

Malta Civil Aviation Safety Report



Civil Aviation Directorate

Year 2023

Publisher: Civil Aviation Directorate
Safety and Compliance Unit,
Malta Transport Centre,
Pantar Road,
Lija. LJA 2021

w: <https://www.transport.gov.mt/aviation>

e: aviationsafety.tm@transport.gov.mt

April 2024

Disclaimer

Accuracy of Information

This document contains information prepared by Transport Malta Civil Aviation Directorate (TM-CAD) and extracted from multiple data sources. While the information contained in this document has been presented with all due care, TM-CAD does not warrant or represent that the information is free from errors or omission.

The published information may change depending on the aviation environment and TM-CAD is not in any way liable for the accuracy of any information, printed and stored, or in any way interpreted and used by the user.

Contents

Abbreviations	ii
Executive Summary	iii
Occurrence Reports	1
Occurrence Class	5
Occurrence Categories	6
Key Risk Areas	9
Specific Occurrence Category Analysis	10
Aerodrome (ADRM).....	11
Airprox/TCAS Alert/Loss of Separation/Near Mid-Air Collision/Mid-Air Collision (MAC).....	12
Unmanned Aircraft Systems (UAS).....	12
Bird strikes (BIRD).....	13
Cabin Safety Events (CABIN).....	16
Controlled Flight Into or Toward Terrain (CFIT)	18
Fire/Smoke (non-impact) (F-NI).....	18
Ground Handling (RAMP).....	19
Loss of Control-Inflight (LOC-I).....	20
Runway Excursion (RE)	21
Runway Incursion (RI).....	22
Fatigue	22
General Aviation.....	24
Laser Attacks	26
Fireworks.....	26
Occurrence Report Events.....	27
Event Type	27
Event Phase.....	28
Occurrence Report Follow-up	30
National and International Safety Investigations.....	31
Safety Information and Advisory Notice (SIAN).....	31
EU Ramp Inspection Programme.....	32
SPAS Actions - Status	34
Appendix I – Occurrence Class definitions.....	35

Abbreviations

ADREP	Accident/Incident Data Reporting
AOC	Air Operator Certificate
ATC	Air Traffic Control
BAAI	Bureau of Air Accident Investigation (Malta)
CA	Competent Authority
CAD	Civil Aviation Directorate (TM-CAD)
CAT	Commercial Air Transport
CFIT	Controlled Flight into or Toward Terrain
EASA	European Aviation Safety Agency
ECCAIRS	European Co-ordination centre for Accident and Incident Reporting Systems
EPAS	European Plan for Aviation Safety
EU	European Union
FOD	Foreign Object Debris / Foreign Object Damage
GA	General Aviation
GH	Ground Handling
GHSP	Ground Handling Service Provider
ICAO	International Civil Aviation Organisation
KRA	Key Risk Area
LOC-I	Loss of Control In-flight
MAC	Mid-Air Collision
MOR	Mandatory Occurrence Report
NoA	Network of Analysts
RA	Resolution Advisory
RE	Runway Excursion
RI	Runway Incursion
RNO	Return to Normal Operations
SAFA	Safety Assessment of Foreign Aircraft
SCU	Safety and Compliance Unit (TM-CAD)
SMS	Safety Management System
SPAS	State Plan for Aviation Safety
SPI	Safety Performance Indicator
SPT	Safety Performance Target
SSP	State Safety Programme
TA	Traffic Advisory
TCAS	Traffic Collision Avoidance System
TMA	Terminal Manoeuvring Area
TM-CAD	Transport Malta Civil Aviation Directorate (CAD)
UAS	Unmanned Aircraft Systems

Executive Summary

The Malta Civil Aviation Safety Report provides an overview of the Maltese Civil Aviation safety data of 2023 and includes comparisons to similar data from the 2019-2022 period. The content and analysis of this report is based on data extracted from the Transport Malta Civil Aviation Directorate (TM-CAD) occurrence reporting system and as required by regulation (EU) 376/2014. Additionally, this report also provides a status on the Civil Aviation Directorate (CAD) actions mentioned in the Malta State Plan for Aviation Safety.

Although travelling and freight numbers show that aviation demand is on the rise, the industry is still addressing residual effects from Covid-19, notably with regards to availability of trained workforce and professionals to counter the current travelling demand. Conflict/war zones and regional instability has resulted in frequent GPS system interferences and spoofing being reported, and the need to manage risks that derive from such hazards.

During this review year, aviation activity involving the 9H mark has continued to experience significant growth. Flight hours have increased across Maltese operators, movements at the Luqa aerodrome (LMML) have increased and the aircraft register continued to grow. This activity has led to an increase in reports submitted to the national database, which also shows a strong reporting culture within organisations and the sharing of information with the CAD via the appropriate reporting channels. The CAD evaluated over 7,500 events with around 7,200 events confirmed as Mandatory Occurrence Reports (MORs). Each event might have multiple reports submitted as follow-ups or closures or else submitted by multiple reporters. For clarity of analysis, this document will distinguish between an 'MOR event' or else 'number of reports' as appropriate.

The data is being presented as an additional tool for aviation users and the public to have a snapshot of the safety levels of the Maltese Civil Aviation environment and present the main safety issues as identified by the CAD and information provided at European and Global (ICAO) levels.

The Malta Civil Aviation Safety Report is compiled by the Safety and Compliance Unit (SCU) within TM-CAD. The data analysis will help assist in the identification of Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs) for the Malta State Plan for Aviation Safety (SPAS).

Occurrence Reports

Occurrence reporting is one of the active systems that contributes towards identifying safety-related issues and help develop pro-active approaches and strategies to mitigate undesired outcomes while enhancing overall aviation safety. Along the years the CAD has seen a steady increase in the amount of occurrence reports it received and analysed. The increase can be attributed to three main drivers:

- the introduction of an EU-wide legal framework for mandatory reporting through regulation EU 376/2014;
- the work done by the Civil Aviation Directorate (CAD) to inspire a safety reporting culture among aviation users, and;
- the continuous growth of aviation activity in Malta and new organisations under the oversight of the CAD.

Occurrence reports may be submitted to the CAD via a web-based portal which is publicly available on the [Transport Malta website](#) and can be accessed by any individual or organisation interested in submitting a safety concern or safety observation. The European Commission’s aviation reporting portal (ECCAIRS 2.0) redirects the user to the TM-CAD occurrence reporting portal whenever a report is intended to be submitted to the CAD. All reports submitted to the national database are stored and managed with strict confidentiality.

Exhibit 1 shows the number of Mandatory Occurrence Report (MOR) events submitted to the national database and analysed by TM-CAD between 2019 and 2023. One can note the increase in occurrence report submissions, along the years, which is mainly attributed to the growth experienced in that year within the Maltese aviation cluster and increase activity of aircraft operators. The occurrence categories for these events are shown in Exhibit 9.

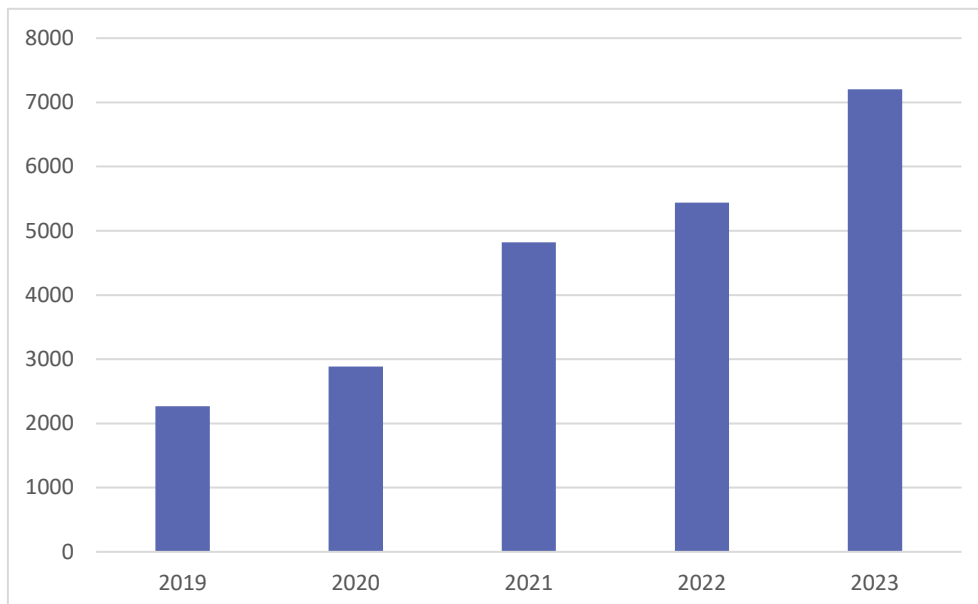


Exhibit 1 – Number of MOR events submitted to TM-CAD (2019-2023)

Exhibit 2 provides a monthly view of the number of events submitted on the National database during each month of 2023. From these events, the CAD has classified over 7,200 events as MORs. This value is the highest to date, which is resultant to the increased in aviation activity and the promotion

of reporting within the culture of an organisation. The national database recorded peak of over 750 events in the busy travelling month of July. On average, there were about 600 events per month, an increase of over 100 average events per month when compared to the previous year.

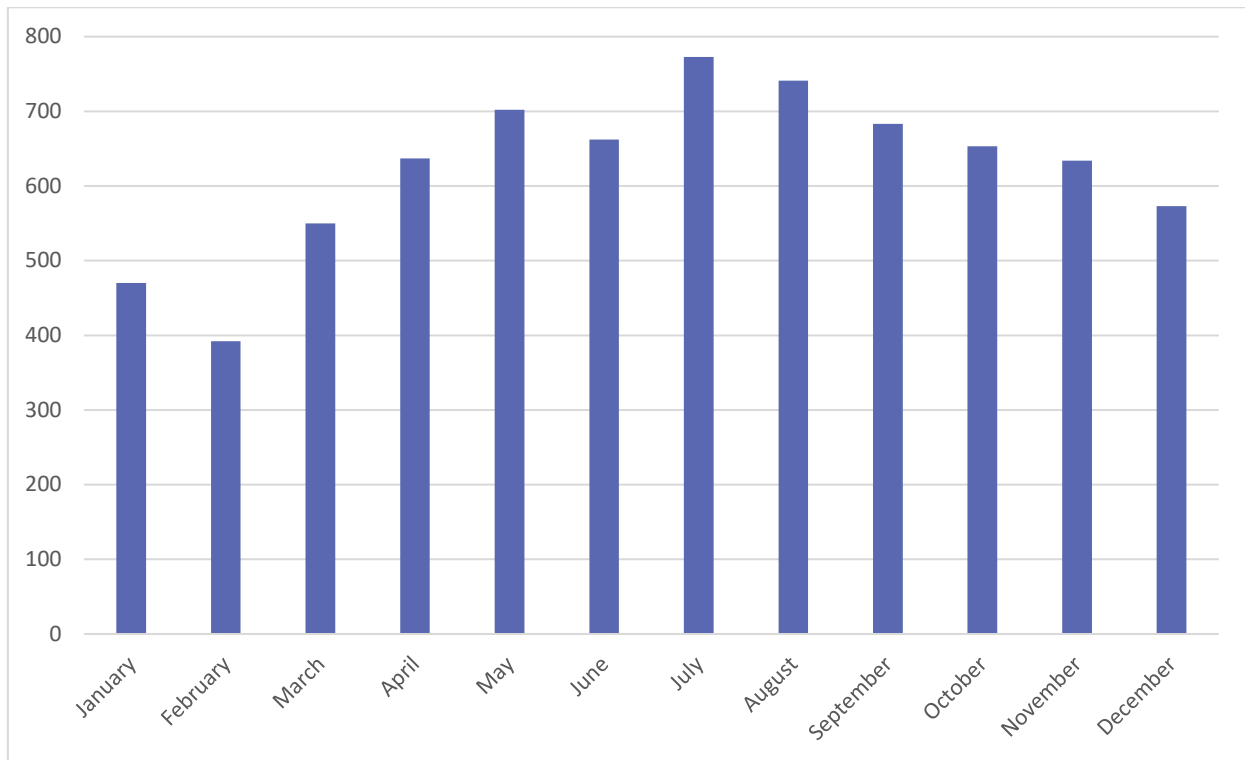


Exhibit 2 – Monthly events recorded by TM-CAD in 2023

Exhibit 3 shows the total flying hours (commercial) operated by Air Operator Certificate (AOC) holders under TM-CAD oversight. The exhibit shows a yearly increase in operational activity year on year. Whilst large organisations continued to increase considerably their flying rate, this increase is also attributed to the increase in new AOC holders.

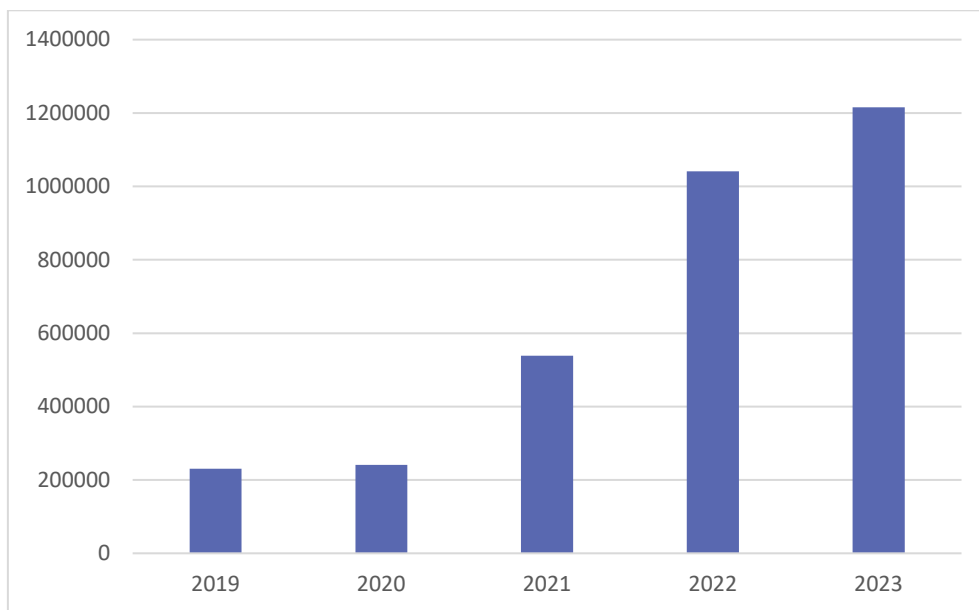


Exhibit 3 - Flying hours of AOC holders per year (2019-2023)

In addition to the yearly figures, exhibit 4 provides a relative value of MOR submissions per 1,000 flying hours (commercial). The value presented is only relevant to the MORs submitted by aircraft operators. One can note a slight increase from 2022 and is currently standing at 6 reports per 1,000 flying hours.

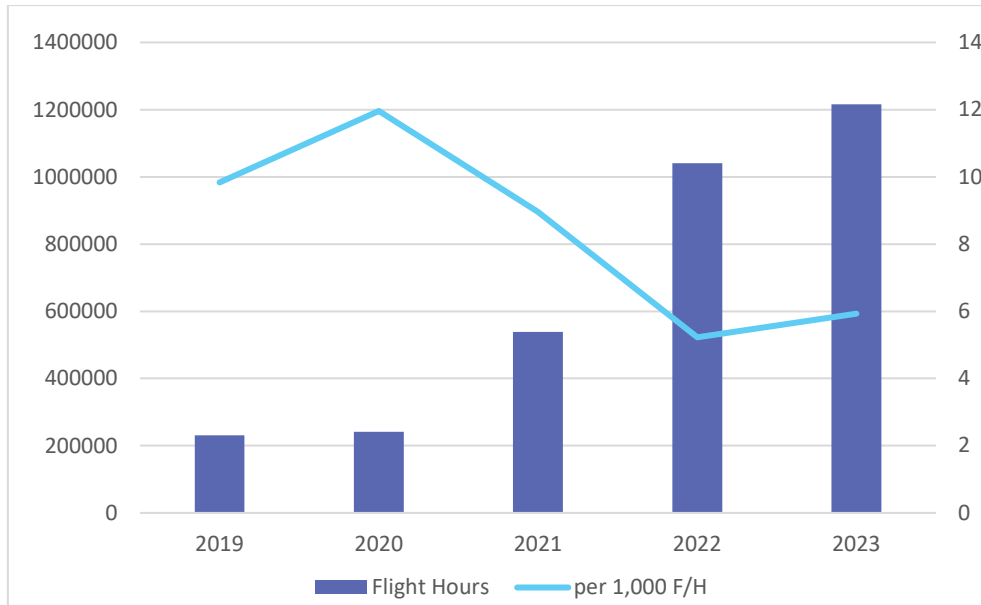


Exhibit 4 - MOR submissions by Aircraft Operators relative to flying hours (2019-2023)

In conjunction with flight hours, Aircraft movements at Malta aerodrome (Luqa) is another important parameter that is taken into consideration. Aircraft movement at the National aerodrome is experiencing year-on-year increase, with scheduled and chartered aircraft operations being the top contributors to this increase. On the contrary, local flights decreased considerably when compared to 2022. The five-year trend in aircraft movements at Luqa aerodrome is shown in Exhibit 5.

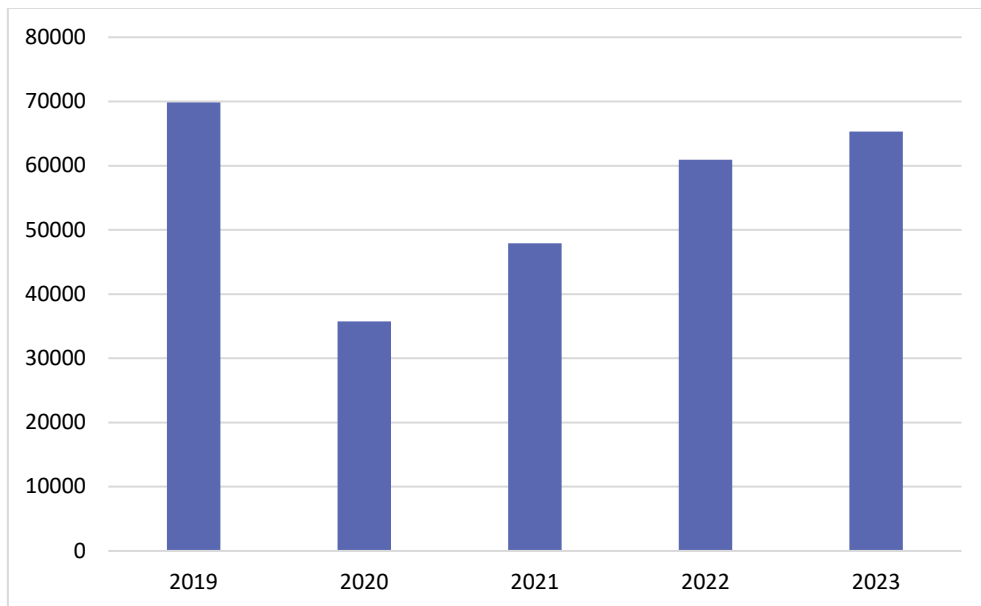


Exhibit 5 - Aircraft movements (excl. Military) at Luqa aerodrome (2019-2023)

The source of the Occurrence Reports submitted in 2023 is presented in Exhibit 6. It is important to point out that the same event may have been reported from multiple sources. In such cases, the CAD Safety and Compliance Unit (SCU) will merge duplicate reports to reflect one event. The source of reports compares to the 2022 trends.

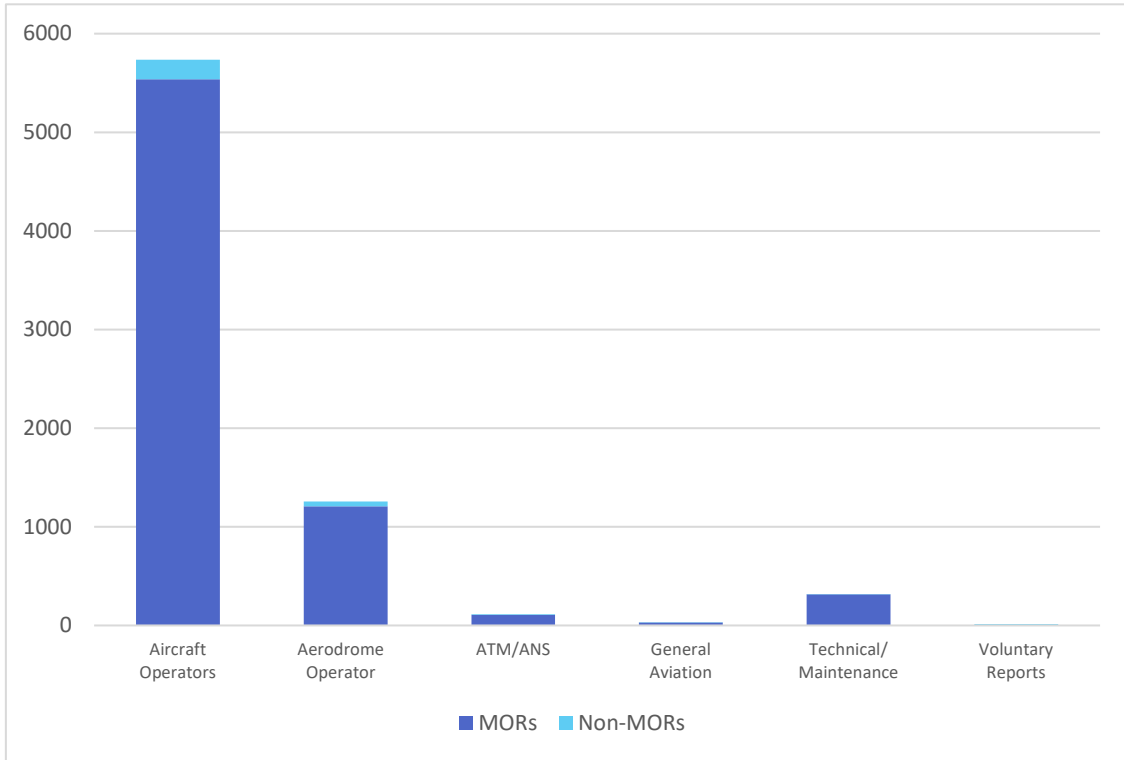


Exhibit 6 - Source of Occurrence Reports (2023)

Occurrence Class

As part of the analysis process conducted by the CAD, each occurrence report submitted to the national database is classified under one of the following occurrence classes:

- Accident
- Incident
- Serious incident
- Occurrence without safety effect
- Occurrence with no flight intended

Such classification is based on the ICAO ADREP taxonomy guidance material and reference to the definitions deriving from regulation (EU) 996/2010, of which ‘accident’, ‘incident’ and ‘serious incident’ are presented in Appendix I of this report.

The majority of MORs received are generally classified as an ‘incident’. Exhibit 7 provides a percentage value of the occurrence classes namely. The ‘Others’ incorporates event classes commonly related to EUROCONTROL terminology (ex: Occurrence without safety effect) and ‘Occurrence with no flight intended’ which are events identified or occurred during maintenance.

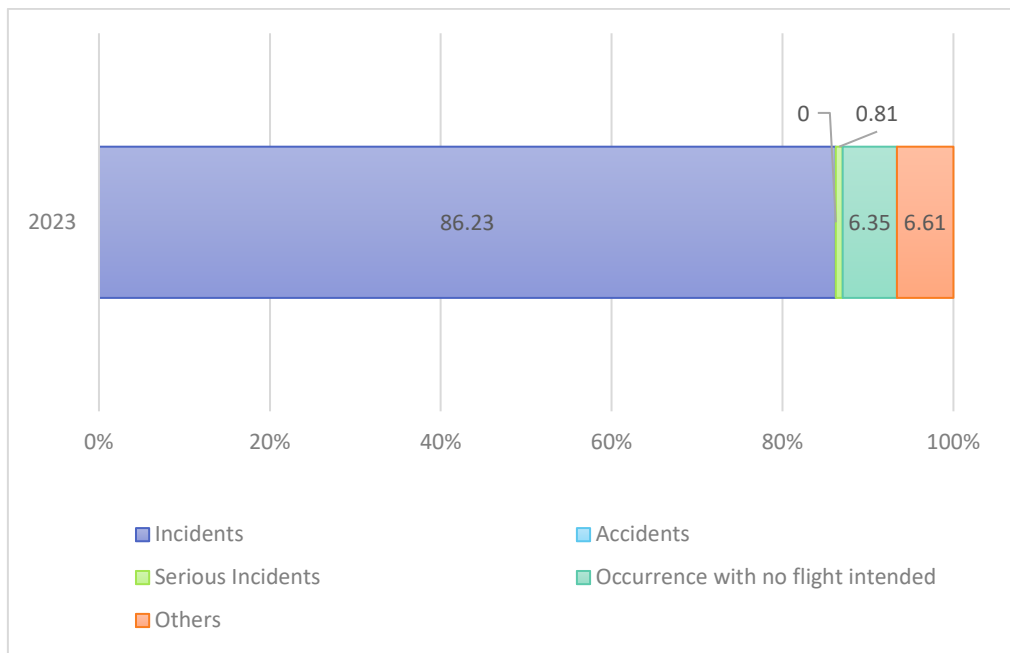


Exhibit 7 - Occurrence Class (% of total)

The percentage of the reports classified as ‘Incident’ is close to the last year’s value. The increase in percentage noted this year is in the ‘occurrence with no flight intended’ segment. This value almost doubled from last year and is due to two elements: an increase in reporting of technical events, and better classification from reporters. Reports classified as ‘Serious incidents’, and ‘accidents’ have decreased in 2023, however, most reports classified as ‘serious incidents’ are related to the MAC category, and which led to a ‘TCAS RA’ message. Events in this occurrence class normally involve the activation of the last layer of protection which if failed, could result in an accident. Nevertheless, this does not mean that each serious incident has been investigated by the appropriate investigation agency.

Occurrence Categories

As part of the analysis process managed by the CAD, each occurrence report received in the national database is categorised to allow for a top-level visibility of events. In order to select the correct category and reflect as closely as possible the event, TM-CAD utilises the ICAO and Commercial Aviation Safety Team (CAST) resources, namely the document prepared by the CAST/ICAO Common Taxonomy Team (CICTT) ‘*Aviation Occurrence Categories – Definitions and Usage Notes*’. These common taxonomies and definitions are intended to improve the aviation community’s capacity to focus on common safety issues.

The categories presented in Exhibit 8 are based on the ICAO ADREP taxonomy and are provided as follows:

<i>Taxonomy abbreviation</i>	<i>Description</i>	<i>Taxonomy abbreviation</i>	<i>Description</i>
ARC	Abnormal Runway Contact	LOC-G	Loss of Control-Ground
AMAN	Abrupt Manoeuvre	LOC-I	Loss of Control-Inflight
ADRM	Aerodrome	LOLI	Loss of Lifting Conditions En-Route
MAC	Airprox/TCAS Alert/Loss of Separation/Near Mid-Air Collisions/Mid-Air Collisions	LALT	Low Altitude Operations
ATM	ATM/CNS	MED	Medical
BIRD	Bird strike	NAV	Navigation Errors
CABIN	Cabin Safety Events	OTHR	Other
CTOL	Collision with Obstacle(s) during Take-Off and Landing	RE	Runway Excursion
CFIT	Controlled Flight Into or Toward Terrain	RI	Runway Incursion
EVAC	Evacuation	SEC	Security related
EXTL	External Load Related Occurrences	SCF-NP	System/Component Failure or Malfunction (Non-Powerplant)
F-NI	Fire/Smoke (non-impact)	SCF-PP	System/Component Failure or Malfunction (Powerplant)
F-POST	Fire/Smoke (post-impact)	TURB	Turbulence Encounter
FUEL	Fuel related	USOS	Undershoot/Overshoot
GTOW	Glider Towing related events	UIMC	Unintended Flight in IMC
GCOL	Ground Collision	UNK	Unknown or Undetermined
RAMP	Ground Handling	WILD	Collision Wildlife
ICE	Icing	WSTRW	Wind Shear or Thunderstorm

Exhibit 8 - Occurrence Categories based on ICAO ADREP taxonomy

Exhibit 9 shows the occurrence categories submitted to the national database between 2019 and 2023. This visual provides a snapshot of the ADREP categories reported and provides the basis for further analysis within that specific category as addressed in this document.

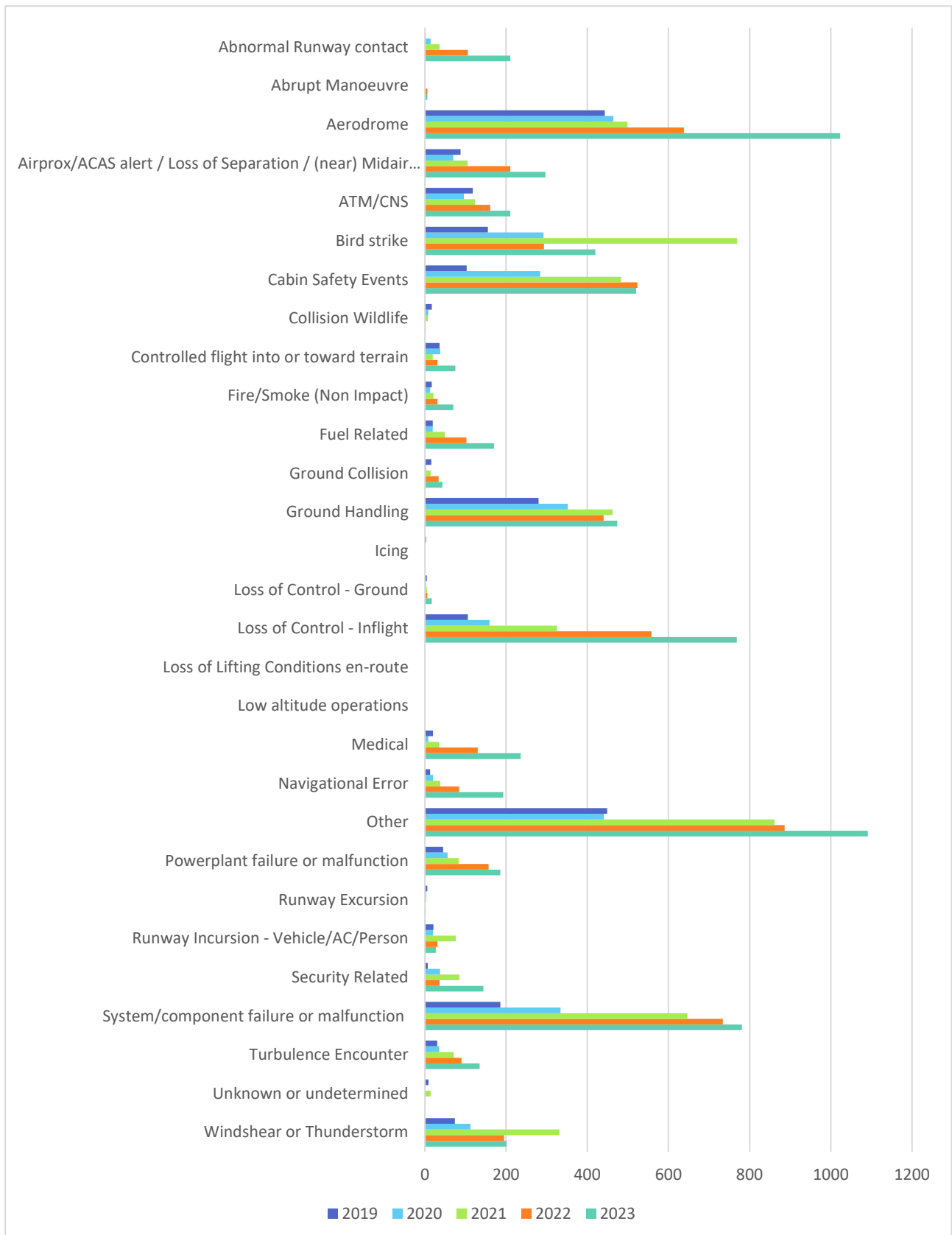


Exhibit 9 - Occurrence categories of MOR events (2019-2023)

Exhibit 10 lists the occurrence categories reported in 2023, in descending order. The most common categories reported in Exhibit 9 are once again present, nevertheless, the most common event category does not necessarily constitute the highest safety risk. The CAD is monitoring these specific categories to ensure that this increase does not constitute a negative impact on operational safety and help identify and address realistic Safety Performance Indicators (SPIs) and Targets (SPTs) by the respective operators/organisations.

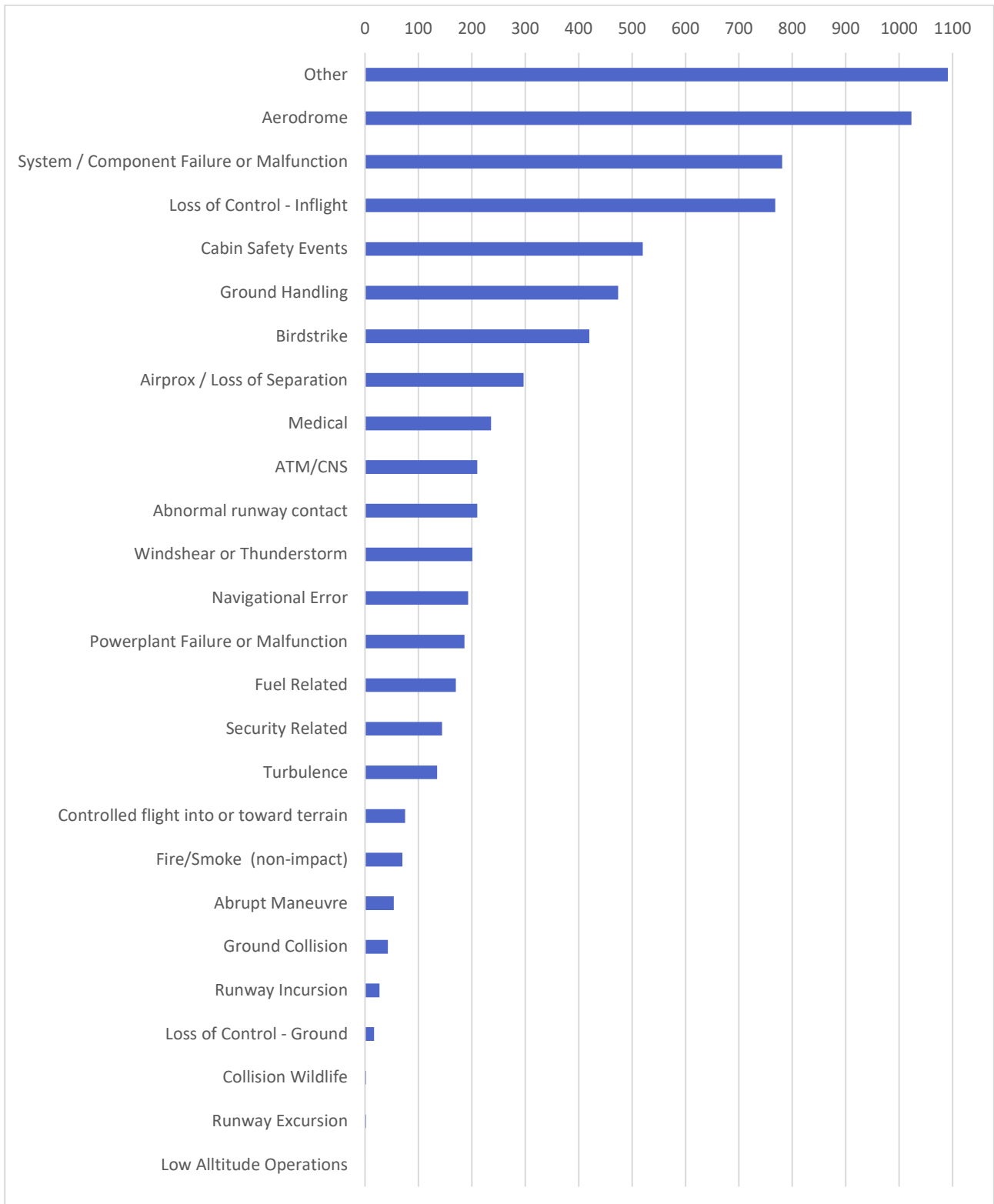


Exhibit 10 - Occurrence categories of MOR events (2023) in descending order

Key Risk Areas

Following the introduction of the European Risk Classification Scheme (ERCS) for national authorities, the CAD started including Key Risk Areas (KRAs) data field as part of its event analysis. The KRAs can be seen as the possible accident outcome that the EASA’s safety efforts are trying to prevent from happening.

This measure is aligned with the new ERCS requirement for event scoring and will be further utilised by the CAD to provide important statistical insight.

The events are being grouped under one of the following ten Key Risk Areas:

- Airborne Collision
- Aircraft Upset
- Collision on Runway
- Excursion
- Fire, Smoke and Pressurisation
- Ground Damage
- Obstacle Collision in Flight
- Other Injuries
- Security
- Terrain Collision

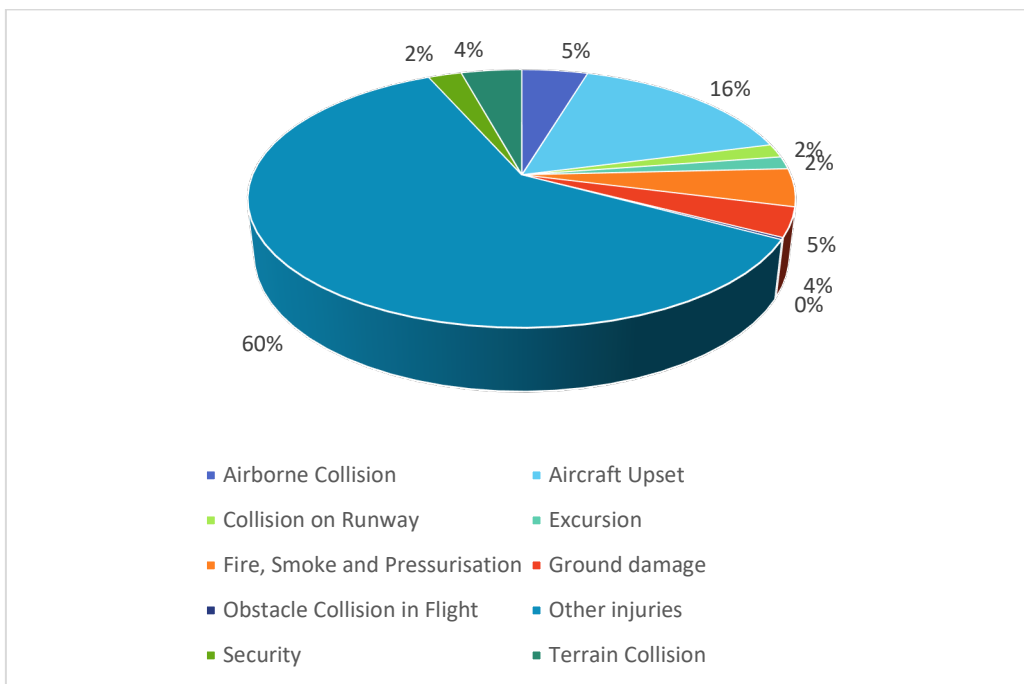


Exhibit 11 - Key Risk Area (%) of total reports

Specific Occurrence Category Analysis

The following occurrence categories are being monitored and analysed as part of the threats deriving from the EPAS, SPAS in Malta and due to commonality of events which require addressing.

The analysis will highlight the following categories:

- Aerodrome (ADRM)
- Airprox/TCAS Alert/Loss of Separation/Near Mid-Air Collisions/Mid-Air Collisions (MAC)
- Bird strike (BIRD)
- Cabin safety events (CABIN)
- Controlled Flight Into or Toward Terrain (CFIT)
- Fire/Smoke (non-impact) (F-NI)
- Loss of Control Inflight (LOC-I)
- Ground handling (RAMP)
- Runway Excursion (RE)
- Runway Incursion (RI)

Moreover, the analysis also sheds light on the number of events for specific local occurrences related to Fireworks, UAS, Laser attacks, and General Aviation reports. Information about Fatigue-relevant reports is also being monitored.

Exhibit 12 provides a visual aid of the number of reports received between 2019 and 2023 for these specific events.

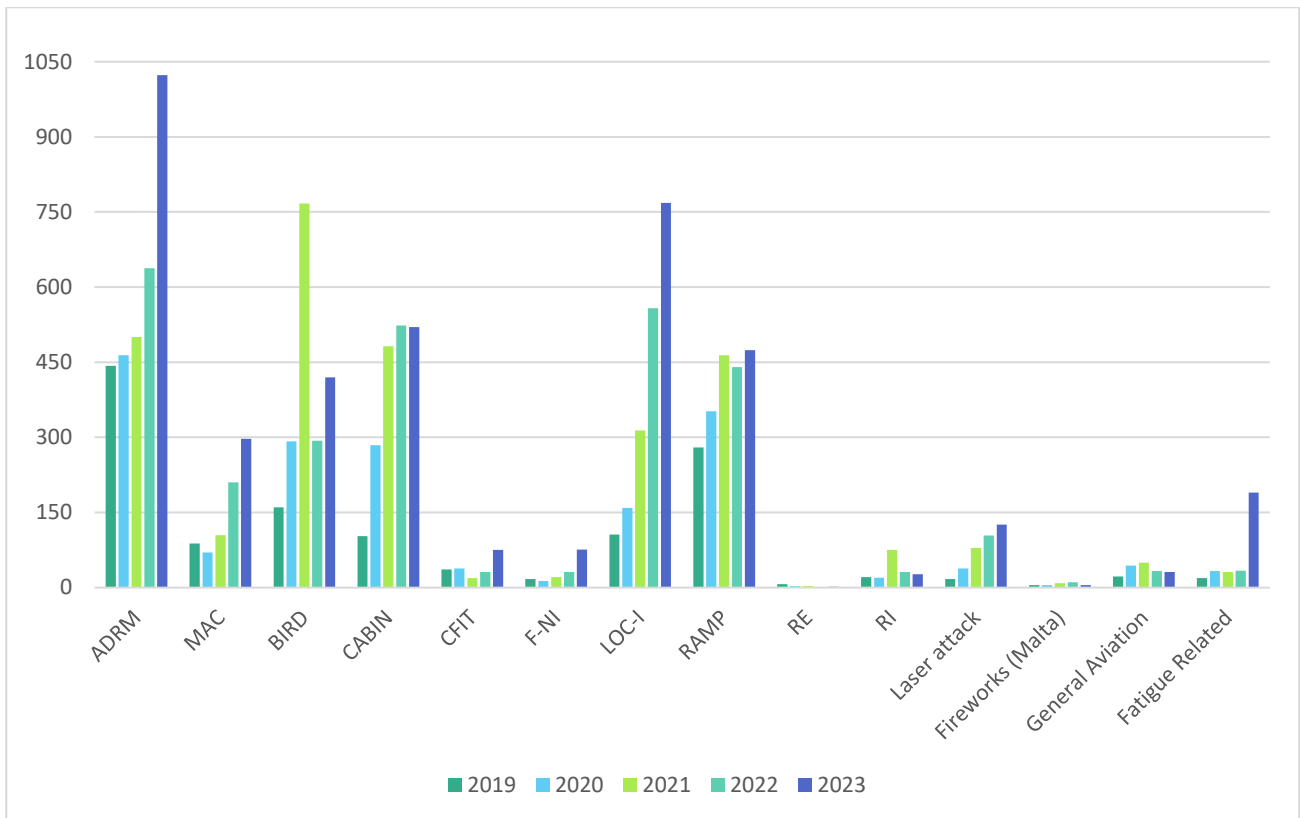


Exhibit 12 - MOR events per category/domain under review (2019-2023)

Each of these specific categories will have different levels of data analysis which will contribute towards a better comparison and aggregation of data supported with a brief description of the outcome from the analysis. When looking into the categories, there seems to be an increasing trend into half of the categories, two comparatively steady whilst the rest on a decline. Following the pandemic, flight hours and aviation activity is once again on a steady increase. This is providing more valuable data that can help stabilise in-flow data and contribute to better trend analysis. Exhibit 12 provides information on key areas that are assessed which require a deeper analysis to identify if safety concerns when increased events are reported.

Aerodrome (ADRM)

The largest number of events categorised under ADRM are derived from the Luqa aerodrome operator. Apart from FOD control and aerodrome lighting and surfaces, this category incorporates occurrence events involving Aerodrome design, service, and other functionality issues. Bird strikes at aerodromes are classified under BIRD and are not included in this category. RAMP-specific events are also not captured under this category.

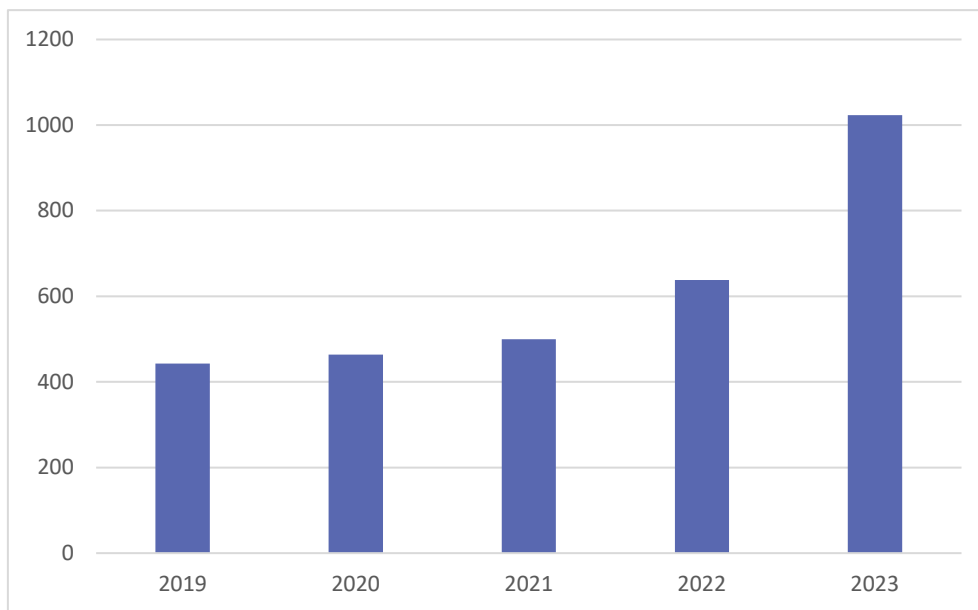


Exhibit 13 - Aerodrome (ADRM) category events (2019-2023)

Exhibit 13 shows an increase in this category and the trend confirms that this increase is driven by both the improvement in the reporting culture and increase in aircraft movements at the National aerodrome in Luqa. Extracting data related to the Luqa aerodrome, the areas that require attention are mostly related to presence of FOD, wildlife in perimeter areas, stand coordination and general aerodrome maintenance matters (mostly related to surface maintenance and general upkeep such as grass cutting).

Airprox/TCAS Alert/Loss of Separation/Near Mid-Air Collision/Mid-Air Collision (MAC)

This category includes occurrence events related to Airprox, TCAS alerts, loss of separation as well as near collisions or collisions between aircraft in flight. This aspect is of crucial importance towards a safe aviation environment. The CAD treats such events seriously and considers the occurrence class as a Significant Incident when evasive manoeuvres are actioned. Nevertheless, each event has its own impact of safety whereby separation criteria and resolution actions are taken into consideration when analysing each case.

The trends of MAC-categorised reports are on an increase and follows the increase in overall reporting to the CAD. When analysing each report, most MAC events were of low safety risk and hence classified as incidents. The increase presented in Exhibit 14 is relatively minor when considering the total number of reports and flight hours significant increase, nevertheless, the CAD is monitoring this trend for possible systemic concerns during operations.

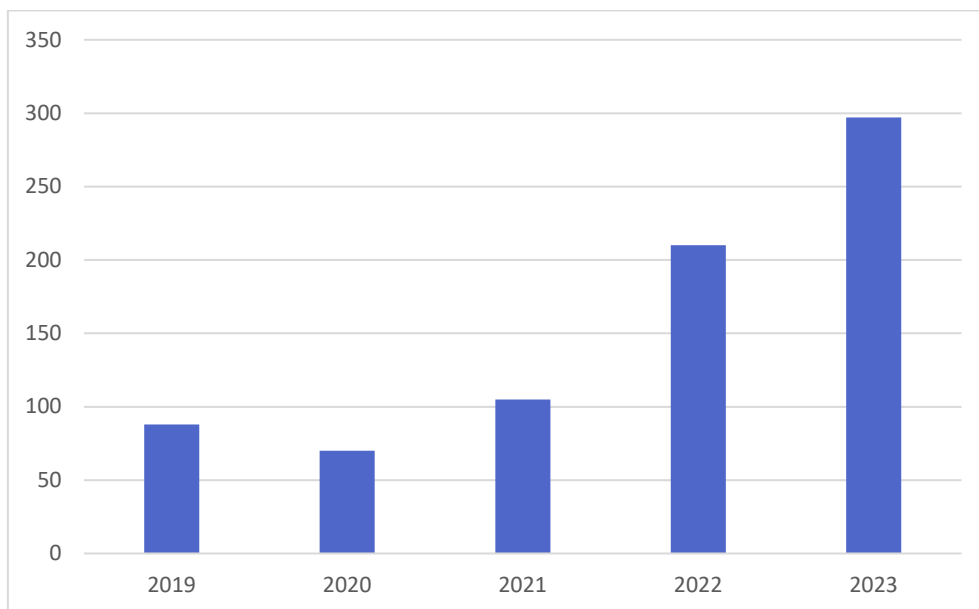


Exhibit 14 - Total MAC category events per year (2019–2023)

Unmanned Aircraft Systems (UAS)

Given that UAS related categories are limited in the current ADREP taxonomy, the CAD is also presenting events where a MAC could have occurred between an aircraft and a UAS. This data also includes sightings of UAS by the crew of an aircraft, in which case no action might have been necessary. The sighting/encounters with UAS is a concern and which the aviation industry must accept and address systematically. Attention to military use of drones in conflict zones is also another factor that needs due attention. Exhibit 15 provides percentage values of UAS related MAC events from the total reported. Similar percentage proportions were recorded in 2022.

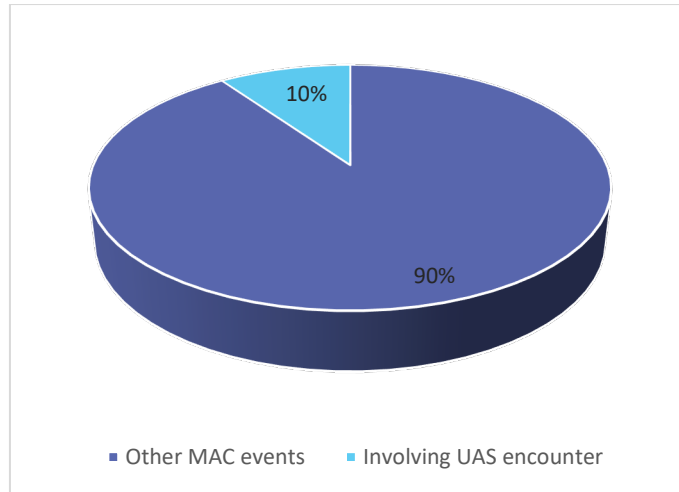


Exhibit 15 - Total MAC category events (% by event type, 2019-2023)

Exhibit 16 provides percentage values about UAS related events, segregating events which occurred in Maltese airspace from those of Maltese-registered aircraft in foreign airspace. Due to the nature of a UAS operation, it is not easy to identify the culprit and enforce provisions. However, the CAD is working with all stakeholders involved to increase awareness about the obligations and responsibilities of UAS users on the Island. In fact, when considering the percentage of last year, the local UAS related events decreased by 3%.

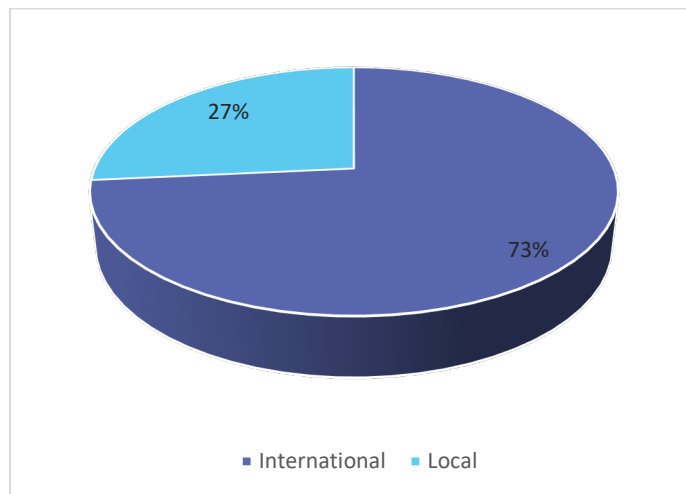


Exhibit 16 - UAS related events (% by location, 2019-2023)

Bird strikes (BIRD)

This category includes occurrences involving collisions/near collisions with bird(s)/wildlife. This natural phenomenon is highly dependent on the location of the aerodrome and surrounding areas. To aid our analysis, such events are separated into two sections, namely bird strikes reported at the only CAD certified aerodrome in Malta (Luqa) and bird strikes reported by Malta-registered operators at foreign locations. The data related to Luqa aerodrome is further compared against the number of aircraft movements between 2019 and 2023 as illustrated in Exhibit 17.

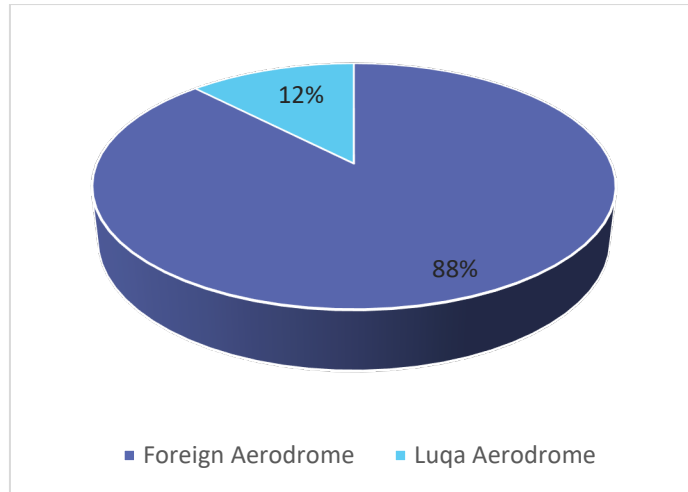


Exhibit 17 - Bird strike (BIRD) category events (% by location, 2019-2023)

Exhibit 18 presents the year-on-year birdstrikes reported to the CAD. Overall, there has been an increase from 2022 and is mostly driven by birdstrikes at foreign locations.

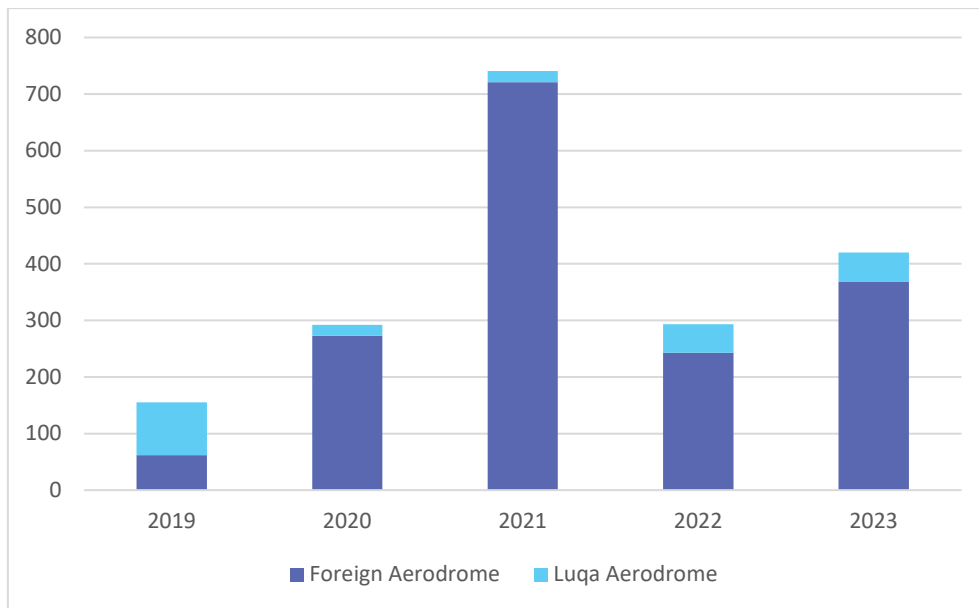


Exhibit 18 - Bird strike (BIRD) category events (number by location, 2019-2023)

When considering the number of birdstrikes for Luqa aerodrome in relation to the total amount of aircraft movements across the year there is a slight decrease. Exhibit 19 and Exhibit 20 provide an annual trend of bird strikes at Luqa aerodrome and measured against 1,000 movements which correlates with this decrease.

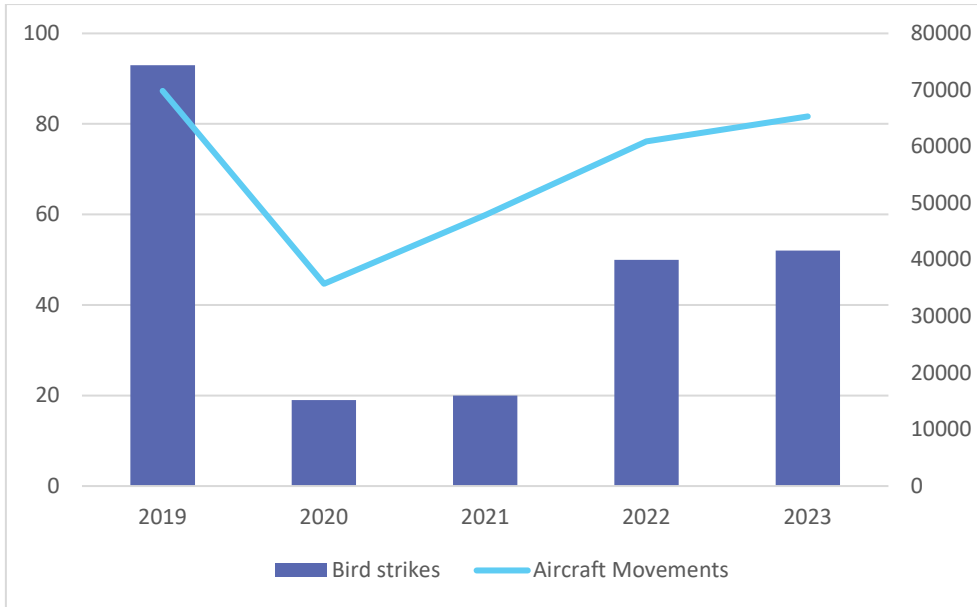


Exhibit 19 - Bird strike (BIRD) events at Luqa Aerodrome vs Aircraft Movement (2019-2023)

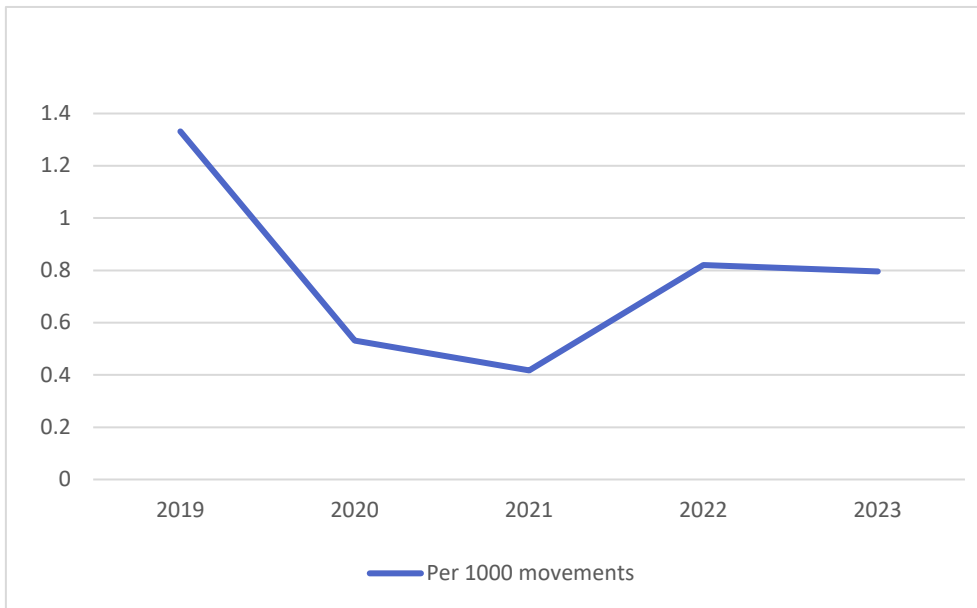


Exhibit 20 - Bird strike (BIRD) events at Luqa Aerodrome per 1,000 Aircraft Movements (2019-2023)

Exhibits 21 and 22 provide a monthly view of the bird strike events as reported in 2023 to the National Database. Exhibit 21 shows the monthly bird strike events which occurred at Luqa aerodrome, while Exhibit 22 shows a monthly view of all the bird strike events reported to the National database.

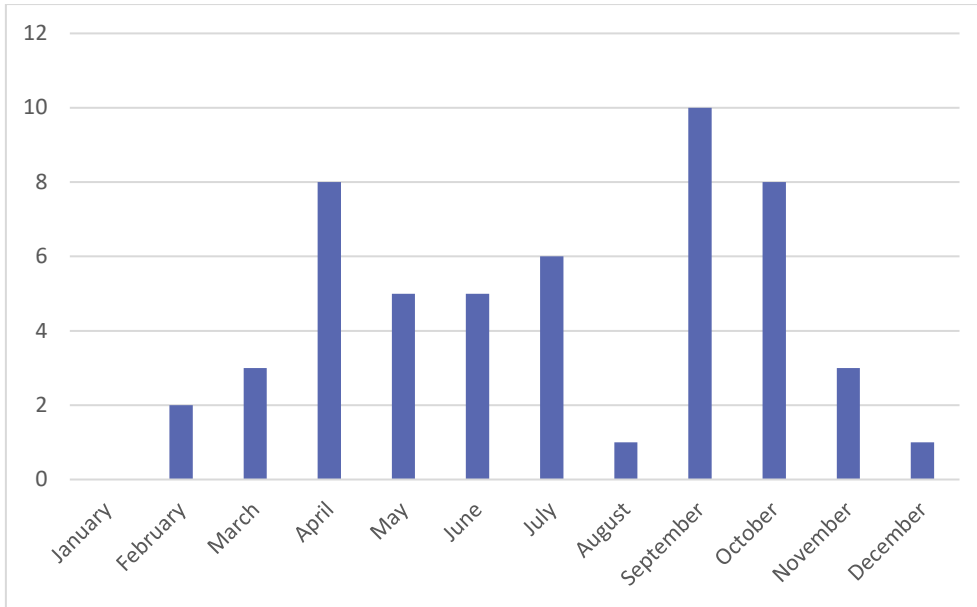


Exhibit 21 – Bird Strike events reported monthly at Luqa Aerodrome (2023)

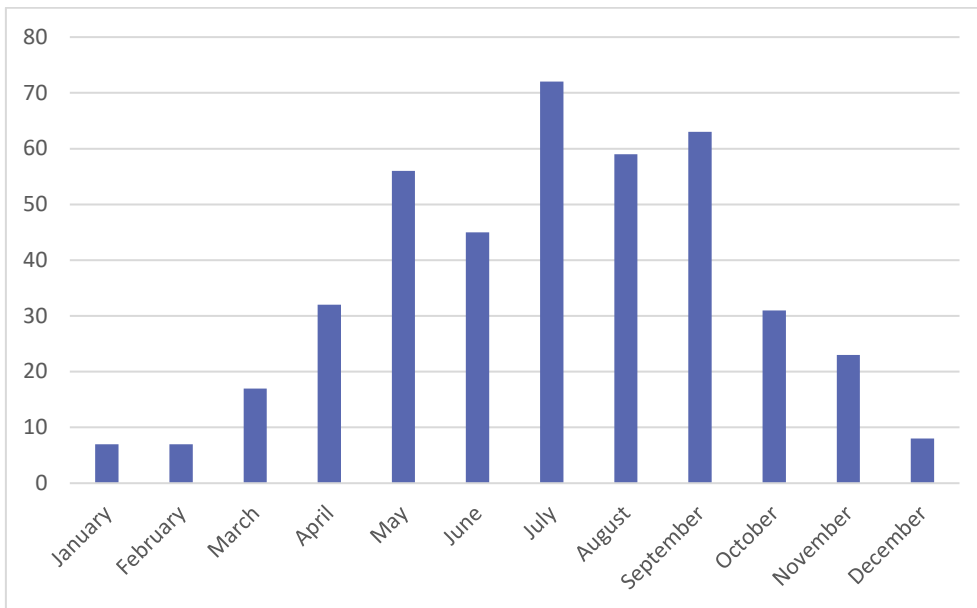


Exhibit 22 – Bird Strike events reported monthly to the National database (2023)

Cabin Safety Events (CABIN)

This occurrence category includes miscellaneous occurrences in the passenger cabin of transport category aircraft. From the analysis it has been noticed that this category is mostly attributed to unruly/disruptive passenger events and smoking in aircraft lavatories. This behaviour concern is a widespread problem in the aviation industry and airlines, together with ground-handling agents, are doing their utmost to prevent such scenarios.

Cabin safety events seem to have stabilised as shown in Exhibit 23. Nevertheless, the three main drivers for this category remain ‘Difficult/Unruly passengers’, ‘Drunk Passengers’ and ‘Smoking in

Cabin/Toilet’ which when grouped together result in the most cases making up this category. This will be discussed further in Exhibit 24.

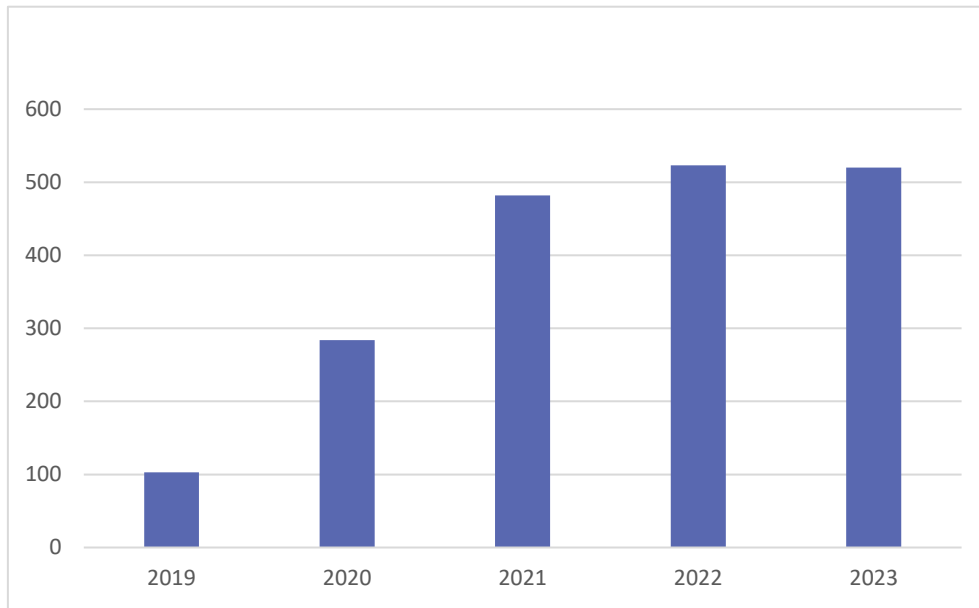


Exhibit 23 - Cabin Safety Events (CABIN) category (2019-2023)

There is no trend related to a specific departure location for unruly passengers, and it has been noticed that the threat levels of such events vary. It has been noticed that the use of electronic cigarettes is increasing and needs to be monitored for effective threat management. The three main drivers mentioned earlier contributed to 59% of all reports classified under the Cabin Safety Events category as shown in Exhibit 24. This supports the trend that these three categories are the main drivers contributing towards this category. The rest of the reports consisted of other cabin matters, ranging from cabin crew matters, passenger medical events, personal baggage issues, use of portable oxygen and other medical equipment.

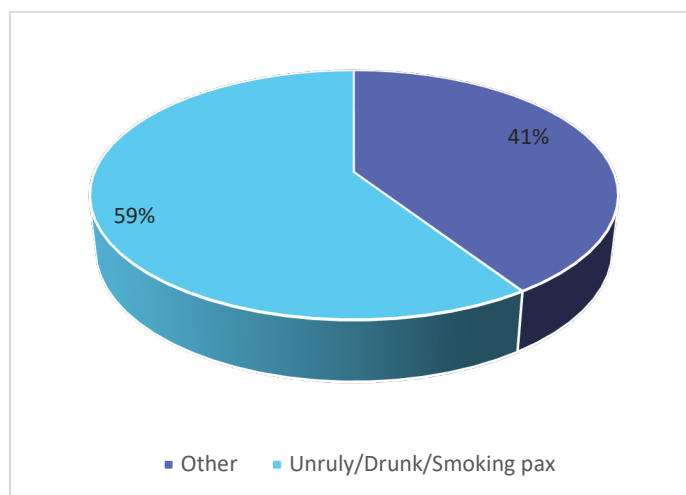


Exhibit 24 - Cabin Safety Events (CABIN) category (% by event type, 2019-2023)

Controlled Flight Into or Toward Terrain (CFIT)

Controlled Flight into Terrain (CFIT) occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water, or an obstacle. This category includes events only occurring during airborne phase and covers events which could have potentially led to an accident (ex: Ground-proximity warning).

CFIT related reports have increased in 2023 when compared to the previous year, although there was no accident or serious incident that has been investigated by the safety investigation bureau. The event type for these reports were further expanded and presented in Exhibit 25. The increase was mostly noticed under the TAWS/GPWS Caution warning. Hard landing events and attitude deviations were also captured in this segment due to pre-cursors to the event. The ‘Flight operations outcome’ incorporates aircraft handling situations, go-arounds and missed approaches which normally follow the warning trigger. In fact, most of the other events selected as part of this category are part of the ‘Warning’ drop down. Other equipment or their interpretation events also contributed towards this category.

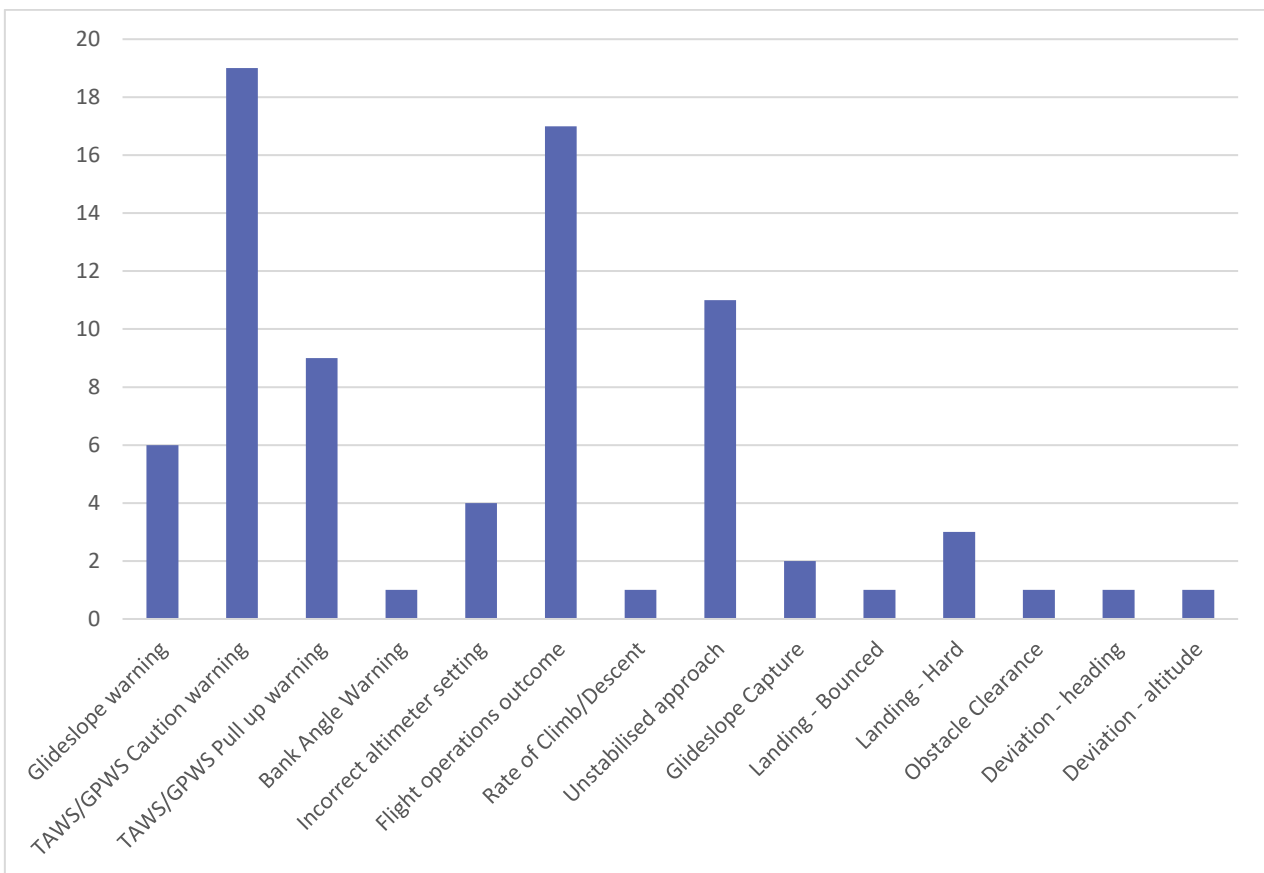


Exhibit 25 - CFIT category related events (2023)

Fire/Smoke (non-impact) (F-NI)

This category includes occurrences where fire or smoke was reported in or on the aircraft, in flight, or on the ground, which was not the result following impact of the aircraft. The events differed from contaminated air in the aircraft air-conditioning system, component failure and galley appliance failures. Each case has been investigated for its root-cause. This category also incorporates any fire

warning triggers which were not confirmed following an inspection on the ground, hence deemed to be of a spurious nature.

As evidenced in Exhibit 26, an increase has been experienced in 2023. There were no injuries or fatalities in all the events under this category. From each analysis, the most common event was related to odours in the cabin. There was one fire deriving from portable electronic equipment in the cabin which was controlled by the crew. From these events, the CAD was notified by the Maltese Bureau of Air Accident Investigation (BAAI) that a field investigation was conducted for one event that involved an electrical burning smell and smoke in the cockpit, which occurred at Luqa aerodrome.

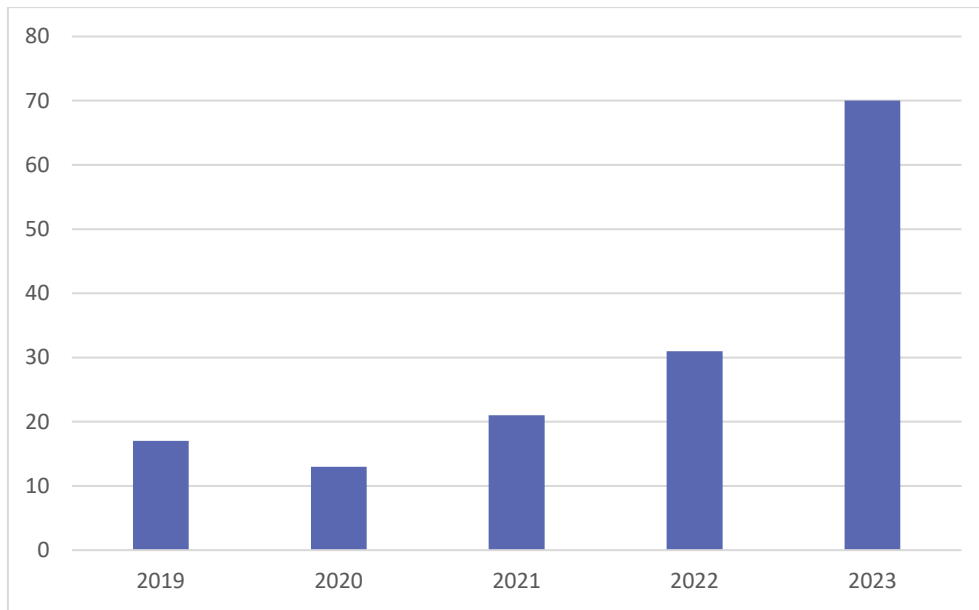


Exhibit 26 - Fire/Smoke (N-I) category events (2019-2023)

Ground Handling (RAMP)

These include occurrences during (or because of) ground handling operations. The following analysis includes RAMP events in Malta and those under this category that were reported by Maltese-registered operators at a foreign aerodrome. Currently, ground handling agents in Malta report events to the aerodrome operator and manage them as part of their SMS. The aerodrome operator submits reports to the CAD pursuant to occurrence reporting obligations.

Exhibit 27 provides data related to reported RAMP category events. The CAD’s approach towards this annual increase is by taking into consideration the severity of the events and ensure that the appropriate measures are being implemented by the aerodrome operator and Ground Handling Service Providers (GHSP). This strategy is aimed at encouraging safety reporting within this segment while also ensuring that practices and procedures are upheld and to avoid a re-occurrence of the event and foster a safe environment.

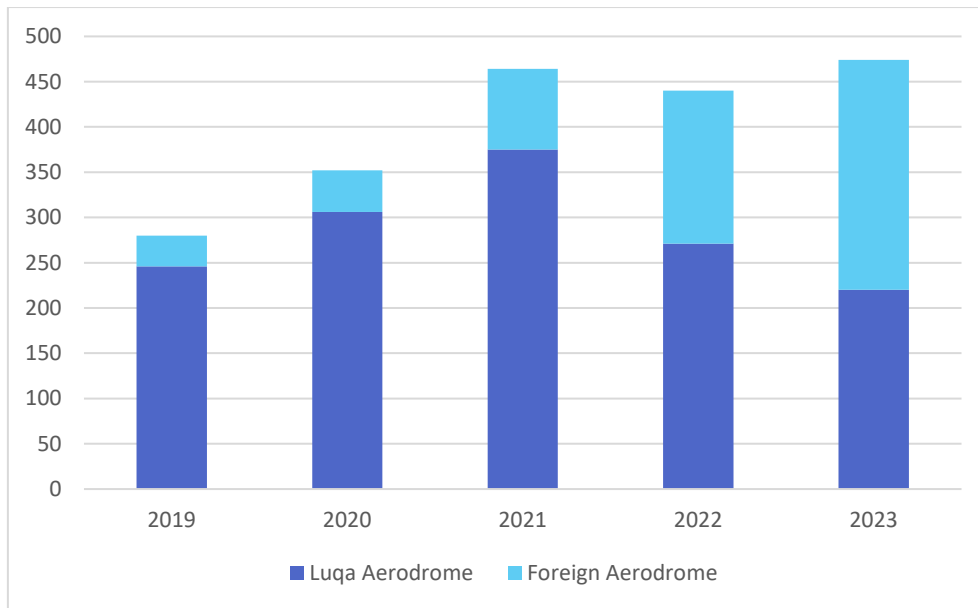


Exhibit 27 – RAMP category events (2019-2023)

The trends identified in previous years are still the major contributors to the RAMP category events at Luqa aerodrome. However, 2023 has seen the introduction of a new GHSP at Luqa aerodrome which highlighted some deficiencies in the application of aerodrome operation procedures. Liaison between the CAD and the aerodrome operator was conducted to address these areas and to identify the corrective actions being implemented by the stakeholders involved.

At international locations, areas of concern are loading of cargo events, and turnaround/pre-flight preparation matters. These matters are being addressed via the SMS of the operators involved in such events.

Loss of Control-Inflight (LOC-I)

This category is quite vast and include occurrences where there was a loss of aircraft control, or deviation from intended flight path inflight. LOC-I remains one of the most significant contributors to fatal accidents worldwide. LOC-I can result from a range of interferences including engine failures, icing, or stalls. It is one of the most complex accident categories, involving numerous contributing factors that act individually or, more often, in combination. This category is also one of the highlights of the EPAS.

When compared to previous years, year 2023, has provided another increase in the LOC-I category as shown in Exhibit 28. The trend also follows the increase of operational activity and submission of occurrence reports, however, there may be underlying causes related to training and experience that have contributed to this increase of unstabilised approaches. Nevertheless, this requires further analysis and a wider data trend. This category captures reported unstabilised approach and flight parameter exceedance and configuration warnings. Upon delving into the reports these events about a third of the events were attributed due to weather and environmental encounters. No injuries, fatalities or near accidents were reported in such category.

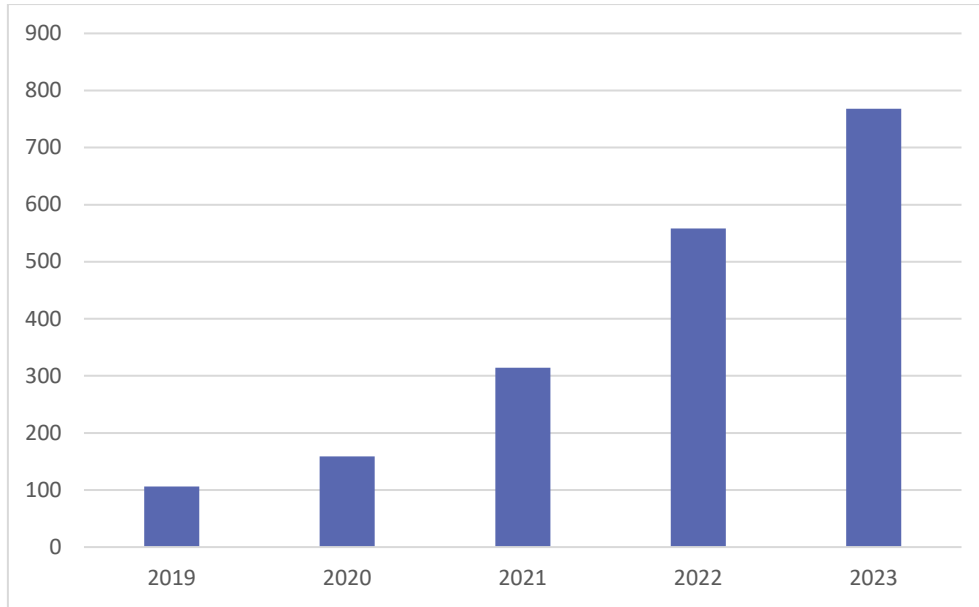


Exhibit 28 - LOC-I category events (2019-2023)

Runway Excursion (RE)

These events occur when an aircraft veers-off or overruns-off the runway surface. Runway excursion can potentially result in loss of life, and/or injury to persons either on board the aircraft or on the ground. Moreover, such events can easily lead to damage to aircraft, and airfield, surrounding equipment, or buildings. Runway excursions can be attributed to one or multiple factors ranging from landing following an unstable approach, deep landing, and/or the condition of the runway surface.

Although the reported pre-cursor events may have led to a runway excursion, only two actual excursions occurred in 2023 as illustrated in Exhibit 29.

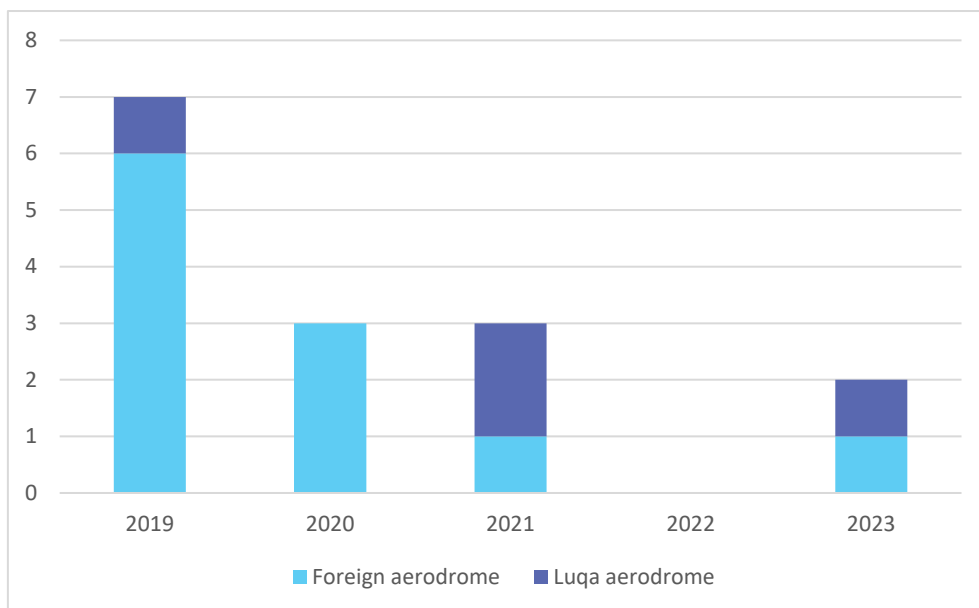


Exhibit 29 – RE category events at location (2019-2023)

Runway Incursion (RI)

These are occurrences 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.

In 2023, the CAD received twenty-seven reports of RI events of which nine occurred at Luqa aerodrome. This is a slight decrease from last year and these events did not result into an accident or near accident. The small number of local events were mostly related to slow moving aircraft, vehicle infringements which led to few go arounds when aircraft were on approach. Nevertheless, one serious event at Luqa aerodrome was related to an incursion by an aircraft which lost brake pressure while awaiting ATC clearance to enter the runway from the maintenance park.

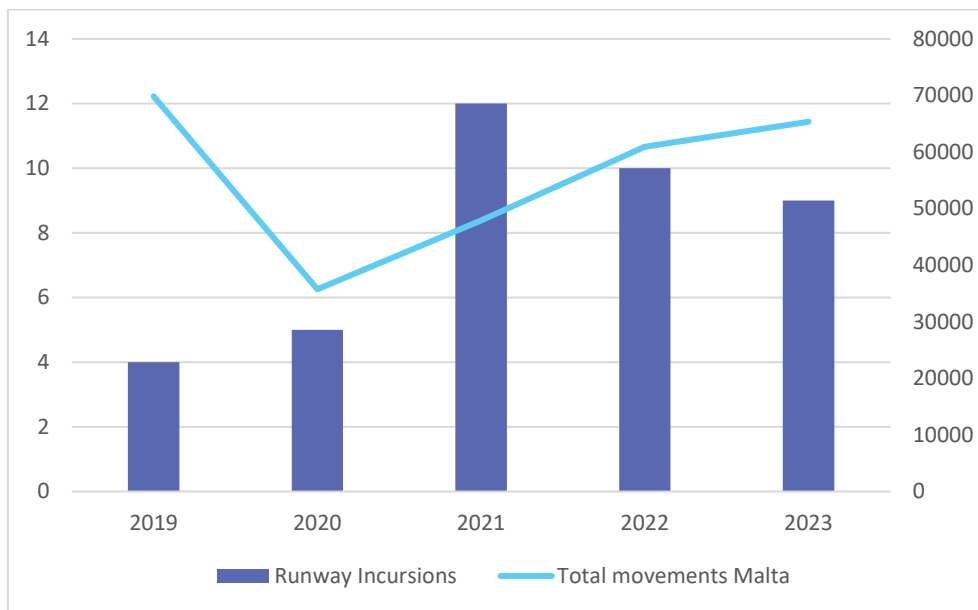


Exhibit 30 - RI category events at Luqa aerodrome vs Aircraft movements (2019-2023)

Numerically, the RI events at Luqa are relatively low and when compared to aircraft movements, this year there were 1.3 RI per 10,000 aircraft movements. This constituted a decrease when compared to last year’s ratio.

Fatigue

Fatigue is the general term used to define physical and/or mental exhaustion which extends beyond normal individual tiredness. This exhaustion may lead to reduced standards of safe operation with an increased possibility of error. The CAD monitors such reports and follows-up with the respective operator on reported occurrences. The submission of a fatigue report does not necessarily mean that each report constituted a breach of regulations or crew-time rest periods/rostering.

Exhibit 31 shows the rate of fatigue-related reports submitted to the National database associated to the amount of flight hours flown by Maltese aircraft operators.

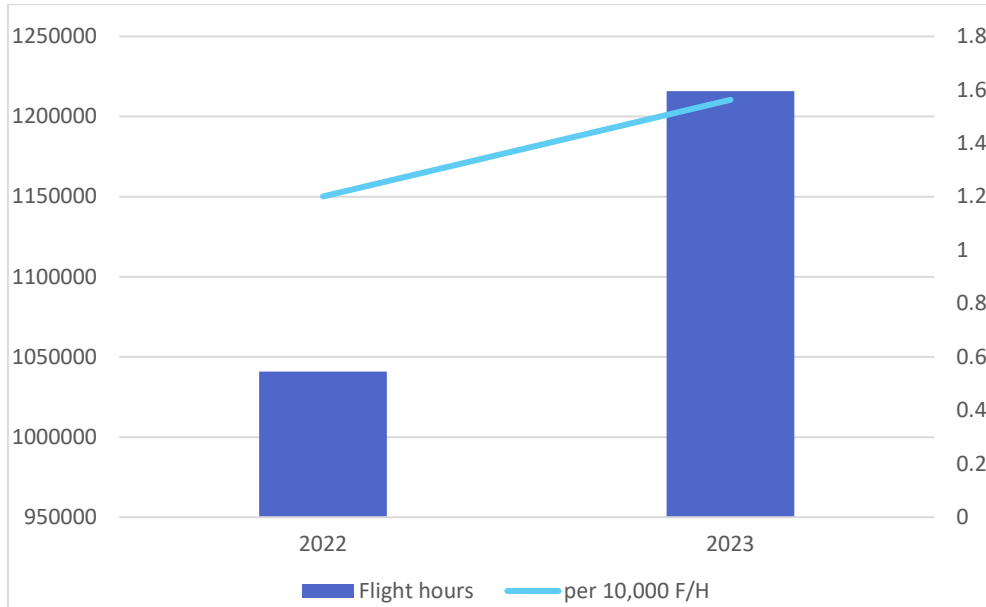


Exhibit 31 – Reported fatigue-related events per 10,000 flight hours (2022-2023).

On analysis of the reports, it has been noted that the increase in reporting was resultant to an increase in cabin-crew reports and due to new AOC holders. Another contributing factor was related to the computation of the rostering system used by an operator. This has since then been amended and is being monitored for effectiveness. When transposing the tally of fatigue reports against a relative value of flight hours, the reporting rate stands at 1.56 (1.6) reports per 10,000 flight hours. Peak reporting months were identified to be in April and July.

Fatigue reporting remained prevalent when conducting multiple-leg flights along different time zones mostly due to rhythm disruption and inability to rest during the allotted rest/off periods. Other factors included technical faults, flight delays and arrival times, operational challenges, challenging weather conditions and matters related to ground operations at aerodromes all contributed to increase in fatigue levels for flight and cabin crew members.

Fatigue and duty-time adherence is a matter that is monitored during continuous oversight by the CAD. Additional checks on Flight Time Limitations (FTL) were conducted by the CAD to ensure that regulatory elements are being complied with. No safety concerns were identified during these audits.

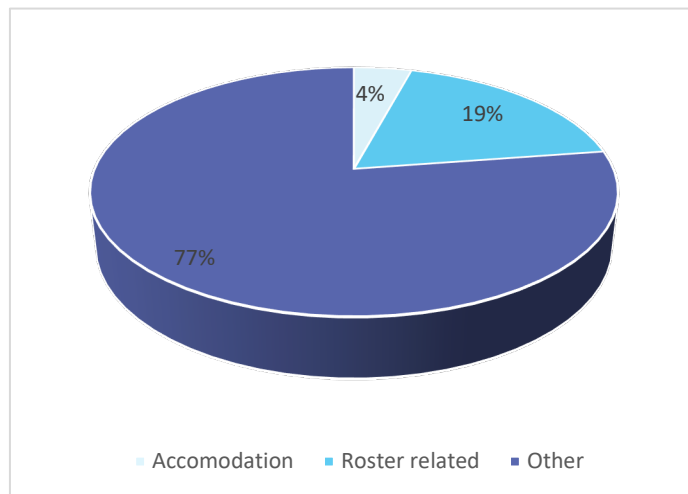


Exhibit 32 - Fatigue reports and their reported causes (2023)

General Aviation

General Aviation (GA) aircraft in Malta depart from and land at the certified aerodrome in Luqa. Such scenario provides greater challenges to the GA community and airspace management, especially due to the operations taking place within and around the international aerodrome. GA is regulated in a hybrid framework of national and regional regulations. The focus is mainly related to standards of airworthiness, pilot licensing and to promote high standards of safety.

The GA activity in Malta is presented in Exhibit 33 and shows a considerable decrease in local movements when compared to the last two years. The decrease in activity may be attributed to the greater scheduled/commercial operations at the aerodrome and the closure of two of the runways for three months which restricted GA operations.

The rate of MORs for GA per 1,000 aircraft movements stands at 4.09 (4 reports), which is a considerable increase when compared to previous years. This increase is being seen from a positive perspective, given the historical low numbers of reporting. Nevertheless, the CAD will remain cautious on the events being reported and act in the interest of aviation safety. Exhibit 34 illustrates General aviation occurrence categories compared to previous years.

The CAD evaluates each report separately and addressed any concerns deriving from such event. As part of the on-going promotion campaign, the CAD held specific meetings with ATO and GA users to further promote the occurrence reporting culture.

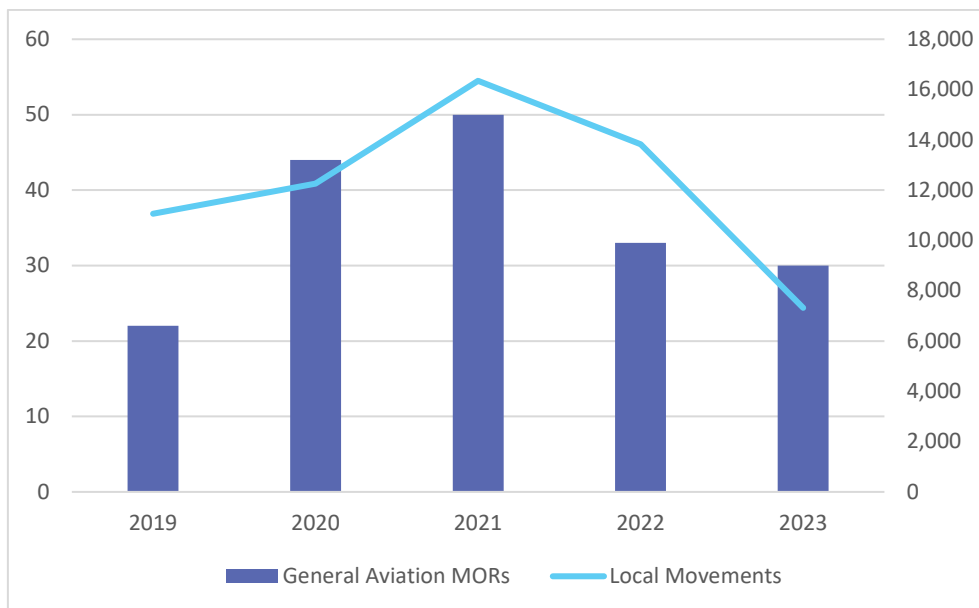


Exhibit 33 - General Aviation MORs vs Local movements (2019-2023)

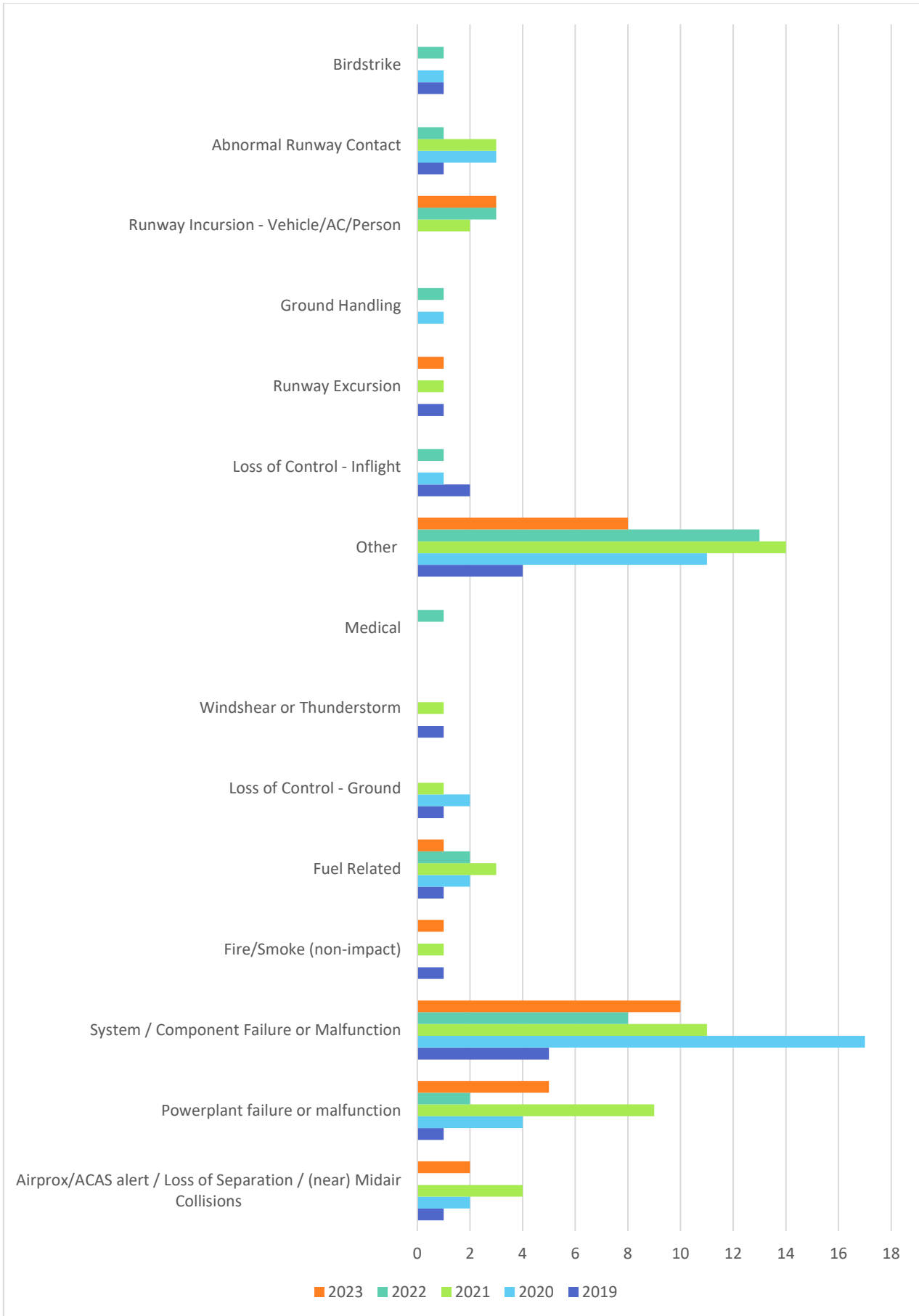


Exhibit 34 - General Aviation Occurrence Categories (2019-2023)

Laser Attacks

Laser attacks are of considerable threat to flight crew and can create potentially hazardous effects during the critical stages of flight particularly take-off and approach/landing. While it is evident that Laser attacks have continued to increase, Exhibit 35 shows that such events in Malta are stable with a downward trend compared to previous years. There is no specific Country or area of operation that this increase has been noticed.

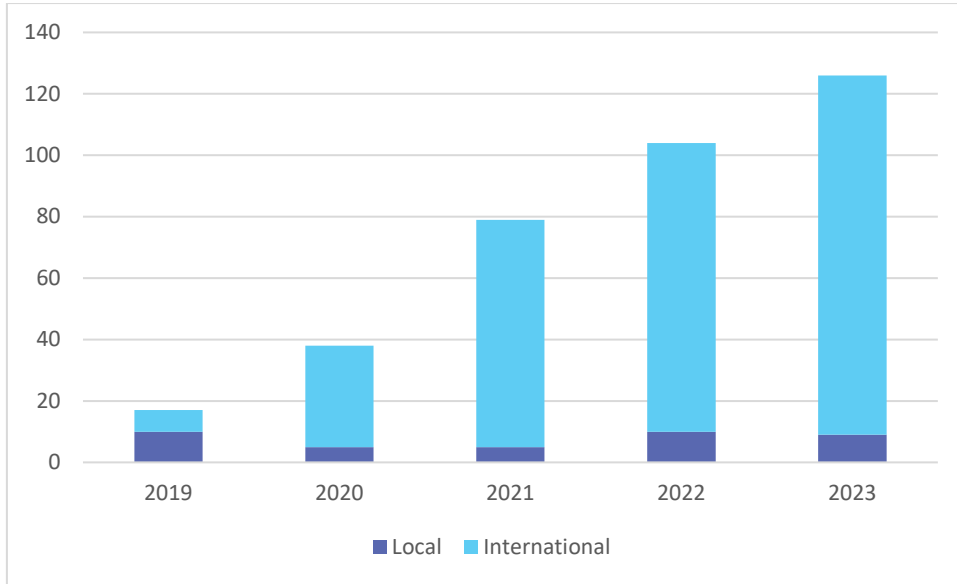


Exhibit 35 - Laser Attack events (2019-2023)

Fireworks

Malta’s traditions include firework displays as part of large-scale celebrations and in local Patron Saint feasts. Taking into consideration the location of the Luqa aerodrome, the take-off and landing paths of flight, fireworks may pose a threat to aviation users. Procedures are currently in place to ensure the safe coordination between stakeholders involved in such activity. Depending on the nature of events, these procedures are evaluated for effectiveness and enhanced as necessary.

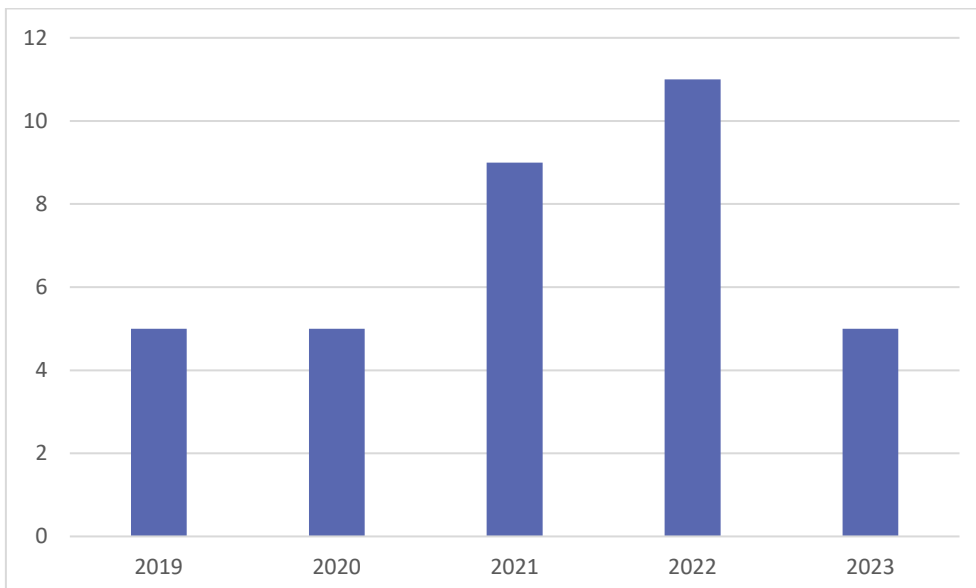


Exhibit 36 - Firework related events (2019-2023)

Occurrence Report Events

Event Type

Each MOR submitted to TM-CAD is attributed an event type which will help in occurrence reporting analysis in identifying pre-cursors and outcome of the cause. Regulation (EU) 376/2014 mandates that this field is populated to aid in data gathering.

The event-type list is based on the ECCAIRS ADREP taxonomy and is quite comprehensive, containing reference to multiple domains and services. Exhibit 37 only shows the high-level of this comprehensive list:



Exhibit 37 - Event Type drop-down menu headers

For simplicity purposes, a bar graph in Exhibit 38 shows the six top-tier headers (excluding the unknown category). It is important to note that one occurrence report can have multiple event types.

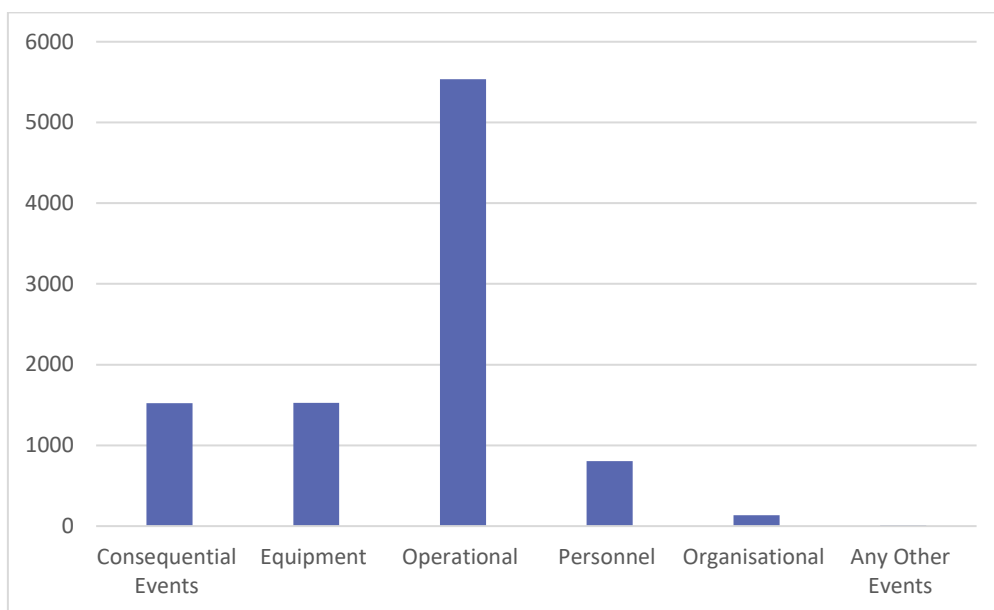


Exhibit 38 - Event Types (2023)

Event Phase

Each different operation has its own set of event phases as presented in Exhibit 39. The occurrence reports received by TM-CAD were related to the ‘Powered fixed-wing aircraft’, ‘Helicopter’ and ‘Maintenance phases’.

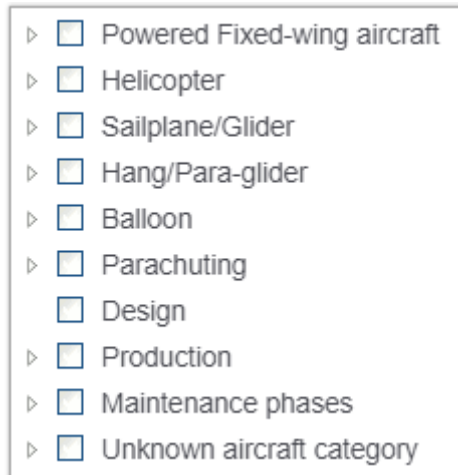


Exhibit 39 - Event Phase drop-down menu headers

For the ‘Powered Fixed-wing aircraft’ and ‘Helicopter’ events in 2023, the phases are shown in Exhibits 40 and 41 respectively.

The event phase tally reflected the increase in amount of reports and follows the same pattern of previous years, with no spike to a specific event phase.

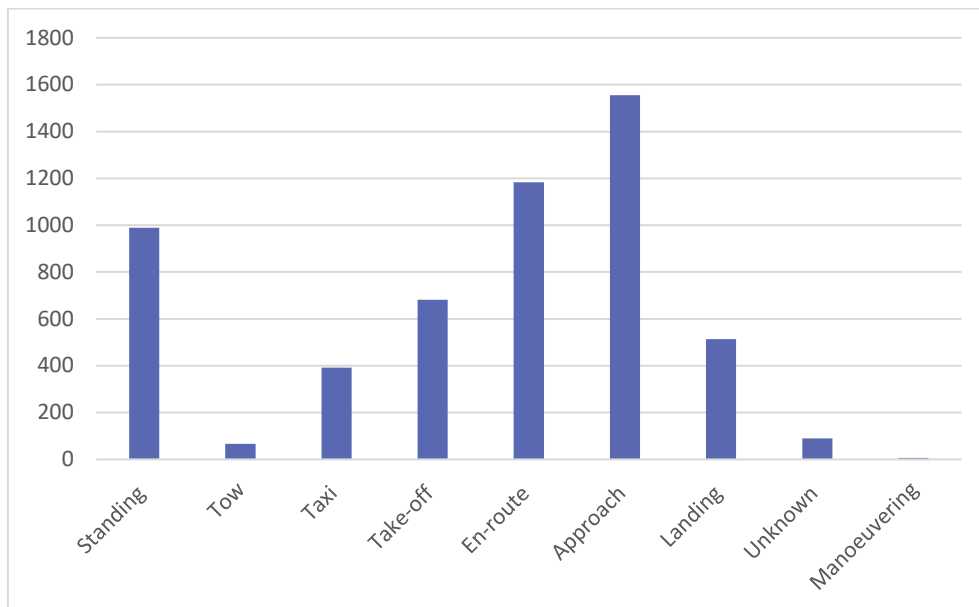


Exhibit 40 - Event Phase: Powered fixed-wing aircraft (2023)

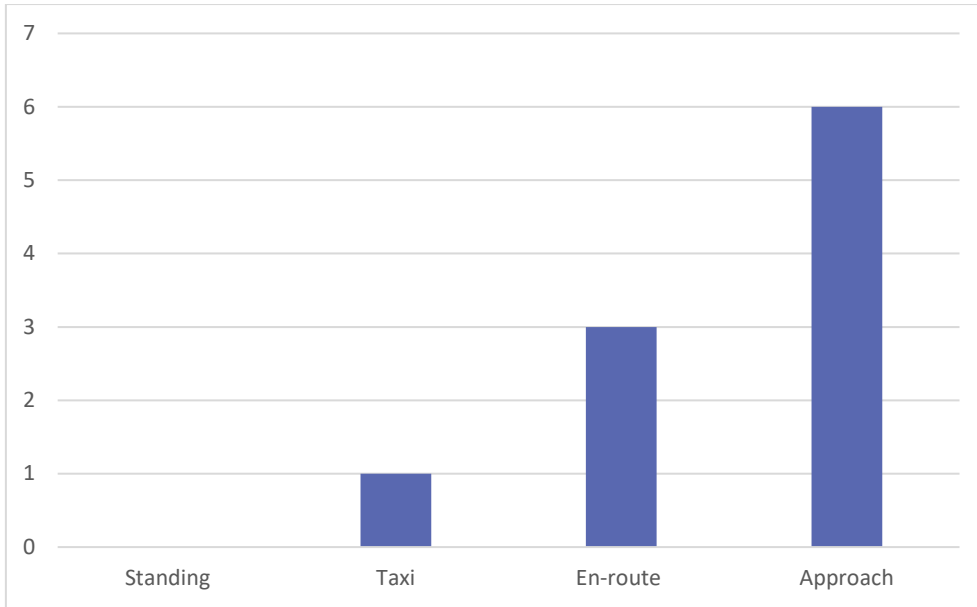


Exhibit 41 - Event Phase: Helicopter (2023)

'Maintenance phases' related events in 2023 are shown in Exhibit 42:

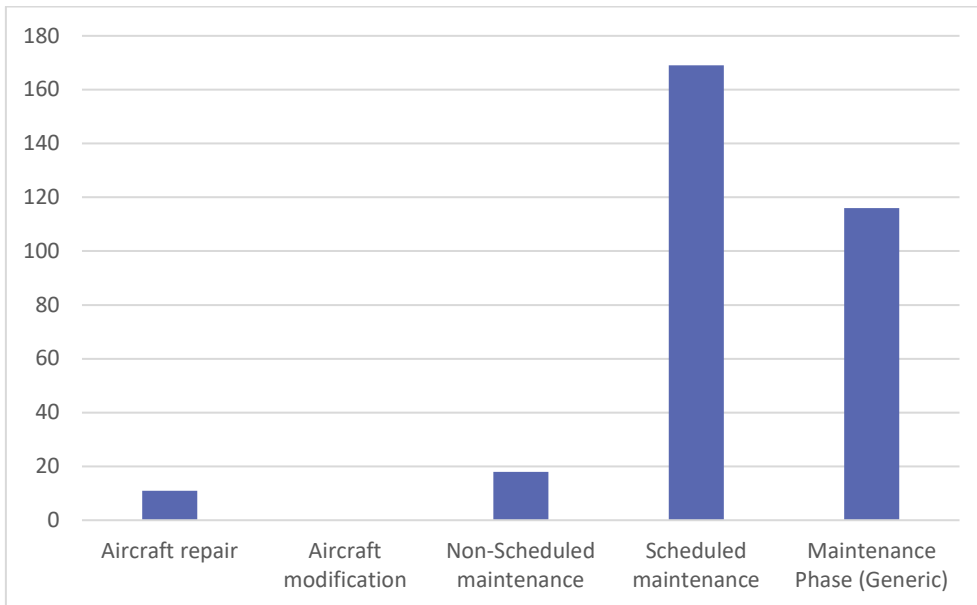


Exhibit 42 - Event Phase: Maintenance phases (2023)

Occurrence Report Follow-up

The aim of safety occurrence reporting is to improve the safe operation of the aviation industry, thus making this mode of transport safer than yesterday. The CAD fosters the notion of Just Culture and it is not the intention of the CAD to attribute blame to an event on an individual. In addition, based on the occurrence reports received, the CAD may conduct its own fact-finding and/or issue any relevant Safety Information/Notice. Exhibit 43 provides information on the reporting flow of an Occurrence Report as implied by regulation (EU) 376/2014.

As part of the analysis, the CAD expects that organisations provide a follow-up report especially if the event has revealed an actual or potential aviation safety risk. The SCU manages this follow-up process in liaison with the respective inspector/inspecting officer from the other Units within the CAD. The goal is to identify operational hazards and system deficiencies which must be addressed by means of added mitigation measures and actions as necessary.

Hence, operators/organisations are expected to conduct an effective root-cause analysis and/or identification of causal factors and introduce any possible mitigation measures. This process must be an integral part of the organisations' SMS and approach towards improving aviation safety.

Additionally, the CAD may opt to issue notices to stakeholders, or apply enforcement measures if a potential safety concern, or trend, is detected.

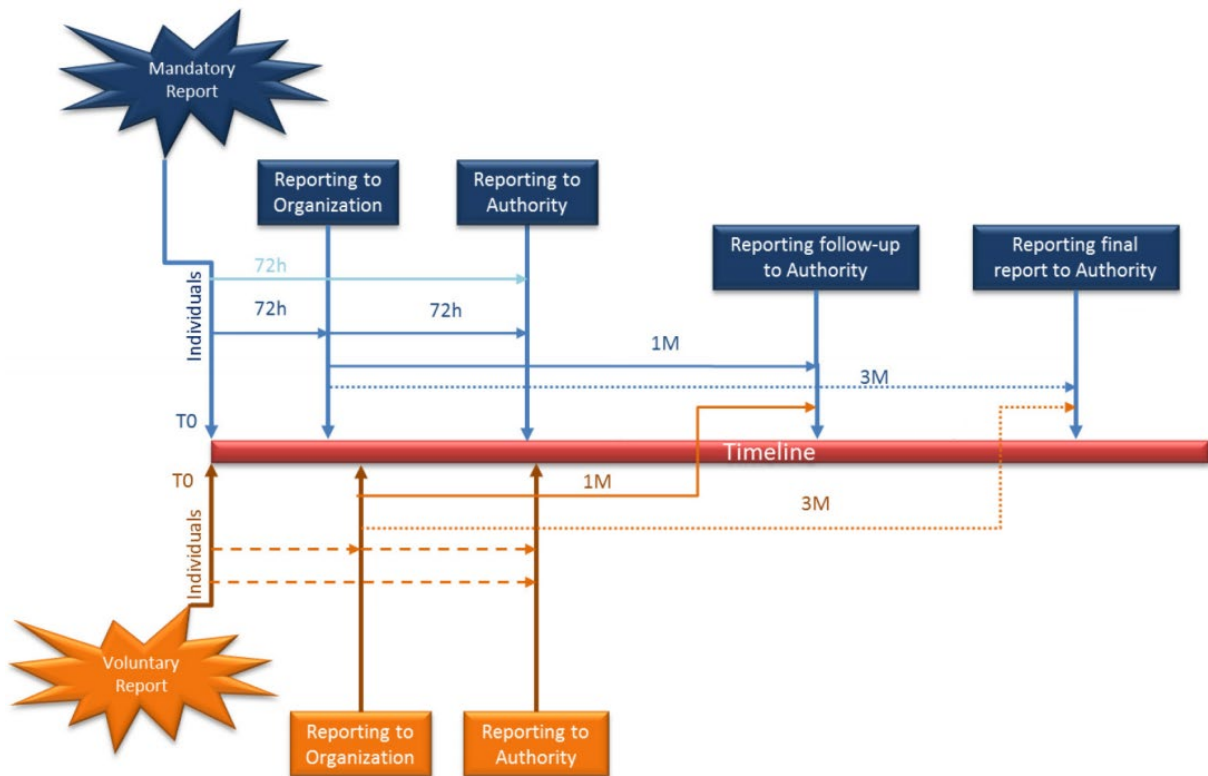


Exhibit 43 - Reporting flow implied by Regulation (EU) 376/2014
 Source: Guidance Material - Regulation (EU) No 376/2014 - Version 1 (December 2015)

National and International Safety Investigations

The Maltese Bureau of Air Accident Investigation (BAAI) is the body responsible to carry out safety investigations in accordance with Subsidiary Legislation 499.22 of the Laws of Malta.

In 2023, the BAAI commenced two safety investigations for serious incident/accident events.

From the two events being investigated, the BAAI has published two Preliminary Reports as below:

- Airbus A330-203 encountered severe turbulence over the Atlantic Ocean.
- Boeing 737-8200 suffered a tail strike on rotation during take-off from Runway 31 at Luqa Airport (LMML)

These reports can be accessed from the BAAI website <https://baai.gov.mt/>

Safety Information and Advisory Notice (SIAN)

In 2023 the CAD issued three Safety Information and Advisory Notices (SIAN) following safety recommendations.

SIAN 01/23 was issued as an action to Recommendation 3 issued by the BAAI following the conclusion of the safety investigation report BAAI/SIR 011121.

- SIAN 01/23 Guidance on the Design of Checklists
- SIAN 02/23 Operation in Icing Conditions - Adherence to Standard Operating Procedures (Special Airworthiness Bulletin BEA-2023-03)
- SIAN 03/23 Suspected Unapproved Parts – AOG Technics Limited

The SCU also updated Safety Information and Advisory Notice 06/22 (Importance of correct QNH setting with respect to the risk of Controlled Flight Into Terrain (CFIT)) to incorporate additional recommendations published by EASA in SIB 2023-03.

All SIANs are available on the TM-CAD website.

EU Ramp Inspection Programme

The EU Ramp Inspection Programme is a tool for the surveillance of foreign operators, which monitors safety compliance through ramp inspections on the aircraft. One of the pillars of the programme are SAFA ramp inspections (Safety Assessment of Foreign Aircraft). These involve all ramp inspections performed by any of the States participating in the programme, including Malta, taking ICAO standards as the regulatory reference.

The inspections are carried out by authorised personnel checking many items such as licenses, procedures, manuals, and compliance. Without hindering aircraft operations and schedules, random inspections are carried out. The absolute number of inspection findings represent an important outcome of the inspecting process which provides valuable information on the subject aircraft or its responsible operator. The severity of such findings is also assessed accordingly:

- Category 1 finding as a minor finding
- Category 2 finding as a significant finding
- Category 3 finding as a major finding

Depending on the nature of the findings corrective actions might need to be taken immediately otherwise the aircraft may be authorised to depart under operational restrictions. Following inspections and associated findings, a rating per country is assessed. This rating is calculated according to many criteria such as the number of operators, the number of aircrafts inspected, number of inspections and the number of findings and their finding category.

Exhibit 44 illustrates, Malta’s SAFA Ratings per quarter of this year. Over a 12-month period, Malta scored an average rating of 0.41, which is a slight decrease from the rating of 2022 (0.45 average). This implies that Malta has improved its SAFA rating and with most findings were reported as Category 1 minor findings.

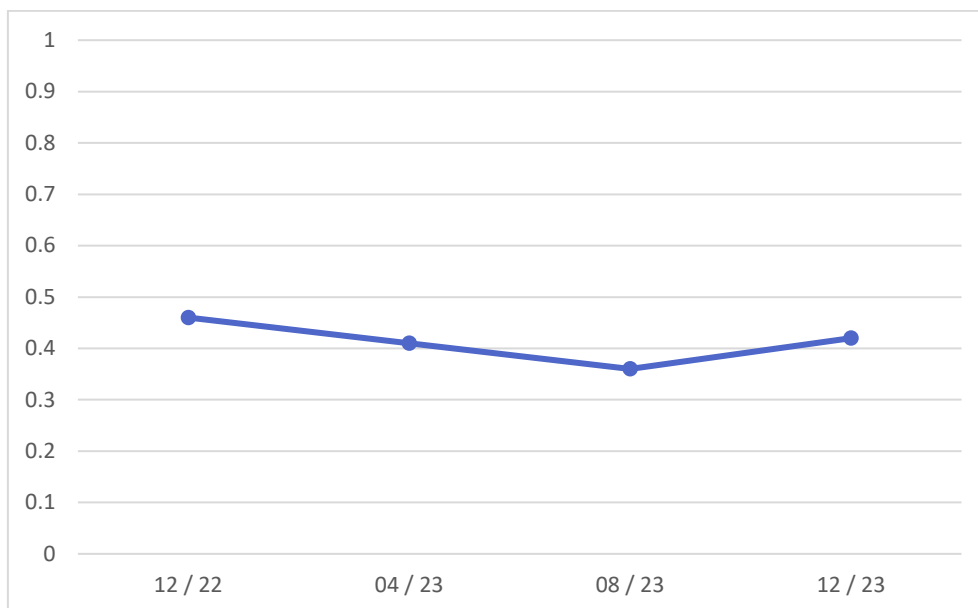


Exhibit 44 – SAFA Ratings per Quarter (2023)

Global Navigation Satellite System Outage and Alterations Leading to Navigation / Surveillance Degradation

With increased conflict and war activity, there has been an increase in jamming and/or spoofing of Global Navigation Satellite Systems (GNSS). The European Union Aviation Safety Agency (EASA) has analysed recent data from the Network of Analysts and open sources and has concluded that GNSS jamming and/or spoofing has shown further increase in the severity of its impact, as well as an overall growth of intensity and sophistication of these events. In this regard, EASA has updated the Safety Information Bulletin (SIB: SIB 2022-02) on GNSS Outage and Alterations Leading to Navigation / Surveillance Degradation.

This interference prevents receivers from locking onto satellites signals and has the main effect of rendering the GNSS system ineffective or degraded for users in the jammed area. Spoofing involves broadcasting counterfeit satellite signals to deceive GNSS receivers, causing them to compute incorrect position, navigation, and timing data (PNT). Detection of jamming or spoofing as well as distinguishing which type of interference is being experienced is difficult, as there are generally no specific flight crew alerts for interference. Depending on aircraft integration, various side effects of jamming have been observed which could be attributed to spoofing and vice-versa. The effects of GNSS jamming and/or spoofing have been observed by crews in various phases of flight, in some cases leading to re-routing or diversions, to ensure safe continuation of flight, and triggering false Terrain Awareness and Warning System (TAWS) Alerts. Under the present conditions, it is not possible to predict GNSS interference or its effects.

The CAD strongly recommends that all involved stakeholders mentioned in the related SIB implement the recommendations that contribute as mitigating measures. Some recommendations for aircraft operators are separated for jamming as compared with spoofing, due to the specificities of the two different cases.

Conflict Zones

In view of the continuous instability across various regions of the Globe, the CAD is continuously monitoring for any developments and adopting industry-wide, guidance and standards. For the latest information and recommendations, the active list of Conflict Zone Information Bulletin as published by the European Union Aviation Safety Agency (EASA) can be accessed at: <https://www.easa.europa.eu/en/domains/air-operations/czibs>

SPAS Actions - Status

The actions listed hereunder are extracted from the SPAS in Malta 2023-2025. All actions listed are specific to 2023 or is part of a phased-implementation approach.

Actions marked as 'continuous' in the EPAS (2023-2025) are not listed in this status table as this is considered as being implemented by the CAD.

Reference	Deliverable/Action	Target Date	Accomplished
SYS.MST.026 MST.002	TM-CAD to enhance its SMS oversight tools, taking into consideration SMICG tools and EASA Management System assessment tool.	On-going	On-going ¹
SYS.MST.028	SPAS established and publicly available. Review annually.	2023	2023
SYS.MST.034	Monitor the progress on standardisation in the OPS domain, specifically on the effective implementation of operators' flight time specifications schemes.	2022/2023	2023 and on-going
SYS.MST.036	To develop proportionate learning objectives to strengthen the competency of PPL and LAPL pilots in meteorological information.	2023	2023
SYS.MST.037	Organise the implementation of the competency framework, and plan and conduct the training for its respective regulatory staff.	2023	2023
SYS.CAD.071	Strategy for Cybersecurity in aviation and risks	On-going	On-going
SYS.CAD.039	Safety promotion to support ramp-up / safe return to operations	2021/2022	2022
SYS.CAD.040	Establish a coordination mechanism between authorities/agencies as appropriate and in respect to regional local legislation.	2022/2023	2023 and on-going
OPS.MST.024	Report relevant occurrences to EASA.	2023	Continuous

Notes:

- ¹ The EASA management System Assessment Tool has been introduced in the Flight Operations Inspectorate and Personnel Licensing Unit. This mechanism will be phased-in to complement the CAD SMS oversight function.

Appendix I – Occurrence Class definitions

These definitions derive from Regulation (EU) No 996/2010 of the European Parliament and of the Council on the investigation and prevention of accidents and incidents in civil aviation as amended to the date of publication of this document.

‘accident’ means an occurrence associated with the operation of an aircraft which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:

- (a) a person is fatally or seriously injured as a result of:
 - being in the aircraft, or,
 - direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or,
 - direct exposure to jet blast, except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or
- (b) the aircraft sustains damage or structural failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and would normally require major repair or replacement of the affected component, except for engine failure or damage, when the damage is limited to a single engine, (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windscreens, the aircraft skin (such as small dents or puncture holes) or minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike, (including holes in the radome); or
- (c) the aircraft is missing or is completely inaccessible.

‘incident’ means an occurrence, other than an accident, associated with the operation of an aircraft which affects or could affect the safety of operation.

‘serious incident’ means an incident involving circumstances indicating that there was a high probability of an accident and is associated with the operation of an aircraft, which in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time it comes to rest at the end of the flight and the primary propulsion system is shut down. A list of examples of serious incidents is set out in the Annex of Regulation (EU) 996/2010.

Transport Malta - Civil Aviation Directorate
Safety and Compliance Unit

w: <https://www.transport.gov.mt/aviation>
e: aviationsafety.tm@transport.gov.mt

April 2024

