Transport Malta
Civil Aviation Directorate

# CIVIL AVIATION SAFETY REPORT 2024

**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

**June 2025**



Cover photo image: Transport Malta Annual Report 2024.
Photographer: Mr. Peter Paul Barbara.

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# Abbreviations

| | |
|---|---|
| ADREP | Accident/Incident Data Reporting |
| AOC | Air Operator Certificate |
| ATC | Air Traffic Control |
| BAAI | Bureau of Air Accident Investigation (Malta) |
| CA | Competent Authority |
| TM-CAD / CAD | Transport Malta Civil Aviation Directorate / Civil Aviation Directorate |
| 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 |
| UAS | Unmanned Aircraft Systems |

# Executive Summary

The Malta Civil Aviation Safety Report presents an analytical overview of civil aviation safety data covering the 2024 period, with comparative insights from the 2020-2023 timeline. This report is primarily based on information extracted from the Transport Malta Civil Aviation Directorate (TM-CAD) occurrence reporting system, in accordance with Regulation (EU) 376/2014. It also provides a status update on the safety actions outlined in the Malta State Plan for Aviation Safety (SPAS).

While the aviation industry continues to adapt to evolving operational demands, challenges such as workforce shortages and operational readiness persist. Geopolitical instability and conflict zones remain an active concern, with GPS interference and spoofing continuing to be reported globally, reinforcing the need for strong risk mitigation strategies.

In 2024, the Maltese aviation sector—especially operations under the 9H aircraft register—continued to grow. A total of over 8,800 Mandatory Occurrence Reports (MORs) were submitted from various sources, the majority originating from aircraft operators. The strong reporting culture observed within Maltese operators, combined with systematic follow-ups and closures, reflects a maturing safety culture.

In terms of occurrence classification, zero accidents were reported in 2024, with 7 serious incidents and over 7,900 classified as incidents. Leading categories included aerodrome-related events, system or component failures, birdstrikes, and other operational hazards, aligning with patterns observed in recent years.

This report serves to provide aviation stakeholders and the public with a transparent preview of Malta's civil aviation safety performance. It identifies key safety issues and emerging risks, supported by data from both national sources and international partners, including the European Union and ICAO.

The Malta Civil Aviation Safety Report, produced by the Safety and Compliance Unit (SCU) within TM-CAD, supports the continuous monitoring and improvement of Malta's Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs), in line with the Malta State Plan for Aviation Safety (SPAS). These activities form a key component of Malta's State Safety Programme (SSP), ensuring that national oversight, data-driven decision-making and proactive safety management remain aligned with ICAO's Global Aviation Safety Plan and European safety strategies.

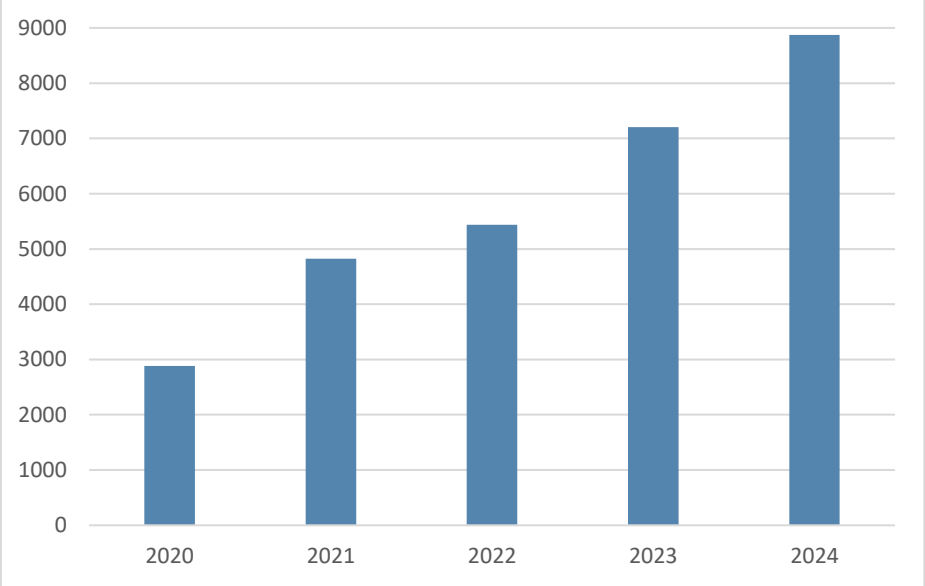
## Occurrence Reports

Occurrence reporting is one of the active systems that contributes towards identifying safety-related issues and helps develop pro-active approaches and strategies to mitigate undesired outcomes while enhancing overall aviation safety. Along the years the Civil Aviation Directorate (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 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.

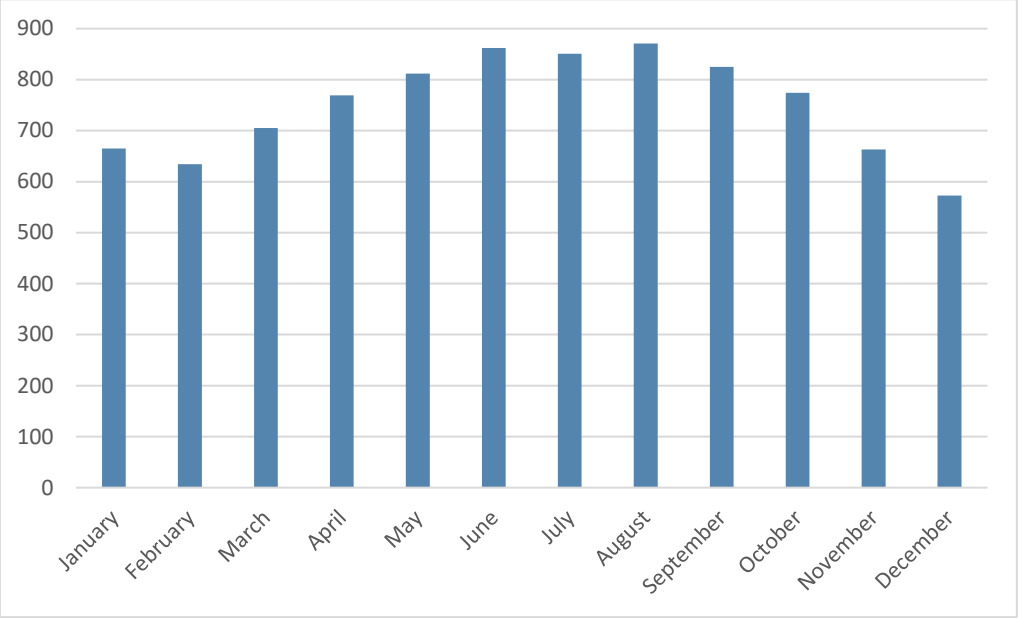
***Graph 1*** shows the number of Mandatory Occurrence Report (MOR) events submitted to the national database and analysed by TM-CAD between 2020 and 2024. One can note the increase in occurrence report submissions, along the years, which is mainly attributed to the growth experienced in that year within the Maltese aviation cluster and increased activity of aircraft operators. The occurrence categories for these events are shown in ***Graph 9***.




***Graph 1*** *– Number of MOR events submitted to TM-CAD (2020-2024)*

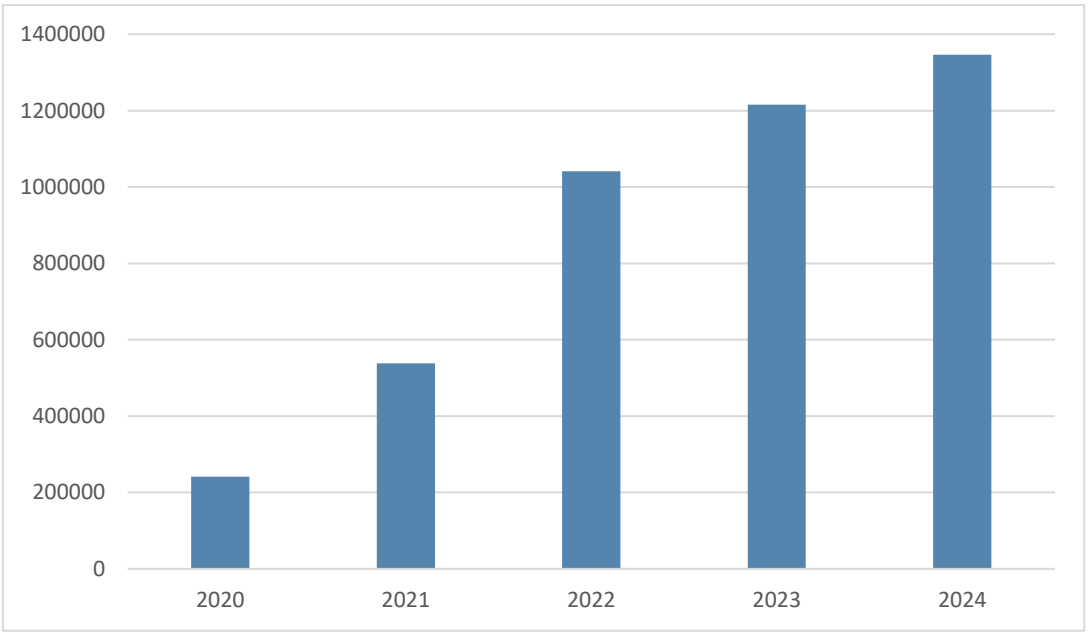
***Graph 2*** provides a monthly view of the number of events submitted on the National database. From these events, the CAD has classified over 8,800 events as MORs. This value is the highest to date, which is resultant to the increased aviation activity and the promotion of reporting within the culture

of an organisation. The national database recorded peaks of over 850 events in the busy travelling summer months. On average, there were about 740 events per month, an increase of over 140 average events per month when compared to the previous year.




***Graph 2*** *– Monthly events recorded by TM-CAD in 2024*

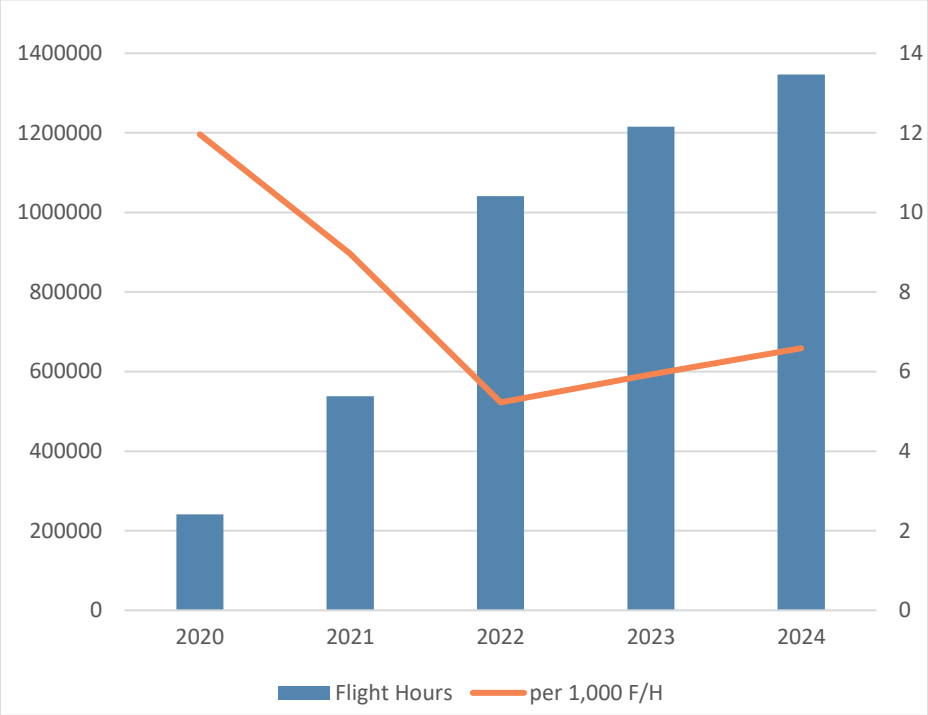
***Graph 3*** shows the total flying hours (commercial) operated by Air Operator Certificate (AOC) holders under TM-CAD oversight. The exhibit shows a yearly increase in operational activity year on year. Whilst large organisations continued to increase considerably their flying rate, this increase is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




***Graph 3*** *- Flying hours of AOC holders per year (2020-2024)*

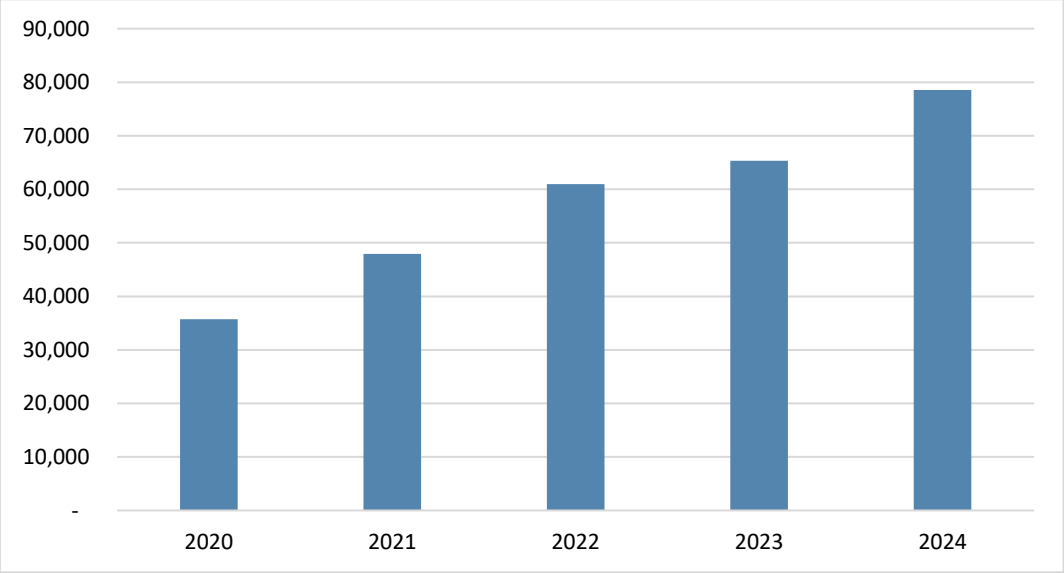
In addition to the yearly figures, ***Graph 4*** provides a relative value of MOR submissions per 1,000 flying hours (commercial). The value presented is only relevant to the MORs submitted by aircraft

operators. One can note a slight increase in the last couple of years and is currently standing at almost 7 reports per 1,000 flying hours.



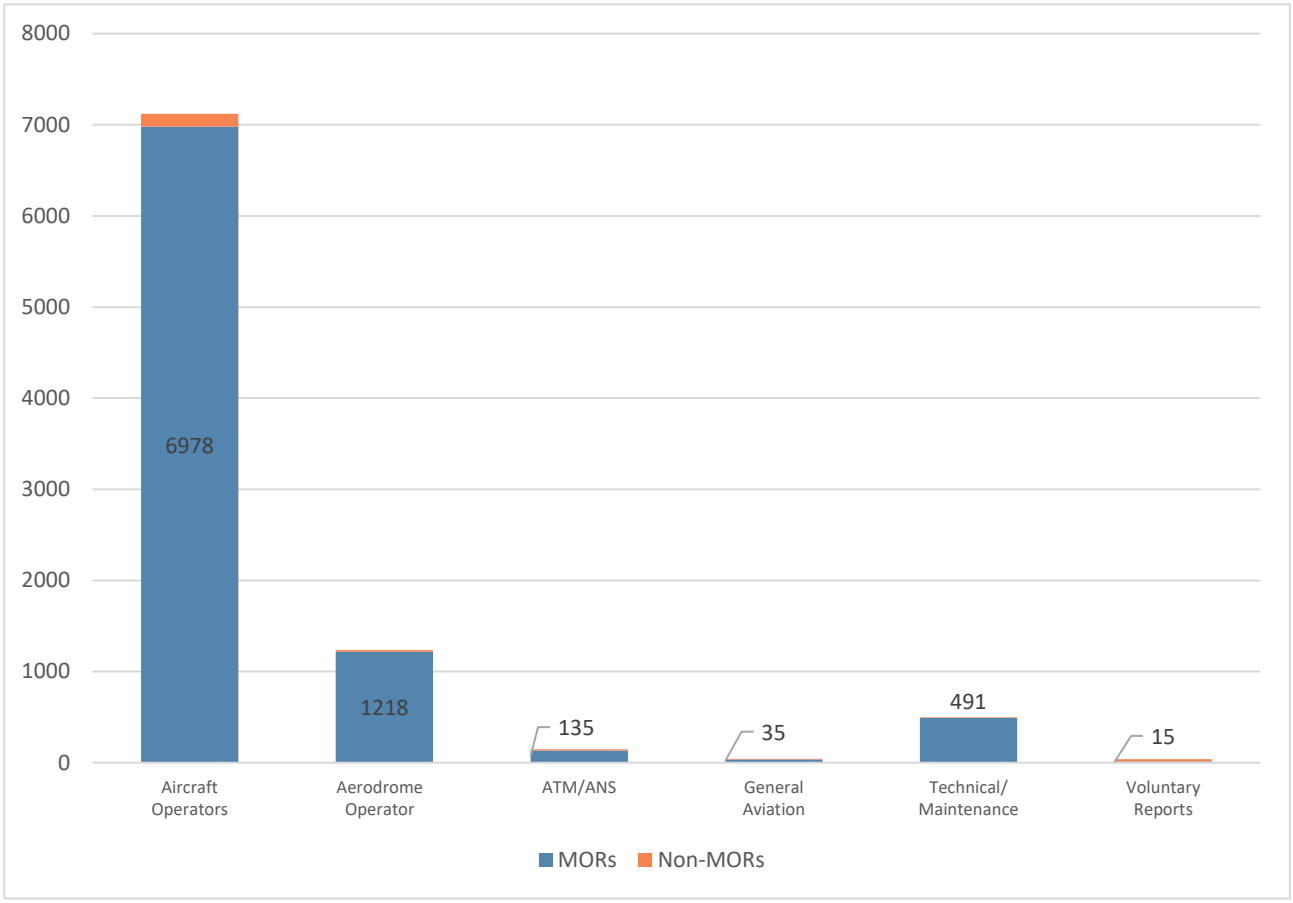

***Graph 4** - MOR submissions by Aircraft Operators relative to flying hours (2020-2024)*

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 local aircraft operations being the top contributors to this increase this year. The five-year trend in aircraft movements at Luqa aerodrome is shown in ***Graph 5***.




***Graph 5** - Aircraft movements (excl. Military) at Luqa aerodrome (2020-2024)*

The source of the Occurrence Reports submitted in 2024 is presented in ***Graph 6*** below. It is important to point out that the same event may have been reported from multiple sources. In such cases, TM-CAD SCU merges duplicate reports to reflect one event. The source of reports compares to the previous years' trends.




***Graph 6*** *- Source of Occurrence Reports (2024)*

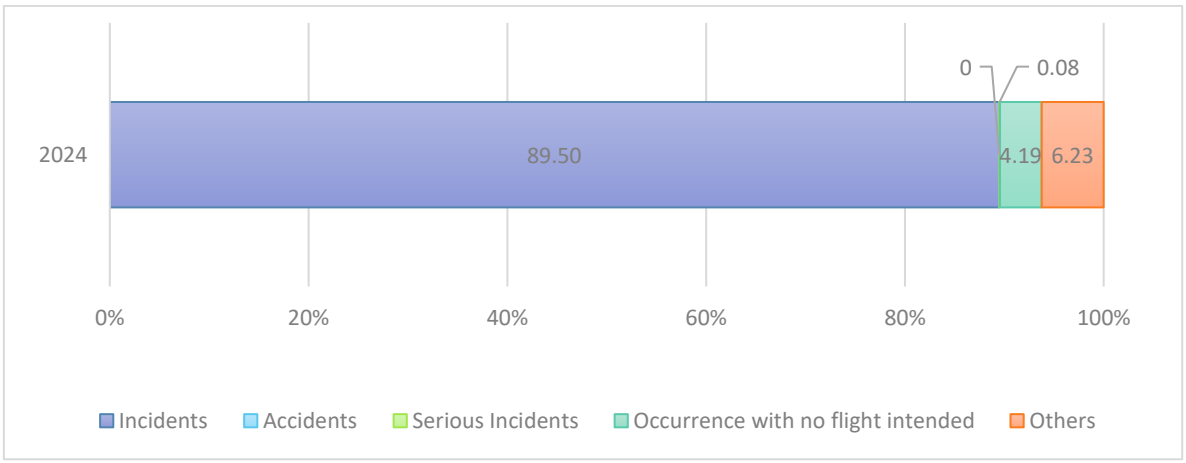
## Occurrence Class

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'. ***Graph 7*** provides a percentage value of the occurrence classes marked accordingly. 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.




***Graph 7*** *- Occurrence Class (% of total)*

The percentage of the reports classified as 'Incident' is close to last year's value. There was a slight decrease in percentage noted this year in the 'occurrence with no flight intended' segment, however, it is still a significant number of reports when compared to 2022. This value almost doubled from 2022 due to an increase in reporting of technical events and an informed classification selection from reporters while also considering the recently introduced continuing airworthiness reporting requirements calling for further reporting. Reports classified as 'Serious incidents', and 'accidents' have decreased since 2022, however, those exceptional reports classified as 'serious incidents' cannot be related to any one particular occurrence category. Events in this occurrence class normally involve a significant aircraft damage or a warning activation of the last layer of protection which if failed, could result in an accident. Nevertheless, not all serious incidents are investigated, as the safety investigation agency may exercise discretion in cases involving smaller aircraft or where no serious injuries occurred, in line with applicable EU regulations.

## Occurrence Categories

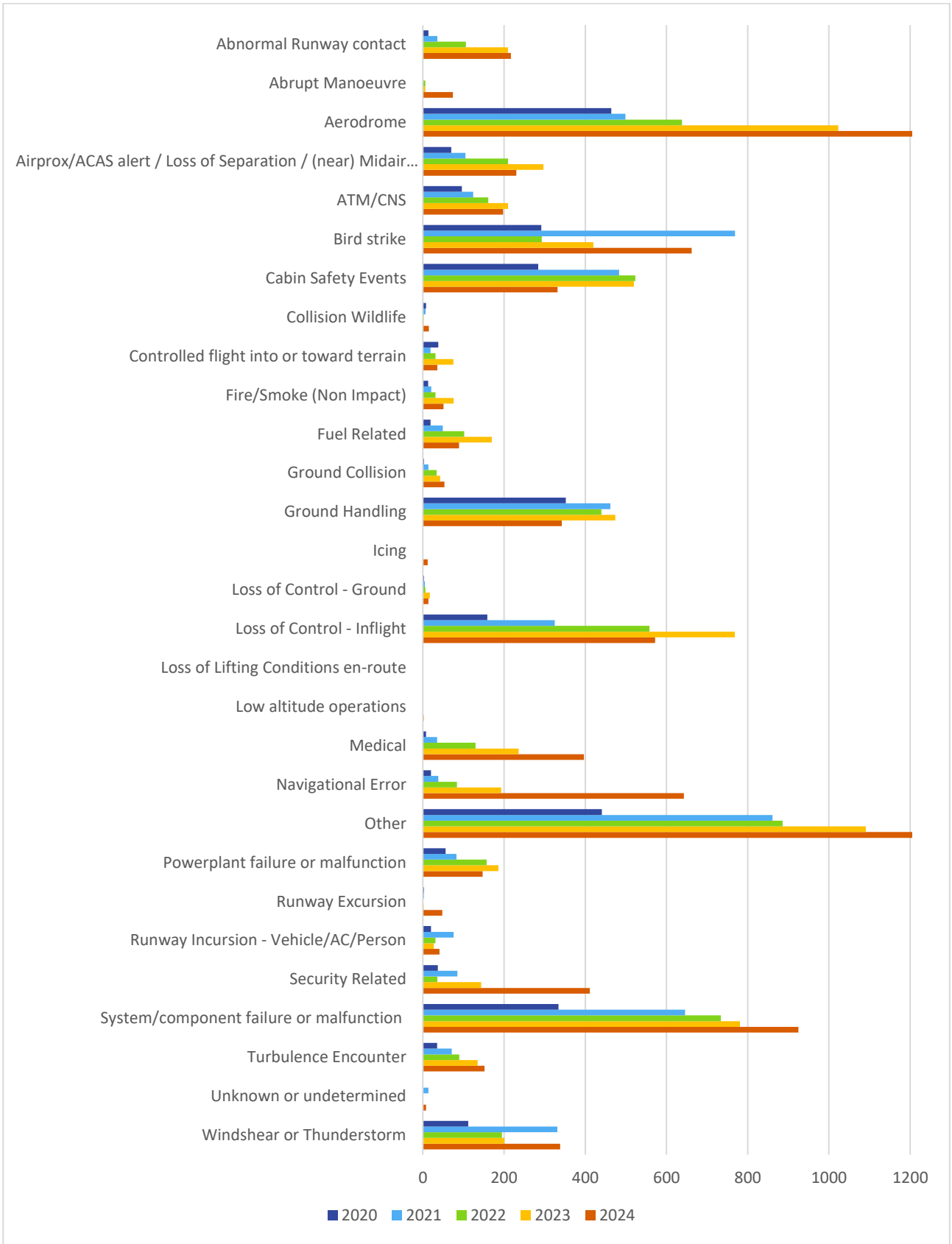
As part of its safety oversight function, the CAD ensures that each occurrence reported to the national database is classified under a structured categorisation framework. This enables high-level visibility of safety events and trends, and supports effective analysis, monitoring, and risk management. To ensure consistency and alignment with international best practices, TM-CAD applies the ICAO Accident/Incident Data Reporting (ADREP) taxonomy. Specifically, categorisation is guided by the CAST/ICAO Common Taxonomy Team (CICTT) publication: "Aviation Occurrence Categories – Definitions and Usage Notes." These harmonised definitions and taxonomies allow the global aviation community to better identify and respond to common safety concerns by standardising the classification of events across jurisdictions.

The table below summarises the key occurrence categories used by TM-CAD, including their ICAO abbreviations and definitions:

| ***Taxonomy abbreviation*** | ***Description*** | ***Taxonomy abbreviation*** | ***Description*** |
|---|---|---|---|
| **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 |

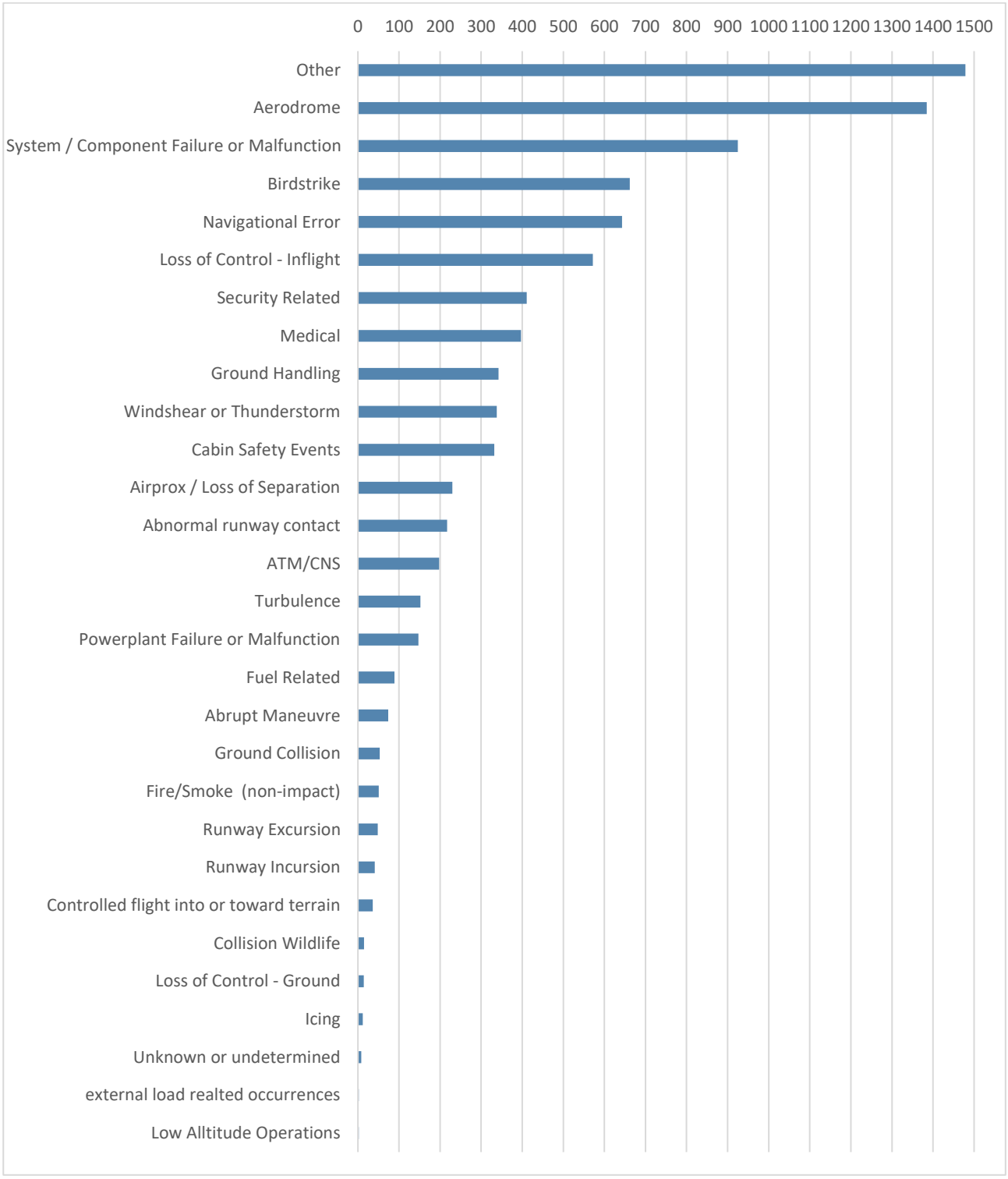
*Occurrence Categories based on ICAO ADREP taxonomy*

***Graph 8*** shows the occurrence categories submitted to the national database between 2020 and 2024. This visual provides a preview of the ADREP categories reported and provides the basis for further analysis within that specific category as addressed in this report.




***Graph 8*** *- Occurrence categories of MOR events (2020-2024)*

***Graph 9*** lists the occurrence categories reported in 2024, in descending order. The most common categories reported in ***Graph 8*** 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.




***Graph 9*** *- Occurrence categories of MOR events in descending order*

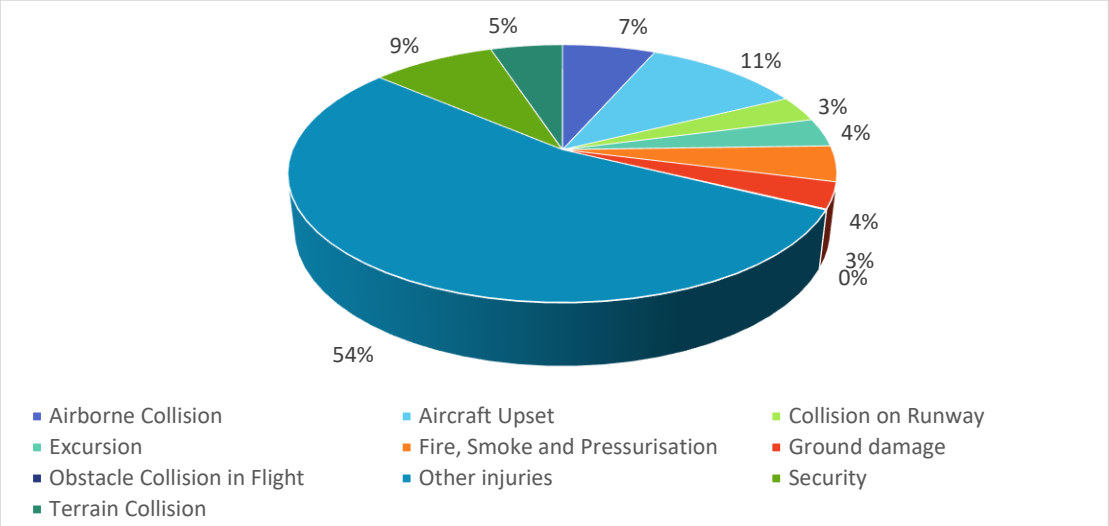
## Key Risk Areas

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 KRAs:

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




***Graph 10** - Key Risk Area (%) of total reports*

The analysis of the KRAs shows that the largest portion of occurrences were classified under 'Other Injuries'. This category captures events that do not align directly with the predefined KRAs, including occurrences related to ground handling, maintenance activities, cabin safety issues, turbulence encounters and similar operational events. Significant contributions were also seen in the Aircraft Upset and Security KRAs, indicating continued focus areas for risk mitigation. Other frequent classifications included Airborne Collision, Fire, Smoke and Pressurisation, and Terrain Collision, underscoring a range of operational and environmental challenges that remain relevant to flight safety oversight. These insights allow TM-CAD to further refine its risk-based oversight and align national safety efforts with European objectives under ERCS.

## Specific Occurrence Category Analysis

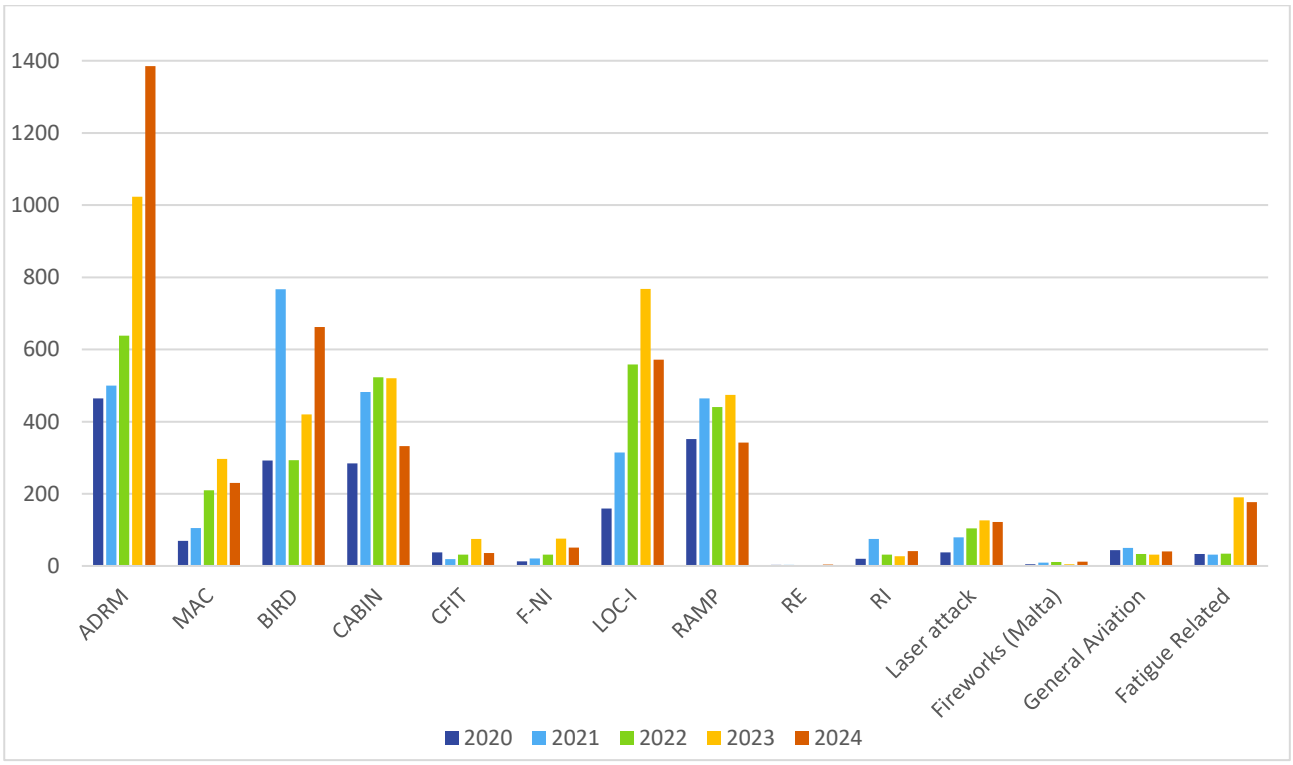
The following occurrence categories are being monitored and analysed as part of the threats deriving from the EPAS, SPAS in Malta and due to commonality of events which require addressing.

The analysis highlights 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.

***Graph 11*** provides a visual aid of the number of reports received between 2020 and 2024 for these specific events.




*Graph 11 - MOR events per category/domain under review (2020-2024)*

Each of these categories is subject to varying levels of analysis to enable meaningful comparisons and aggregate insights, supported by concise interpretations of key findings. The data illustrates a mixed trend across the monitored categories: Aerodrome (ADRM) occurrences have shown a sharp increase in 2024, now representing the most frequently reported category. Bird strikes (BIRD) and Loss of Control Inflight (LOC-I) also display consistently high volumes, with fluctuating yet prominent patterns. In contrast, Ground Handling (RAMP) and Cabin Safety (CABIN) show a slight decline in 2024 following peaks in previous years. Categories such as MAC, Runway Excursion (RE), and Runway Incursion (RI) have remained relatively stable across the reporting period. Additionally, reports involving laser attacks, general aviation, and fatigue-related events show a gradual upward trend, while fireworks-related events remain minimal.

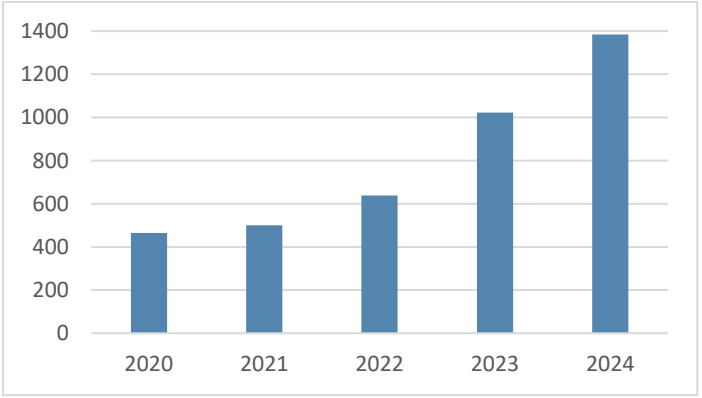
Although GNSS-related events are not included in the graph—being a relatively new phenomenon—GPS interference is an emerging issue and will be addressed in further detail in the coming sections.

This emerging data aligns with the ongoing recovery of aviation activity and flight hours post-pandemic, which has contributed to an increased volume and reliability of reporting. ***Graph 11*** provides an essential visual reference for identifying categories that warrant further analysis to determine whether the rise in reported events indicates evolving safety concerns or improvements in reporting culture.

## Aerodrome (ADRM)

The events categorised under ADRM are derived from the Luqa aerodrome operator. This category includes FOD runway/taxiway control, aerodrome lighting, surface conditions as well as markings and signage. Moreover, it also incorporates occurrences related to aerodrome design, serviceability, and infrastructure functionality. It is important to note that occurrences related to Bird strikes at aerodromes and ground handling are not included in this category. These are classified under BIRD and RAMP-specific respectively.

As illustrated in ***Graph 12***, there has been a year-on-year increase in ADRM-related reports, with 2024 showing the highest volume recorded in the past five years. This upward trend is attributed to a notable rise in aircraft movements at Malta's national aerodrome in Luqa. Detailed analysis of these reports reveals recurring themes that require continued attention, including the presence of FOD, wildlife activity within the aerodrome perimeter, stand coordination challenges, and maintenance-related issues, particularly those involving surface conditions and general aerodrome upkeep such as grass cutting and clearing.

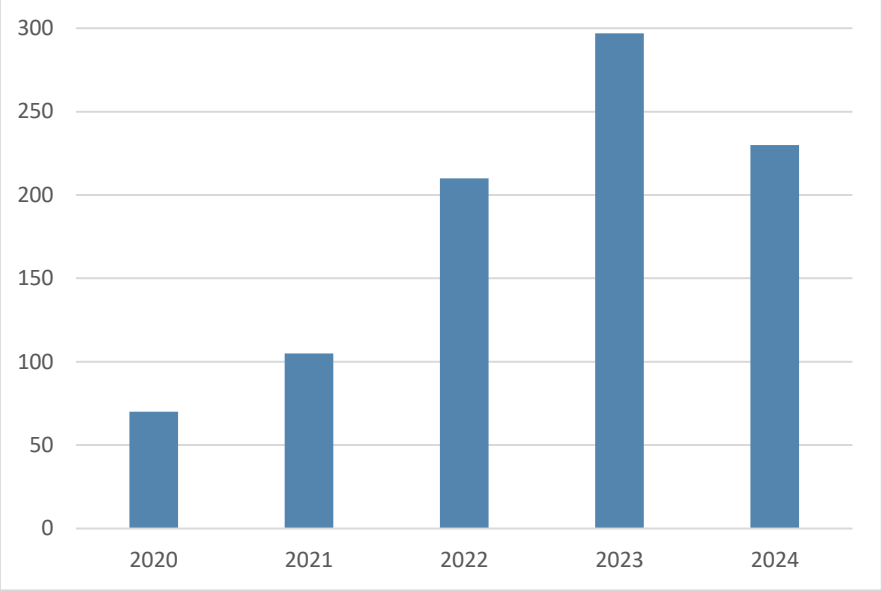



***Graph 12*** *- Aerodrome (ADRM) category events (2020-2024)*

## 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 serious 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 were on an increasing trend and while most MAC events were of low safety risk and classified as incidents, the increase presented in 2023 led to close monitoring of this trend for possible systemic concerns during operations. The decrease noted in 2024, as per ***Graph 13***, is an encouraging development and may reflect improvements in situational awareness, compliance with separation standards and air traffic procedures. While this decline is positive, the CAD continues to monitor this category closely to identify any underlying issues. Given the potential severity of such occurrences, ongoing collaboration with air navigation service providers and operators remains essential to maintaining and further enhancing safety in this area.

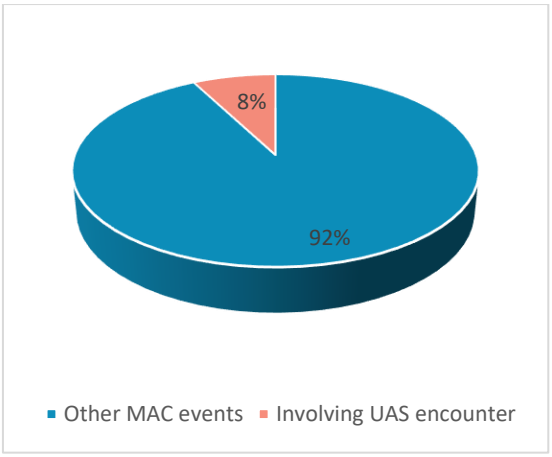



***Graph 13*** *- Total MAC category events per year (2020–2024)*

### *Unmanned Aircraft Systems (UAS)*

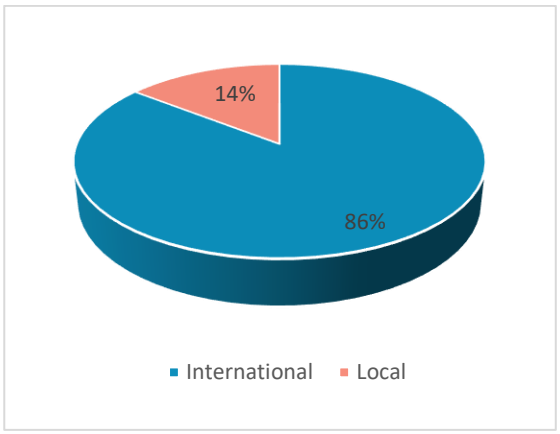
Given the limitations of current ICAO ADREP taxonomy categories, the CAD continues to report on occurrences involving potential Mid-Air Collisions (MAC) between manned aircraft and Unmanned Aircraft Systems (UAS). These include both confirmed encounters and crew sightings, even when no evasive action was necessary. Such events remain a safety concern, highlighting the need for a coordinated and systematic approach. The use of drones in military conflict zones also adds complexity to airspace risk management.

***Graph 14*** shows the proportion of UAS-related MAC events relative to total reports, with percentages consistent with previous years.




***Graph 14** - Total MAC category events (% by event type, 2020–2024)*

***Graph 15*** separates events occurring within Maltese airspace from those involving Maltese-registered aircraft abroad. Due to the nature of UAS operations, enforcement remains challenging; however, CAD continues to work with stakeholders to raise awareness of legal and safety responsibilities. Notably, locally reported UAS events dropped by 13% compared to the previous year, suggesting progress in compliance and education.

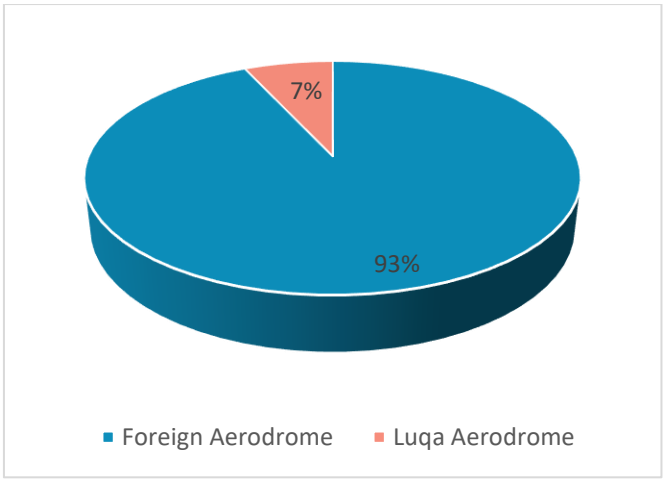



***Graph 15** - UAS related events (% by location, 2020-2024)*

The altitude of UAS sightings is of growing concerns among EU member states. Reports indicate that approximately 18% of UAS sightings in Europe occurred above 12,000 feet, a height at which drones are not only exposed to extreme temperatures that significantly impair battery performance, but also present an elevated risk of airborne conflict with commercial aircraft. This indication highlights the need for stricter operational boundaries and continued monitoring.

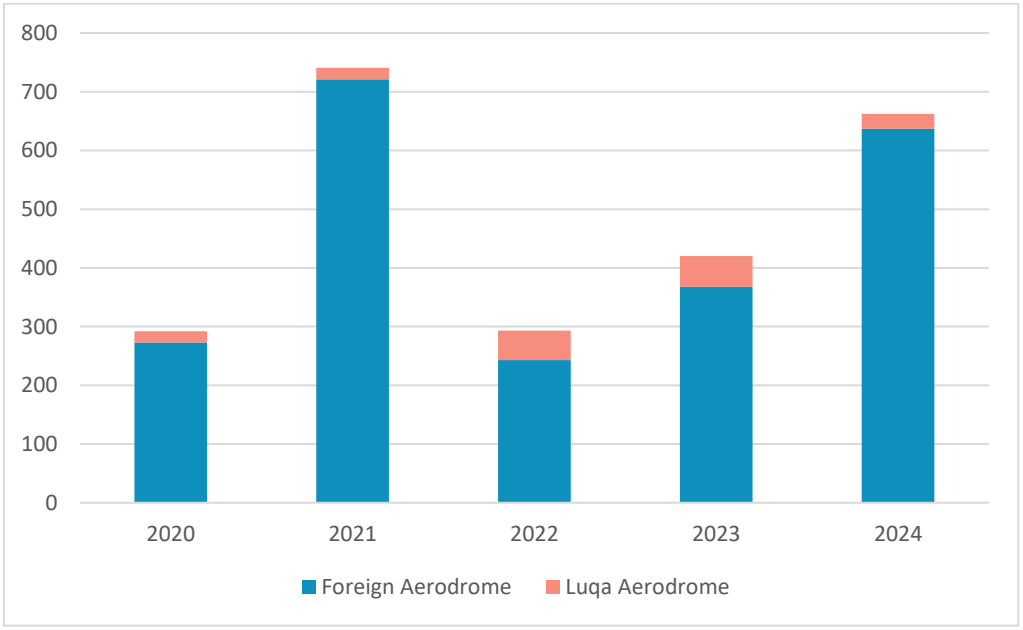
### *Bird strikes (BIRD)*

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 2020 and 2024 as illustrated in ***Graph 16***.



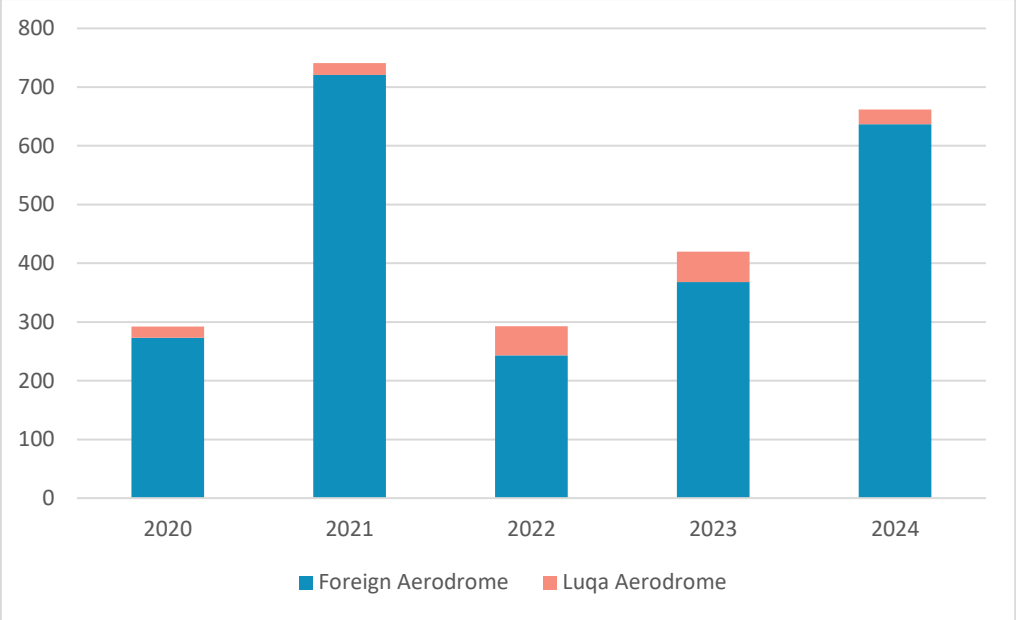

***Graph 16 -*** *Bird strike (BIRD) category events (% by location, 2020-2024)*

***Graph 17*** 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.

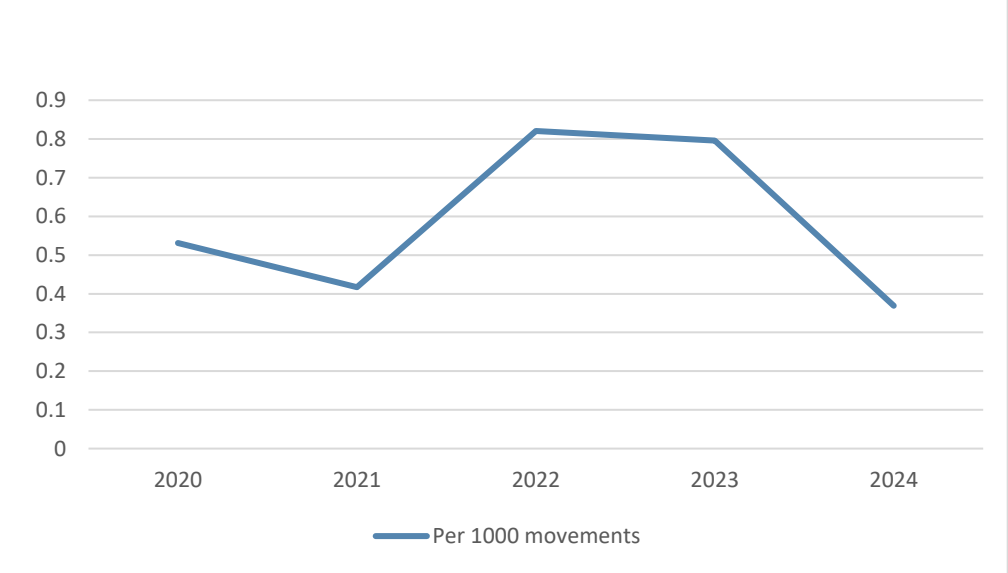



***Graph 17*** *- Bird strike (BIRD) category events (number by location, 2020-2024)*

When comparing the number of birdstrikes at Luqa aerodrome against the total annual aircraft movements, a slight decrease is observed. However, there has been a notable increase in reported bird sightings, suggesting improved reporting vigilance. ***Graph 18*** and ***Graph 19*** provide an annual trend of bird strikes at Luqa aerodrome and measured against 1,000 movements which correlates with this decrease.

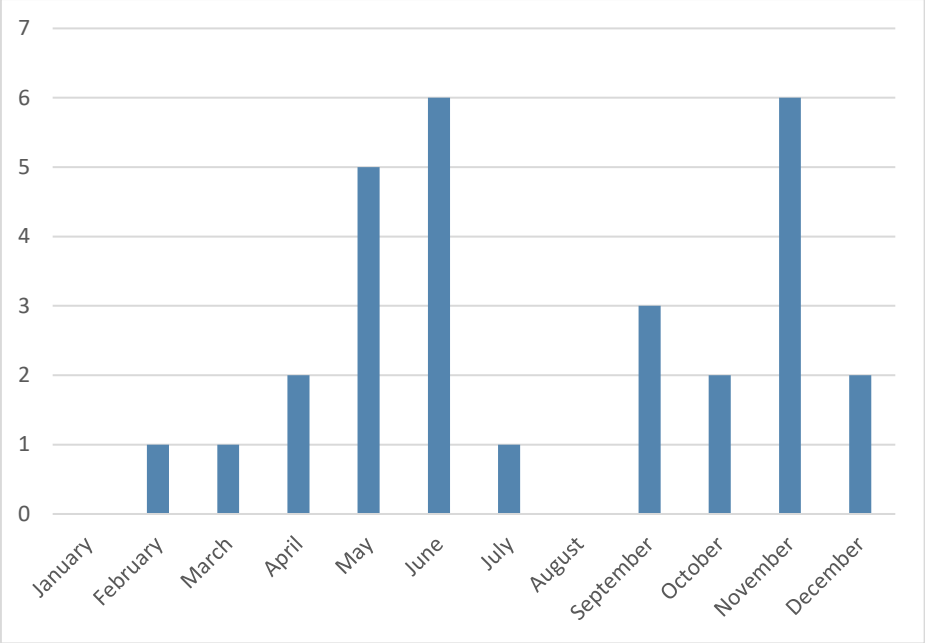



***Graph 18** - Bird strike (BIRD) events at Luqa Aerodrome vs Aircraft Movement (2020-2024)*

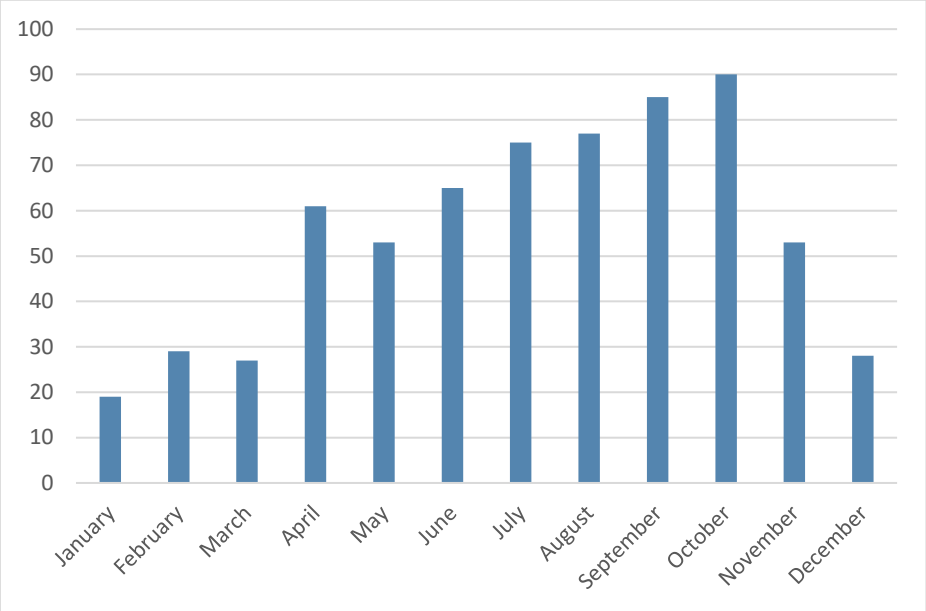



***Graph 19** - Bird strike (BIRD) events at Luqa Aerodrome per 1,000 Aircraft Movements (2020-2024)*

Graphs 20 and 21 provide a monthly view of the bird strike events as reported in 2024 to the National Database. ***Graph 20*** shows the monthly bird strike events which occurred at Luqa aerodrome, while ***Graph 21*** shows a monthly view of all the bird strike events reported to the National database.




***Graph 20** – Bird Strike events reported monthly at Luqa Aerodrome (2024)*

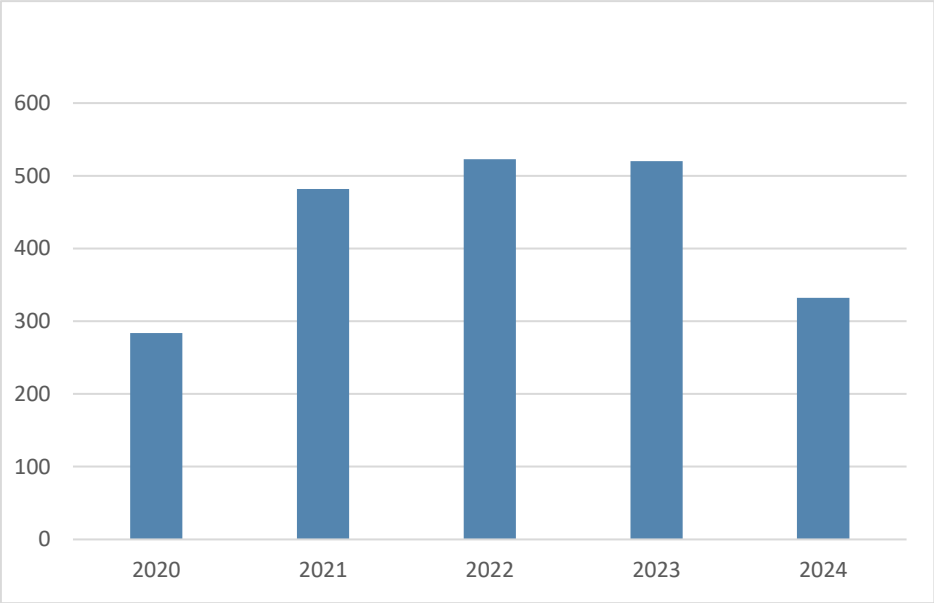



***Graph 21** – Bird Strike events reported monthly to the National database (2024)*

## Cabin Safety Events (CABIN)

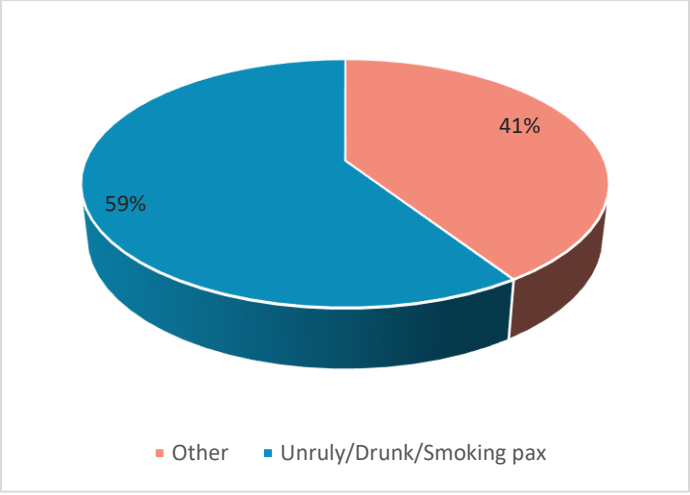
This occurrence category includes a wide range of occurrences taking place within the passenger cabin of transport aircraft. Analysis of recent data reveals that the majority of cabin-related events are driven by unruly or disruptive passenger behaviour, including drunkenness and smoking in lavatories. These behaviours remain a persistent challenge across the aviation industry, with airlines and ground-handling agents continuing to implement preventive measures through training and awareness campaigns amongst others.

As illustrated in ***Graph 22***, the number of cabin safety reports peaked between 2021 and 2023, before noting a notable decrease in 2024 – suggesting a possible stabilisation trend following post pandemic. Despite the overall decline, disruptive passengers remain the dominant contributor with 59% of cabin safety reports in 2024 linked to unruly behaviour, intoxicated passengers or smoking onboard as shown in ***Graph 23***.




***Graph 22*** *- Cabin Safety Events (CABIN) category (2020-2024)*

There appears to be no strong correlation between unruly events and specific departure location. The increasing use of electronic cigarettes in-flight is another emerging issue, requiring closer monitoring and tailored mitigation strategies. Additionally, risks associated with lithium battery-powered devices remain relevant, as highlighted in the Safety Information Bulletin (SIB) issued by TM-CAD. The remaining 41% of cabin safety reports cover a variety of other in-flight occurrences, such as medical events, crew observations, passenger baggage issues, and the use of portable oxygen and medical equipment. These underline the diverse nature of cabin-related risks, but also reinforce the importance of maintaining a robust safety culture onboard.




***Graph 23*** *- Cabin Safety Events (CABIN) category (% by event type, 2020-2024)*

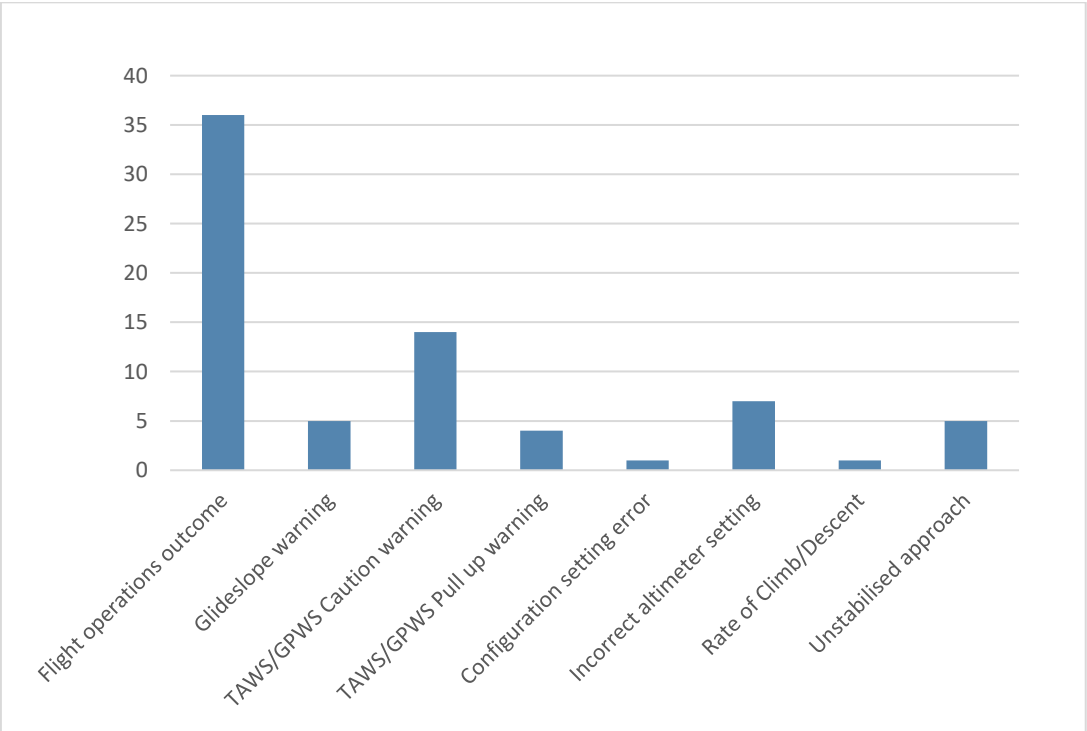
## Controlled Flight Into or Toward Terrain (CFIT)

**Controlled Flight into Terrain (CFIT)** refers to instances where a fully functioning aircraft, under the pilot's control, is unintentionally flown into terrain, water, or an obstacle—often due to loss of situational awareness. This category only includes events occurring during the airborne phase of flight and covers scenarios that, while not resulting in an accident, **could have had serious** consequences—such as Ground Proximity Warning System (GPWS) alerts or altimeter setting errors.

In 2024, CFIT-related reports dropped by half compared to 2023, a positive sign of improved operational awareness and effective use of onboard warning systems. No CFIT events were classified as accidents or serious incidents by the Safety Investigation Bureau during this period.

As illustrated in ***Graph 24***, the largest contributing factor within this category was the 'Flight Operations Outcome', which includes aircraft handling responses such as go-arounds and missed approaches—typically following a triggered warning. Notably, TAWS/GPWS Caution and Pull Up warnings were also frequently reported, underscoring the importance of terrain awareness and timely pilot response. Additional factors included incorrect altimeter settings, unstabilised approaches, and rate of climb/descent deviations.

The high number of 'warning'-related entries reflects the value of early detection systems in helping crews take corrective action before a hazard escalates. These insights reinforce the importance of continuous training, adherence to standard operating procedures, and robust safety nets to keep CFIT risk under control.



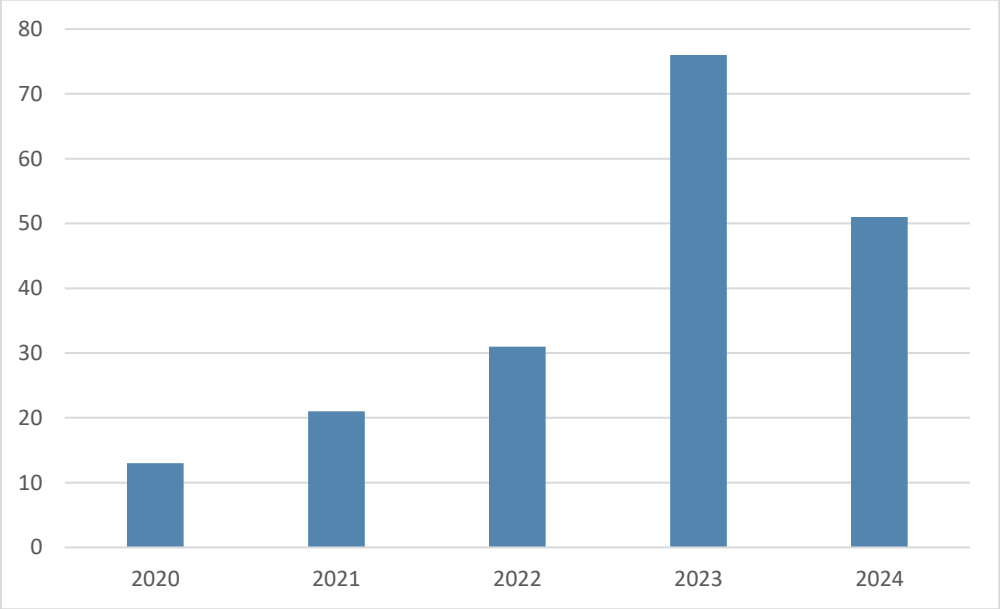

***Graph 24*** *- CFIT category related events (2024)*

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

This category covers occurrences where fire, smoke, or unusual odours were reported in the aircraft, either in-flight or on the ground, excluding events caused by impact. These reports typically relate to air-conditioning issues, galley equipment, component malfunctions, or spurious fire warnings that were not confirmed upon inspection.

As shown in ***Graph 25***, while 2023 recorded a sharp increase in F-NI related reports, 2024 shows a notable decrease. Despite the decline, this category remains a key area of concern. The most frequent reports involved odours in the cabin—often traced back to residual oils or component overheating—particularly after maintenance or engine servicing.

There were no injuries or fatalities reported under this category. The CAD continues to monitor such events closely and works with operators to ensure appropriate maintenance practices and response procedures are in place, contributing to overall safety assurance.

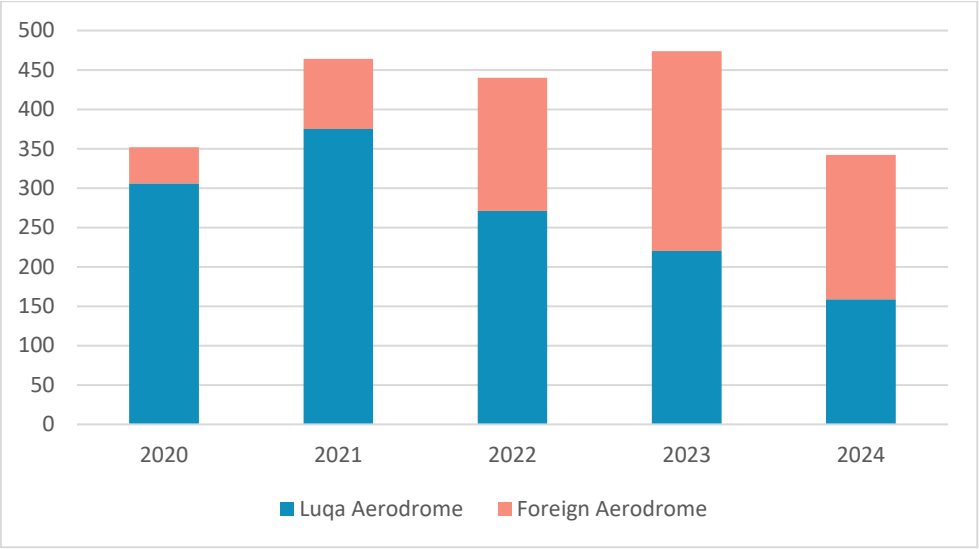



***Graph 25*** *- Fire/Smoke (N-I) category events (2020-2024)*

## 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.

***Graph 26*** provides data related to reported RAMP category events. The CAD's approach by taking into consideration the severity of the events and ensuring that the appropriate measures are being implemented by the aerodrome operator and Ground Handling Service Providers (GHSP) led towards decreasing this category annually. This strategy aimed at encouraging safety reporting within this segment while also ensuring that practices and procedures are upheld to avoid a re-occurrence of the event.




***Graph 26** – RAMP category events (2020-2024)*

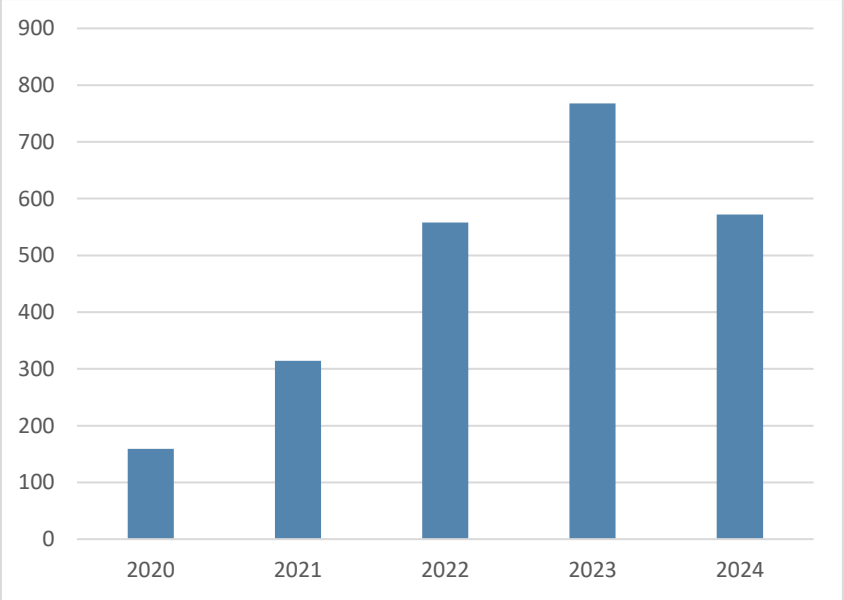
The trends identified in previous years are still the major contributors to the RAMP category events at Luqa aerodrome. Following the introduction of a new GHSP at Luqa aerodrome, which reflets the number of reports in 2023, highlighted some deficiencies in the application of aerodrome operation procedures. 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. This possibly led to a decrease in 2024.

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.

In contrast to previous years, 2024 reported a decline in the LOC-I category as shown in ***Graph 27***. This is notable given the overall rise in operational activity and occurrence reporting. While the decrease is encouraging, the data suggests that unstabilised approaches and flight parameter exceedances continue to be key drivers within this category. Detailed analysis indicates that around a third of reported events were linked to environmental and weather-related factors, such as turbulence, tailwinds, or poor visibility. The most frequently reported contributors were go-arounds, speed/flap exceedances, and bank/roll deviations. Although no injuries, fatalities, or near accidents were recorded, these trends underline the importance of maintaining vigilance, especially during critical phases of flight. Further investigation is warranted to assess the potential influence of crew training, experience levels, and operational pressures on LOC-I events.

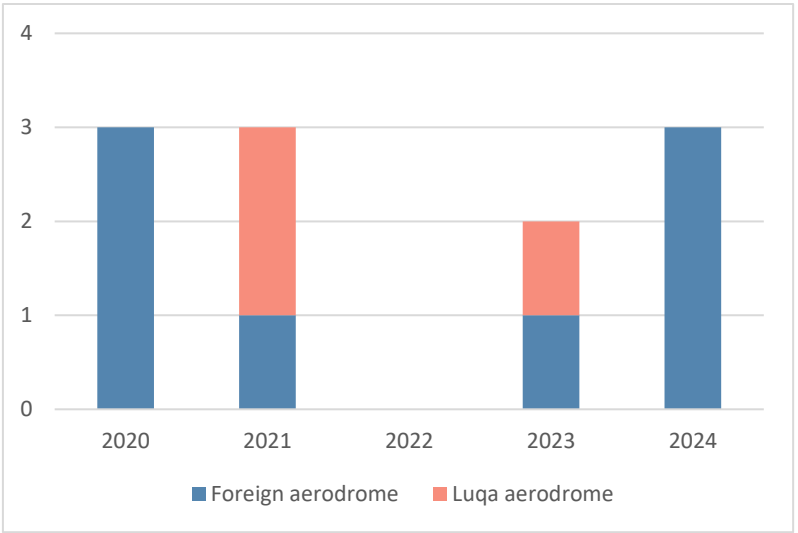



***Graph 27** - LOC-I category events (2020-2024)*

## 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 three actual excursions occurred in 2024 as illustrated in ***Graph 28***.

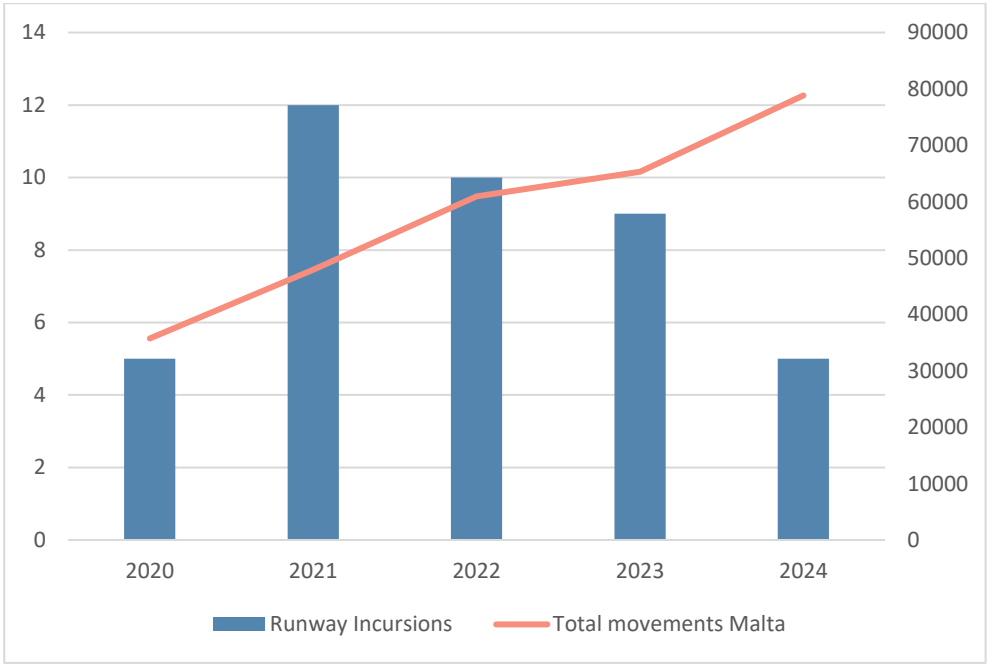



***Graph 28** – RE category events at location (2020-2024)*

## 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 2024, the CAD received 41 reports of RI events of which 5 occurred at Luqa aerodrome. This is a decrease from last year and these events did not result into an accident or near accident. The small number of local events where mostly related to slow moving aircraft, vehicle infringements which led to few go arounds when aircraft were on approach. One serious event classified as an RI involved taking the wrong runway lineup followed by a rejected take off. However, this did not take place on Luqa Aerodrome grounds.



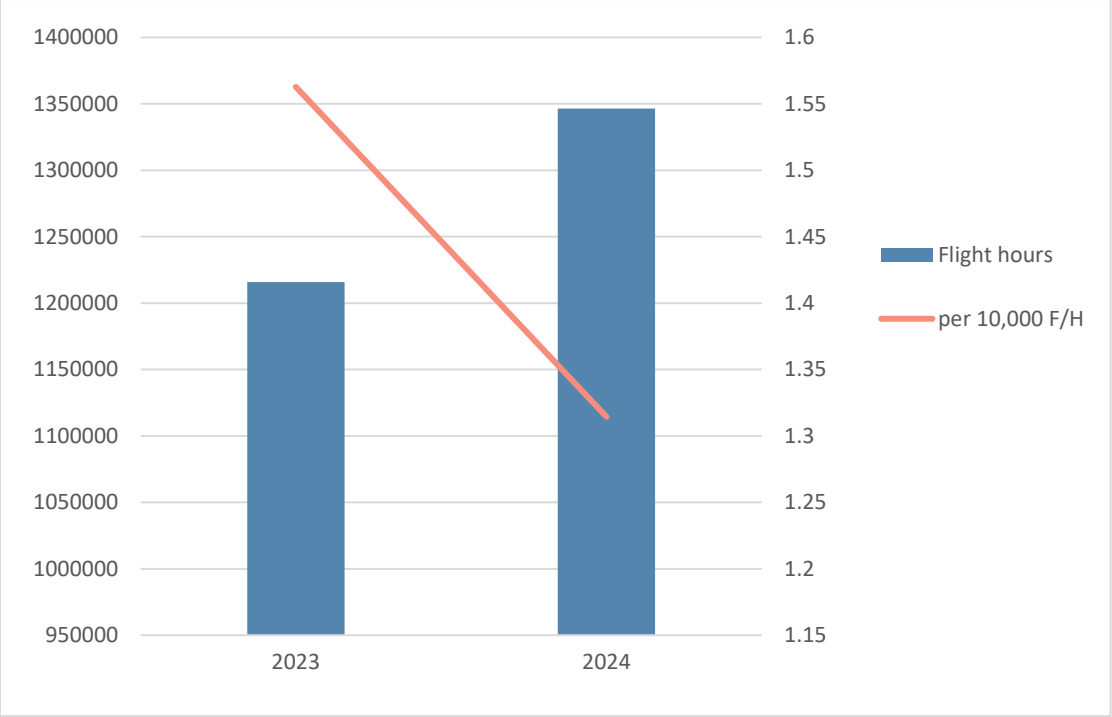

***Graph 29*** *- RI category events at Luqa aerodrome vs Aircraft movements (2020-2024)*

Numerically, the RI events at Luqa are relatively low and when compared to aircraft movements, this year there were 0.6 RI per 10,000 aircraft movements. This constituted another considerable decrease when compared to previous years' 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.

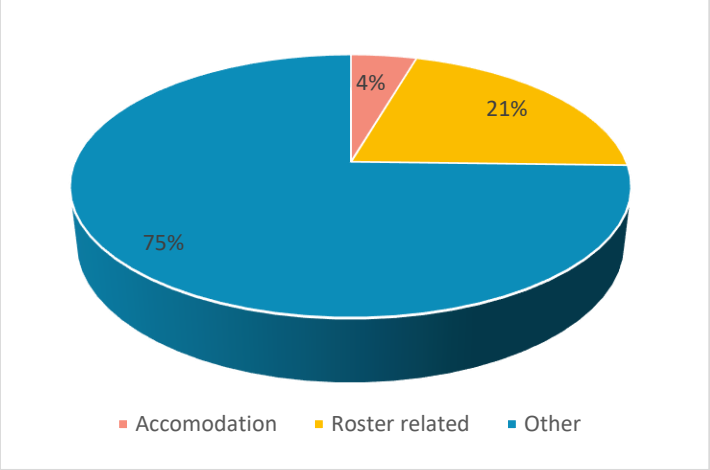
***Graph 30*** shows the rate of fatigue-related reports submitted to the National database associated to the amount of flight hours flown by Maltese aircraft operators.




***Graph 30** – Reported fatigue-related events per 10,000 flight hours (2023-2024).*

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. 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 1.3 reports per 10,000 flight hours. Peak reporting months were identified to be in July and August.

Fatigue reporting remained common, particularly during multi-leg flights across time zones, often driven by circadian rhythm disruption and limited rest during scheduled off periods. Contributing factors included technical issues, delays, demanding weather, operational challenges, and aerodrome ground handling. Fatigue and duty-time adherence continue to be closely monitored by the CAD through ongoing oversight, including targeted checks on Flight Time Limitations (FTL), which confirmed compliance with no safety concerns identified during audits.




***Graph 31** - Fatigue reports and their reported causes (2024)*

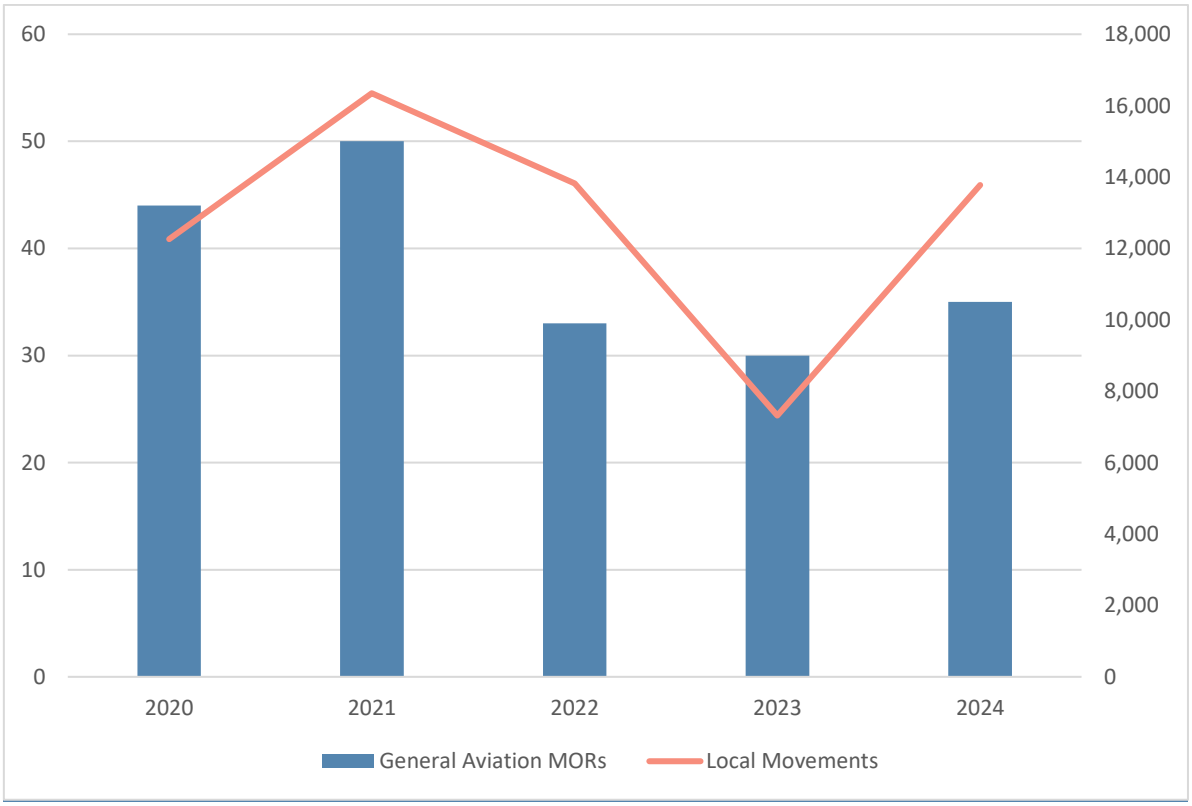
## General Aviation

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.

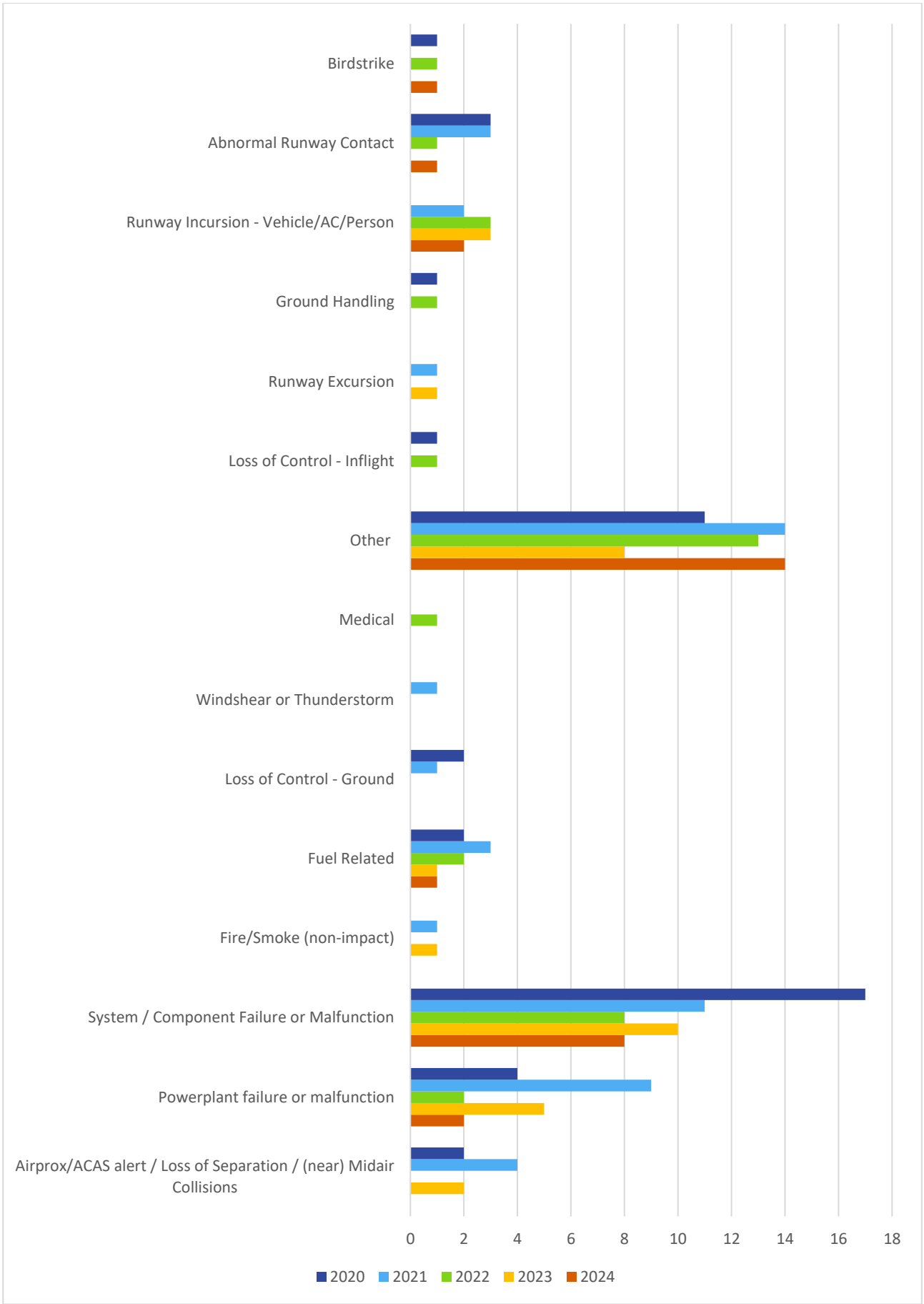
The GA activity in Malta is presented in ***Graph 32*** and shows a spike in local movements when compared to the last year. The increase in activity is mainly attributed to the re-opening the two of the runways which were closed for three months in the previous year which restricted GA operations.

The rate of MORs for GA per 1,000 aircraft movements stands at 3 reports, which has dipped after the considerable increase of last year. This decrease highlights the importance of further awareness and training to have reports reaching TM-CAD, given the historical trend of low number of reporting. Nevertheless, the CAD will remain cautious on the events being reported and act in the interest of aviation safety. ***Graph 33*** 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 continuous promotion campaign, the CAD held specific meetings with ATO and GA users to further promote the occurrence reporting culture.



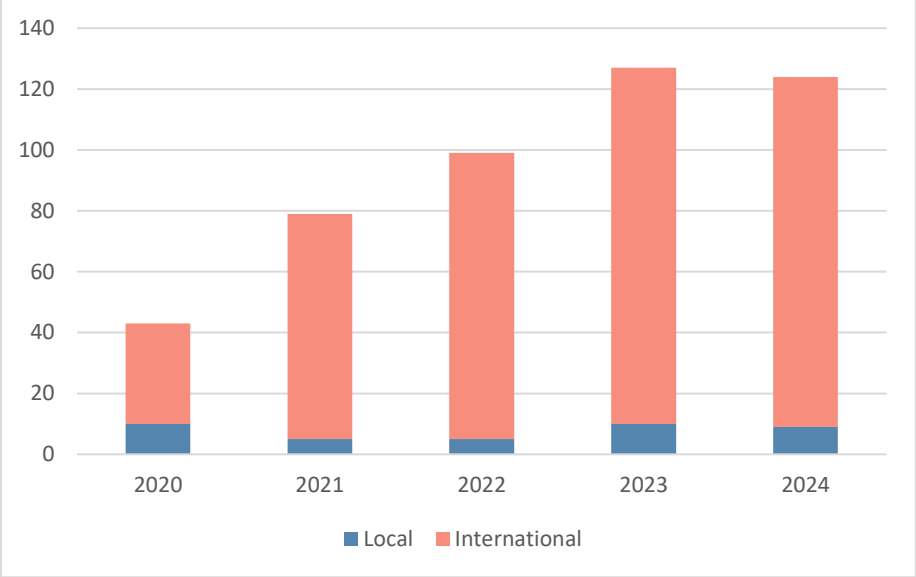

***Graph 32*** *- General Aviation MORs vs Local movements (2020-2024)*




***Graph 33** - General Aviation Occurrence Categories (2020-2024)*

## Laser Attacks

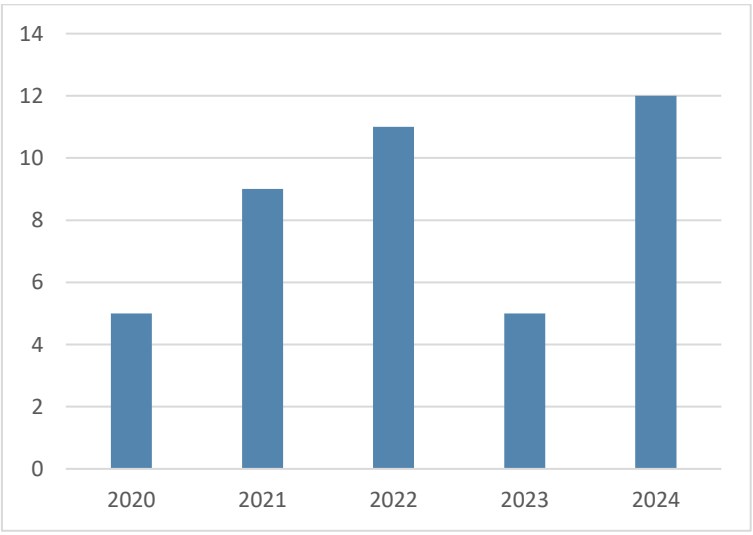
Laser attacks are of considerable threat to flight crew and can create potentially hazardous effects during the critical stages of flight particularly take-off and approach/landing. While it is evident that there was an increasing trend, laser attack reports have shown a stabilisation figure when compared to last year, ***Graph 34*** 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.




***Graph 34*** *- Laser Attack events (2020-2024)*

## 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.

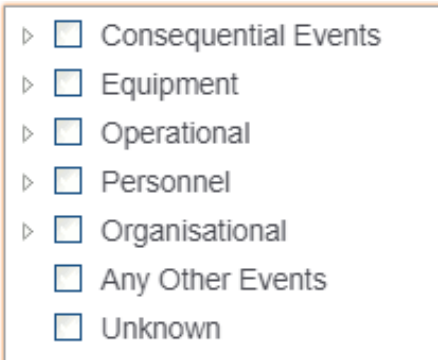



***Graph 35*** *- Firework related events (2020-2024)*

# Occurrence Report Events

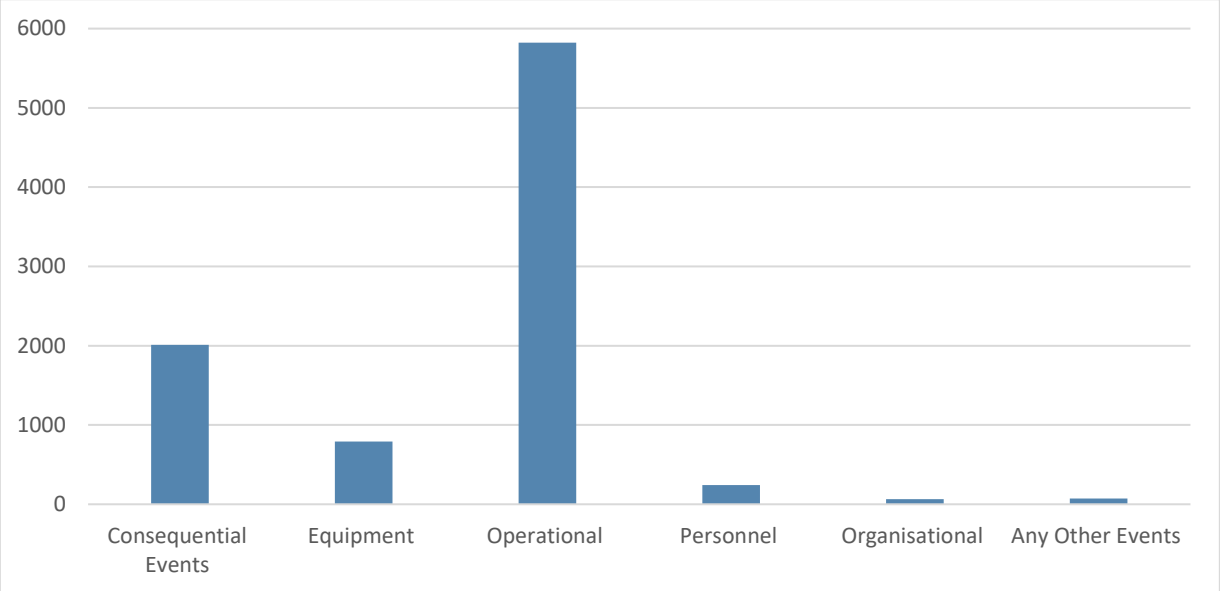
## Event Type

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. The event type drop down below shows only the high-level of this comprehensive list:




*Event Type drop-down menu headers*

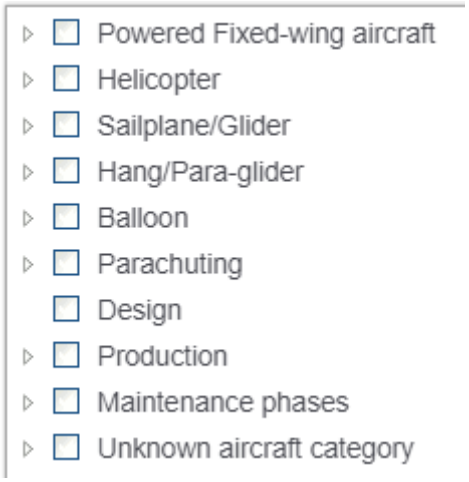
For simplicity purposes, ***Graph 36*** shows the six top-tier headers as per the event type drop-down selections (excluding the unknown category). It is important to note that one occurrence report can have multiple event types.




***Graph 36*** *- Event Types (2024)*

## Event Phase

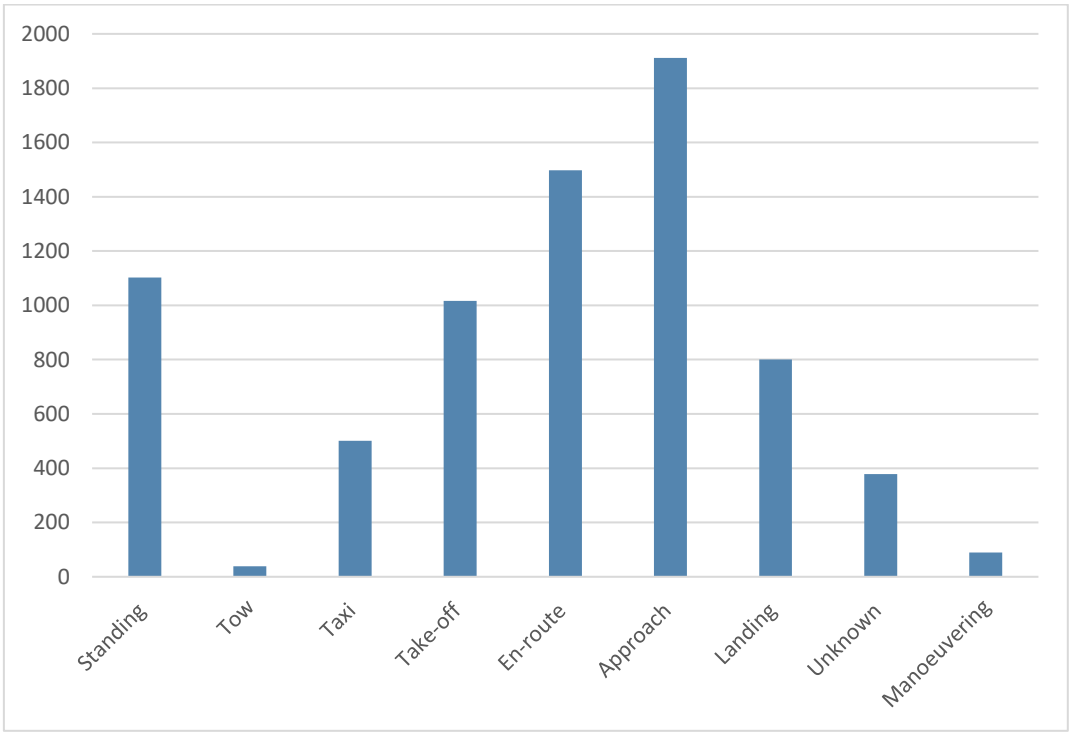
Each different operation has its own set of event phases as presented in event phase drop-down menu below. The occurrence reports received by TM-CAD were related to the 'Powered fixed-wing aircraft', 'Helicopter' and 'Maintenance phases'.



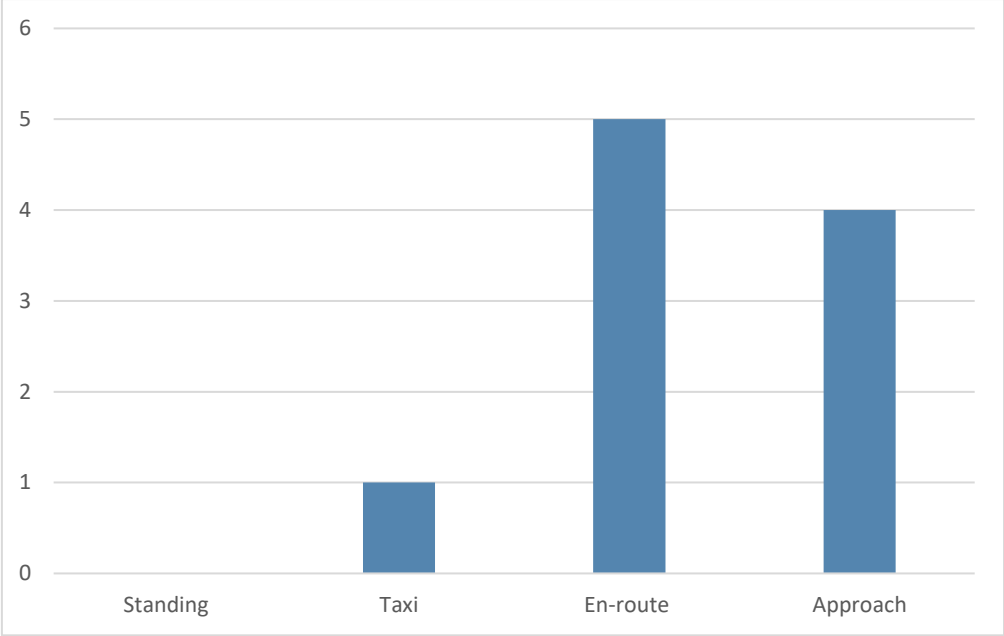

*Event Phase drop-down menu headers*

For the 'Powered Fixed-wing aircraft' and 'Helicopter' events in 2024, the phases are shown in ***Graph 37*** and ***Graph 38*** 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.

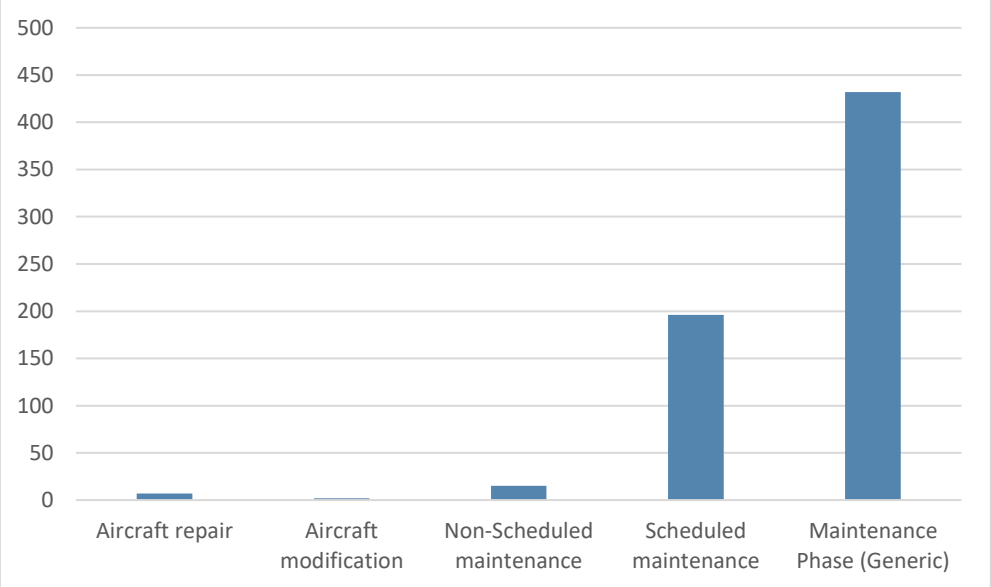



***Graph 37*** *- Event Phase: Powered fixed-wing aircraft (2024)*




***Graph 38** - Event Phase: Helicopter (2024)*

'Maintenance phases' related events in 2024 are shown in ***Graph 39***:




***Graph 39** - Event Phase: Maintenance phases (2024)*

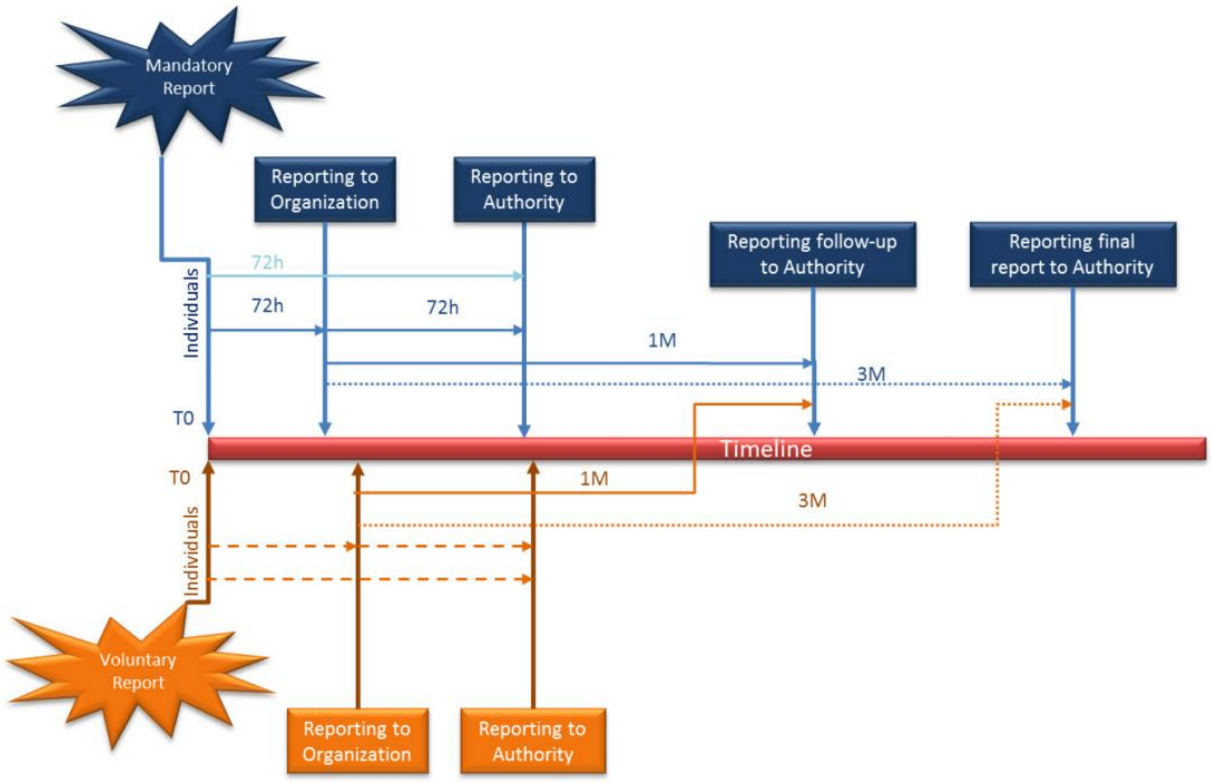
## Occurrence Report Follow-up

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. The timeline below 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.




*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 2024, the BAAI was included in nine safety investigations for serious incident events concerning Maltese registered aircrafts.

The following the five events, for which the BAAI are ACCREP throughout their investigation, are ongoing.

- Embraer Praetor 600 (EMB-550) experienced difficulties in steering the aircraft pitch after take-off.
- De Havilland Canada DHC-8-402 involved in a runway excursion.
- Boeing 737-8AS suffered a rotation close to the end of the runway during take-off.
- Boeing 737-8AS involved in a ground collision with airport fixtures
- Boeing 737-8AS landing while opposite aircraft is taking-off.
- Boeing 737-800 experienced a burst tyre after landing.
- Boeing 737-800 passenger fell off from stairs.
- Boeing 747-400 initiated a take-off roll from taxiway.
- Airbus A321 experienced FADEC fault and engine inflight shutdown.

## Safety Information and Advisory Notice (SIAN)

In 2024, the Civil Aviation Directorate issued one Safety Information and Advisory Notices (SIAN) to promote safety awareness regarding aircraft control systems.

**SIAN 01/24 – Loss of Pitch Control and Trim** was issued following reported cases involving *Embraer EMB-550, EMB-505***,** and *EMB-500* aircrafts, where flight crews had trouble in pitch control or abnormal trim behaviour during flight. The notice highlights potential issues related to incorrect trim configuration, unintended autopilot engagement or pilot mismanagement of pitch trim controls, which could lead to increased control forces or momentary loss of pitch authority.

Operators and flight crews were reminded to strictly adhere to the aircraft flight manual (AFM), follow standard operating procedures (SOPs) and ensure adequate familiarity with pitch trim and autopilot systems. The notice serves as a proactive reminder of the importance of pilot awareness and correct handling techniques, especially during critical phases of flight.

All published SIANs are accessible on the TM-CAD website.

## EU Ramp Inspection Programme

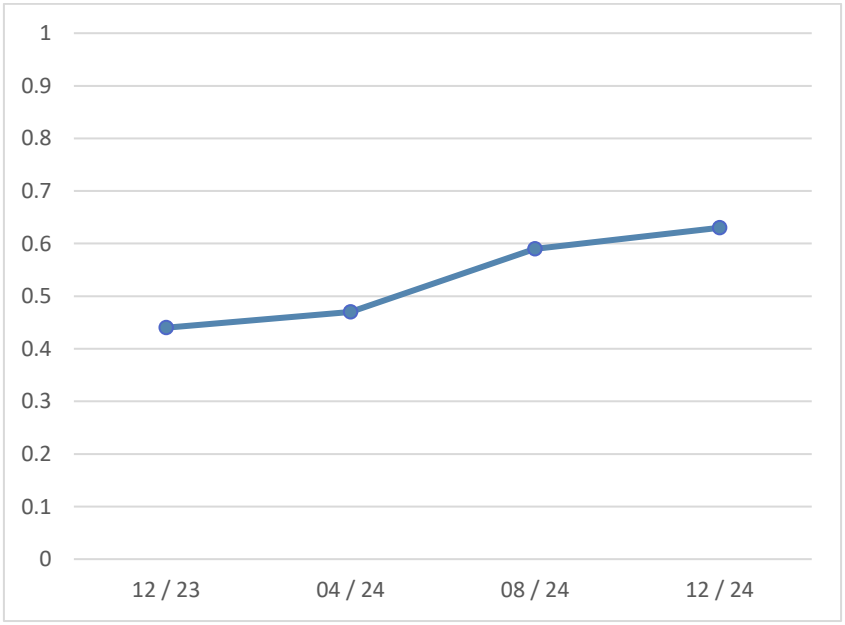
The EU Ramp Inspection Programme is a tool for the surveillance of foreign operators, which monitors safety compliance through ramp inspections on the aircraft. One of the pillars of the programme are SAFA ramp inspections (Safety Assessment of Foreign Aircraft). These involve all ramp inspections performed 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 aircraft inspected, number of inspections and the number of findings and their finding category.

***Graph 40*** illustrates, Malta's SAFA Ratings per quarter of this year. Over a 12-month period, Malta scored an average rating of 0.53, which is a slight increase from the rating of 2023 (0.41 average). While this implies that Malta has diminished its SAFA rating, most findings were reported as Category 1 minor findings concentrated in the 2nd Quarter of the year.



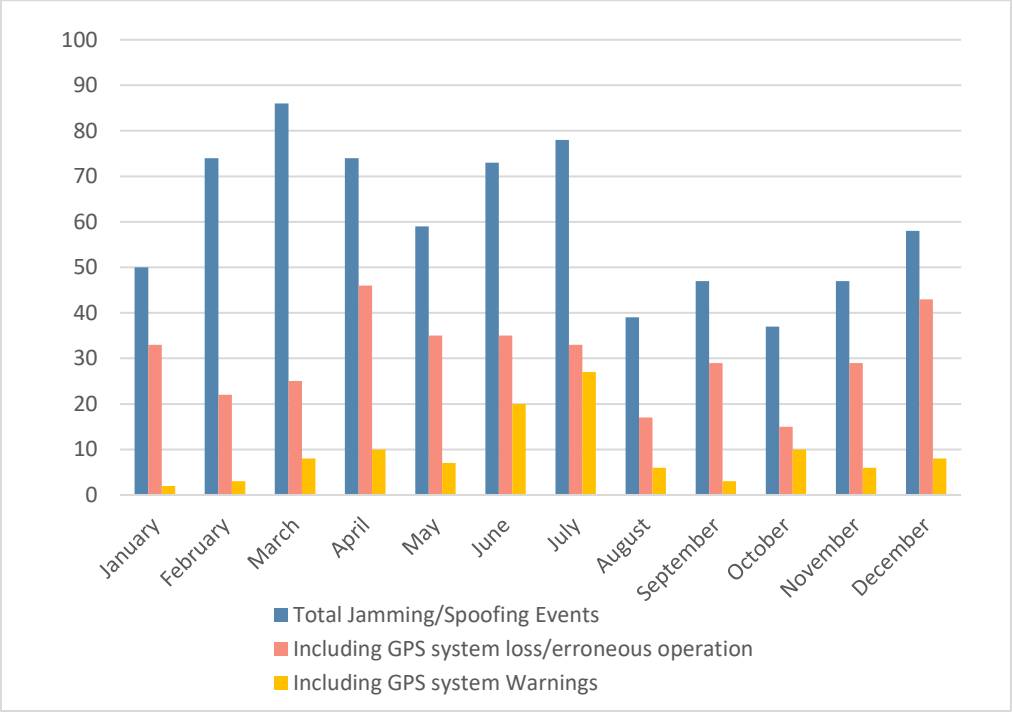

***Graph 40*** *– SAFA Ratings per Quarter (2024)*

## 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 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 2022-02R3) on GNSS Outage and Alterations Leading to Navigation / Surveillance Degradation.

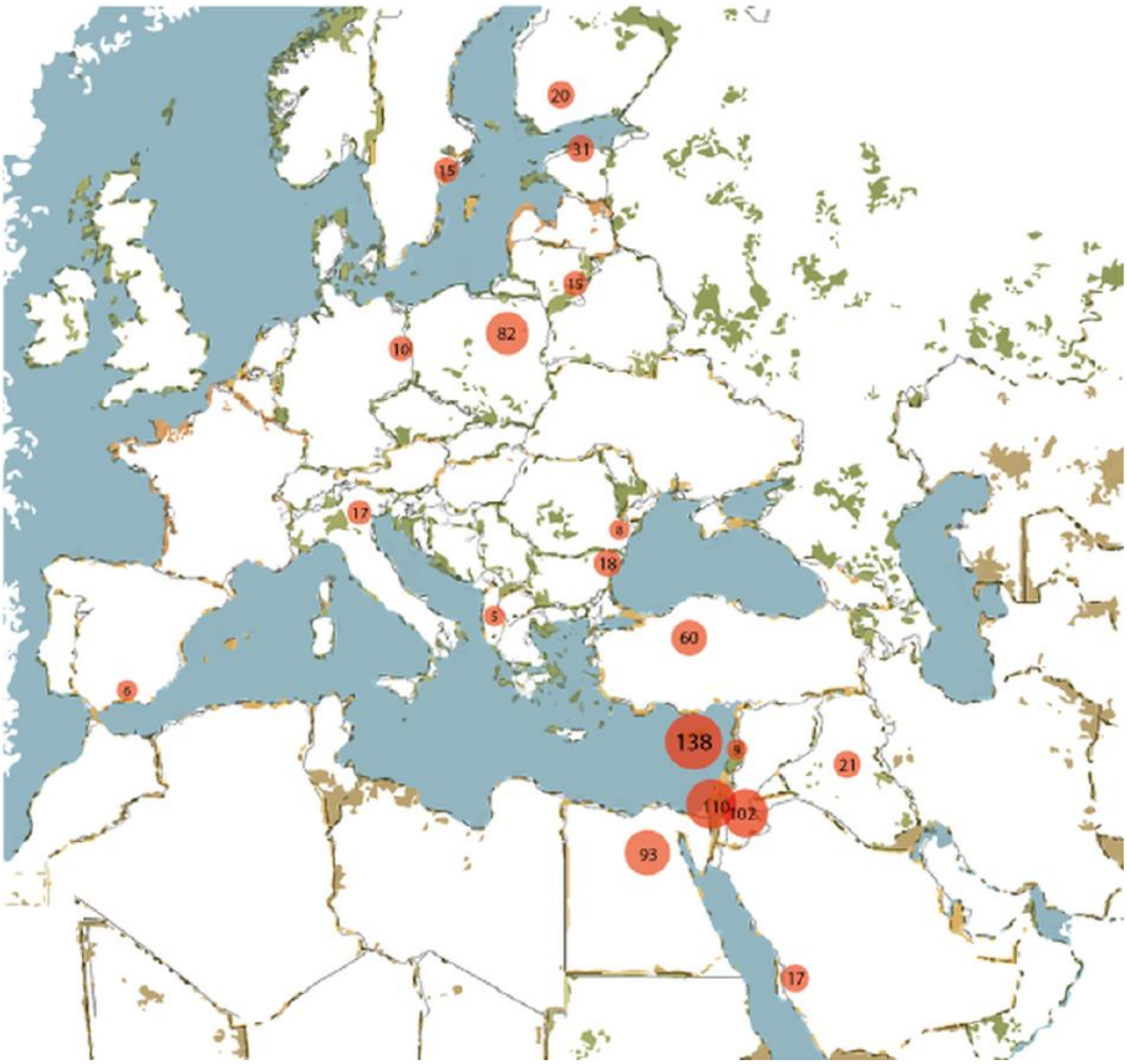
This interference prevents receivers from locking onto satellites signals and has the main effect of rendering the GNSS system ineffective or degraded for users in the jammed area. Spoofing involves broadcasting counterfeit satellite signals to deceive GNSS receivers, causing them to compute incorrect 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.

In 2024, the CAD continued to closely monitor and analyse GNSS-related interference reports, particularly jamming/spoofing occurrences. A total of 828 GNSS jamming/spoofing events were recorded, with approximately half of these incidents (47%) resulting in GPS system loss or erroneous position output. Additionally, 11% of the total reports involved activation of onboard GPS-related warnings. As illustrated in ***Graph 41***, the monthly distribution of these events indicates a consistently high frequency, peaking in March and July, with notable dips in August and October. These figures highlight the persistence of the threat as well as the increased operational impact on flight crew and aircraft systems.




***Graph 41*** *– Nature of experienced GNSS jamming and spoofing (2024)*

Mapping of reported spoofing and jamming locations as seen below reveals a geographic clustering in high-risk areas, particularly over the Eastern Mediterranean and Middle East. The highest concentrations were noted over Cyprus (138), Israel (110), and Jordan (102), with additional hotspots in Egypt (93), Poland (82) and Turkey (60). This geographical pattern reflects the geopolitical instability in these regions, reinforcing EASA's concern about both the complexity and scope of GNSS interference events.




*Mapped GNSS jamming/spoofing events (2024)*

The CAD strongly suggests that all involved stakeholders, mentioned in the aforementioned 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. | 2025 | 2025 |
| SYS.MST.034 | Monitor the progress on standardisation in the OPS domain, specifically on the effective implementation of operators' flight time specifications schemes. | 2025 | On-going |
| SYS.MST.036 | To develop proportionate learning objectives to strengthen the competency of PPL and LAPL pilots in meteorological information. | On-going | Complete 2024 |
| SYS.MST.037 | Produce guidance for assessing the competence of regulatory staff, and guidance for assessing the competence of trainers. | 2025 | In Progress |
| SYS.MST.040 | Sustain a coordination mechanism between authorities/agencies as appropriate and in respect to regional local legislation. | 2025 | On-going |
| OPS.MST.024 | Report relevant occurrences to EASA. | Continuous | Continuous |

Notes:

[1] The EASA Management System Assessment Tool has been introduced in the Flight Operations Inspectorate, Airworthiness 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

June 2025