

# MALTA CIVIL AVIATION SAFETY REPORT



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### **Photo Credits**

TM-CAD would like to extend a special thanks to Mr. Stephen J. Muscat (TM-CAD) for giving his kind permission to use his photo for the cover page of this publication.

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## Abbreviations

CA	Competent Authority
CAD	Civil Aviation Directorate
CAT	Commercial Air Transport
CFIT	Controlled Flight into Terrain
EASA	European Aviation Safety Agency
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
LOC-I	Loss of Control In-flight
MAC	Mid-Air Collision
MOR	Mandatory Occurrence Report
RA	Resolution Advisory
RE	Runway Excursion
RI	Runway Incursion
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 Plan
SSP	State Safety Programme
TA	Traffic Advisory
TCAS	Traffic Collision Avoidance System
TM-CAD	Transport Malta Civil Aviation Directorate (CAD)
UAS	Unmanned Aircraft Systems

## Executive Summary

This publication of the Malta Civil Aviation Safety Report will provide an overview for the period 2017-2019 and an interim review from January to June 2020 in relation to the Maltese civil aviation safety data. 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.

It is important to point out that the period January-June 2020 has been heavily impacted by overall decline of air travel and closure of airports due to the Covid-19 pandemic worldwide. Nevertheless, one will immediately notice a widespread increase in reported events in 2019 when compared to the previous years. This is mostly attributed to three main factors: a common regulatory framework for the reporting of occurrences, the growth that the Maltese aviation industry experienced, and an improved occurrence reporting culture among aviation partners. Yet, even though there was an increase in events in 2019, the relative number of reported events per flight hours is similar to what was reported in 2018, with approximately 6 reports per 1000 flight hours.

In 2019, the CAD has evaluated over 3000 reports submitted in the National Database. Since each event might have multiple reports submitted as follow-ups and/or closures and/or submission from 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 general 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 Civil Aviation Directorate (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 the TM-CAD. The data analysis will help assist in the identification of SPI's 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, Transport Malta-Civil Aviation Directorate (TM-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 considerable increase in aviation activity in Malta and organisations under the oversight of the CAD.

In its drive to contribute towards aviation safety, TM-CAD has invested in a new occurrence reporting system for the management of reports and their related follow-up submissions and analysis of reports. This system is 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 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 MOR events submitted on the national database and analysed by TM-CAD between 2017 and 2019. One can note the increase in occurrence events submissions, especially in 2019, which is mainly attributed to the growth experienced in that year within the Maltese aviation cluster.

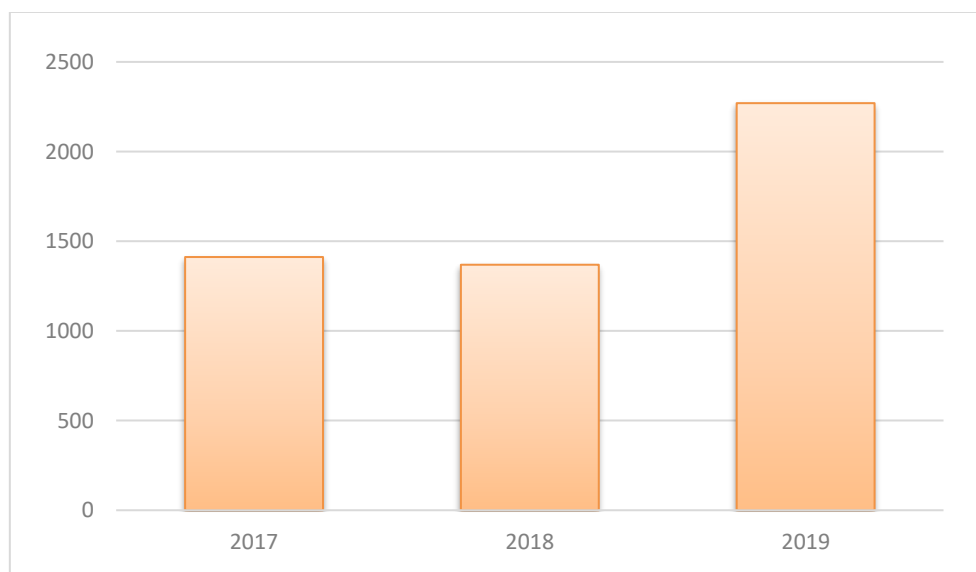


Exhibit 1 - Amount of MOR events received by TM-CAD 2017-2019

Exhibit 2 shows the total flying hours (commercial and non-commercial) operated by AOC Holders under TM-CAD oversight. The exhibit clearly shows the increase in operational activity, year after year, and hence an increase in occurrences reported to TM-CAD is expected. Nevertheless, the increase must be justified and monitored in a way to ensure the safe operation of an aircraft, passengers and other users.

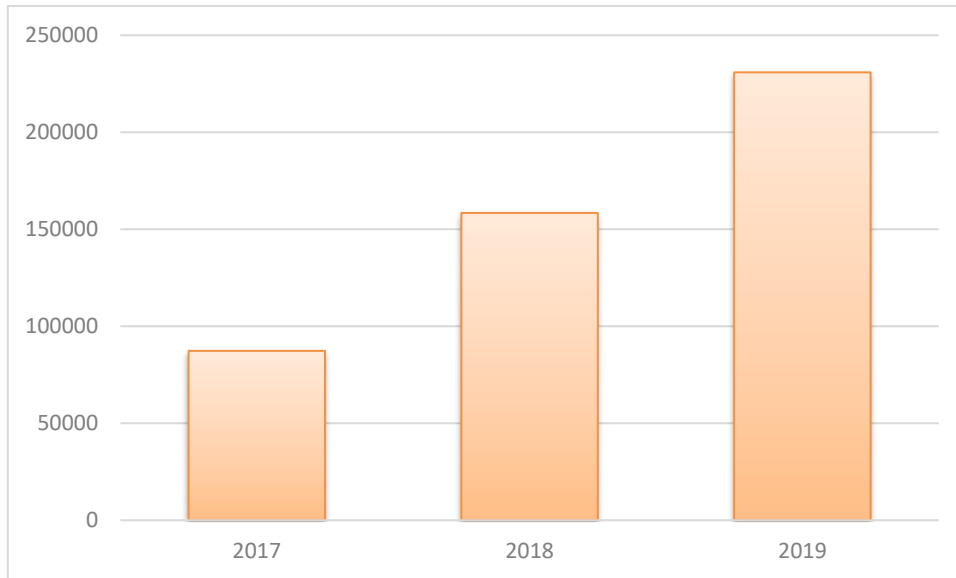


Exhibit 2 - Flying hours of AOC holders per year (2017-2019)

Notwithstanding such increase, Exhibit 3 provides a relative value of MOR submissions per 1000 flying hours (commercial). This value is relevant to the MORs submitted by aircraft operators. A decrease in this relative value has been noticed since 2017 and is currently standing at 5 reports per 1000 flying hours. This relative value shall be monitored as part of the CAD safety monitoring and analysis.

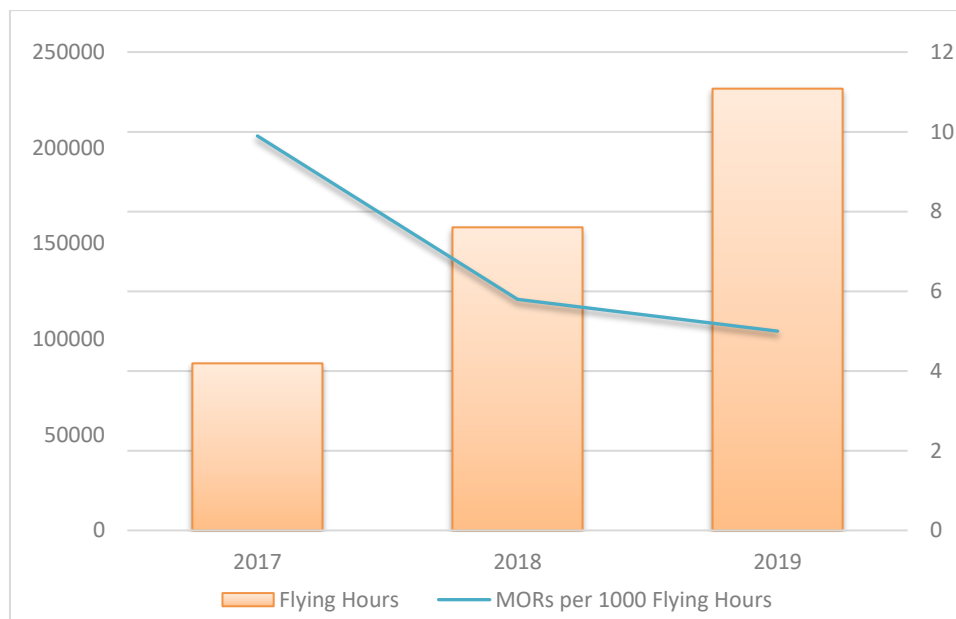


Exhibit 3 - MOR submissions by Aircraft Operators relative to flying hours (2017-2019)

As expected, the growth in aviation activity has also led to an increase in aircraft movements at the Luqa aerodrome. The three-year growth in aircraft movements is shown in Exhibit 4.

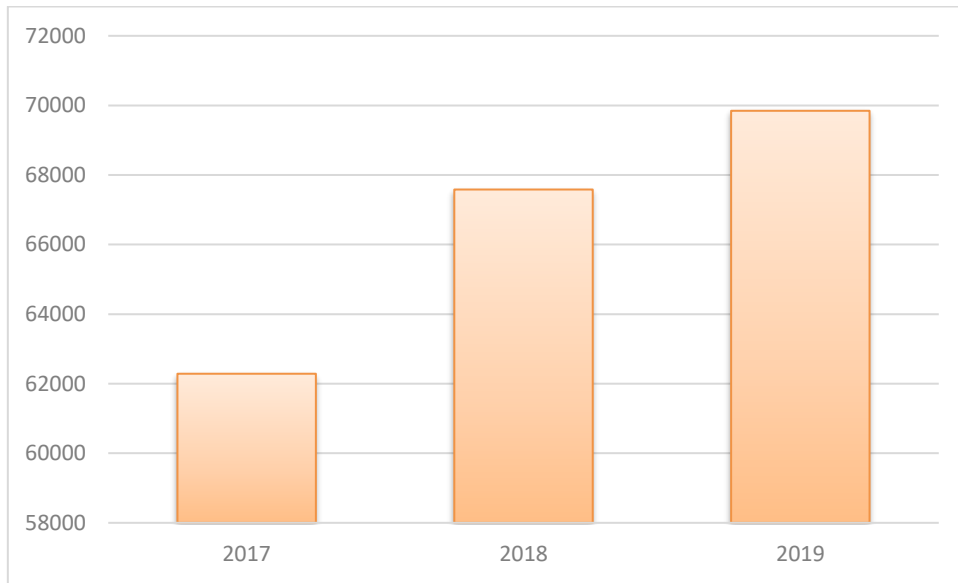


Exhibit 4 - Aircraft movements (excl. Military) at Luqa aerodrome (2017-2019)

Exhibit 5 provides a monthly-view of the number of events submitted on the National database between January-June 2020. From these events, the CAD has classified 1024 events as MORs. The decline in MOR submissions between the months of March and June is attributed to the COVID-19 pandemic due to its widespread impact on the aviation industry. As air services start to resume, it is expected that occurrence submissions will increase.

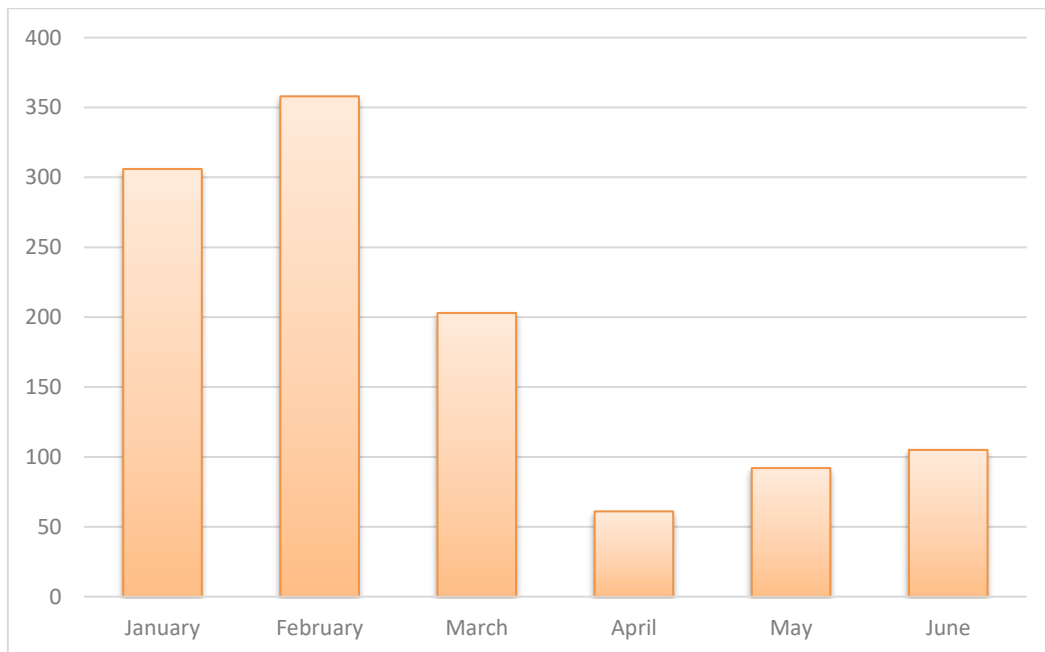
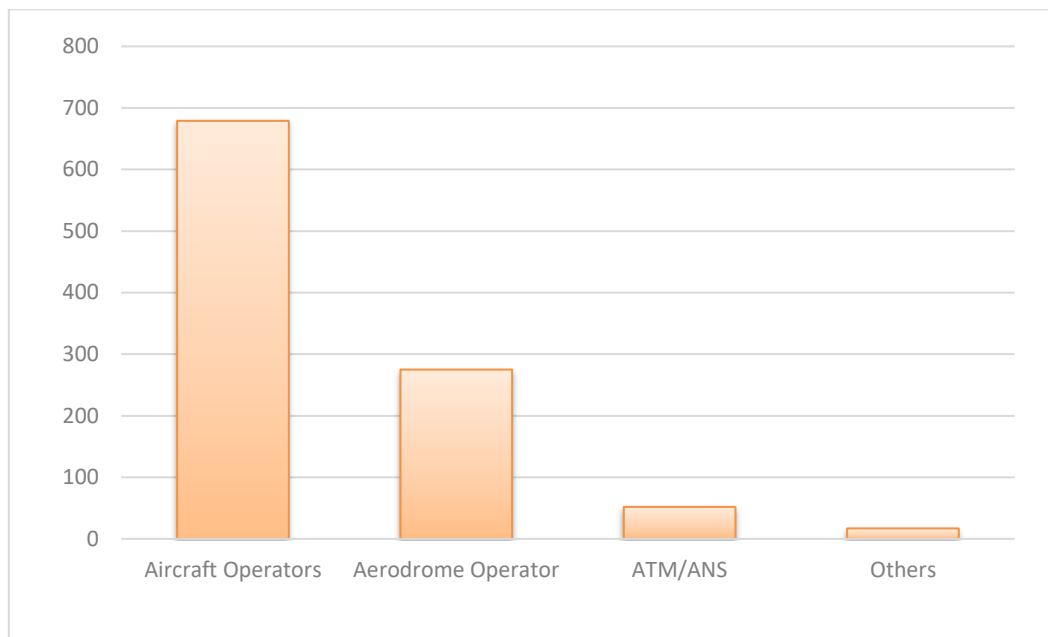


Exhibit 5 - Monthly events reported to CAD (January-June 2020)



The source of the MORs between January-June 2020 is shown in Exhibit 6. This data does not exclude multiple reporting from different sources for the same event.



**Exhibit 6 - Source of MORs (January-June 2020)**

## Occurrence class

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

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

This classification allows a top-level visibility of events. The decision for 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 MOR’s received are generally classified as an ‘incident’. Exhibit 7 provides a percentage value of the three occurrence classes namely, ‘incident’, ‘accident’ and ‘serious incident’.

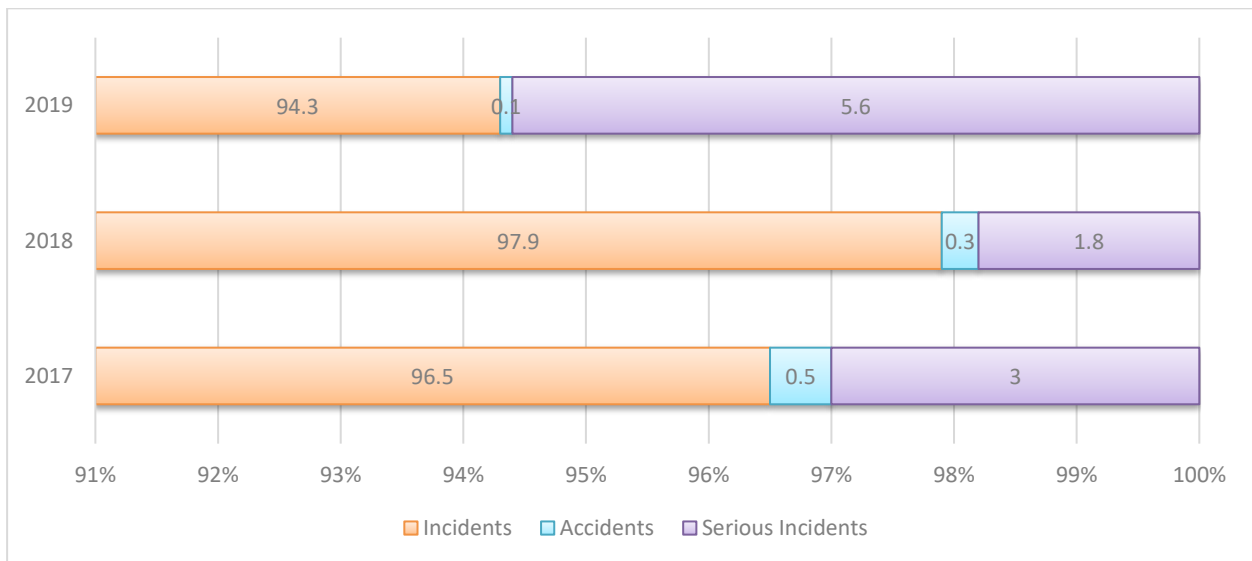


Exhibit 7 - Occurrence Class (% of total)

In 2019 the CAD improved its MOR data collection system. As part of the improvement, the CAD also aimed at streamlining its internal classification methods to ensure a fair classification of the occurrence. Due to this assessment development, an increase in serious incident classifications can be easily noticed in 2019. The CAD analysis and assessment might be more restrictive, even though guidance based on the definition of these occurrence classes is sought. Most of the reports classified as ‘serious incidents’ are related to the MAC category and which led to a ‘TCAS RA’s’ event where separation levels were compromised, and evasive corrective actions were necessary to avoid an accident. Events in this class normally involve the activation of the last layer of protection which if failed, could result in an accident.

## 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:

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

**Exhibit 8 - Occurrence Categories based on ICAO ADREP taxonomy**

Exhibit 9 lists the occurrence categories submitted to the national database between 2017 and 2019. This visual provides a snapshot of the common categories reported and provides the basis for further analysis within that specific category as addressed in this document.

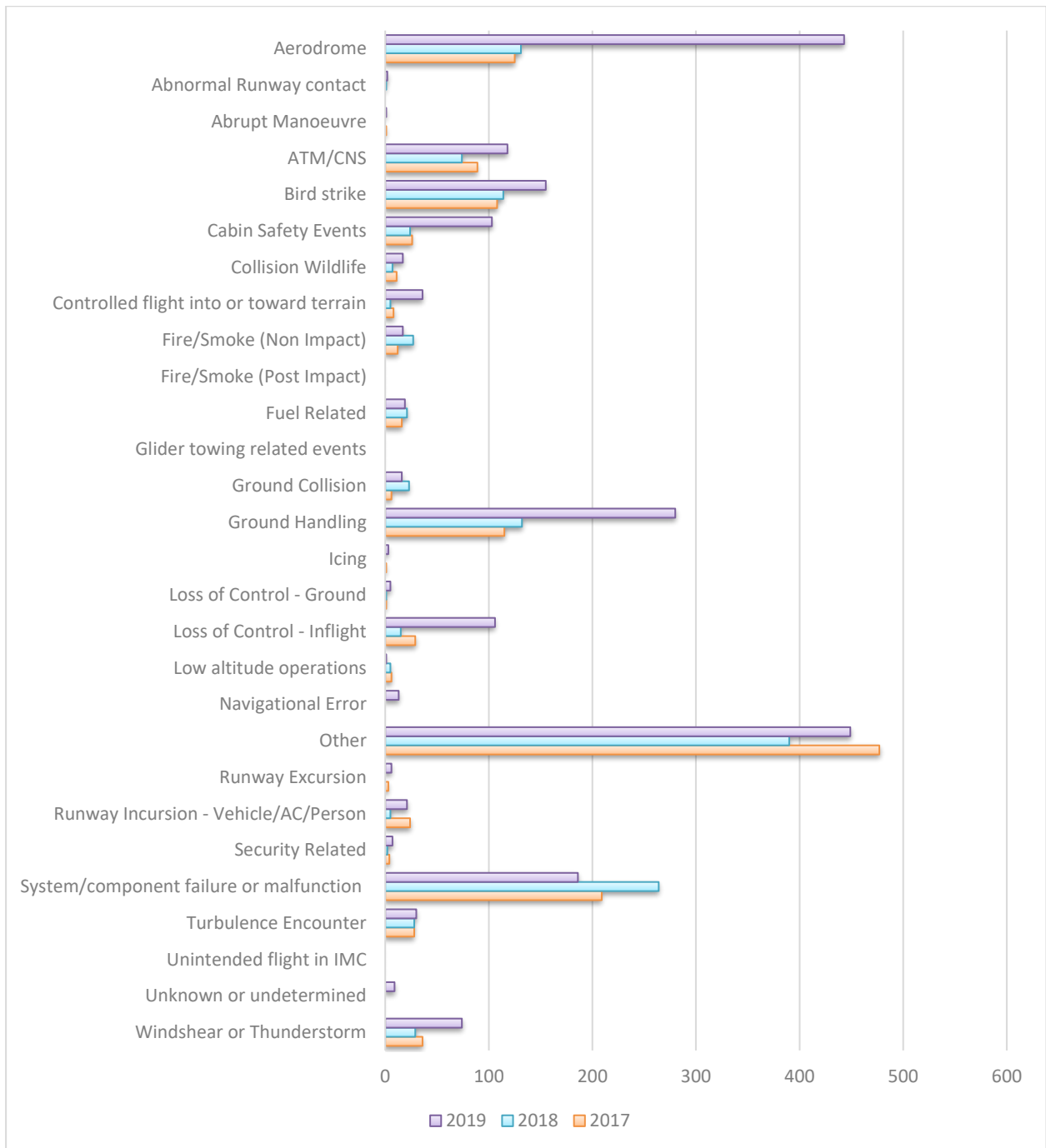


Exhibit 9 - Occurrence categories of MOR events (2017-2019)

Event increases can be noticed for ‘Ground Handling’, ‘Cabin Safety Events’, ‘Aerodrome’ and ‘Loss of Control – Inflight’, while also a decrease in events categorised as ‘Other’. This increase is mostly attributed to the new way in which the CAD is categorising events, based on newly published guidance material by ICAO. Nevertheless, ‘Cabin Safety events’ have increased drastically, mostly due to unruly passengers on commercial flights.

Exhibit 10 lists the occurrence categories reported during the period January-June 2020. The most common values reported in Exhibit 9 are once again present, including those categories in which an abnormal spike has been noticed. This exhibit is an initial step to provide a better comparison tool between specific categories along a set period. In fact, the abnormal spikes experienced for ‘Aerodrome’, ‘Ground Handling’ and ‘Cabin Safety Events’ in 2019 are among the common categories for the first six months of 2020. The CAD is monitoring these specific categories to ensure that realistic Safety Performance Indicators (SPIs) and Targets (SPTs) are identified.

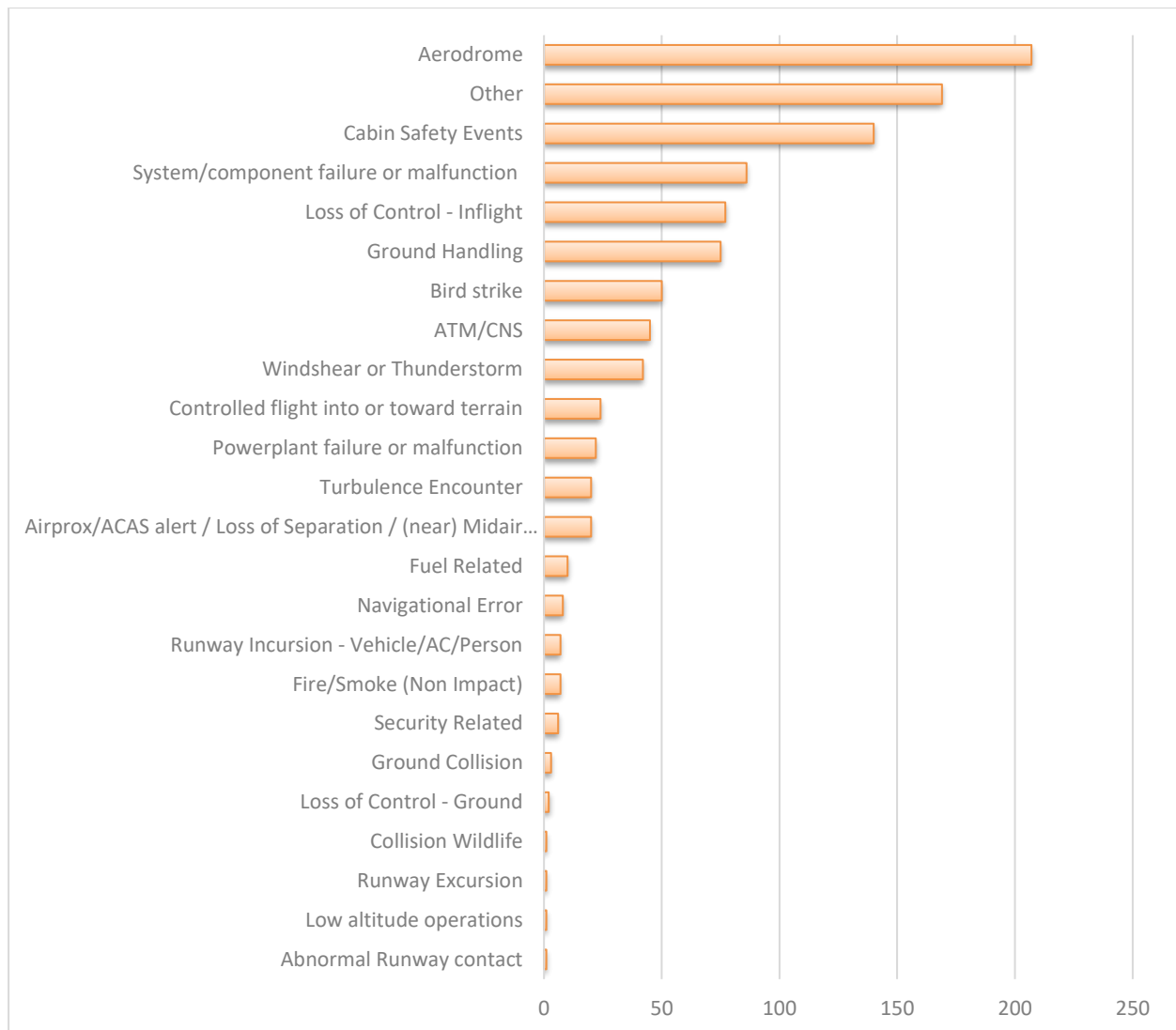


Exhibit 10 - Occurrence categories of MOR events (January-June 2020)

### Specific Occurrence category analysis

Annually, TM-CAD had an internal process whereby the categories identified in the 2013 State Safety Plan (SSp) were monitored for their reporting frequency. However, this new analysis will include additional categories, taking into consideration the content of the EPAS and the upcoming Malta SPAS.

The analysis will highlight the most common occurrence categories analysed by TM-CAD, namely:

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

In addition, the analysis will also shed light on the number of events for specific local occurrences related to fireworks and information about Fatigue, UAS, Laser attacks, Fireworks and General Aviation related events. Exhibit 11 provides a visual aid of the amount of reports received between 2017 and 2019 for these specific events.

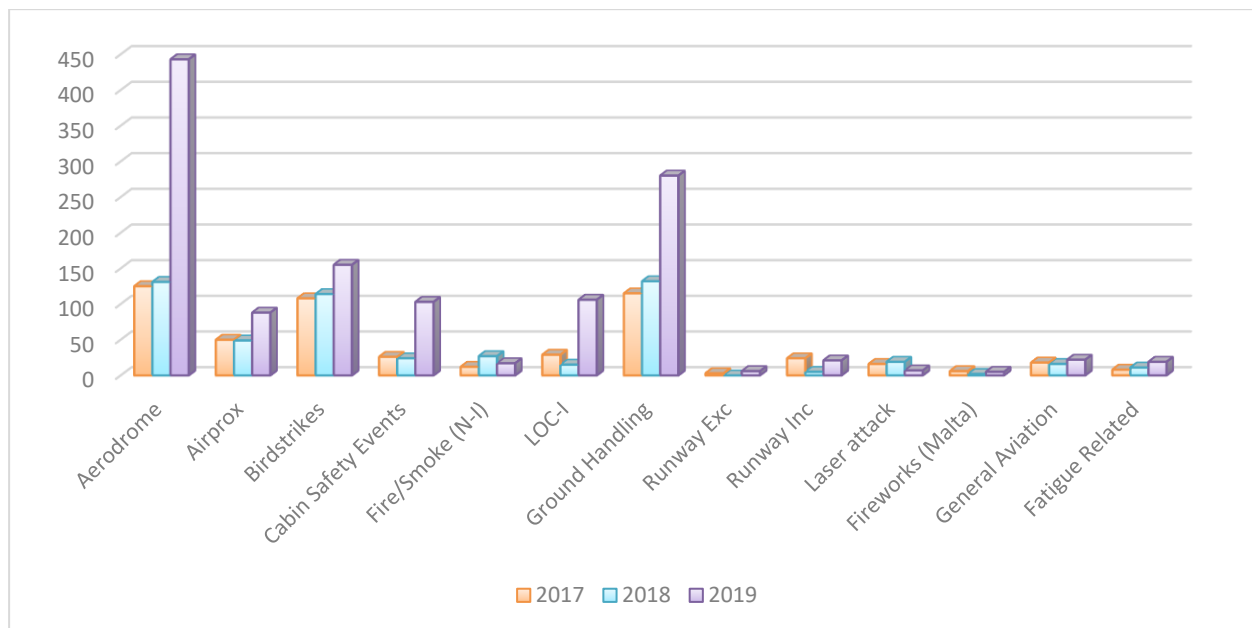


Exhibit 11 - MOR events per category/domains under review (2017-2019)

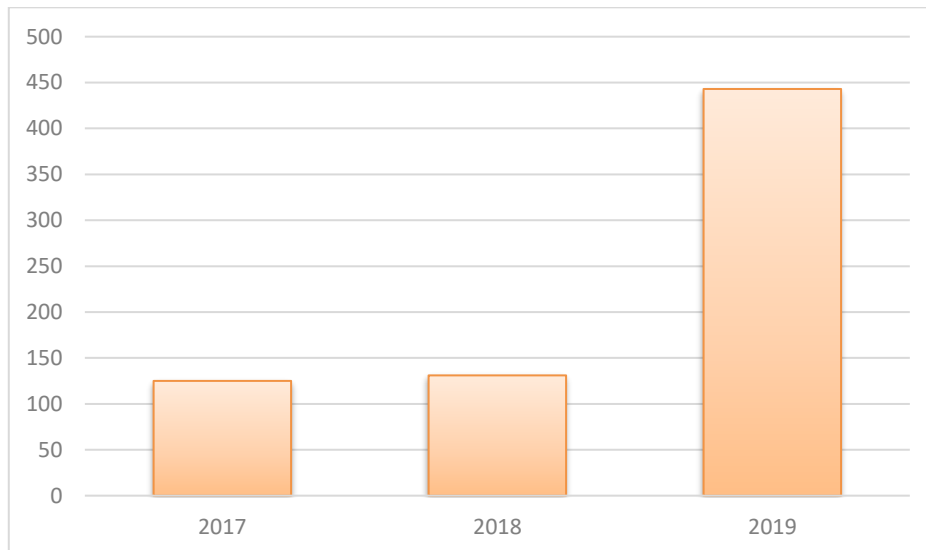
Each of these specific categories will have different levels of data analysis which will contribute towards a better comparison and aggregation of data supported with a brief description of the outcome from the analysis.

### 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.

Following analysis, the spike evident in Exhibit 12 is attributed to better categorisation within the CAD as based on guidance material, increase aviation activity and the continuous improvement of the Luqa aerodrome operator reporting tools and awareness. Due to the fact of this sudden spike, it is ineffective to compare with previous years.



**Exhibit 12** - Aerodrome (ADRM) category events (2017-2019)

In terms of Luqa aerodrome, a common factor noticed during the past year was the number of FOD-related events in movement areas. Another issue is related to aerodrome surfaces whereby continuous maintenance work is required and general upkeep such as grass cutting and surface markings.

Between January-June 2020, the CAD received 75 reports of FOD-related events at Luqa aerodrome. The events were mostly due to reported dead wildlife/birds and loose objects from ground equipment and other plastics from different users within the aerodrome. 51 reports were related to aerodrome maintenance, mostly highlighting the need of grass cutting and surface issues (markings and/or cracks).

### **Airprox/TCAS Alert/Loss of Separation/Near Mid-Air Collisions/Mid-Air Collisions (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. TM-CAD treats such events seriously and considers the occurrence class as a Significant Incident. Nevertheless, each event has its own impact of safety whereby separation criteria and resolution actions are taken into consideration when analysing each case.

In 2019, there was an increase in reported MAC events, and this was mostly attributed to the increase in aviation activity around the globe and the growth experienced by CAD. In addition, the new occurrence report database used by CAD has allowed room for enhanced analysis of reports and better categorisation of events. The analysis also has shown that 15% of all MAC categorised events between 2017 and 2019 was a result of a UAS encounter, either in vicinity or in sight.

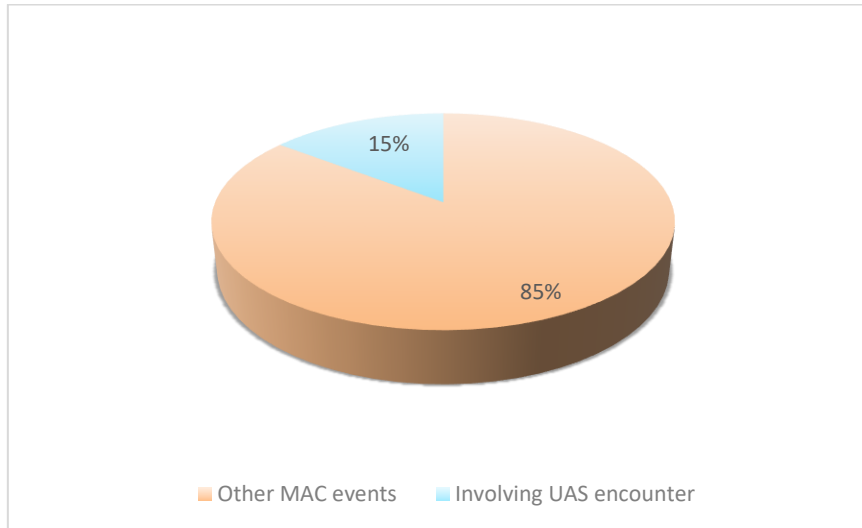


Exhibit 13 - Total MAC category events (% by event type, 2017 – 2019)

Between January-June 2020, the CAD received 20 reports of MAC related events of which 1 was a TCAS TA in Maltese airspace. Some of these events were related to TCAS RA's triggered due to heavy traffic at specific airports. From the reported events, the separation from traffic was always within a visible and manageable distance for the crew and adhered to the resolution advisories as provided by the ACAS/TCAS. Nevertheless, TM-CAD has followed up with aircraft operators to ensure that their procedures remain effective especially in heavy traffic airspace.

### **Unmanned Aircraft Systems (UAS)**

Given that UAS related categories are limited in the current ADREP taxonomy, TM-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 phenomenon on the rise and which the aviation industry must accept and address systematically.

The exhibit provides percentile data about UAS related events, segregating events which occurred in Maltese airspace from those of Maltese-registered aircraft in foreign airspace. The majority of reported events occurred in Maltese airspace. Due to the nature of a UAS operation, and as things currently stand, there is limited enforcement the authorities can implement. However, the CAD is working with all stakeholders involved to increase awareness about the obligations and responsibilities of UAS users on the Island.



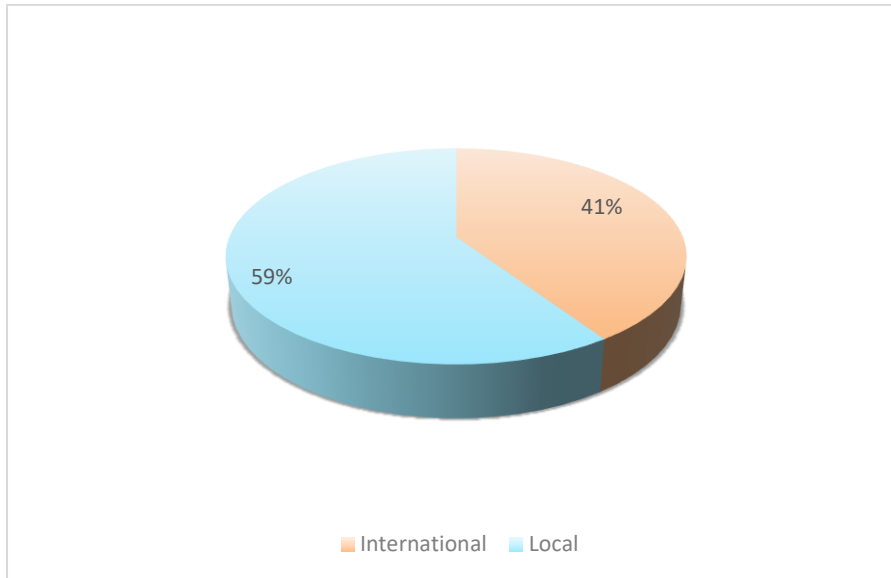


Exhibit 14 - UAS related events (% by location, 2017 – 2019)

Between January-June 2020, the CAD received 1 report of UAS encounter which occurred at a foreign location.

### 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. In order to aid in our analysis, such events are separated into two sections, namely bird strikes reported at the only CAD certified aerodrome (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 2017 and 2019.

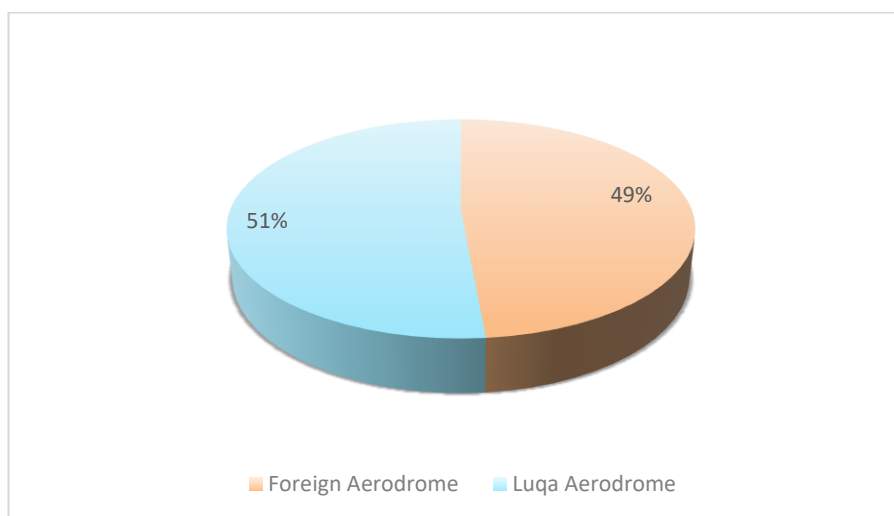


Exhibit 15 – Bird strike (BIRD) category events (% by location, 2017 – 2019)

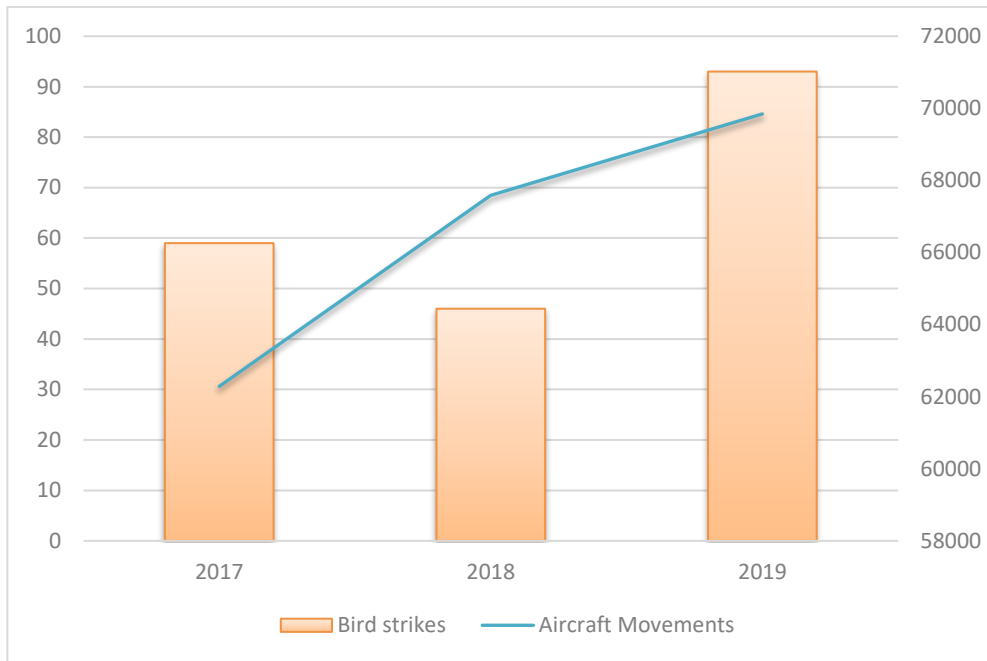


Exhibit 16 - Bird strike (BIRD) events at Luqa Aerodrome vs Aircraft Movement (2017-2019)

As shown, the majority of reported bird strike events received by CAD occurred at Luqa aerodrome. The numerical values of these reported events were measured against the number of aircraft movements in order to allow a more relative value. It has to be noticed that 2019 had a considerable increase in reported bird strikes and relatively doubled from 2018.

Between January-June 2020, the CAD received 50 reports of bird strikes, three of which occurred at Luqa Aerodrome and an additional four reports of suspected strikes.

**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.

A considerable increase of this category was experienced in 2019 as shown in Exhibit 17. For the purpose of analysis, the three different event types, namely ‘Difficult/Unruly passenger’, ‘Drunk Passenger’ and ‘Smoking in Cabin/Toilet’ are grouped together as the majority of cases these are linked together. Exhibit 18 provides a percentage value of such events types under the Cabin Safety event category.

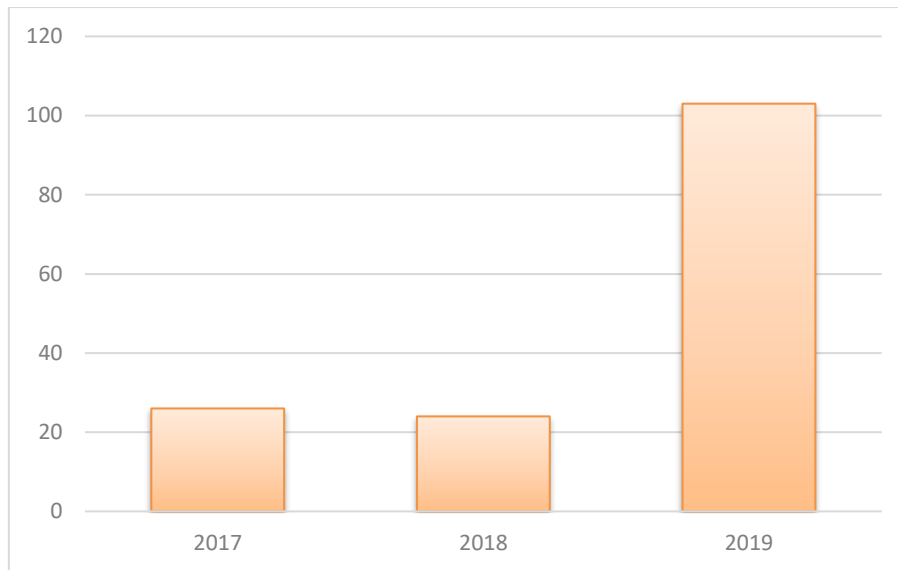


Exhibit 17 - Cabin Safety events (CABIN) category (2017 – 2019)

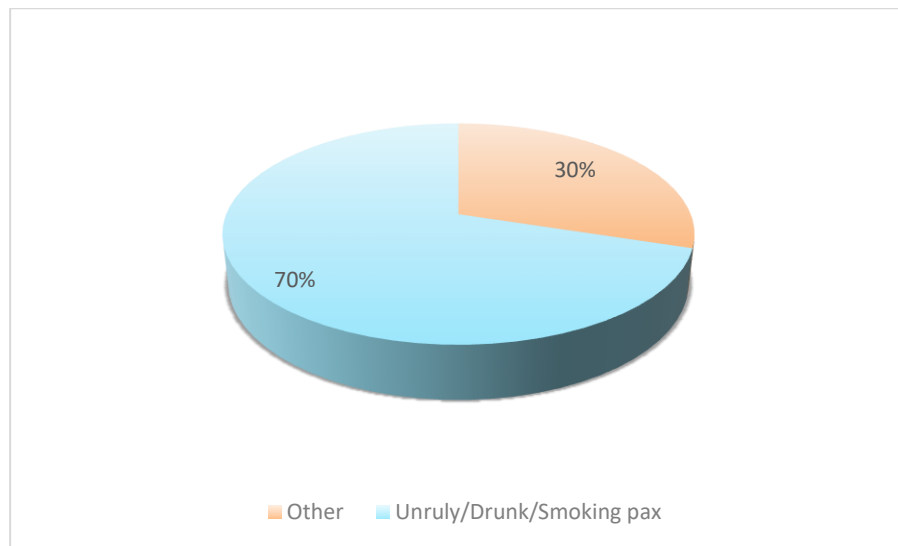


Exhibit 18 - Cabin Safety events (CABIN) category (% by event type, 2017 – 2019)

The increase experienced in this category is mostly attributed to the growth in CAT aircraft operators and their increased passenger routes. There is no particular trend related to a particular departure location, and it has been noticed that the threat levels of such events vary. This is an industry wide challenge and TM-CAD together with regional agencies will keep on contributing towards recommending measures to help contain and reduce such events.

Between January-June 2020, the CAD received 140 events categorised as Cabin Safety events, of which sixty-four are related to Unruly/Drunk passengers and/or smoking in aircraft cabin lavatory violations. Other Cabin-safety related events were due to the use of portable oxygen equipment used by passengers for medical reasons during the flight.

**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.

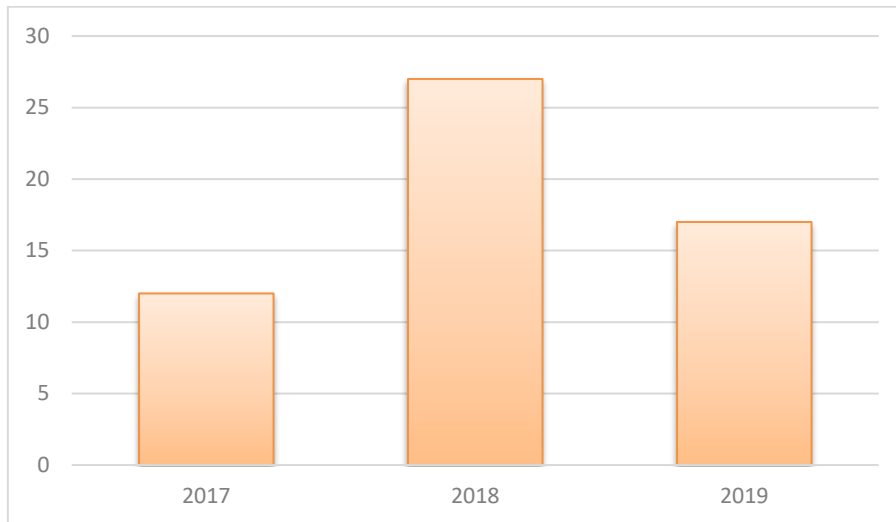


Exhibit 19 - Fire/Smoke (N-I) category events (2017-2019)

Between January-June 2020, the CAD received 7 reports categorised as F-NI events. Each case has been investigated for its root-cause and, where necessary, involved the manufacturer of the part/component which was the cause of smoke or fire. There were no injuries or fatalities in all the events under this category.

**Loss of Control-Inflight (LOC-I)**

This category is quite vast and include occurrences where there was a loss of aircraft control while, 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. Reducing this accident category, through understanding of causes and possible intervention strategies, is an industry priority.

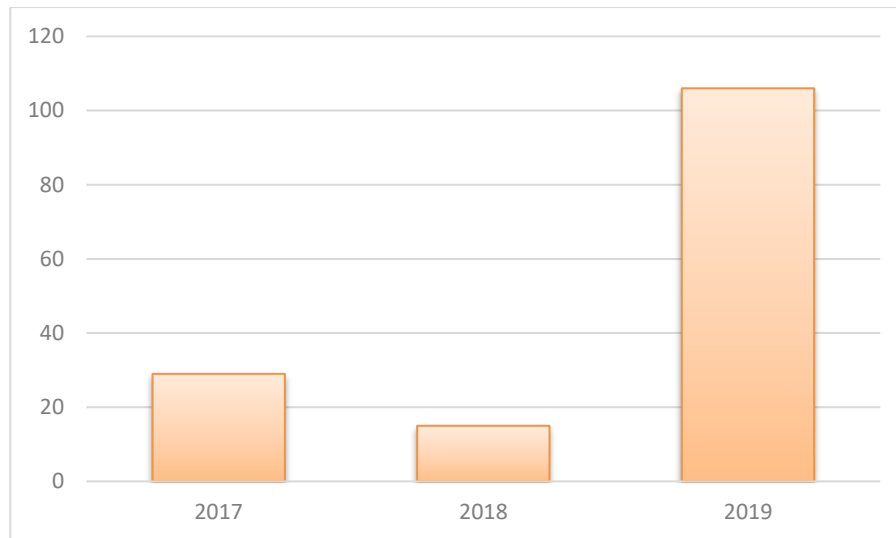


Exhibit 20 - LOC-I events (2017-2019)

It is evident that there is an increase in the LOC-I category of events in 2019. This has been thoroughly looked into by CAD and it is been concluded that this can be attributed to two main factors: the categorisation for specific events (ex: level bust, unstabilised approaches, incorrect configuration in flight) from aircraft operators and CAD, and the increase in operations. This category is also one of the highlights of the EPAS.

Between January-June 2020, the CAD received 78 reports categorised as LOC-I events. These are mostly related to unstabilised approach and flight configuration warnings. No injuries, fatalities or near accidents were reported.

### Ground Handling (RAMP)

These include occurrences during (or as a result of) ground handling operations. The following analysis includes RAMP events in Malta and those under this category that were reported by Maltese-registered operators.

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 TM-CAD in-line with occurrence reporting regulation obligations. An increase in reporting is mainly attributed to the increase in reporting awareness among Ramp users.

In 2019, 89% of the reports related to RAMP has been occurred at Luqa aerodrome. These were mostly related to potential FOD at the aerodrome, ground handling service equipment failures (including fluid spillages) and non-adherence to driving procedures on aircraft movement areas.

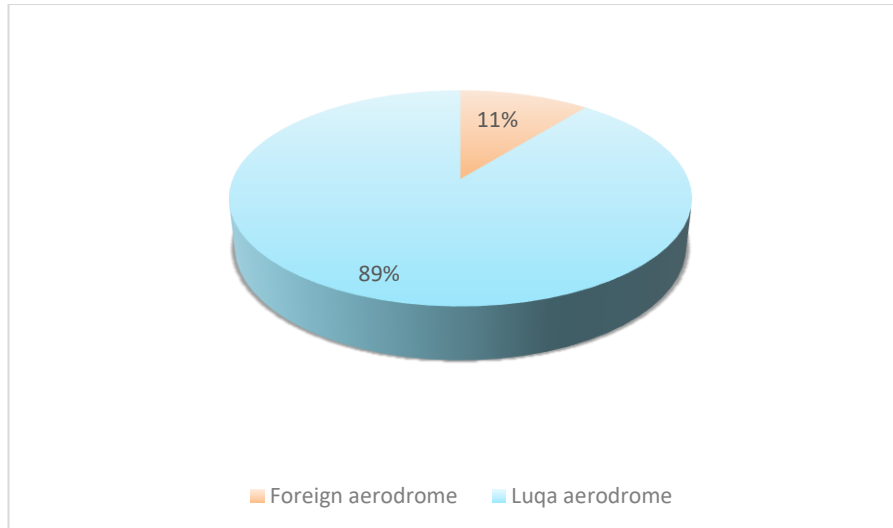


Exhibit 21 - Ground handling category events (% by location, 2017-2019)

Between January-June 2020, the CAD received 75 reports categorised as RAMP, with fifty-six occurring at Luqa aerodrome.

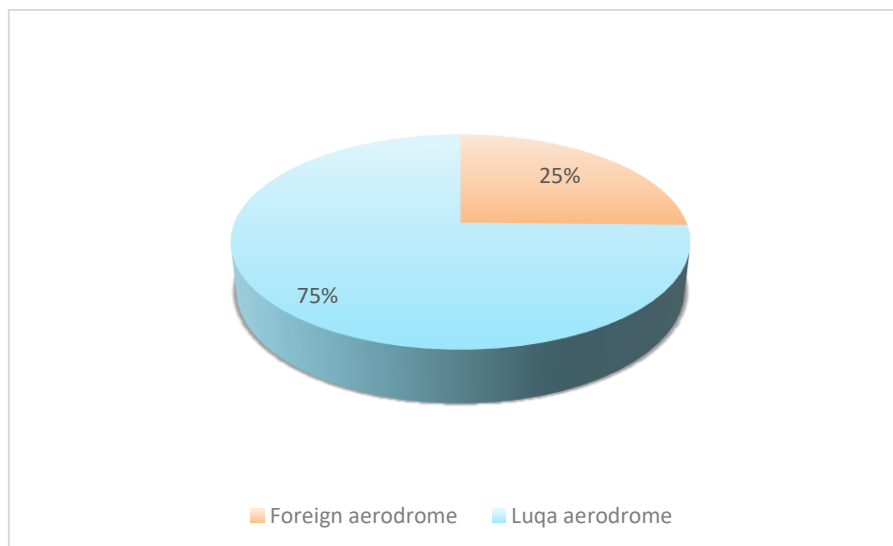


Exhibit 22 - Ground handling category events (% by location, 2020)

In general, it is noticed that the majority of events reported at Luqa aerodrome are mostly related to ground handling equipment and personnel behaviour rather than specific damage to aircraft during ground handling operations. Inversely, reports received by aircraft operators at foreign aerodromes include more aircraft-related damages/impact with ground handling operations.

### Runway Excursion (RE)

These are events where an aircraft veered-off or overrun-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 unstable approaches, failure to go-around, and/or the condition of the runway surface.

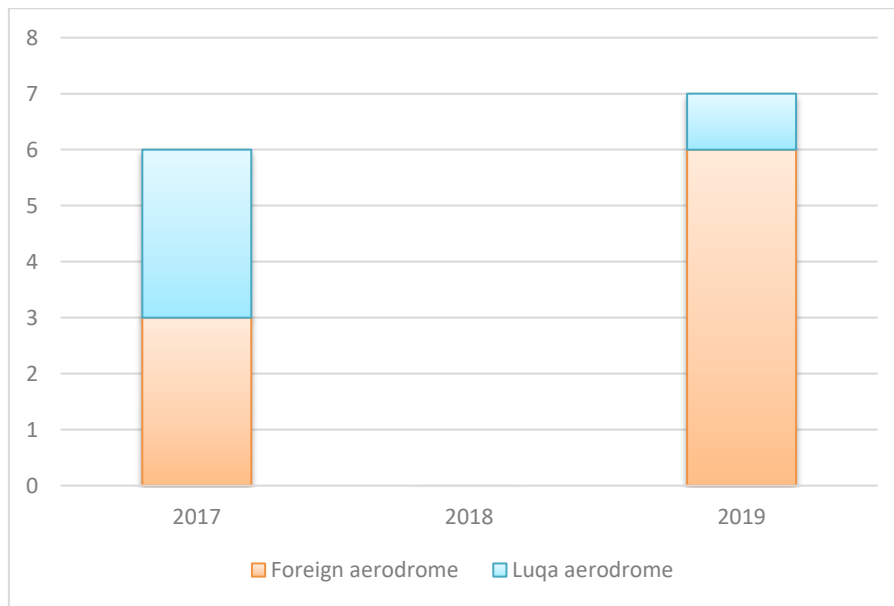


Exhibit 23 - Runway Excursion events at location (2017-2019)

In 2019, 6 RE were reported, one of which occurred at Luqa aerodrome. The occurrence at Malta Airport was of a General Aviation aircraft landing on runway 23/05. A RE at a foreign location was investigated by the UK AAIB.

Between January-June 2020, the CAD received 1 report which potentially could have resulted in an RE. This event did not occur at Luqa aerodrome.

### Runway Incursions (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.

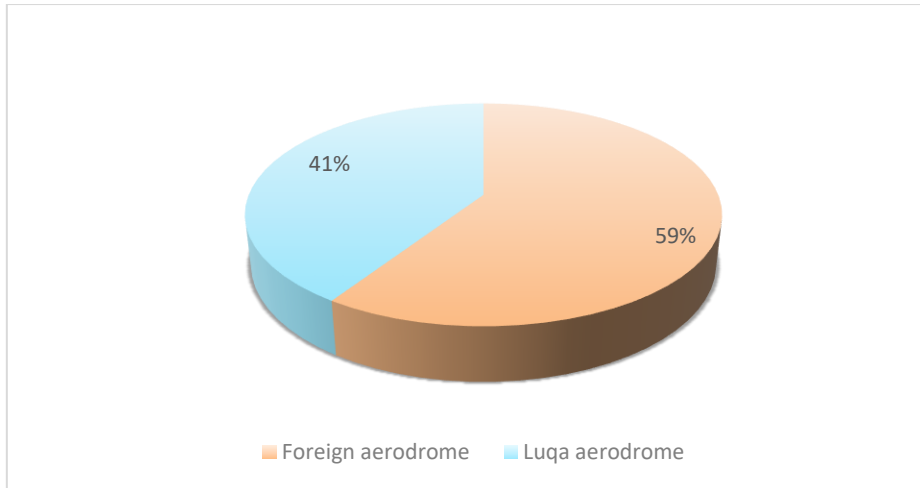


Exhibit 24 - Runway Incursion events (% by location, 2017 – 2019)

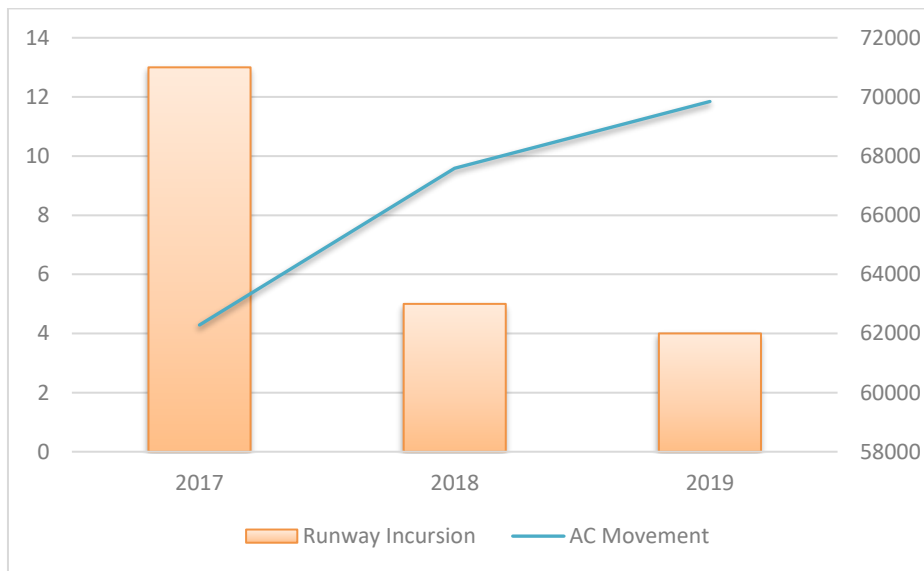


Exhibit 25 - Runway Incursion events at Luqa aerodrome vs Aircraft movements (2017-2019)

In 2019 the CAD received 21 reports of RI events of which four occurred at Luqa aerodrome. Three of these RI’s were due to an aircraft slowly exiting the runway with the inbound aircraft resorting to conduct a go-around. The other report was during aircraft towing operations, which resulted in the tow-truck infringing runway clearances.

Between January-June 2020, the CAD received 7 reports of RI events with one occurring at Luqa aerodrome. This event was related to a slow-moving aircraft vacating the runway.

A positive aspect is the reduction in runway incursions experienced at Luqa aerodrome, mostly remedied with the service road infrastructure improvement around runway 23/05.

**General Aviation**

General aviation aircraft in Malta depart and land from the Luqa aerodrome. 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.

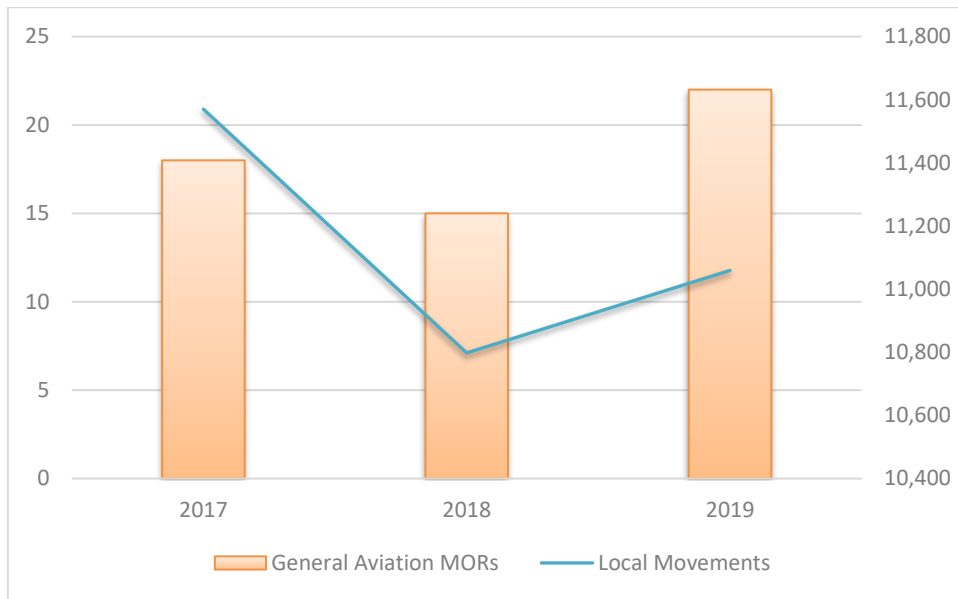


Exhibit 26 - General Aviation MORs vs Local movements (2017 -2019)

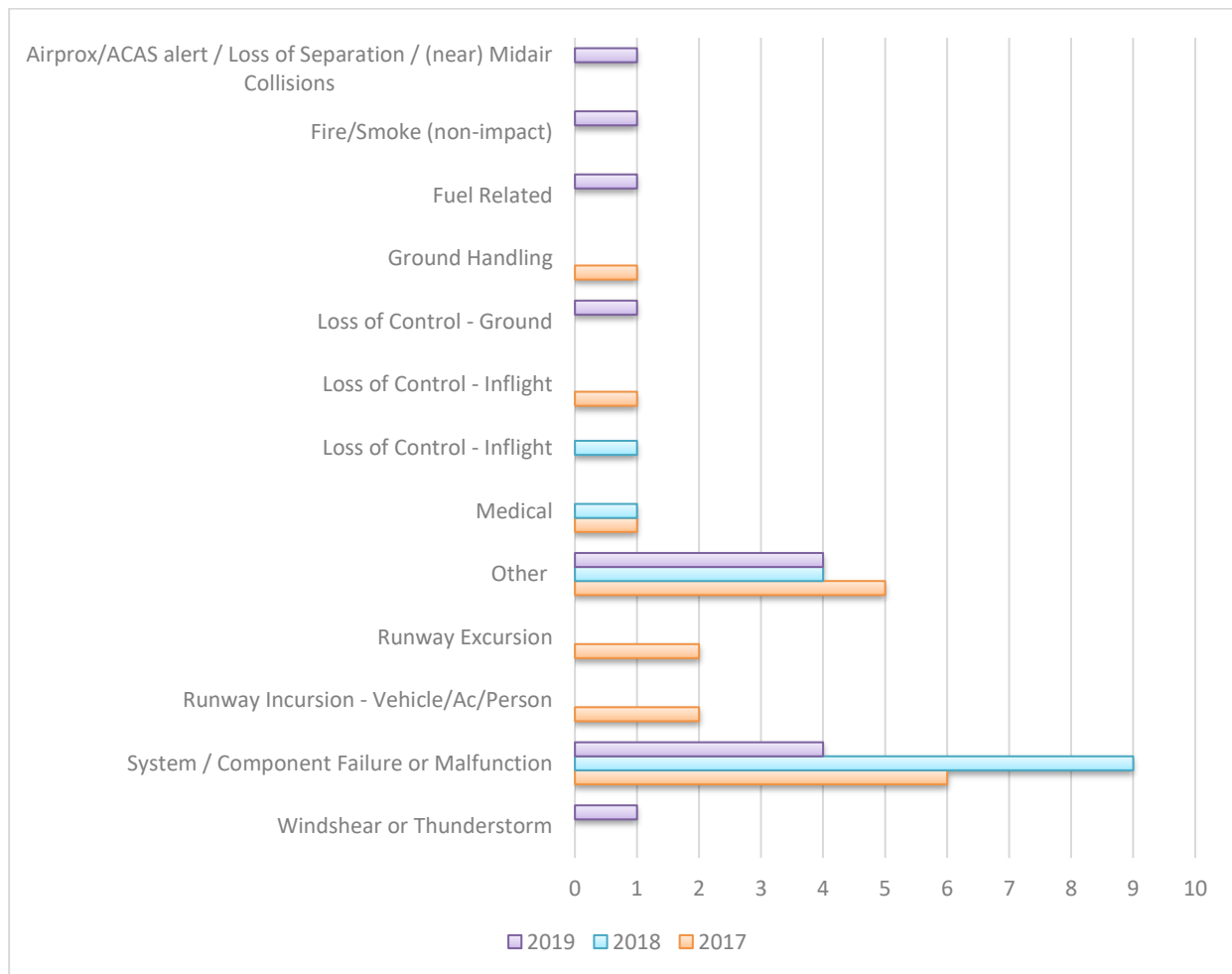


Exhibit 27 - General Aviation Occurrence Categories (2017-2019)

While a positive trend in occurrence reporting is being noticed, the CAD still believes that there are margins of improvement to capture each occurrence event experienced by the GA user. In view of this, TM-CAD will be enhancing its safety promotion among the GA community as part of a strategy to ensure that MORs are being reported to the aircraft owner and the CAD as mandated by the applicable regulations.

Between January-June 2020, the CAD received 15 reports from the GA users which were mostly related to System/component failure.

### Laser Attacks

It is a known fact that laser pointers have become easily available to the general public in recent years. This is considered as one of the contributing factors towards the global increase in the deliberate use of laser pointers against aircraft's cockpit when approaching or departing an aerodrome. 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.

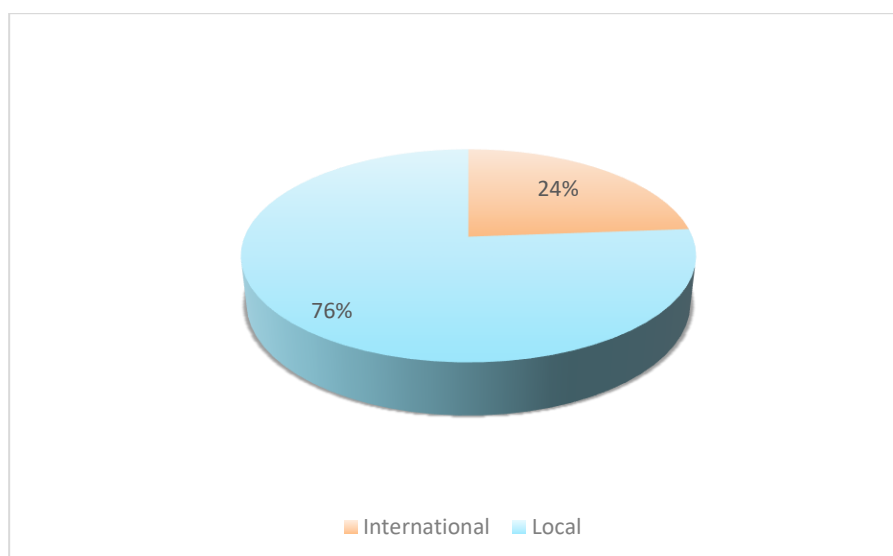


Exhibit 28 - Laser Attack events (2017- 2019)

Between January and June 2020, TM-CAD received 7 reports of laser attack events three of which occurred on approach at Luqa aerodrome.

### Fireworks

Malta's traditions include firework displays as part of large-scale celebrations and local Patron Saint feasts. Taking into consideration the location of the Luqa aerodrome and the take-off and landing paths of flight, fireworks may pose a threat to aviation users. Hence,

even though number of reports are relatively low, TM-CAD monitors occurrence reports related to this event for monitoring and management purposes.

Between January and June 2020, TM-CAD received 1 report of a firework-related event in Maltese airspace.

**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. TM-CAD monitors such reports and follows-up with the respective operator on reported occurrences. It is noticed that fatigue reporting is more common to the business-aviation community, mostly attributed to the operation model adopted by the industry.

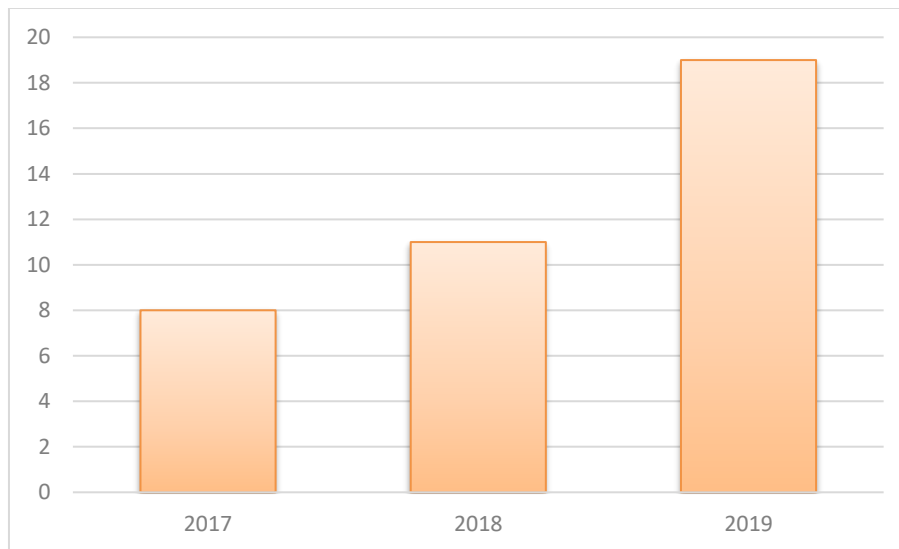


Exhibit 29 - Fatigue-related events (2017-2019)

Throughout the years, an increase in fatigue-related reports are being submitted to CAD. Mostly are related to multiple-leg flights with different time zones which impact the level of alertness of the crew. Each report is analysed for validity by the respective organisation and CAD monitors any recommendations and implementing measures taken by the operators.

Between January and June 2020, TM-CAD received 8 reports of crew fatigue-related events.

## Occurrence Report Events

### Event Type

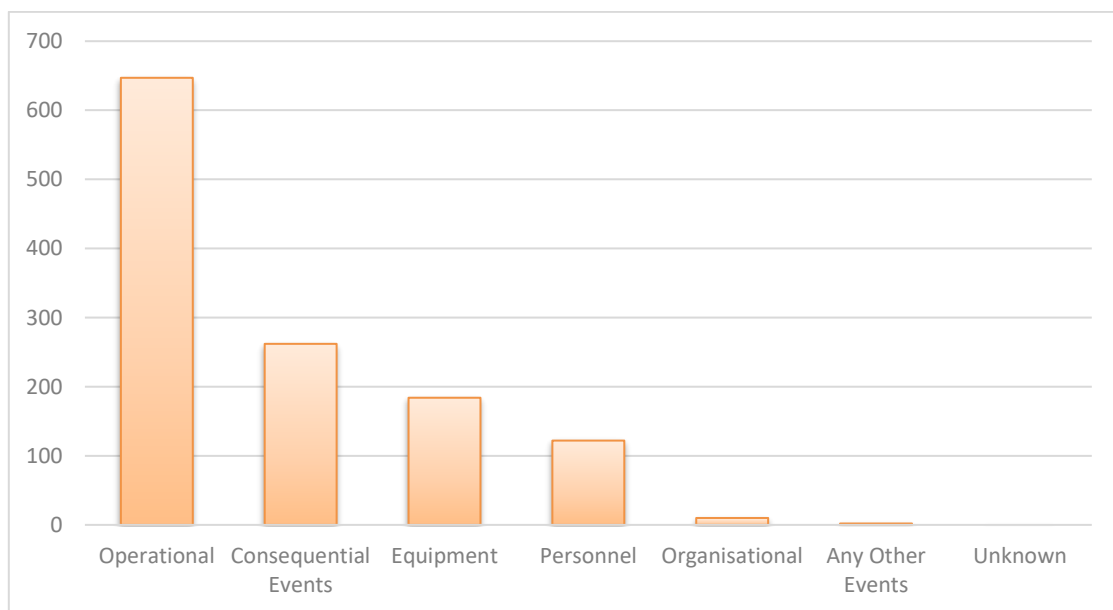
Each MOR submitted to TM-CAD is attributed an event type which will help in occurrence reporting analysis in identifying pre-cursors and outcome of the cause. Regulation (EU) 376/2014 mandates that this field is populated to aid in data gathering.

The event-type list in Exhibit 30 is based on the ECCAIRS taxonomy and is quite comprehensive, containing reference to multiple domains and services.



**Exhibit 30** - Event Type drop-down menu headers

For simplicity purposes, a bar graph in Exhibit 31 shows the seven top-tier headers. It is important to note that one occurrence report can have multiple event types.



**Exhibit 31** - Event Types (January-June 2020)

### Event Phase

Each different operation has its own set of event phases as presented in Exhibit 32. The occurrence reports received by TM-CAD were related to the 'Powered fixed-wing aircraft' and 'Maintenance phases'.

- ▷  Powered Fixed-wing aircraft
- ▷  Helicopter
- ▷  Sailplane/Glider
- ▷  Hang/Para-glider
- ▷  Balloon
- ▷  Parachuting
- Design
- ▷  Production
- ▷  Maintenance phases
- ▷  Unknown aircraft category

Exhibit 32 - Event Phase drop-down menu headers

Between January-June 2020, MOR's related to the 'Powered Fixed-wing aircraft' occurred during the following phases:

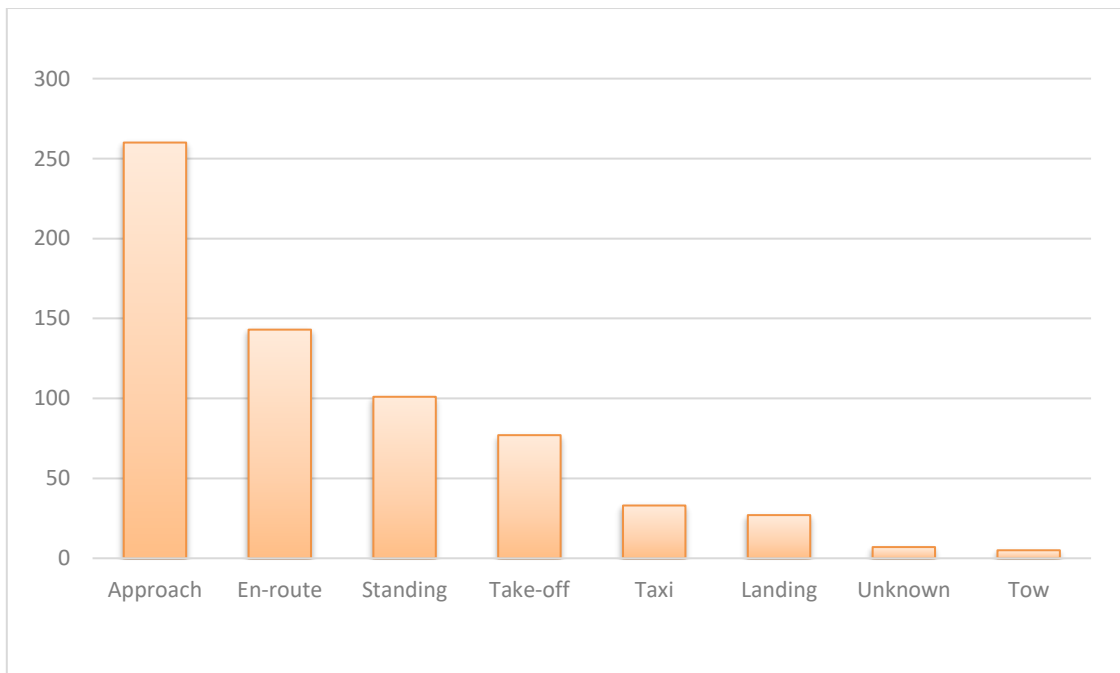
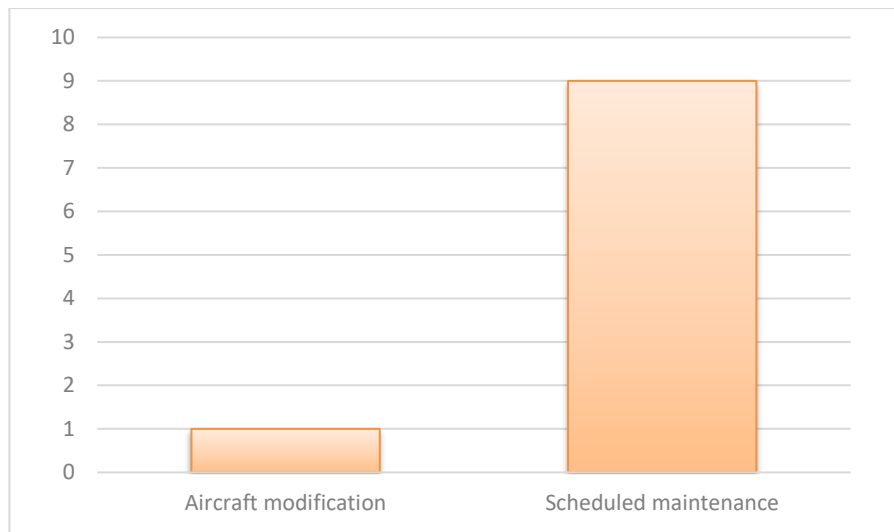


Exhibit 33 - Event Phase 2020 - Power-fixed wing (January-June 2020)

Between January-June 2020, MOR's related to the 'Maintenance phases' occurred during the following phases:



**Exhibit 34** - Event Phase - Maintenance phase (January-June 2020)

## Occurrence Report follow-ups

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. TM-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.

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.

## 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  
2020