5 accidents per year in this domain, almost half of which are fatal. The EPAS has identified actions for EASA to address some of the key risks in this area, including actions to address helicopter technical failures, crash survivability, helicopter ditching, terrain and obstacle avoidance, human factors etc.

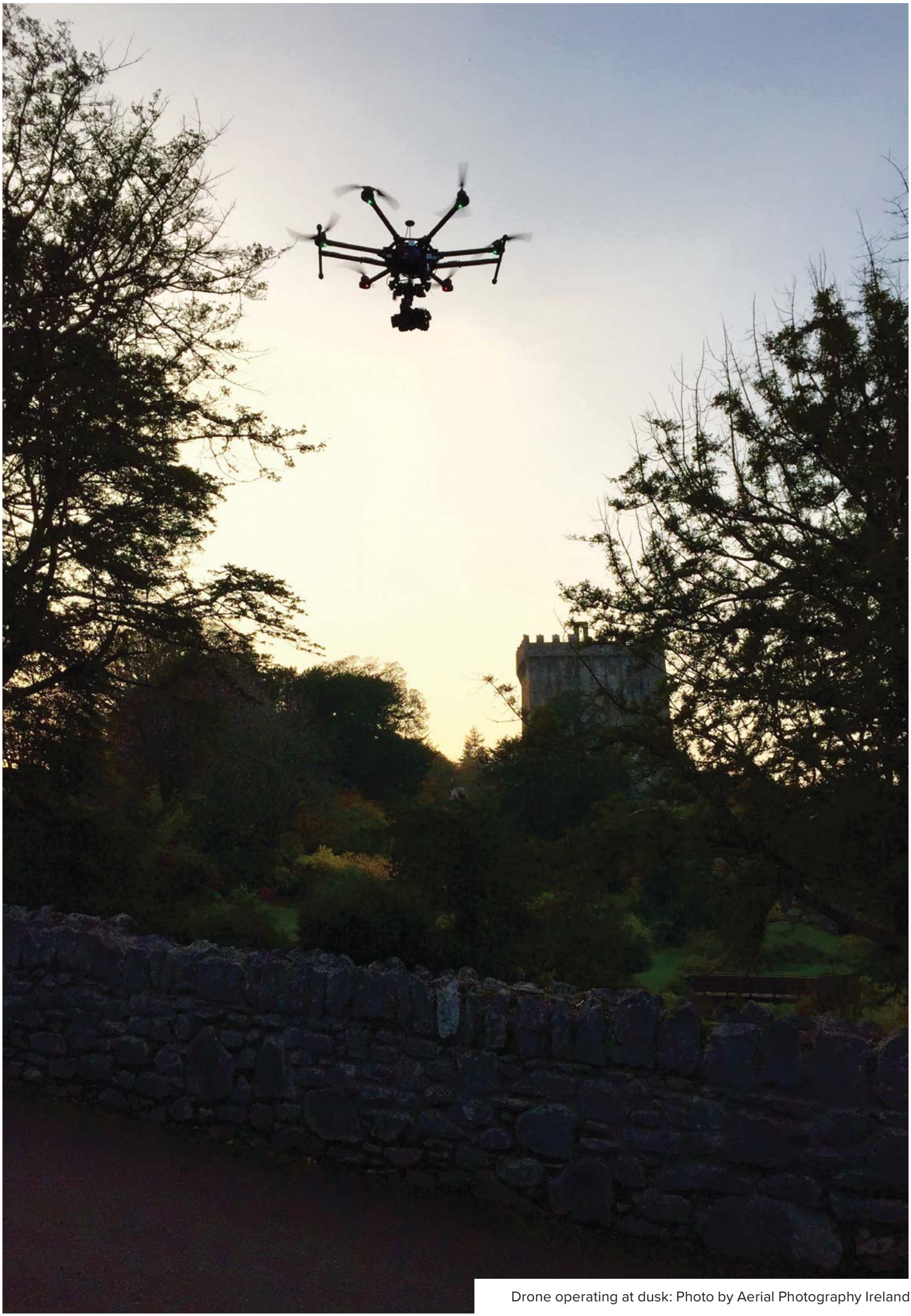
The IAA has been an active participant in the European Helicopter Safety Team (EHEST) (refer also to Chapter FOD.015 of this Plan) which is a collaborative body that works to develop risk awareness and safety promotion material in respect of helicopter operations. Although the EHEST is now disbanded to be replaced by new dedicated EASA working groups, the EHEST safety material is still current and available on https://essi.easa.europa.eu/ehest/. EASA has also instigated a dedicated Offshore Helicopter Collaborative Analysis Group in order to identify further risks in offshore helicopter operations.

The issue of offshore helicopter operations has been brought into sharp focus in Ireland in 2017 following the fatal crash of an Irish helicopter involved in an offshore Search and Rescue mission. Search and Rescue (SAR) is excluded from the regulatory framework of civil aviation and thus is outside the remit of the EASA or the IAA, nevertheless, lessons learned from Search and Rescue activities may be applicable to the commercial offshore activities as well (eg commercial air transport (CAT), helicopter emergency medical services (HEMS)).

In common with the practice in many States, an Irish helicopter operator may be involved in both civil aviation activities (eg CAT/HEMS) and state functions (eg SAR). Whereas the IAA has safety oversight of the civil aviation operations, the oversight of state functions rests with the Department of Transport Tourism and Sport. The IAA has initiated a comprehensive review of the safety oversight structure for helicopter operations in Ireland that involve both civil and State functions, in order to ensure that there are no gaps in the oversight process (New Action a) below).

The EASA Network of Analysts has performed a detailed analysis of offshore helicopter accidents and serious incidents. This comprehensive analysis identifies the key risk areas involved, including causal factors, contributory factors and consequences. The IAA will review the EASA analysis of Offshore Helicopter Operations in detail, and implement any actions necessary to address specific risks applicable to Irish offshore helicopter operations (New Action b) below).

NEW ACTIONS		TARGET DATE
a)	The IAA, in conjunction with the DTTaS, will conduct a comprehensive review of the safety oversight structure for helicopter operations in Ireland that involve both civil and state functions, in order to ensure that there are no gaps in the oversight process	Q4 2017
b)	The IAA will review the EASA analysis of Offshore Helicopter Operations in detail, and will implement any actions necessary to address specific risks applicable to Irish offshore helicopter operations	Q4 2018



Drone operating at dusk: Photo by Aerial Photography Ireland

APPENDIX THREE: GENERAL AVIATION

Land Africa Microlight: Photo by Frank Grealish (IrishAirPics.com)

FOD.017: Airspace Infringement by GA aircraft

Safety Issue

The general risk area of a mid-air collision (MAC) is addressed in the Commercial Air Transport section above in chapter ASD.001. The specific risk of airspace infringement by GA aircraft is addressed here, as it is one of the main causes for MAC events reported under mandatory occurrence reporting systems. The IAA would like to see a reduction in the level of airspace infringements by GA aircraft in Irish airspace.

An airspace infringement occurs when an aircraft enters controlled airspace without receiving the appropriate ATC clearance. The expected benefit of these actions is that there will be no accidents or serious incident in Irish airspace as a result of an airspace infringement by GA traffic and that the level of lower risk occurrences (eg cutting corners) is reduced.

Current Status

The problem of airspace infringement is a serious risk to aviation safety and the risk is particularly serious when the infringing aircraft involved is a GA light aircraft as the majority of these aircraft are not required to carry appropriate transponder equipment. This means that major surveillance safety nets (eg ATC control, TCAS) that help prevent mid-air collisions are ineffective.

As discussed in ASD.001 (MAC) the IAA has implemented the recommendation of the European Action Plan for Airspace Infringement Risk Reduction (EAPAIRR) and some of these recommendations address this specific risk.

The problem of airspace infringement is a serious risk to aviation safety and the risk is particularly serious when the infringing aircraft involved is a GA light aircraft as the majority of these aircraft are not required to carry appropriate transponder equipment. This means that major surveillance safety nets (eg ATC control, TCAS) that help prevent mid-air collisions are ineffective.

The IAA published an Airspace Infringement (hotspot) Map for Dublin CTA in early 2014 (www.iaa.ie).

The General Aviation Safety Council of Ireland (GASCI) is also considering measures to address this risk. One particular action in the GASCI plan is to explore the opportunities to address specific airspace design issues (including opportunities for re-design or introduction of VFR corridors) at the margins of Class C airspace subject to increased levels of GA traffic. An airspace design review project has been launched by the IAA ANSP with full participation of GASCI to help address this issue.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will work with the General Aviation Safety Council of Ireland to review airspace design issues at airspace infringement hotspots with a view to implementing measures to reduce airspace infringements by GA aircraft. **EPAS Reference:** MST.016	**Q4 2017**

FOD.020: Mid-Air Collisions by GA aircraft in Class G Airspace

Safety Issue

Mid-Air Collisions (MAC) are accidents where two or more aircraft come into contact with each other in the air. Whereas thankfully a mid-air collision event in Ireland is quite rare, it is included in this Plan because the consequences of a mid-air collision between GA aircraft often lead to loss of life.

The expected benefit of these actions is that there will be no accidents or serious incidents in Irish airspace due to mid-air collision between GA aircraft flying in Class G airspace.

Current Status

Although there have been no MAC accidents in Irish airspace between GA aircraft operating in Irish airspace in the recent past (ref IAA Annual Safety Review 2016) the issue is included in this Plan due to the broader European experience. Recent EASA Annual Safety Reviews show that mid-air collisions are among the main contributors to fatal accidents involving GA aircraft in Europe.

For historical reasons there is insufficient data on the numbers of serious incidents (eg near miss) involving GA aircraft for analysis purposes, due to the lack of voluntary reporting of these events throughout Europe. The new EU Regulation 376/2014 on occurrence reporting aims to address this deficiency by making it mandatory for those involved in GA to report such events since 15th November 2015.

The General Aviation Safety Council of Ireland has been discussing this hazard with a view to identifying possible mitigating actions for GA in Ireland. Issues under discussion include potential improvements to existing Aeronautical Charts (eg identification of GA airfields with increased flying activity) and measures to improve communications frequency management in un-controlled airspace (eg improved AIP guidance for VFR traffic at unattended airfields). The updated Aeronautical Charts are scheduled to be published by end Q2 2017.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will work with the General Aviation Safety Council of Ireland to assist in the development of improved AIP guidance for VFR traffic at unattended airfields.	**Q4 2017**
b)	The IAA will work with the General Aviation Safety Council of Ireland (GASCI) to introduce improved symbology in Aeronautical Charts (eg ATZ) for GA airfields and high density GA activity areas. **EPAS Reference:** SPT.044	**Q2 2017**

FOD.016: Paragliding Safety

Safety Issue

This chapter addresses a range of paragliding activities, including self-regulated free flying paragliding and State regulated powered paragliding

Recent accidents causing serious injury involving paragliding activities in Ireland have brought this leisure activity into focus. The expected benefits of the actions in this Plan are that there will be no fatal accidents in Ireland caused by lack of appropriate training and safety awareness of those involved.

Current Status

The IAA strongly recommends that no person should fly or attempt to fly paragliding aircraft without receiving an appropriate course of training, provided or approved by the relevant sport aviation association covering this activity. The IAA is keen to stress that nobody is entitled to carry passengers on any aircraft type (including paragliders) for hire or reward without the necessary commercial air transport approvals being in place.

The IAA has recently published updated policy and guidance in respect of the powered paragliding activities. IAA Aeronautical Notice A.112 addresses the aircraft registration requirements and provides eligibility criteria relating to the permission to fly these aircraft in the State. Aeronautical Notice P.21 has been updated to provide criteria for the acceptance of flight crew licences/ authorisations obtained in foreign jurisdictions.

A further IAA Aeronautical Notice is in work to provide criteria for the licensing of pilots involved in powered paragliding in Ireland. Action Item c) is amended accordingly.

Non-powered free flying paragliding is not subject to safety oversight by the IAA, however, paraglider operations are still subject to rules of the air and paraglider associations are encouraged to develop procedures in conjunction with international best practices, including a pilot rating system. One such paraglider association in Ireland has already accomplished considerable work in this area.

The following guidance has also been jointly promoted by GASCI and IAA:

“Hang Gliding and Paragliding in Ireland are subject to the Rules of the Air; in addition, local environmental regulations may also apply. Anyone who wishes to partake in hang gliding or paragliding in Ireland should contact the Irish Hang Gliding and Paragliding Association through their website www.ihpa.ie for the latest up-to-date information.”

A recent Air Accident Investigation Report highlighted the risk to paraglider operations in operating their aircraft over the manufacturers recommended weight limits. A new action d) is added to update published policy on this subject and to highlight the dangers of operating single seat non-type certified GA aircraft outside manufacturer recommended weight limits.

NEW ACTIONS		TARGET DATE
d)	The IAA will update published policy and highlight the dangers of operating single seat non-type certified GA aircraft outside manufacturer recommended weight limits.	**Q4 2017**

EXISTING ACTIONS		TARGET DATE
c)	The IAA will develop and publish criteria for the licensing of pilots involved in powered paragliding in Ireland.	**Q4 2017**

CLOSED ACTIONS	
a)	The IAA will issue updated guidance material in respect of paraglider flying in Ireland
b)	The IAA and GASCI will develop methods to improve safety awareness to those involved in paragliding activities in Ireland, including foreign visitors.

AWSD.006: Safety Information for GA Maintenance

Safety Issue

Analysis of accidents in general aviation shows that system component failures, including power plant and non-power plant components, feature very highly in the accident category list. The IAA intends to provide safety information to those involved in flying and maintaining general aviation aircraft to address technical issues.

One of the top causal factors for both fatal and non-fatal accidents involving GA aircraft is system component failures (SCF), whether it be the engine itself or other system component failures critical to safety of flight (eg fuel, oil, landing gear etc). The objectives of this particular section of the Plan is to ensure that lessons learned (eg following investigation of accidents and serious incidents) are promulgated to persons involved in maintaining and repairing aircraft, in order to reduce the rate of occurrence.

Current Status

In many cases the problem of system component failure is exacerbated by poor decision making by either pilots or maintenance personnel in reaction to the failure. Sadly, the circumstances of some component failure related aircraft accidents are remarkably similar to previous accidents so it seems that lessons are not being learned as a result of accident reports to help prevent similar tragedies.

The IAA airworthiness department reviews accident reports received from the Air Accident Investigation Unit in Ireland and acts on any safety recommendations and lessons learned from these. The airworthiness department also reviews safety information provided by other States air accident investigation authorities (eg US NTSB and UK AAIB) for issues affecting aircraft equipment or maintenance. The IAA has promulgated Safety Alerts issued by the US NTSB concerning risk management in maintenance and decision making and awareness in respect of mechanical problems via the IAA website and provides links on the IAA website to safety data and leaflets published by other States (visit https://www.iaa.ie/general-aviation/safety-information).

IAA Safety Leaflet IGA3 was updated in 2017 to provide latest guidance on the maintenance of GA aircraft, engines and components with low utilisation.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will review accident reports and safety information provided by air accident investigation authorities and develop safety information (based on effective communication of key messages) concerning aircraft equipment failure and maintenance for dissemination to the Irish general aviation community.	**Ongoing**

FOD.009: Small Unmanned Aircraft (SUA)/Drones

Safety Issue

The popularity and application of small (ie less than 150 Kg) unmanned aircraft, commonly referred to as drones, continues to grow. The increasing use of drones by members of the public without appropriate understanding of the civil aviation system represents a growing risk to aviation safety.

The proliferation of the use of drones represents an emerging risk to both commercial and general aviation. The expected benefits of the actions in this Plan are that the operation of drones is properly integrated into the Irish Civil Aviation System to ensure that there will be no accidents or serious incidents as a result of conflict between a drone and an aircraft in Irish airspace.

Current Status

ICAO and EASA are addressing future Standards and Recommended Practices (SARPS) for the use of unmanned systems. ICAO established a UAS study group in 2008 to recommend appropriate SARPS to be applicable world-wide. Some SARPs in the areas of Annex 7 - Aircraft Nationality and Registration Marks and Annex 2 - Rules of the Air became applicable in 2012 and ICAO will continue to develop further SARPS for all aspects of drone operation. In addition an ICAO iKIT on unmanned systems contains latest regulatory and guidance material from a number of contracting States.

Similarly EASA has included actions in the European Plan for Aviation Safety to address unmanned aviation systems, addressing both the EU regulatory framework and safety promotion. The Joint Authorities for Rulemaking of Unmanned Systems Group (JARUS) was also established in Europe to recommend a single set of technical, safety and operational requirements in this area. The IAA is actively involved in three working groups of JARUS (CONOPS, Operations and Licensing). The JARUS plenary session was hosted by the IAA in 2015.

Significant progress was made in Ireland in this area in the past two years, including updated regulations, guidance and safety promotion. New regulation SI 563 of 2015 specifies operational requirements and establishes registration requirements for drones. A dedicated website https://www.iaa.ie/general-aviation/drones provides all the latest guidance for those interested in operating drones for either business (aerial works) or leisure purposes. The site includes relevant links and guidance for the on-line registration system. A full media campaign (TV and radio) was launched in the run-up to Christmas in 2015 and 2016 to highlight the dangers of inappropriate use of drones and guidance was distributed to major drone suppliers.

The IAA has also been actively encouraging and supporting the establishment of drone users associations or clubs, including engagement with the Model Aircraft Council of Ireland in order to improve safety promotion opportunities. In recognition of the growing use of drones by various government agencies the IAA is also actively encouraging the creation of a government agency drone operators group.

This level of engagement with the public and drone sector is expected to continue into the next two years as further experience of the growth and operational use of these devices emerges. Specific safety events planned for 2017 include a drone safety workshop aimed at the air navigation services providers and a drone safety education days aimed at secondary schools (high school) students.

Drone flying prohibited zones were established in close proximity to the main airports in Ireland in 2016. These prohibited zones are supported by appropriate road signage and highlighted through associated promotional campaign. Action g) is closed.

EXISTING ACTIONS		TARGET DATE
c)	The IAA will continue to participate in the development of appropriate guidance concerning the operation of drones through its collaboration in the Joint Authorities for Rulemaking of Unmanned Systems Group (JARUS).	**Ongoing**
f)	The IAA will provide relevant public guidance to raise awareness of the regulatory requirements and safety hazards associated with operating drones.	**Q4 2017**

CLOSED ACTIONS	
g)	The IAA will work with the main Irish airports in order to establish prohibited zones for drone flying in close proximity to an airport along with associated road-signage, promotional campaign etc

Cityjet Sukhoi RRJ-95B: Photo by Cityjet

FOD.014: Safety Information for General Aviation

Safety Issue

Good safety management depends on the sharing of safety information, including lessons learned from accidents or incidents, with GA pilots and instructors.

The aim of safety promotion is to enhance awareness of hazards and provide best practices for mitigating these hazards in order to help reduce accidents in the general aviation sector. The objectives of the actions in this Plan are to ensure that safety information relevant to GA pilots or instructors are developed/obtained and promulgated to the widest audience in the most suitable and expeditious way possible.

Current Status

By it's very nature, although many general aviation pilots are members of groups or clubs, the sharing of safety information between the many diverse practitioners involved is challenging. In Europe, the European General Aviation Safety Team (EGAST) was established in 2006 and this group provided safety material in the form of Safety Leaflets, Safety Presentations and Safety Videos, based on lessons learned from accidents and incidents that occurred throughout Europe affecting general aviation. This safety information can be used as training aids by Approved Training Organisations and Registered Training Facilities or can be distributed directly to those involved in private flying for their own personal use.

The EGAST is discontinued and it's functions are now distributed in the new EASA Safety Management groups (eg Collaborative Analysis Groups, Technical Evaluation Boards, Safety Promotion Network) – see https://www.easa.europa.eu/easa-and-you/safety-management. Although the group is discontinued the EGAST repository remains in use as a valuable source of current safety information for those involved in general aviation. New safety information derived from the EASA Safety Management process is promoted via the EASA Safety Promotion Network.

The IAA was an active participant in EGAST and continues to be actively involved in the EASA Safety Management groups. The IAA has published EGAST Leaflets on the IAA website in the past; however, more recently the IAA has been working closely with the General Aviation Safety Council of Ireland (GASCI) in order to ensure more effective promulgation of this information. The review of latest EASA/EGAST material is a standing agenda item for each GASCI meeting.

Feedback from GA community is that the promulgation of safety information via electronic media (website/facebook) is far more effective than printed material.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will work with GASCI to develop and promote EASA/EGAST Safety Material to general aviation community in Ireland. **EASA Reference:** MST.002	**Ongoing**
b)	The IAA will work with GASCI to organise/facilitate regular general aviation safety events, during which EGAST and other safety material will be promoted. **EPAS Reference:** MST.025	**Ongoing**

FOD.015: Safety Information for Helicopter Operators

Safety Issue

Analysis of accident and occurrences involving helicopters over the past decade has shown that helicopter operations are exposed to specific risks. Safety promotion in this area is a key risk mitigation strategy.

The aim of safety promotion is to enhance awareness of hazards and provide best practices for mitigating these hazards in order to help reduce helicopter accidents. The objectives of the actions in this Plan are to ensure that safety information relevant to helicopter pilots or instructors are developed/obtained and promulgated to the widest audience in the most suitable and expeditious way possible.

Current Status

The European Helicopter Safety Team (EHEST) was launched in November 2006 and brought together manufacturers, operators, research organisations, regulators, accident investigators and a few military operators from across Europe. EHEST is the helicopter branch of the ESSI, and also the European component of the International Helicopter Safety Team (IHST). The EHEST/IHST worked in collaboration to develop risk awareness, safety promotion and training material.

The EHEST is discontinued and it's functions are now distributed in the new EASA Safety Management groups (eg Collaborative Analysis Groups, Technical Evaluation Boards, Safety Promotion Network) – see https://www.easa.europa.eu/easa-and-you/safety-management. Although the group is discontinued the EHEST repository remains in use as a valuable source of current safety information for those involved in helicopter flying. New safety information derived from the EASA Safety Management process is promoted via the EASA Safety Promotion Network.

The IAA was an active participant in EGAST and continues to be actively involved in the EASA Safety Management groups. The IAA has promulgated EHEST Leaflets on the IAA website in the past but more recently has been trying to find a more effective means of promulgating this information via the General Aviation Safety Council of Ireland (GASCI). In view of the relatively low activity levels of helicopter activity in the State, specific helicopter safety events are not held, however, helicopter operator representative groups are represented in GASCI and safety information in respect of helicopters are included in GASCI safety evenings. In some cases EHEST Safety Material has been directly distributed by the IAA to licensed helicopter pilots in Ireland.

EXISTING ACTIONS		TARGET DATE
a)	The IAA will work with GASCI to develop and promote EASA/EHEST/IHST Safety Material to Helicopter community in Ireland. **EASA Reference:** MST.002	**Ongoing**
b)	The IAA will work with GASCI to organise/facilitate regular general aviation safety events, during which EHEST/IHST and other safety material will be promoted. **EASA Reference:** MST.015, MST.025	**Ongoing**

FFOD.021: Planning for GA flights in uncontrolled airspace

Safety Issue

The vast majority of GA light aircraft flying occurs in uncontrolled Class G airspace from/to private licensed airfields and take place in conditions where there is no requirement to file a flight plan, which exposes many GA such pilots to higher levels of risk.

Inadequate planning for the conduct of a GA flight exposes the GA pilot to additional risk of death or serious injury following a survivable accident or emergency landing. The objectives of the actions of this Plan are to enhance GA pilot awareness of the need to consider all risks and fully prepare for a GA flight in uncontrolled airspace, including the carriage of appropriate clothing and equipment, and the need to ensure that another person is aware of the intended flight plan.

Current Status

The General Aviation Council of Ireland has been considering this subject for some time and has already published a safety leaflet to help improve the chances of an aircraft being located quickly after an accident or after it has been forced to execute an emergency landing in a remote location.

The Safety Leaflet entitled "Tell someone who cares" is available on the GASCI website http://gasci.weebly.com/tell-someone-who-cares.html and GASCI facebook. It promotes the concept of a "buddy system" between GA pilots to ensure that "missing" aircraft are identified as quickly as possible, so that emergency services can be alerted and the location of the accident site can be quickly established. This Safety Leaflet has been widely promoted to the GA community (action a) is closed).

GASCI is also planning to develop further guidance to address the need for GA pilots to consider issues in the pre-flight planning stage, such as appropriate clothing, carriage of appropriate equipment etc. This will enable the GA pilot to alert authorities or others in case of an emergency, and to be properly protected from the elements to give the greatest chance of survival until emergency services or other help arrives.

EXISTING ACTIONS		TARGET DATE
b)	The IAA will work with GASCI to develop and promulgate guidance information to GA pilots to ensure they are properly prepared for flight in uncontrolled airspace by carrying appropriate equipment and clothing in case of a survivable accident.	**Q4 2017**

CLOSED ACTIONS	
a)	The IAA will work with GASCI to raise awareness of the need for appropriate pre-planning for GA flights in uncontrolled airspace to consider the risk of a survivable accident or emergency landing.

FOD.022: Conduct of Air Displays

Safety Issue

The fatal accident in 2015 during an air display aircraft in Shoreham, UK, has highlighted the risks posed to participants, spectators and the non-involved public, during the conduct of air displays.

Whereas there have been no accidents or serious incidents in Ireland during air displays, the Shoreham accident in 2015 in the UK provides a stark reminder of the need to remain vigilant to ensure that those managing and participating in air displays properly assess all the risks involved. The objectives of the actions of this Plan are to ensure that there are no accidents or serious incidents during the conduct of air displays in Ireland.

Current Status

Air displays are both a necessary and exciting component of civil aviation and are enjoyed by many thousands of spectators in Ireland each year. Following the tragic fatal accident in Shoreham, UK, in 2015, the IAA conducted a review of the policies and procedures in place in Ireland in relation to air displays, to ensure that the lessons learned from this accident were fully incorporated.

In 2016 the IAA published updated policies and procedures relating to:

- The acceptance of personnel responsible for organising and managing air displays
- The acceptance of personnel participating in air displays
- The issue/validation of permissions for display aircraft
- The acceptance of individual display plans/schedules and associated risk assessments.

As part of it's review the IAA will also provide specialist training to inspectorate staff involved in the investigation of requests to conduct an airshow (New Action b) below)

The EGAST (refer also to Chapter FOD.014 of this Plan) produced a safety leaflet GA11 "Safety at Flying Displays and events: A guide for pilots". The IAA will work with GASCI to ensure this safety leaflet is promulgated to GA pilots involved in such activities in Ireland (new action c) below).

NEW ACTION		TARGET DATE
b)	The IAA will provide specialist training to inspectorate staff involved in investigating requests for permit to conduct an airshow.	**Q4 2017**
c)	The IAA will work with GASCI to ensure the EGAST Safety Leaflet GA 11 "Safety at Flying Displays and events: A guide for pilots" is promulgated to GA pilots in Ireland	**Q4 2017**

CLOSED ACTION		TARGET DATE
a)	The IAA will review the policies and procedures in place for the conduct of air displays in Ireland to ensure that they incorporate latest recommendations arising from recent UK AAIB accident investigations.	

FOD.023: Carriage of Dangerous Goods in GA

Safety Issue

Dangerous Goods are articles or substances which are capable of posing a risk to health, safety, property or the environment.

The carriage of dangerous goods on aircraft not only presents safety risks due to handling by persons, but could also lead to catastrophic accidents in flight, due to damage to aircraft or aircraft critical flight systems, following the leakage of hazardous material. The objectives of the actions of this Plan are to ensure that there are no accidents or serious incidents due to the carriage of dangerous goods on GA aircraft.

Current Status

The carriage of Dangerous Goods is permitted on board commercial aircraft in accordance with robust organisational safety management processes. The IAA has published detailed guidance on the subject on the IAA website at https://www.iaa.ie/commercial-aviation/dangerous-goods . Nobody should attempt to carry dangerous goods on any aircraft without adhering to the strict rules and guidance that relate to this activity as detailed in this link.

EASA has noted a growing trend for the carriage of dangerous goods on general aviation aircraft. Without the back-up of organisational safety management systems general aviation pilots may unwittingly carry dangerous goods on their aircraft without adequate knowledge and experience of the risks involved to themselves or their aircraft and occupants.

The IAA will work with GASCI to review the existing guidance provided on the carriage of dangerous goods on aircraft and determine if specific guidance for GA pilots is required.

NEW ACTION		TARGET DATE
a)	The IAA will work with GASCI to review the existing guidance provided on the carriage of dangerous goods on aircraft and determine if specific guidance for GA pilots is required	**Q4 2017**

GLOSSARY OF TERMS

A

AAIU	Air Accident Investigation Unit
ANSD	Air Navigation Services Department
AOC	Air Operators Certificate
ARMS	Aviation Risk Management Solutions
ATC	Air Traffic Control
ATS	Air Traffic Service

C

CAST	Commercial Aviation Safety Team
CFIT	Controlled Flight Into Terrain

E

EASA	European Aviation Safety Agency
EASA	MS EASA Member States (28 EU Member States plus Iceland, Liechtenstein, Norway and Switzerland)
EPAS	European Plan for Aviation Safety
EC	European Commission
ECR	European Central Repository
EGAST	European General Aviation Safety Team
EHEST	European Helicopter Safety Team
ERC	Event Risk Classification
EU	European Union

F

FAB	Functional Airspace Block
FDM	Flight Data Monitoring

G

GA	General Aviation
GASCI	General Aviation Safety Council of Ireland

I

IAA	Irish Aviation Authority
ICAO	International Civil Aviation Organisation

K

KSI	Key Safety Indicators

L

LOC-I	Loss of control in flight

M

MAC	Mid air collision
MOR	Mandatory Occurrence Report
MTOM	Maximum Take-Off Mass

N

NoA	Network of Analysts

P

PBN	Performance Based Navigation

R

RI	Runway Incursion
RE	Runway Excursion
RIAG	Runway Incursion Action Group
RST	Runway Safety Team
RPAS	Remotely Piloted Aircraft System

S

SAR	Search and rescue
SMS	Safety Management system
SOTS	Safety Occurrence Tracking System
SUA	Small Unmanned Aircraft

U

UAS	Unmanned Aerial Systems
UN	United Nations

Photo Credits

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Disclaimer

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