Aviation Safety Report

6 Monthly Summary of Aviation Safety for the year ended 30 June 2019

Intelligence Safety & Risk Analysis Unit

CIVIL AVIATION AUTHORITY OF NEW ZEALAND
Te Mana Rererangi Tūmatanui o Aotearoa

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Introduction and Executive Summary

Introduction

This safety report is produced using data from the Civil Aviation Authority's Aviation Safety Management System. It primarily covers the period from 1 July 2018 to 30 June.[1]

Key Indicators

- Key measures of industry activity have increased as follows in the above period.
    - Aircraft on CAA records increased slightly by 1.0%
    - Airline Air transport flights decreased by 5.5%
    - Adventure Aviation flights including parachute descents increased by 5.8%
    - Total hours flown increased by 1.0% varying by sector from 68% for Adventure Aviation to 10% **decrease** for Private flying
- The number of organisational certificates currently held has decreased by 0.9% to 1065.
- The number of accidents in the period was 120, up from 91 in the last period, and the trend is up relative to the average of the preceding three years (97 accidents pa 2016 to 2018).
- There were 13 fatalities, 4 more than in the previous 12 months and the third highest in the last ten years. The average of the last four years was 11.25 fatalities pa and the highest in the last ten years was 22 fatalities in 2012
- The accident statistics are now led by, private sport aircraft Part 115 sport transport and then private aeroplanes, but the principal contributors to the fatalities are private sport aircraft followed by other commercial helicopters, other commercial aeroplanes and the other commercial spot aircraft. The number of fatalities in 'other commercial' operations remains a concern and area of focus for the CAA.

J.D. Stanton
Manager Intelligence Safety and Risk Analysis

[1] This report uses June end years. Where quarters are referred to the first quarter is 1 July to 30 September.

Data in tables may not sum exactly to the total shown due to rounding

Executive Summary

Industry status as at 30 June 2019 and trend over the preceding 9 years

This section is organised into three parts

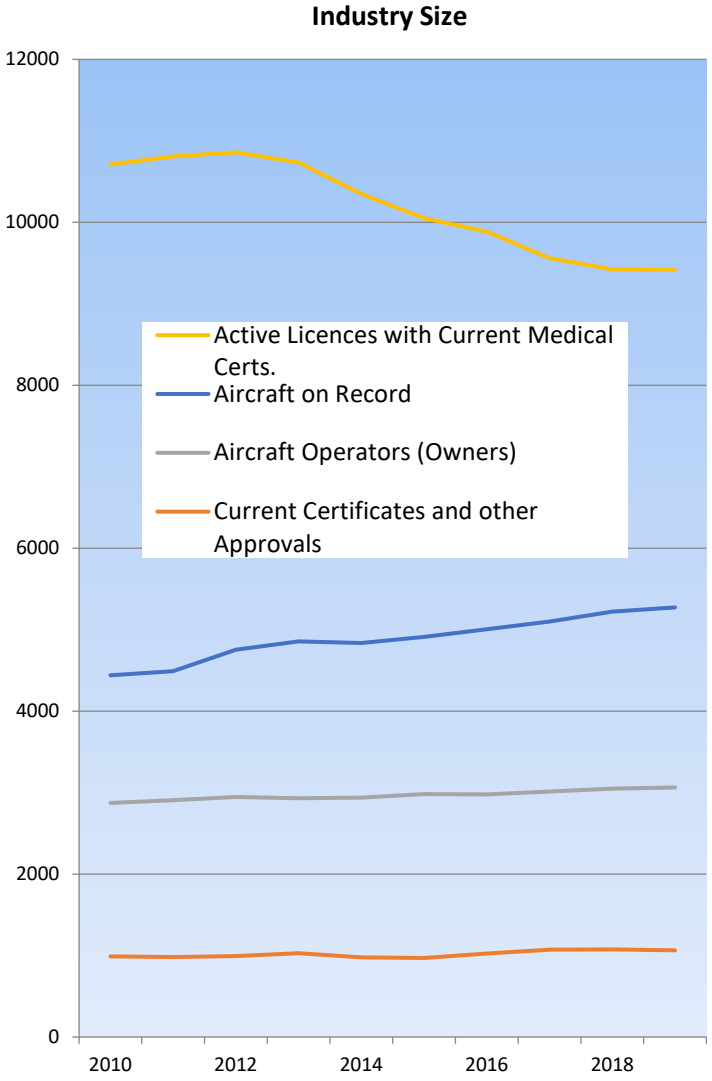
- Industry Size
- Industry Activity
- Safety Outcomes

Industry Size

Several different measures of industry size are available. No single measure is likely to meet the needs of all readers. Available measures are

- Number of licenses (with current medical certificates as appropriate) at the year end
- Number of certificates and other operational approvals at the year end
- Number of aircraft operators (owners) at the year end
- Number of aircraft recorded as active at the year end

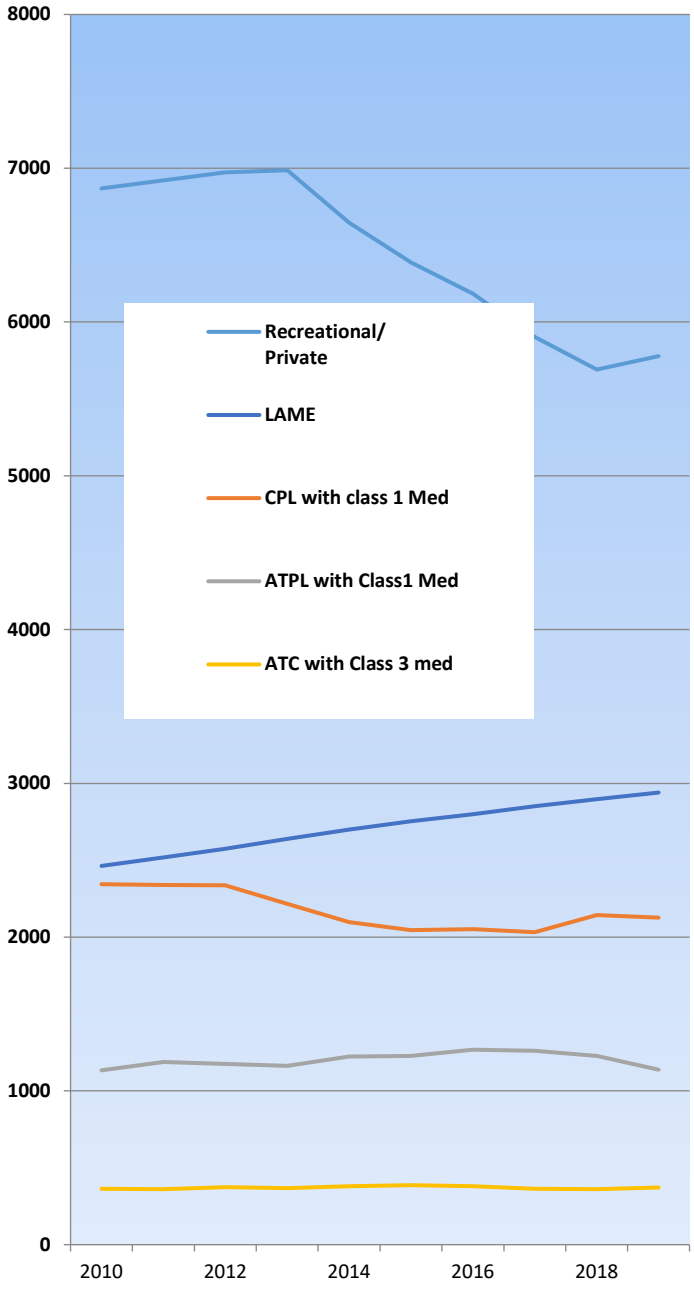
Ten year movements of these measures are summarised in the following graph.



The main points to note are the recent steady decline in the number of licences held and the relatively steady long term increase in the number of aircraft on record.

The graphs that follow show that the movement in licence numbers comes mostly from the recreational and private sector and the increase in aircraft numbers comes mostly from the commercial and adventure sectors.

Licences Held as at 30 June



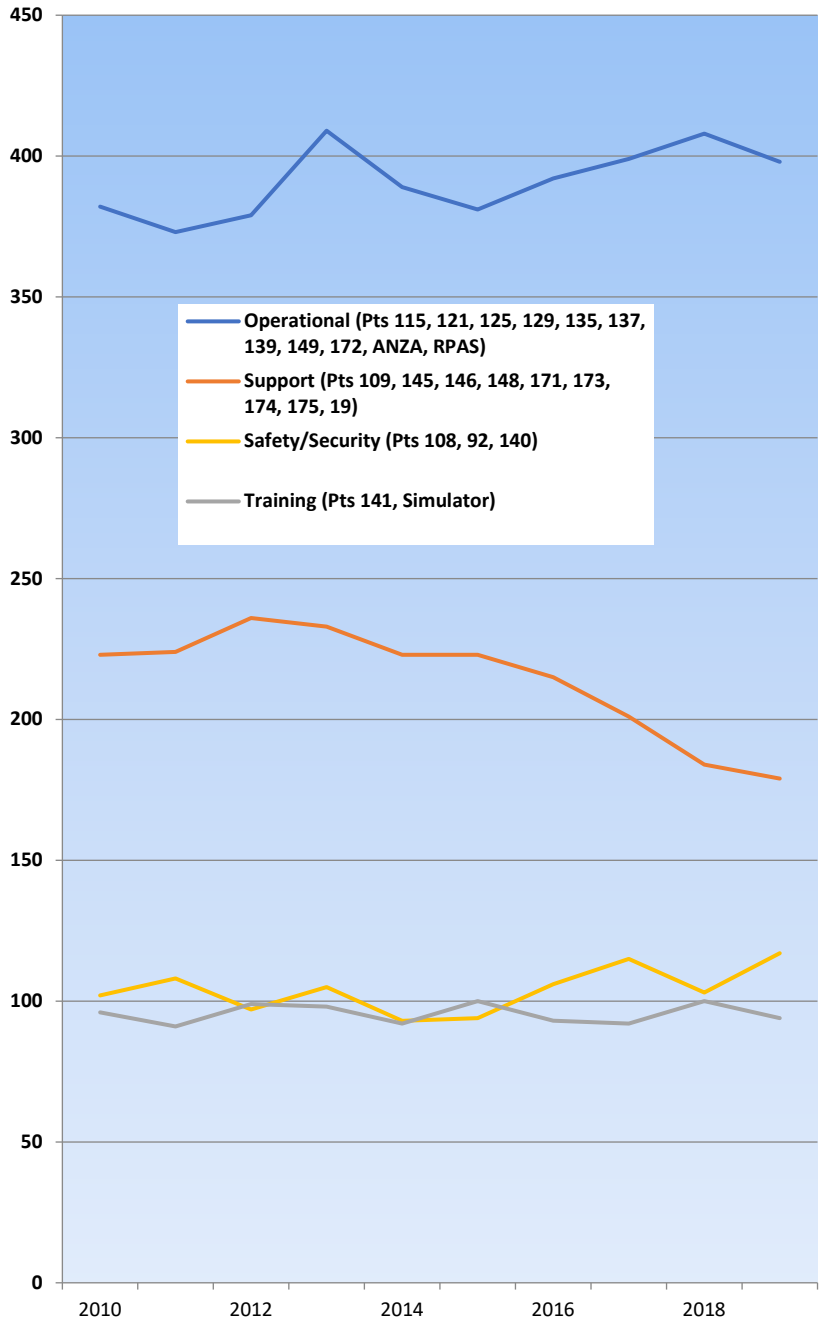
The 'Recreational/Private' group consists of holders of RPL licences who have appropriate current medical certificates plus holders of any pilot licence who have current class 2 medical certificates plus holders of PPL licenses only who hold a current class 1 medical certificate.

There is no medical requirement for holders of LAME licences which are issued on a lifetime basis. The increase in their numbers is simply an indication that more licences are being issued than holders' lifetimes are terminating.

Both the Recreational/Private and the CPL groups have been slowly declining in numbers over the last 3 years and although Microlight certificates issued by Part 149 organisations are not included it has been suggested that PPL and RPL holders might be choosing to operate in the Microlight sector rather than the fully licensed sector.

For more detail see: Licences

Approvals Held as at 30 June

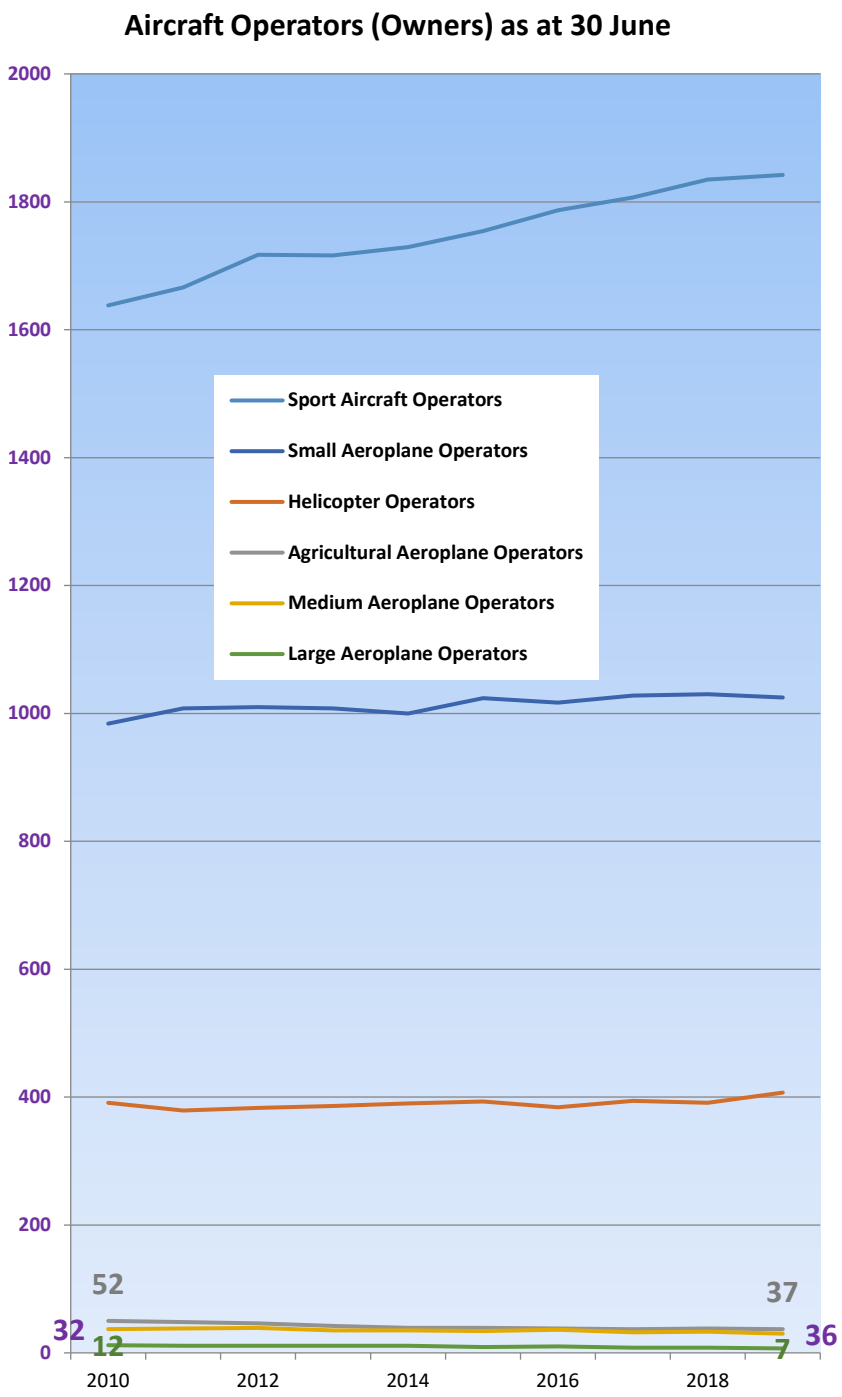


The decline in support organisations is due to declining numbers of Part 145 and Part 148 organisations and in particular decreased Part 19F supply organisations. Part 19F organisations have largely been re-integrated with their parent Part 145 organisations as anticipated by the rule.

The number of Part 121 Large Aeroplane Operator approvals has fallen from 9 in mid-2014 to 5 in mid-2019. In the same time period foreign air operators increased from 30 to 50.

The numbers of Part 137 Agricultural Aircraft Operator approvals from 99 in mid-2014 to 105 in mid-2019.

For more detail see: Approvals



Those operators who operate more than one category of aircraft have been counted in each category. This means that any attempt to total the numbers will lead to more operators than actually exist.

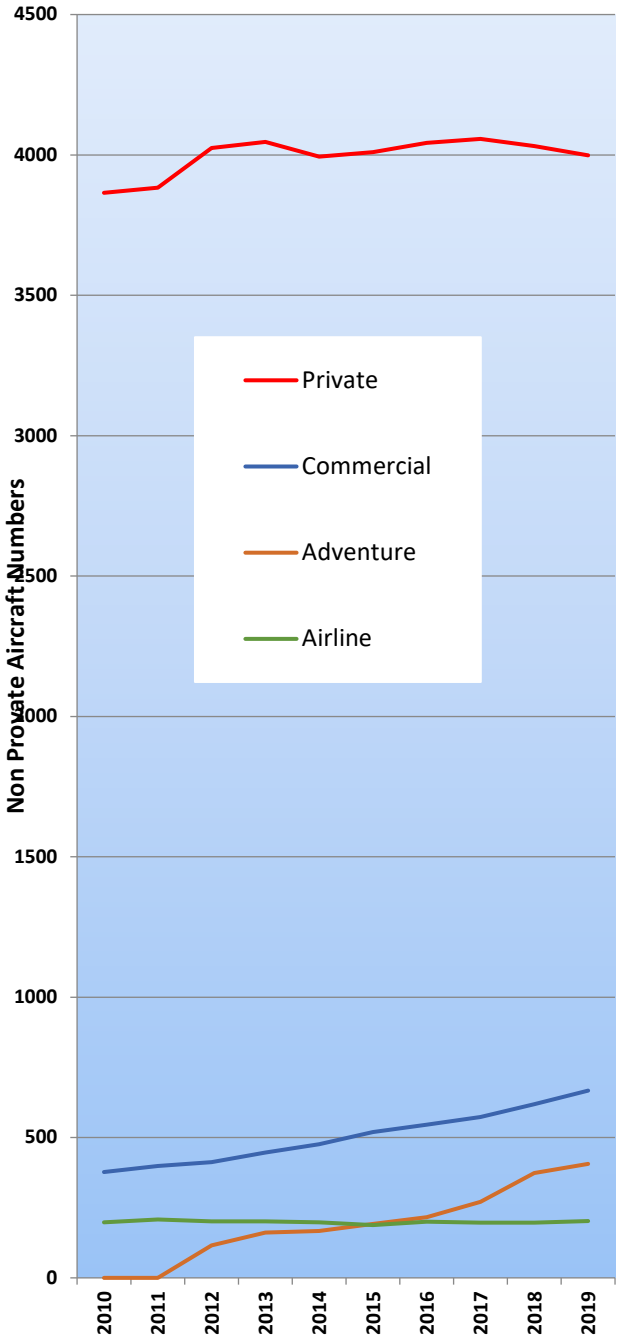
The number of Large Aeroplane operators has declined from 11 in 2014 to 7 in 2019.

The number of Helicopter operators has increased slightly from 390 in 2014 to 497 in mid-2019.

All other categories show small changes in the number of operators except for the Sport Aircraft category where there has been significant growth across the whole period covered by this report

For more detail see: Owners

Aircraft on Record as at 30 June



Aircraft have been counted in the Adventure group if there was a current Part 115 approval for the aircraft at the 30 June year end.

Aircraft have been counted in the Private group if they have no Part 119 or Part 115 approval and they are not an agricultural aeroplane. So this includes standard/restricted and special category aircraft (including microlights). The vast majority of aircraft recorded in the CAA database are private and their numbers increased until 2012 and have stabilised since then.

The most notable trend is in the commercial group where the numbers have increased by 77% since mid-2010. Both fixed wing and rotary have contributed to this increase but the rotary component is the major factor having gone from 198 commercial helicopters in mid-2010 to 473 in mid-2019 an increase of 139%.

For more detail see: Aircraft

Industry Activity

Most activity measures depend on operations statistics returns supplied by operators under the requirements of rule part 12.151 or rule part 19.103 for agricultural aviation statistics.

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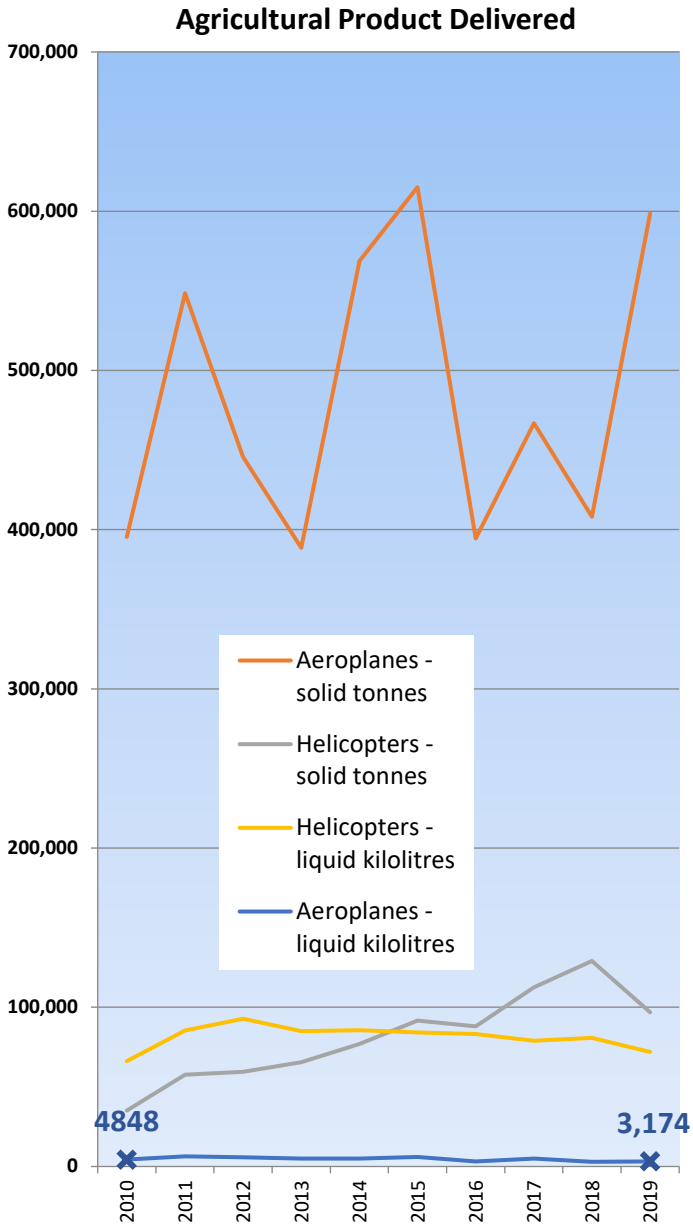
The following measures of industry activity are available

- Agricultural Product delivered during the year
- Total hours Flown during the year
- Number of Air Transport flights conducted during the year
- Aerodrome Movements conducted during the year at part 139 certified aerodromes

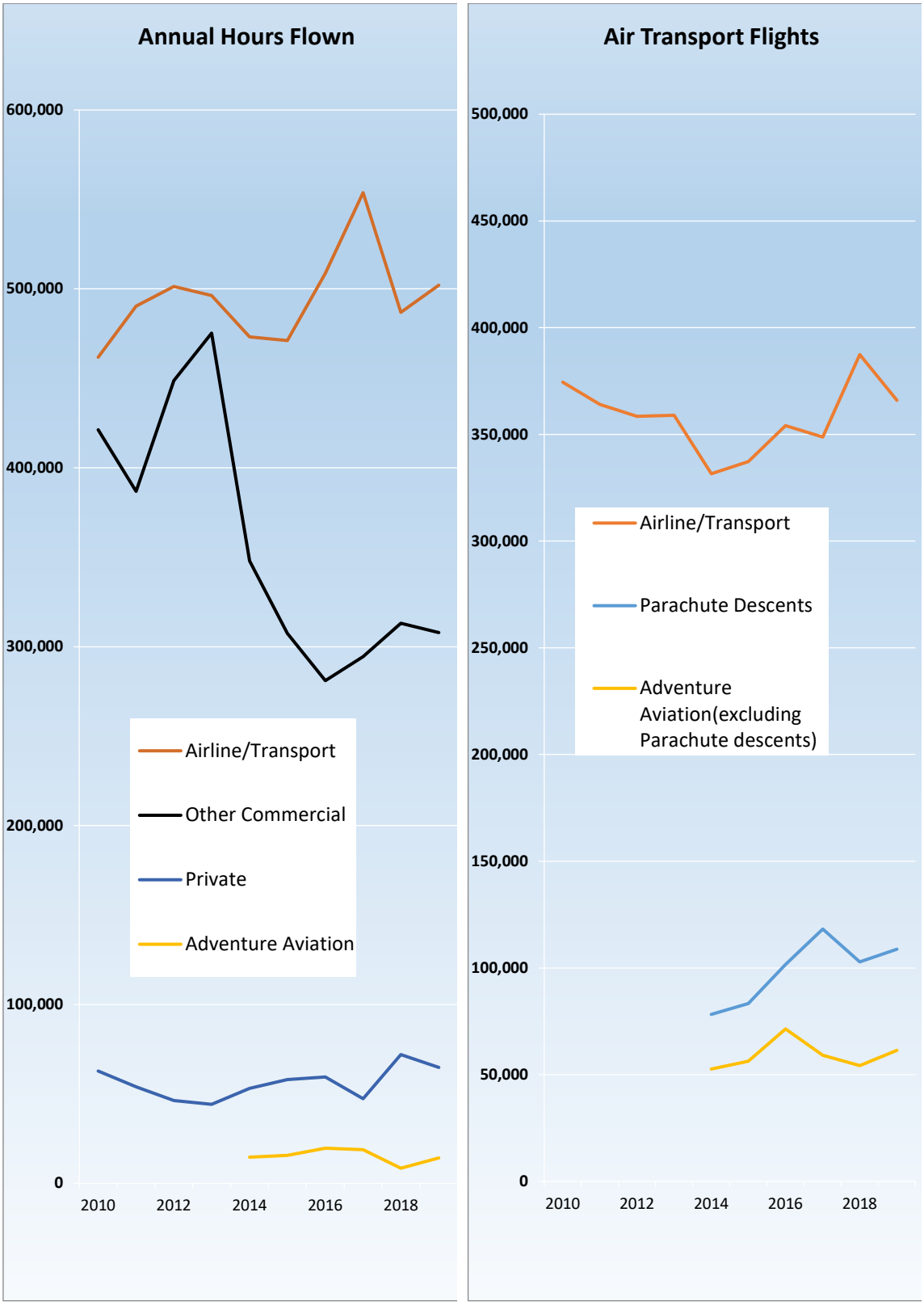
These measures are summarised in the following graphs that relate to years ending 30 June.



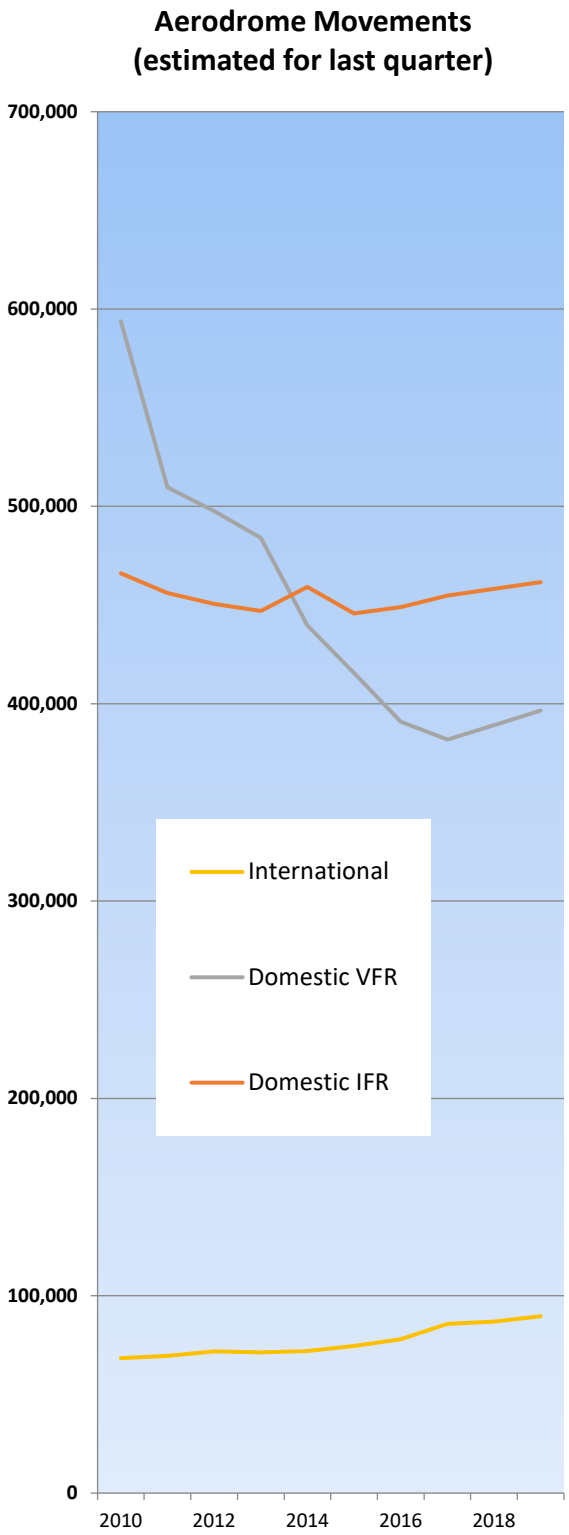
Trends in agricultural product delivery vary by aircraft type.

Liquid quantities applied by helicopter have plateaued from 2013 – 2019, while solid tonnage has increased significantly. In 2019 the solids spread by helicopter declined, corresponding to a big increase in solids spread by aeroplane.

Solid tonnage applied by aeroplane fluctuates significantly, likely due to agricultural commodity prices effecting farm spending.



For more detail follow these links: Hours Flown Flights



This data is provided by aerodrome operators in accordance with rule 139.

There has been a steady decline in VFR movements since a peak of 646695 in 2008, but this has stabilised in the last 2 years and is now slowly increasing. This is likely due to an increase in tourist helicopter flights which are conducted under VFR.

For more detail see: Aerodrome Movements

Safety Outcomes

Safety outcome measures covered in this report include

1. Fatality and serious injury rates
2. Accident rates
3. Airspace, Operational, Aerodrome, Defect, Bird and Security incident rates

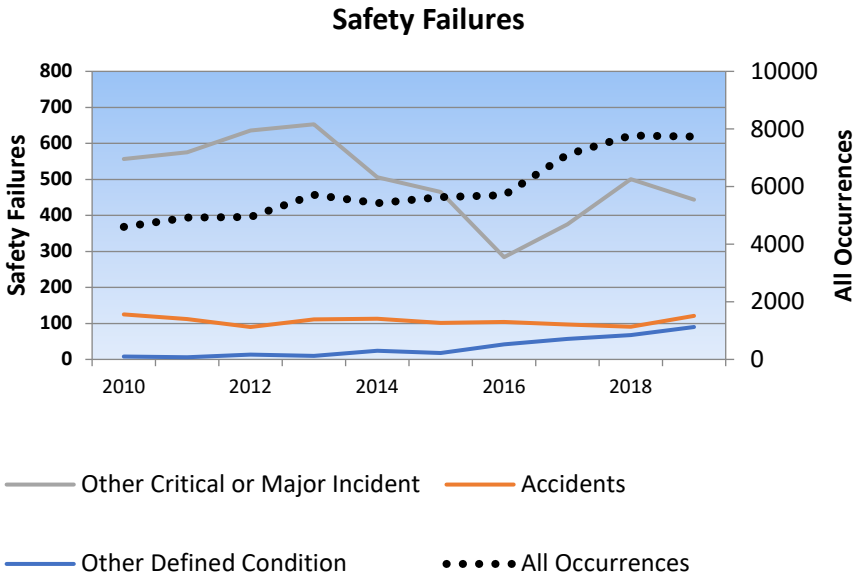
It is not practicable to summarise all of these measures in a concise form so this summary focusses on a concept of Safety Outcomes which classifies all reported occurrences into three groups, Safety Failures, Close Calls and Safety Successes. Aviation-Related Concerns and Risk Assessments are summarised separately.

The values relate to years ending 30 June.

Safety Failures

We have taken a Safety Failure as:

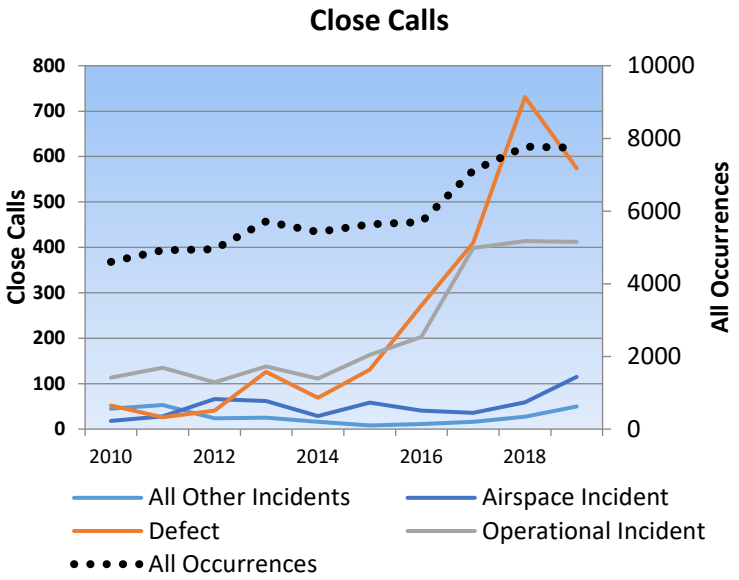
- an accident including hang glider and parachute accidents or
- an incident where the aircraft is written off, destroyed or missing or
- a critical or major incident or
- an incident that has any of 31 selected descriptors (see appendix), most of which relate to collision, serious landing outcomes, serious aircraft technical or operational failures or acts of violence



Whilst the goal for Safety Failures must be continuous reduction, it is difficult to identify a clear trend because of the small population of events. It is worthy of note that the number of 'Other Critical or Major' incidents does seem to be declining in recent years. These 'Other' incidents are mostly (87%) made up of Operational Incidents, Airspace Incidents and Defects in decreasing order of frequency.

Close Calls

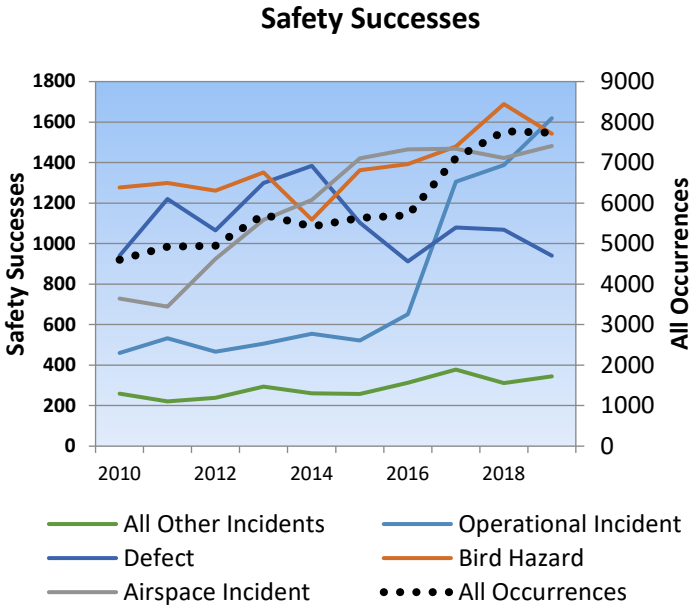
We have defined a Close Call as an incident that is not a safety failure but that has any of 112 selected descriptors (see appendix) that support the assumption that failure would have been the outcome if either the condition had escalated or adequate compensating action had not been taken



The most obvious trend is the recent increase in the number of defect incidents are close calls (574 in 2019). This is accompanied by a decrease in those that are safety failures (147). The total number of reported defect incidents also decreased by 231 from 1899 to 1668.

Safety Successes

We have defined a Safety Success as a reported incident (i.e. something unexpected) that was managed to a safe outcome using normal operational procedures. The increased number of occurrences of this type is an indication of better detection and reporting systems. This is evident in the increasingly reported operational incident and airspace events.



Precursors to Safety Failure

The CAA operates two processes that generate indicators of possible future safety failure of a particular activity type by a particular operator. They are the Routine Audit and Client Risk Assessment processes.

The Client Risk Assessment Process

This process generates a 'score' representing a weighted assessment of a range of factors all of which have the ability to indicate possible risk to an operation. A new score is generated any time any one of the relevant factors changes or if a manual assessment is initiated.

Client Risk Assessment scores are unique to a particular activity type and are not comparable between one activity and another.

The next table shows how the average of annual Risk Assessments has changed over the last 9 years within each certificate type. A value of 100 would represent the highest risk possible.

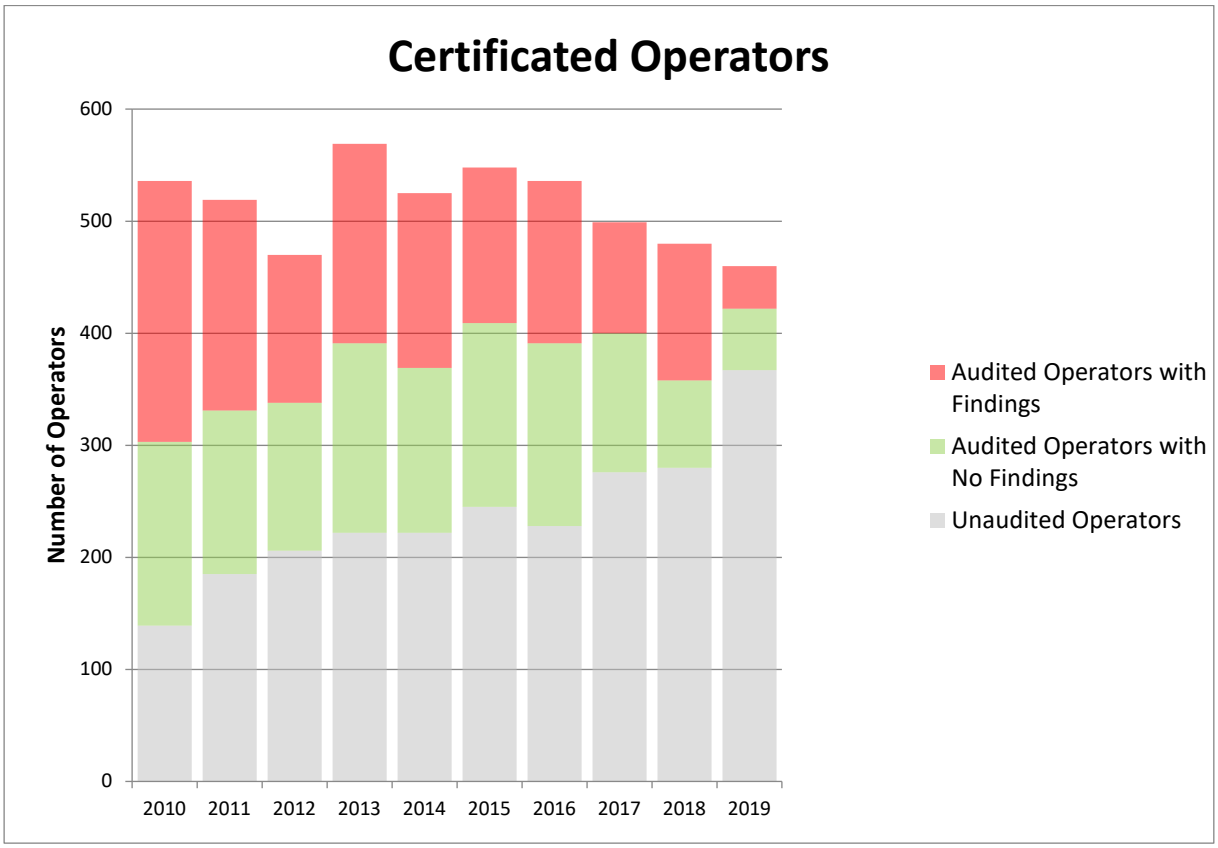
Activity	Year ending 31 December									
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Part 149 Aviation Recreation Organisation	30.7	8.4	16.2	11.4	14.4	16.2	16.3	9.9	10.1	10.0
Part 137 Agricultural Aircraft Operator	16.6	16.3	15.5	15.6	14.6	15.1	15.2	14.1	14.5	15.8
Part 135 Air Operator Helicopters and Small Aeroplanes	16.7	15.9	15.8	15.3	13.9	14.5	15.0	13.5	14.4	15.2
Part 125 Air Operator Medium Aeroplanes	15.3	16.1	12.8	14.2	13.8	16.3	14.9	13.1	13.8	12.4
Part 115 Adventure Aviation Operator Certificate				30.6	13.2	12.2	13.4	13.0	11.7	13.6
Part 172 Air Traffic Service Organisation	9.7	9.9	22.0	19.1	15.1	12.8	13.2	12.6	16.3	16.1
Part 92 Dangerous Goods Packaging Approval Holder	2.6	5.6	10.9	5.1	8.4	7.4	12.7	6.7	7.1	6.0
Part 109 Regulated Air Cargo Agent	13.9	11.2	10.4	11.7	12.7	12.4	11.1	10.6	11.6	12.9
Part 19F Supply Organisation	11.1	11.2	10.2	9.1	10.8	10.2	10.3	9.2	9.2	7.9
Part 148 Aircraft Manufacturing Organisation	10.4	11.2	10.8	9.4	10.9	11.6	9.6	10.2	10.8	10.7
Part 121 Air Operator Large Aeroplanes	10.5	10.0	7.8	8.0	8.2	7.6	9.6	8.1	7.4	9.0
Part 129 Foreign Air Transport Operator	8.2	8.9	9.6	8.3	6.8	6.4	9.5	11.8	8.6	9.4
Part 145 Maintenance Organisation	10.8	10.3	11.1	9.4	9.8	10.3	9.3	8.3	9.3	9.2
Part 141 Aviation Training Organisation	11.4	9.5	10.7	9.3	8.3	9.3	8.9	6.7	8.3	8.7
Part 173 Instrument Flight Procedure	5.9	8.2	15.4	13.0	11.1	13.5	8.9	4.4	4.0	4.5
Part 139 Aerodrome Operator	6.3	5.7	5.8	5.9	6.5	7.2	8.6	7.1	7.5	6.3
Part 146 Aircraft Design Organisation	7.6	11.8	10.2	9.4	8.2	8.8	8.3	8.8	8.4	9.6
Australia AOC with ANZA Privileges Part 108 Security Programme	5.5	5.9	7.0	6.1	5.6	7.4	8.2	8.1	7.2	6.7
Part 140 Aviation Security Service Organisation	5.5	4.5	4.8	5.0	6.1	6.1	8.1	12.8	11.4	18.9
Part 108 Security Programme	8.3	7.5	7.1	7.0	6.4	6.9	7.6	6.8	6.6	7.3
Part 174 Meteorological Service Organisation	9.6	10.3	15.9	10.7	5.1	5.3	6.1	4.7	10.0	8.8
Part 175 Aeronautical Info Service Organisation	7.6	12.1	21.2	14.6	11.1	43.3	5.3	3.6	3.3	6.0
Part 171 Telecom Service Organisation	4.9	6.8	17.3	12.7	6.6	5.1	5.0	5.4	17.0	7.7

When a client is initially certificated their risk score is automatically high. It gradually declines as the client builds up operational experience. The Part 115 holders illustrate this effect well.

The Routine Audit Process

This process generates findings as a result of inspections of compliance with CAA rules.

The following chart shows the numbers of certificated operators. They are separated into those that have not been audited, those that have been audited and for whom no non-compliances were discovered and finally those for whom one or more non-compliances were discovered either as a result of an audit, an inspection or an investigation. The chart uses calendar years.



It is worth noting that as the CAA moves to risk-based auditing decisions, fewer operators are being audited than in previous years. It is also worth noting that over the last three years less than half of the operators who are audited have generated findings. This is a change from earlier years when for most years significantly more than half of all audited operators generated findings. This is reflected in the table of client risk scores which is to be expected since non-compliance findings are one component of the risk score.

Industry Size and Activity Data

Registered Aircraft

The following table summarises the number of registered aircraft or Part 115 approved aircraft as at 31 December of each year.

Aircraft Category and Class	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Large Aeroplane	119	128	126	128	127	117	131	135	130	136
Medium Aeroplane	79	80	79	79	77	77	75	70	76	75
Small Aeroplane	1519	1522	1526	1532	1498	1500	1499	1509	1519	1525
Helicopter	767	765	770	787	798	828	825	838	859	879
Agricultural Aeroplane	109	110	109	106	102	93	93	91	95	94
Sport Aircraft - Aeroplanes	119	124	136	147	158	166	172	173	175	179
Sport Aircraft - Amateur Built Aeroplane	242	246	255	263	268	268	279	284	288	293
Sport Aircraft - Amateur Built Glider	4	4	4	3	3	3	3	3	3	3
Sport Aircraft - Amateur Built Helicopter	21	21	22	23	24	23	24	22	24	24
Sport Aircraft - Balloons	69	70	72	70	61	64	60	61	63	58
Sport Aircraft - Glider	301	300	296	293	284	282	283	283	282	288
Sport Aircraft - Gyroplane	42	40	38	41	49	57	64	72	77	76
Sport Aircraft - Hang Glider	0	0	13	13	18	18	20	24	21	18
Sport Aircraft - Helicopter	5	5	5	6	4	5	5	5	5	5
Sport Aircraft - Microlight Class 1	236	233	229	223	218	211	209	211	212	212
Sport Aircraft - Microlight Class 2	760	794	818	832	835	868	881	890	904	911
Sport Aircraft - Power Glider	48	48	47	46	46	47	51	51	53	53
Sport Aircraft - Parachute	0	0	174	195	198	204	240	266	331	342
Sport Aircraft - Para Glider	0	0	35	67	67	77	88	104	97	99
Total	4440	4490	4754	4854	4835	4908	5002	5092	5214	5270

Statistically significant growth areas are:

- gyroplanes – from 40 in 2011 to 76 in 2019
- sport aeroplanes – from 119 in 2007 to 179 in 2019
- class 2 microlights – from 760 in 2010 to 911 in 2019
- Part 115 hang gliders – from 13 in 2012 to 18 in 2019
- Part 115 parachutes – from 174 in 2012 to 342 in 2019
- Part 115 para gliders – from 35 in 2012 to 99 in 2019

Moderate declines are evident for

- class 1 microlights - from 236 in 2010 to 212 in 2019
- agricultural aeroplanes – from 110 in 2011 to 94 in 2019

The totals for sport aircraft need to be interpreted with care because the figures before 2011 did not include Hang Gliders, Parachutes or Para Gliders. These aircraft classes have only been recorded since the need to approve them for Part 115 operations arose in late 2011. Even now any private aircraft of these classes do not appear in the CAA records

Licences

The following table summarises the number of airline transport, commercial, private and recreational pilot, air traffic controller, and aircraft maintenance engineer licences on the register as at 30 June of each year.

Licences	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Recreational (RPL with Med or any Class2 Med only or any PPL only)	6868	6921	6973	6987	6647	6389	6184	5904	5691	5778
CPL with class 1 Med	2344	2339	2337	2217	2098	2046	2051	2032	2143	2126
ATPL with Class1 Med	1134	1188	1175	1163	1223	1228	1268	1261	1228	1138
ATC with Class 3 Med	363	361	374	367	381	387	381	364	361	371
LAME	2463	2519	2575	2639	2699	2754	2800	2852	2898	2940
Total	**13172**	**13328**	**13434**	**13373**	**13048**	**12804**	**12684**	**12413**	**12321**	**12353**

Note — the statistics above for pilot licences count only those with active medical certificates of a class appropriate for the licence type. This means that for CPL and ATPL licences, the number with a class 2 medical only, must only be exercising PPL privileges (or not flying at all). The statistics for ATCL holders count only those with an active class 3 medical certificate.

('Private & Recreational' is the combined total of any PPLs with a valid medical certificate, any aircrew licence with only Class2 medical certificate and any RPLs with current DL9 medical)

These statistics show the number of licences held and the totals therefore overestimate the number of licence holders, as each holder may hold more than one licence.

The numbers of 'Private & Recreational' Pilot licence holders have stabilised in 2019 after declining since 2013. Commercial Pilot licence holders have been declining since 2010.

Operators (Owners)

The following table summarises the number of registered operators of aircraft on the register as at 30 June of each year.

Operators of:	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Large Aeroplane Operators	12	11	11	11	11	9	10	8	8	7
Medium Aeroplane Operators	37	38	39	35	35	34	36	32	33	30
Agricultural Aeroplane Operators	50	48	46	42	39	39	38	37	38	37
Helicopter Operators	391	379	383	386	390	393	384	394	391	407
Small Aeroplane Operators	984	1008	1010	1008	1000	1024	1017	1028	1030	1025
Sport Aircraft Operators	1638	1666	1717	1716	1729	1754	1787	1807	1835	1842

No attempt has been made to total these figures because many operators own aircraft from multiple categories making totals meaningless.

The most notable trends are a 42% drop in the number of large aeroplane operators and a 26% drop in the number of agricultural aeroplane operators over the last ten years along with increases of 4%, and 12% in the numbers of helicopter and sport aircraft operators over the same period.

Certificated Operators

The following table shows the number of Civil Aviation Rule Part certificate holders as at 30 June of each year.

	Years 20--									
Approval	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
Part 109 Regulated Air Cargo Agent	63	63	63	67	65	65	66	65	63	63
Part 115 Adventure Aviation Operator	0	0	20	33	28	28	28	29	27	26
Part 119 Air Operator	185	184	181	185	179	172	172	174	175	167
Part 119 Air Operator - Pacific	0	0	0	0	0	0	0	0	0	0
Part 129 Foreign Air Operator	37	33	28	31	30	28	36	43	45	50
Part 137 Agricultural Aircraft Operator	108	104	99	103	99	103	103	102	104	105
Part 139 Aerodromes	26	26	26	27	25	27	27	27	26	27
Part 140 Aviation Security Service	1	1	1	1	1	1	1	1	1	1
Part 141 Aviation Training Organisation	58	54	57	57	53	56	53	52	51	48
Part 141 Restricted Training Organisation	0	0	0	0	0	0	0	0	0	0
Part 145 Aircraft Maintenance Organisation	55	60	67	66	58	56	55	53	51	51
Part 146 Aircraft Design Organisation	13	14	15	14	14	14	12	12	12	13
Part 148 Aircraft Manufacturing Organisation	22	21	23	20	20	20	20	17	14	14
Part 149 Aviation Recreation Organisation	9	9	9	7	8	8	8	8	8	8
Part 171 Aeronautical Telecommunication Service Organisation	2	2	2	2	2	2	2	2	2	1
Part 172 Air Traffic Service	1	1	1	1	1	1	1	1	1	1
Part 173 Instrument Flight Procedure Service Organisation	3	3	3	3	4	2	2	2	2	2
Part 174 Meteorological Service Organisation	2	2	2	2	2	2	2	2	2	3
Part 175 Aeronautical Information Service Organisation	2	1	1	1	1	2	2	2	2	2
Part 19 Supply Organisation Certificate of Approval	61	58	60	58	57	60	54	46	36	30
Part 92 Dangerous Goods Packaging Approval	56	65	57	62	52	57	59	61	55	58
Part 129/108 Security Programme	26	25	21	23	22	20	28	37	41	44
Part 119/108 Security Programme	19	17	18	19	18	16	18	16	6	14
Part 121 Large Aeroplanes	10	9	9	9	9	7	8	6	13	5
Part 125 Medium Aeroplanes	15	15	15	16	14	13	15	13	12	11
Part 135 Helicopters and Small Aeroplanes	174	174	171	173	168	163	162	166	167	160
Part 119 Pacific/108 Security Programme	0	0	0	0	0	0	0	0	0	0
Pacific - Part 121 Large Aeroplanes	0	0	0	0	0	0	0	0	0	0
Pacific - Part 125 Medium Aeroplanes	0	0	0	0	0	0	0	0	0	0
Pacific - Part 135 Helicopters and Small Aeroplanes	0	0	0	0	0	0	0	0	0	0
Australian AOC Operating with ANZA Privileges	2	2	1	2	2	2	4	4	5	5
Synthetic Training Device (Airlines)	10	10	9	9	11	14	12	11	11	8
Synthetic Training Device (General Aviation)	28	27	33	32	28	30	28	29	38	38
Pilotless Aircraft Authorisation	0	0	0	7	5	1	0	0	0	0
Part 102 Unmanned Aircraft Operator Certificate	0	0	0	0	0	0	45	89	105	110
Total	988	980	992	1030	976	970	1023	1070	1075	1065

* Note:

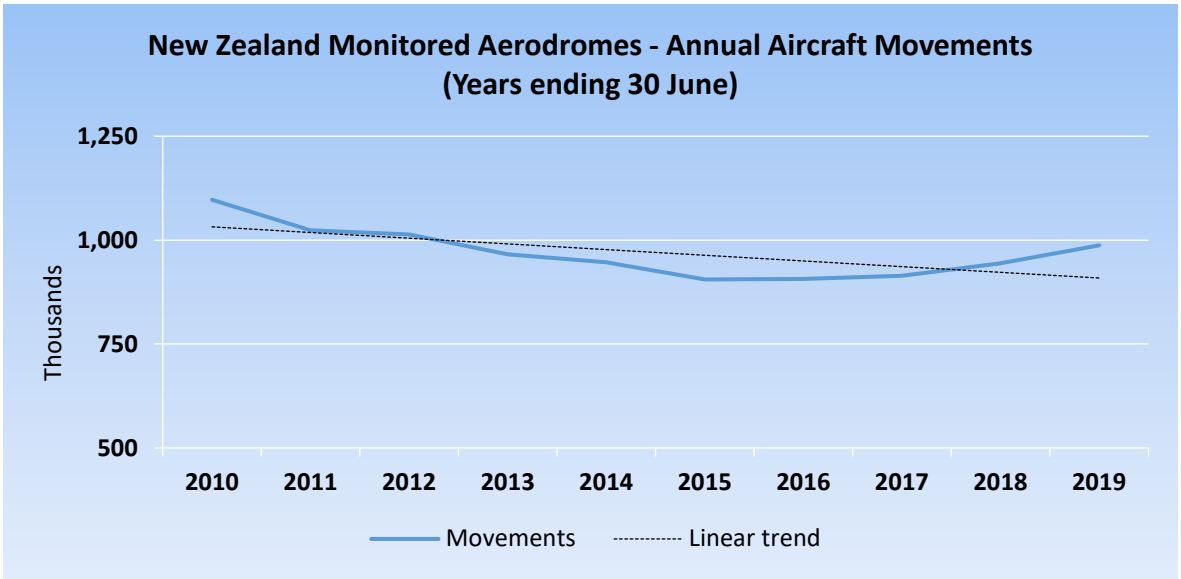
For organisations with Part 92 and for those with Part 172 certificates the figures show the total number of services that are certificated. This does not necessarily equate to the number of organisations that hold the certificate.

Aircraft Movements

Quarterly aircraft movement numbers are supplied to CAA by Airways Corporation for all aerodromes that they service, either by way of a control service or an information service. In addition Taupo airport voluntarily supplies movement information on a regular basis. A movement is defined as a take-off or a landing but touch-and-go operations are not defined. Airways counts each as a single movement, Taupo Airport counts each as two movements. This means that Taupo's values may not be validly compared with other aerodromes' but can of course be used to inform trends over time.

Long-Term Change in Aircraft Movements

The following graph shows the annual number of aircraft movements for the ten-year period ending 30 June 2019. Paraparaumu Airport has been omitted from this long term analysis because the available data is incomplete because there has only been a flight information service available since October 2011.



Breakdown by Aerodrome

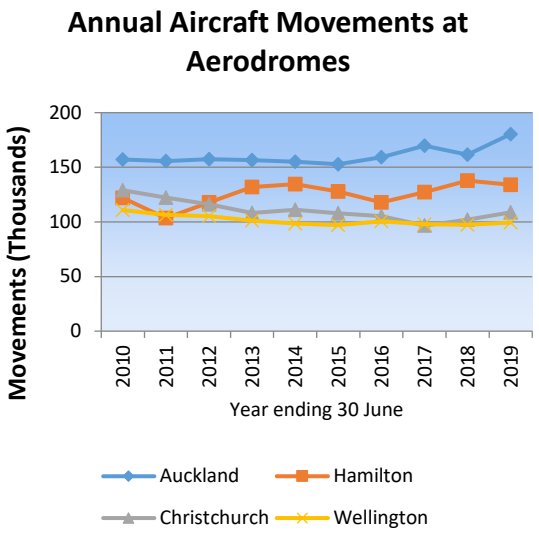
The following table shows the number of aircraft movements reported at the following aerodromes: Auckland, Christchurch, Dunedin, Gisborne, Hamilton, Invercargill, Milford Sound, Napier, Nelson, New Plymouth, Ohakea, Palmerston North, Paraparaumu, Queenstown, Rotorua, Taupo, Tauranga, Wellington, Whenuapai and Woodbourne.

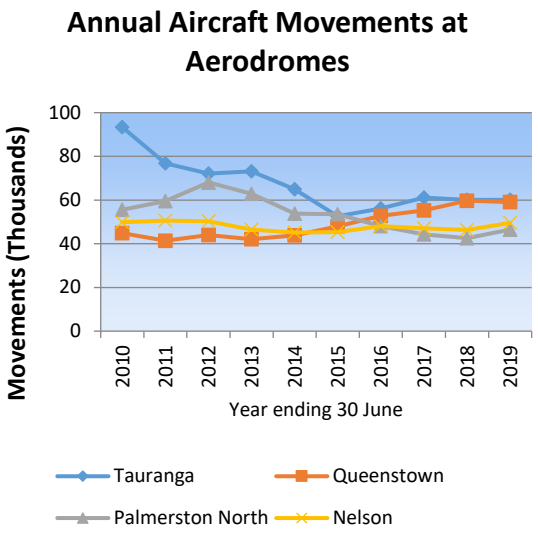
Annual Aircraft Movements at Aerodromes

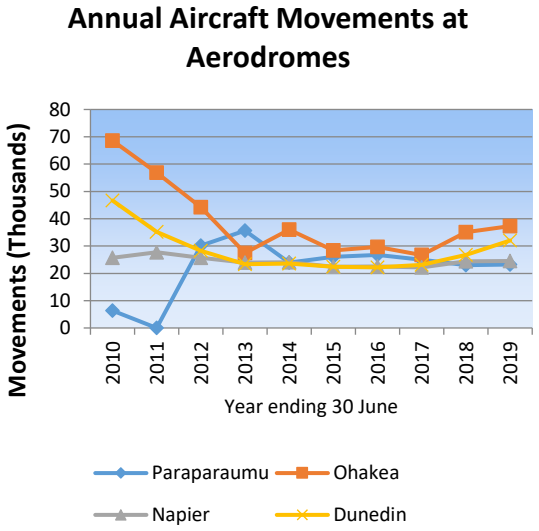
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Auckland	157032	155609	157365	156405	155093	152792	159294	169712	161408	180352
Hamilton	122086	103408	117870	131795	134701	127861	117762	127168	137782	133980
Christchurch	128984	122352	116007	108259	111140	107996	105109	96641	101908	108875
Wellington	110817	106426	105323	101279	98601	97023	100522	98000	97223	99442
Tauranga	93360	76784	72158	73193	64903	52590	56145	61114	60051	60028
Queenstown	44831	41406	43943	42070	43861	47991	52828	55262	59713	59043
Palmerston North	55504	59476	68073	62881	53753	53534	48030	44303	42557	46482
Nelson	49813	50610	50295	46531	45139	45283	48065	47034	46384	49533
Paraparaumu	6305	0	30151	35639	23959	26055	26805	24993	22980	23237
Ohakea	68597	56850	44154	27459	36007	28429	29670	26691	35078	37260
Napier	25661	27725	25720	23963	24042	22371	22541	22177	24387	24531
Dunedin	46661	35213	28236	23300	23628	22412	22183	23092	26731	31968
Taupo	29370	27224	26558	24146	22976	21476	22393	20144	20392	22634
Woodbourne	22887	23703	23124	22077	21229	21416	21626	21206	22232	21389
New Plymouth	40578	34590	31687	27797	23402	21011	19340	19454	19589	20237
Rotorua	23331	22089	23100	22103	21204	19528	18671	19014	19275	20909
Milford	14426	13094	12931	13918	12836	15356	16847	19007	19022	17787
Invercargill	26251	29483	31268	25230	21468	17907	16346	17890	18047	19391
Gisborne	23279	22295	21563	18054	17149	15728	15989	15128	23035	30991
Whenuapai	13642	14981	14107	15145	15909	14711	13239	11126	9495	2299
New Zealand Monitored Aerodromes -	1103415	1023318	1043633	1001244	971000	931470	933405	939156	967289	1010368

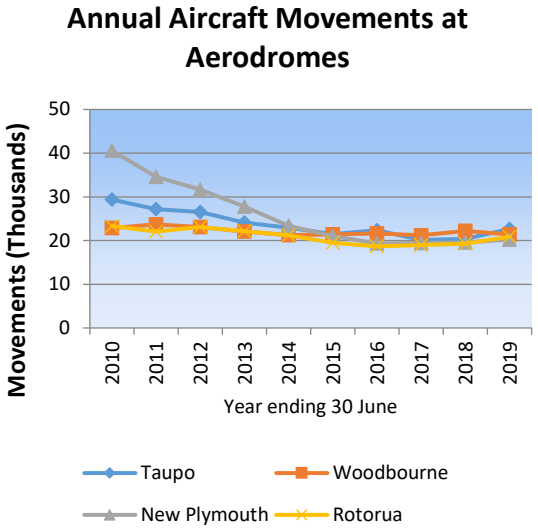
Movements data for individual aerodromes are graphed on the next page. The aerodromes are grouped by the number of movements over the last year covered by this report.

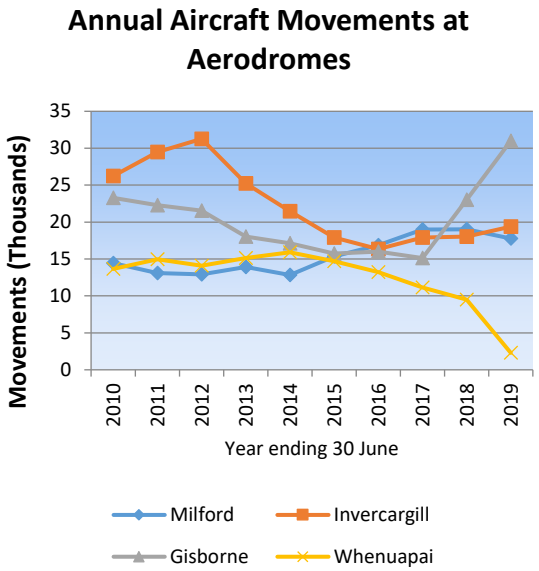
Note that the scales are different for each chart to prevent the smaller aerodromes' graphs from becoming unreadable which would happen if all the charts had the same scales.







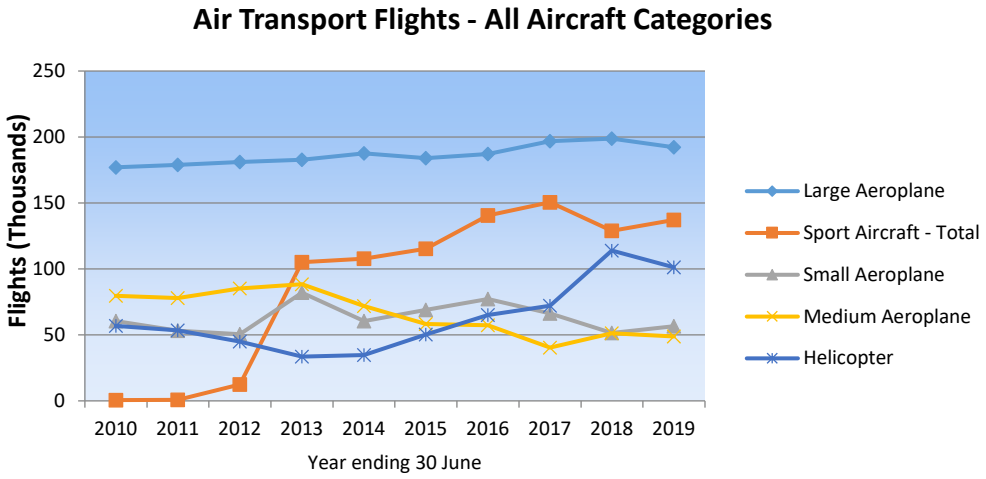




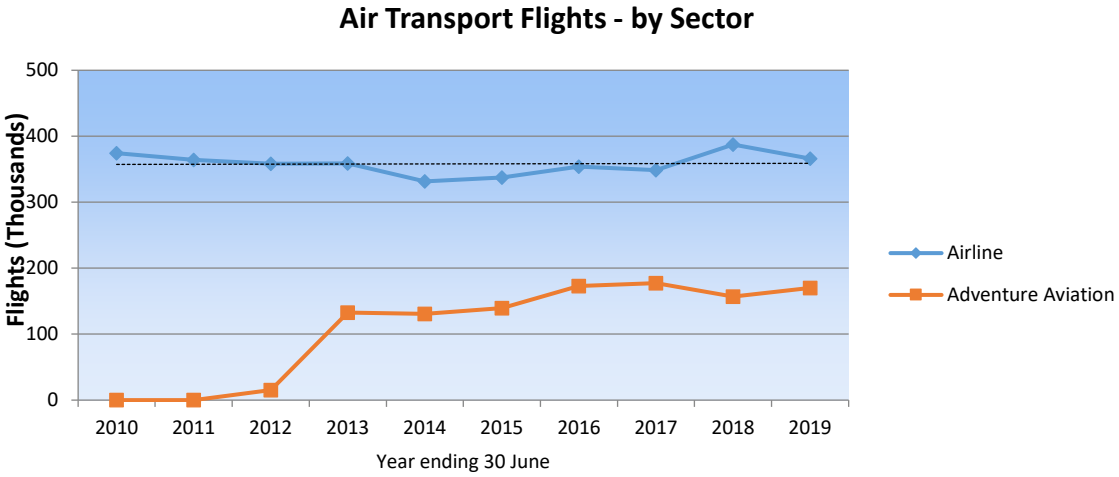
Air Transport Flights

The following graphs show the estimated number of air transport flights for the ten years ending 30 June 2019. The estimates are based on the reported numbers of flights with an allowance for aircraft for which reports were not received.

Note that these graphs exclude foreign registered aircraft that are operated in New Zealand.

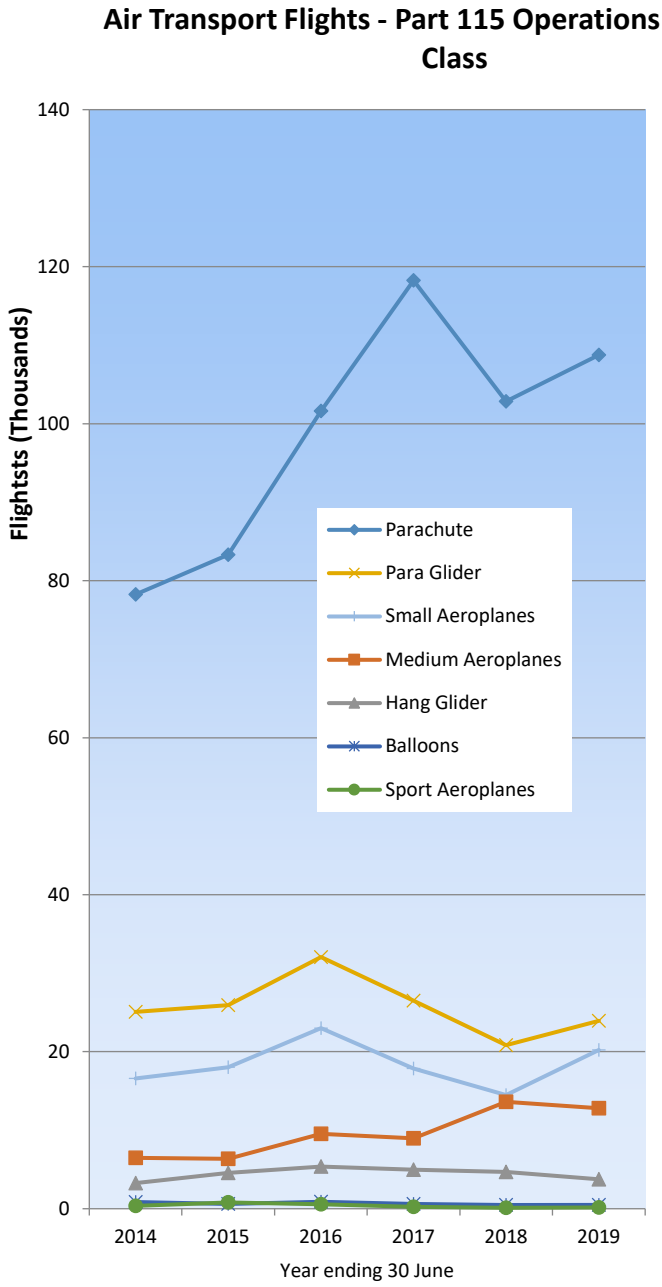


Apart from the expected emergence of adventure aviation flights the only trend that may be worthy of note is that Helicopter Air Transport Flights have reversed the declining trend that existed since 2010 and are now back to the 2010 levels. This change is believed to relate in part to the growth in tourism.



The Airline graph shows a decrease of 2.4% over the ten years. This trend is significantly less than the decrease in the monitored aerodrome movements of 8.4% over the same period.

While it is expected that the Part 115 operations will not be reflected in the aerodrome movements data, it is interesting to note that the recent increase in airline sector flights is not seen in the aerodrome data. The increase is clearly seen in the small aeroplane and particularly helicopter groups whose operations are less focussed around the monitored aerodromes than are the airlines operations.



Rule Part 115 didn't come into force until 10 November 2011. Here we present data from the last 5 years 2014 to 2019.

Sport aeroplanes and balloons conduct less than 1000 adventure aviation flights each per year. The reported figures for 2019 (3 June year-end) are 159 and 491 respectively. (The balloon curve is obscured by sport aeroplane curve in the graph above)

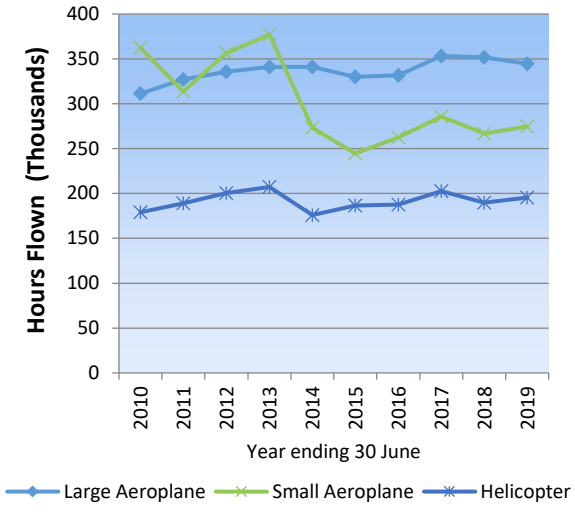
The most obvious trend is the steady growth in the sector particularly in parachute flights.

Hours Flown

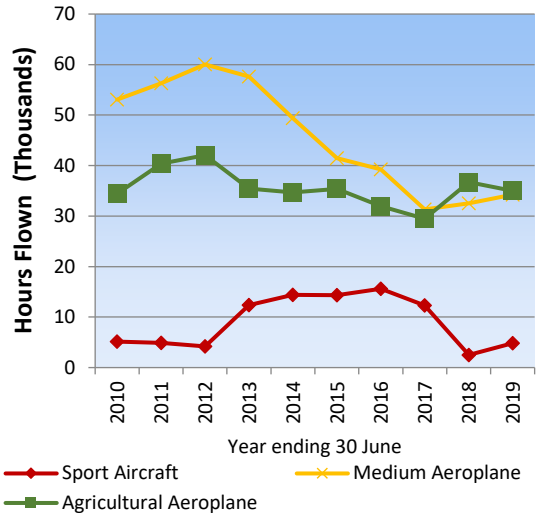
The following graphs show the estimated number of annual hours flown during the ten year period ending 30 June 2019. The estimates are based on the reported hours with an allowance for aircraft for which reports were not received. Recent improvements in the collection procedure for operating statistics data have resulted in improved return rates with a consequent improvement in confidence in the published data.

Note that these graphs exclude the aircraft statistics categories Sport Aircraft and Hang Gliders except where the aircraft are approved for use in Part 115 operations. Foreign registered aircraft that are operated in New Zealand and parachutes are also excluded.

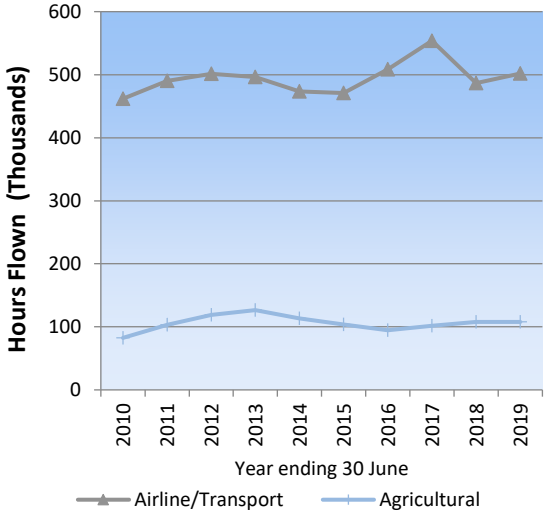
Annual Aircraft Hours Flown by Aircraft Category



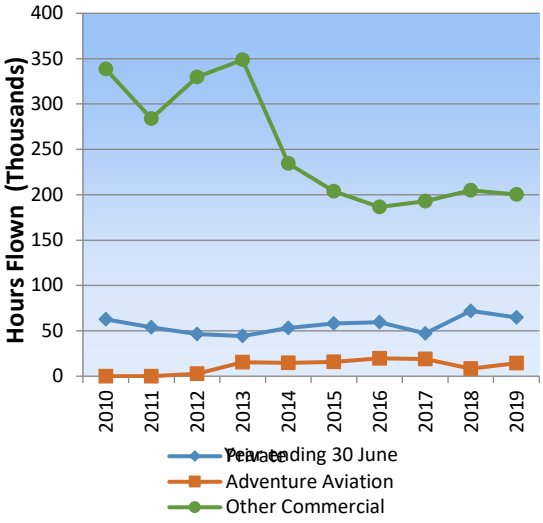
Annual Aircraft Hours Flown by Aircraft Category



Annual Hours Flown by Sector - all Aircraft Types



Annual Hours Flown by Sector - all Aircraft Types



Safety Target Structure

The 2010 Safety Targets classify all New Zealand aviation under three broad group headings: Public Air Transport, Other Commercial Operations, and Non-commercial Operations. Thirteen further sub-groups enable differentiation between aeroplanes, helicopters, and sport aircraft, and also allow for different weight groups. This section presents the same accidents as the previous section but classified by type of operation (sector) rather than type of aircraft.

Number of Accidents

The following table shows, for each safety target group, the number of accidents each year for the last ten years ending in June 2019.

Safety Outcome Target Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Agricultural Operations - Aeroplanes	5	6	3	11	6	3	2	7	5	2
Agricultural Operations - Helicopters	5	3	7	4	3	5	3	5	1	5
Airline Operations - Helicopters	3	1	2	6	5	2	4	2	1	
Airline Operations - Large Aeroplanes	3	3			4	1	1	2		2
Airline Operations - Medium Aeroplanes	2		1			1				
Airline Operations - Small Aeroplanes	3	3	1	2	1	2		1	2	3
Other	1	1	2	1	2			2	1	1
Other Commercial Operations - Aeroplanes	12	11	5	7	10	6	6	3	10	8
Other Commercial Operations - Sport			3	10	11	5	7	4	4	3
Other Commercial Operations - Helicopters	3	7	8	4	5	5	4	5	5	7
Private Operations - Aeroplanes	9	5	7	12	11	10	14	9	10	16
Private Operations - Helicopters	11	7	2	8	1	4	5	4	3	4
Private Operations - Sport	56	54	39	42	46	45	47	38	37	48
Sport Transport (Part 115)	12	11	10	4	8	12	11	15	12	21
Total	**125**	**112**	**90**	**111**	**113**	**101**	**104**	**97**	**91**	**120**

Flight Phase

The following table shows the flight phase recorded for accidents for the ten one-year periods ending 30 June 2019. The figures include all aircraft types. The table is ordered by the 2019 values.

Flight Phase	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
LANDING	49	36	32	45	47	41	46	40	40	47
TAKEOFF	26	24	13	9	21	17	16	16	10	18
CRUISE	11	12	10	13	14	14	10	11	9	13
UNKNOWN		2	2	3	1	5	4	10	10	5
APPROACH	6	5	6	6	8	4	3	5	3	4
CLIMB	6	11	3	5	7	6	7	3	5	4
PARKED	3	2	4	8			5	2		3
DESCENT	4	4	2	7	2	4	5	4	5	4
HOVER	6	1	5	3	2	2	4		2	1

AGRICULTURAL MANOEUVRES	5	2	2	3	2	4		1	2	3
TAXIING	3	5	3	3	4	3	4	2	2	4
HOVER TAXI				2	1			1		1
CIRCUIT		1	1			1		1	1	1
Not Recorded	6	7	6	4	3	0	0	0	2	9
HOLDING										
AEROBATICS			1		1			1		

The most common phase of flight during which accidents occurred in the year ending 30 June 2019 remains the landing phase (40%). This proportion of accidents by flight phase is largely unchanged from previous years and reflects the fact that landing is generally the highest risk phase of flight.

Number of Fatalities

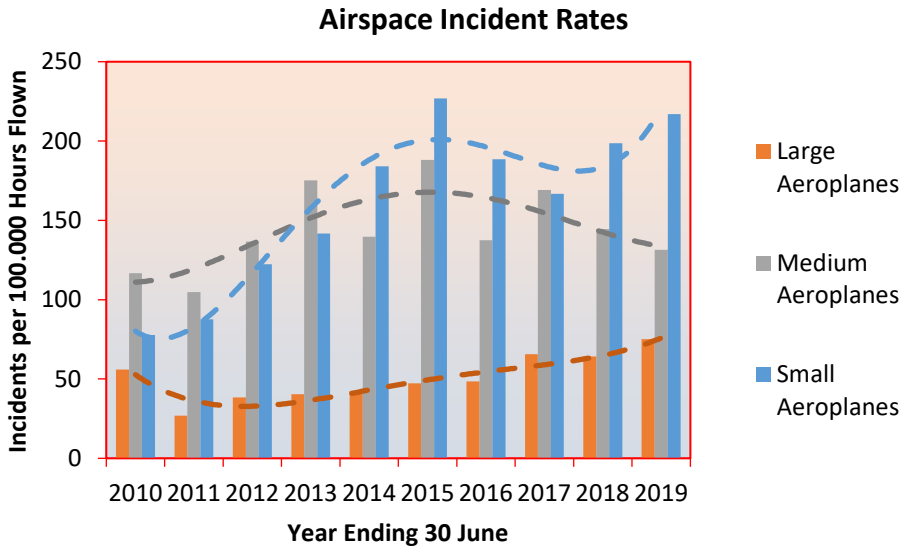
The following table shows, for each safety target group, the number of fatalities each year for the last ten years ending in June 2019.

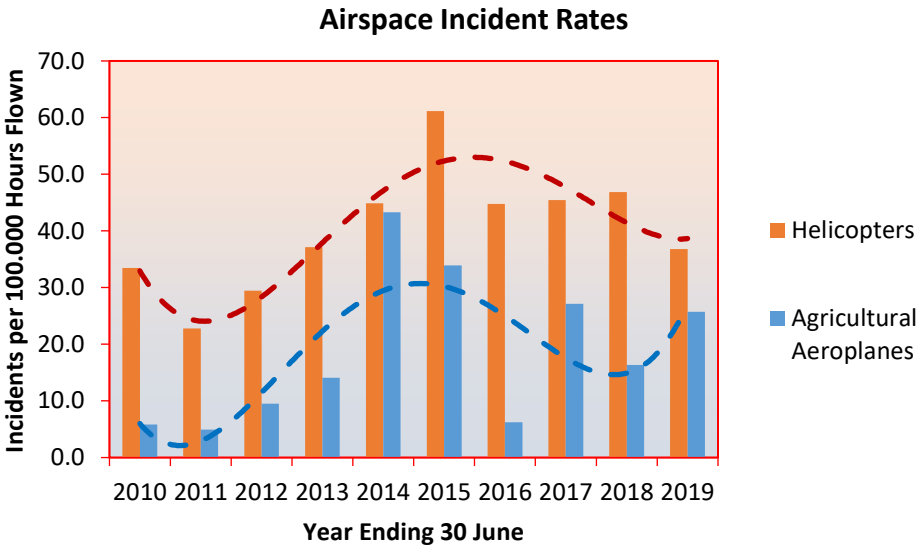
Safety Outcome Target Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Agricultural Operations - Aeroplanes				1				2		
Agricultural Operations - Helicopters			1		1	1		2		
Airline Operations - Helicopters				1	1	1	7			
Airline Operations - Small Aeroplanes						1				
Other (foreign registered)				2						
Other Commercial Operations - Aeroplanes	1	11			2					2
Other Commercial Operations - Sport				1		2			1	2
Other Commercial Operations -Helicopters		4	3		1	3		1	1	3
Private Operations - Aeroplanes	1		1		1	4				0
Private Operations - Helicopters		1		1	2	1	1	1		1
Private Operations - Sport	6	5	6	2	2		2	7	6	5
Sport Transport			11						1	
Total	**8**	**21**	**22**	**8**	**10**	**13**	**10**	**13**	**9**	**13**

Airspace Incidents

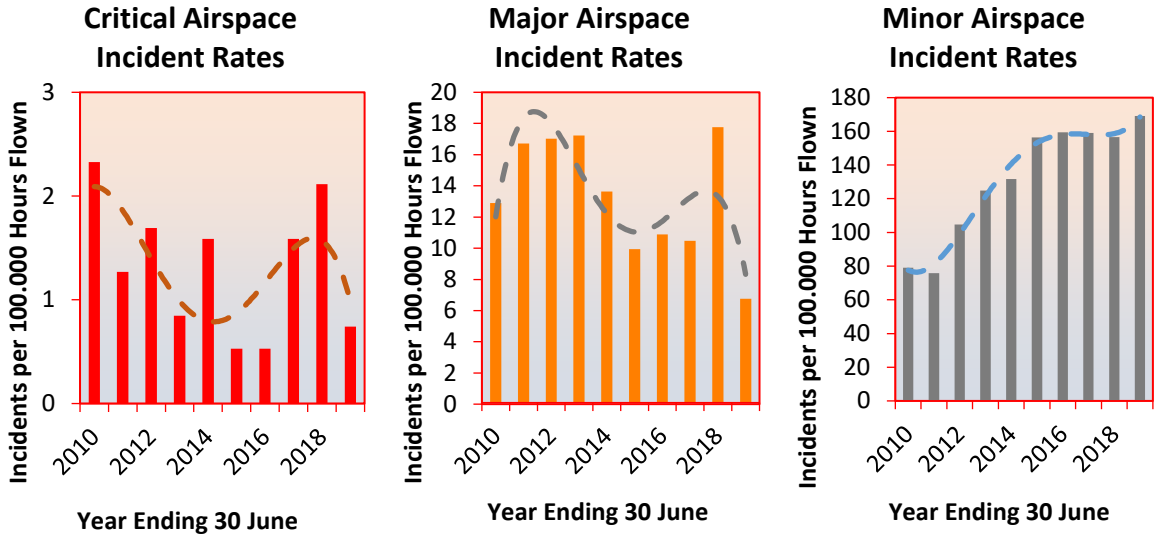
The following graphs show the reported annual airspace incident rates (incidents per 100,000 hours flown) for the ten one-year periods ending 30 June 2019 (excluding the Sport Aircraft category). The graphs do not differentiate between incidents that are pilot or ATS attributable.

Breakdown by Aircraft Category



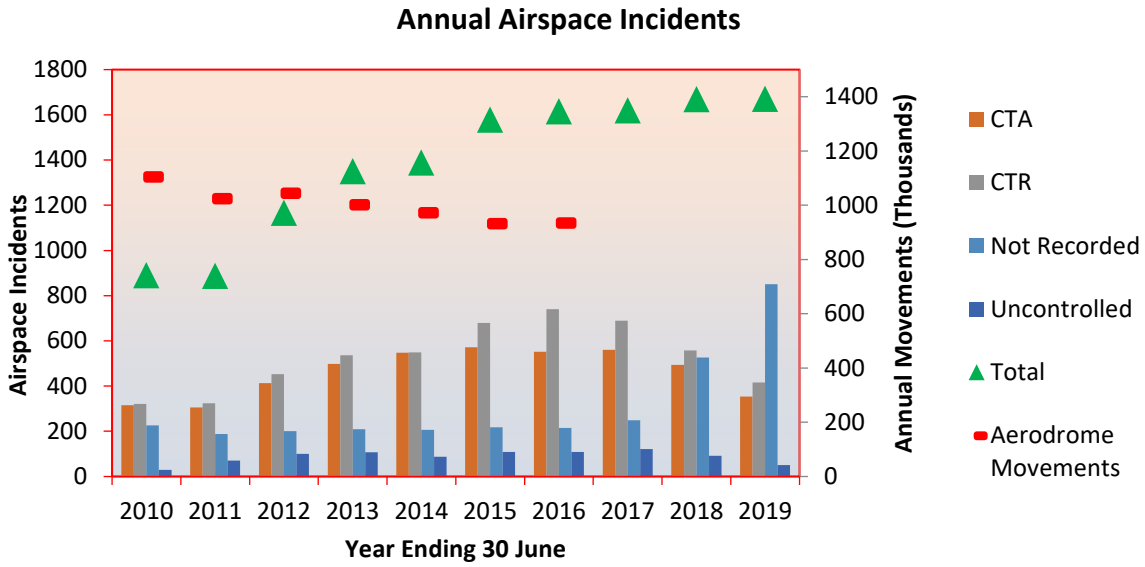


Breakdown by Severity



Breakdown by Airspace Designation

(Counts not Rates)



After June 2011 a sudden onset of a steady increase in the total numbers of reported airspace incidents is evident. This was in an environment of a steady but slower decrease in the reported number of aerodrome movements. No single underlying cause for this increase has been identified, although Airways Corporation began several safety enhancement training initiatives around this time.

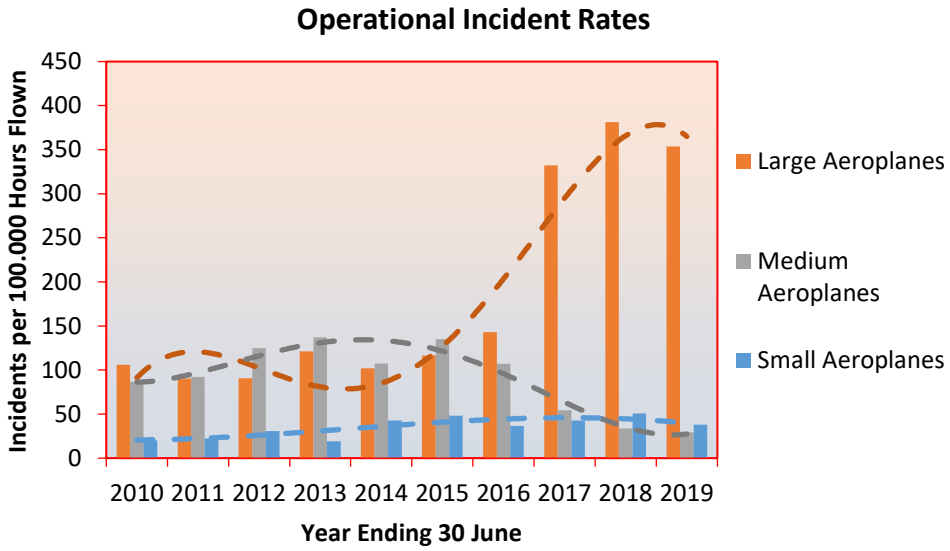
Breakdown of Airspace Incidents in Control Zones by Aerodrome

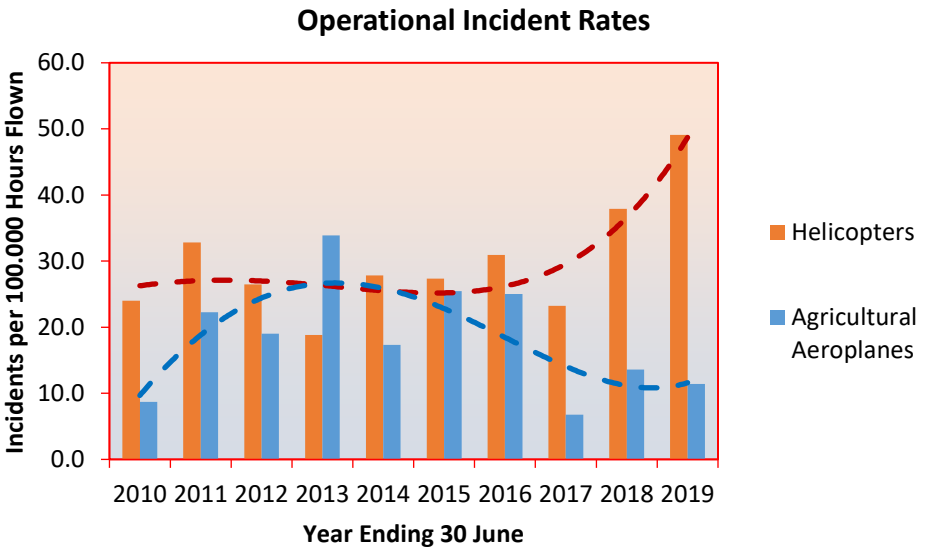
Aerodrome	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Hamilton	48	60	119	164	95	163	162	157	95	89
Auckland	37	39	36	50	49	71	96	84	56	40
Christchurch	27	30	36	36	66	71	83	73	76	46
Tauranga	14	26	43	47	73	67	83	35	28	37
Wellington	32	32	46	28	33	27	57	53	27	27
Queenstown	22	27	35	30	35	64	42	60	60	24
Nelson	27	18	29	20	19	29	34	41	28	27
Palmerston North	22	23	24	37	47	50	33	27	49	18
Dunedin	15	9	20	33	29	42	31	35	31	24
Rotorua	13	18	20	7	15	10	22	16	16	17
Woodbourne	25	14	5	17	17	17	23	22	13	7
Napier	8	5	10	17	16	17	20	21	14	18
Gisborne	4	5	1	13	9	9	16	9	15	12
Ohakea	7	3	10	11	14	11	14	4	5	4
Whenuapai	6	4	7	13	9	12	8	10	4	1
Invercargill	5	3	1	3	5	3	7	9	7	7
New Plymouth	7	6	4	5	11	8	3	8	13	4

Operational (Aircraft) Incidents

The following graphs show the reported annual operational incident rates (incidents per 100,000 hours flown) for the ten-year period ending 30 June 2019.

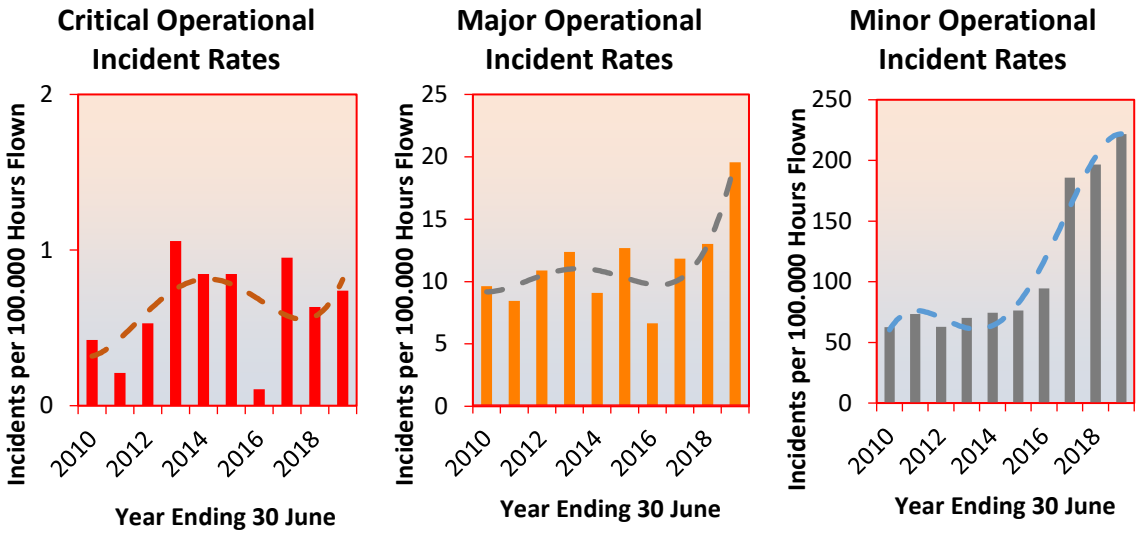
Breakdown by Aircraft Category





Breakdown by Severity

These charts cover all operational incidents regardless of the category of the aircraft involved. The previous section omitted incidents where the aircraft were sport aircraft or the category was not recorded.



Number of Incidents

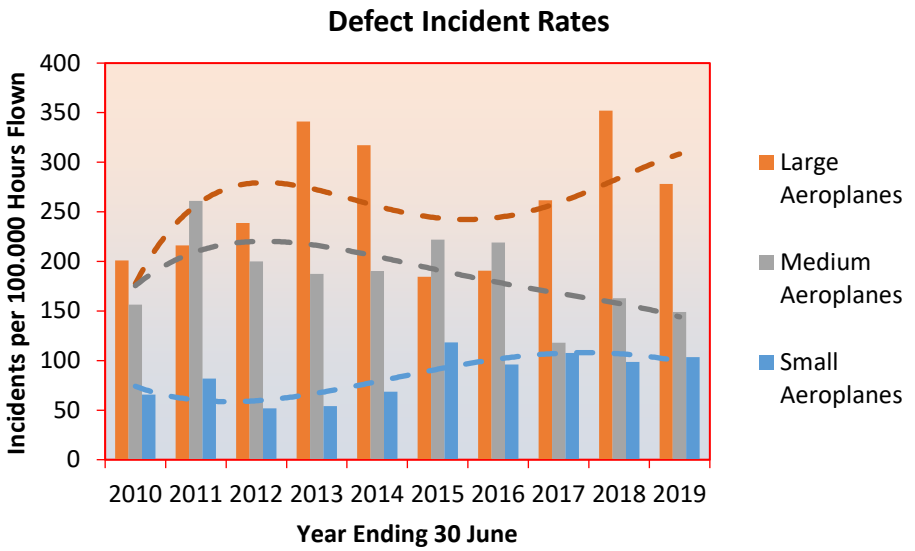
The following table shows, for each safety target group, the number of operational incidents each year for the last ten one-year periods ending 30 June 2019. All aircraft types are included. The table is sorted by the number of incidents in the year ending June 2019.

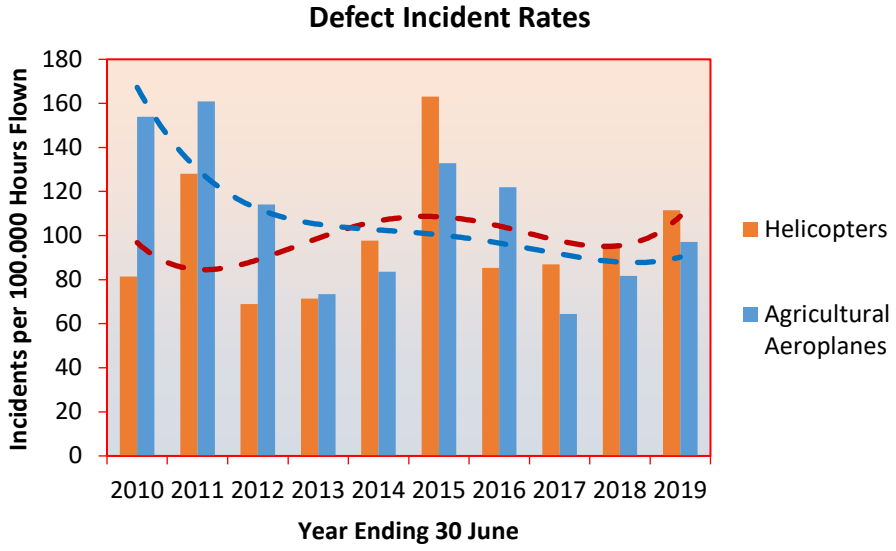
Safety Outcome Target Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Airline Operations - Large Aeroplanes	333	323	323	457	396	450	547	1256	1465	**1364**
Airline Operations - Medium Aeroplanes	46	43	74	74	57	57	38	13	19	**22**
Airline Operations - Small Aeroplanes	8	11	11	2	9	11	12	11	22	**18**
Airline Operations - Helicopters	10	20	6	11	18	5	2	6	11	**8**
Sport Transport	2	5	16	32	46	29	23	115	141	**137**
Other Commercial Operations - Aeroplanes	53	59	78	58	87	93	77	102	81	**85**
Other Commercial Operations - Helicopters	18	25	37	17	19	39	53	28	43	**81**
Other Commercial Operations - Sport	1	0	1	7	5	18	21	10	0	**3**
Agricultural Operations - Aeroplanes	3	9	9	12	4	9	7	3	4	**3**
Agricultural Operations - Helicopters	11	11	5	8	9	5	2	7	15	**14**
Private Operations - Aeroplanes	14	10	22	11	24	19	30	10	15	**15**
Private Operations - Helicopters	3	7	7	4	3	2	2	5	2	**0**
Private Operations - Sport	25	18	47	58	68	53	28	36	16	**10**
Other	18	127	53	25	40	55	108	268	93	**27**
None	142	107	13	16	14	5	8	8	31	**501**
Total	**687**	**775**	**702**	**792**	**799**	**850**	**958**	**1878**	**1958**	**2288**

Defect Incidents

The following graphs show the aircraft defect incident reporting rates (incidents reported per 100,000 hours flown) for the ten-year period ending 31 December 2016.

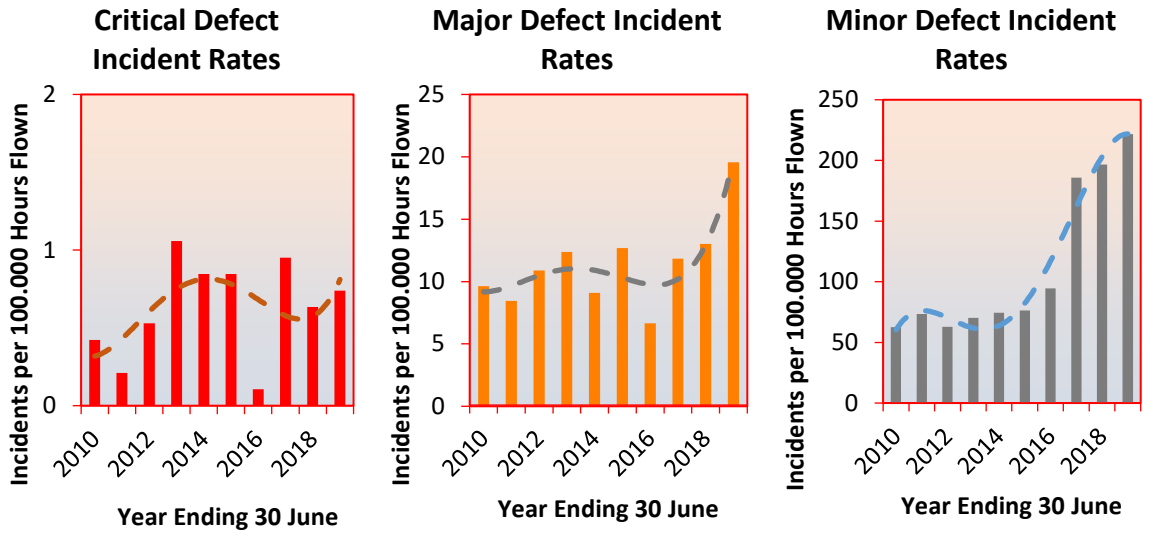
Breakdown by Aircraft Category





Breakdown by Severity

These charts cover all operational incidents regardless of the category of the aircraft involved. The previous section omitted incidents where the aircraft were sport aircraft or the category was not recorded.



Number of Incidents

The following table shows, for each safety target group, the number of defect incidents each year for the last ten one-year periods ending 30 June 2019. All aircraft types are included.

Safety Outcome Target Group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Airline Operations - Large Aeroplanes	620	700	794	1155	1090	630	657	951	1292	**1004**
Airline Operations - Medium Aeroplanes	66	117	111	97	77	70	37	19	29	**20**
Airline Operations - Small Aeroplanes	48	80	33	41	26	25	29	27	35	**44**
Airline Operations - Helicopters	60	78	26	54	27	5	1	18	11	**7**
Sport Transport	1	8	5	11	4	1	0	9	11	**2**
Other Commercial Operations - Aeroplanes	143	185	133	146	154	261	250	279	200	**248**
Other Commercial Operations - Helicopters	46	109	82	57	94	281	152	143	151	**188**
Other Commercial Operations - Sport	0	0	1	0	3	1	4	2	3	**2**
Agricultural Operations - Aeroplanes	44	65	47	29	29	53	41	21	33	**44**
Agricultural Operations - Helicopters	13	29	19	27	25	6	2	9	21	**20**
Private Operations - Aeroplanes	65	33	33	30	35	45	29	29	38	**34**
Private Operations - Helicopters	17	26	12	12	26	15	7	10	3	**7**
Private Operations - Sport	30	27	38	19	17	16	21	16	25	**19**
Other	17	35	15	23	48	25	19	47	34	**15**
None	69	24	14	12	10	10	11	11	13	**32**
Total	**1239**	**1516**	**1363**	**1713**	**1665**	**1444**	**1260**	**1591**	**1899**	**1686**

Occurrences — General

The following table shows the number of occurrences (excluding Non-Reportable Occurrences) that were registered on the CAA database during each of the 12 months of the reporting period.

Month	ACC	ADI	ARC	ASP	BRD	DEF	DGD	HGA	INC	NIO	PAA	PIO	SEC
Jul-2018	5	25	100	127	122	180	10	1	171	2	0	2	3
Aug-2018	3	21	100	114	124	172	5	1	138	8	1	5	6
Sep-2018	6	22	131	111	111	127	4	0	113	4	2	2	2
Oct-2018	8	9	134	159	123	177	4	3	150	1	1	4	1
Nov-2018	3	12	113	149	130	111	3	1	196	6	2	0	1
Dec-2018	4	17	72	117	100	103	4	1	144	7	1	0	1
Jan-2019	10	24	112	163	77	168	5	5	170	8	1	2	0
Feb-2019	7	12	148	155	160	144	7	3	142	5	3	0	1
Mar-2019	8	26	149	148	117	150	17	4	403	3	4	3	3
Apr-2019	5	10	99	139	118	104	5	0	215	8	1	1	1
May-2019	7	23	105	165	196	148	5	1	196	9	3	2	2
Jun-2019	6	16	122	124	190	128	6	0	152	4	1	1	4

ACC Accident
ADI Aerodrome Incident
ARC Aviation Related Concern
ASP Airspace Incident
BRD Bird Incident
CSI Cargo Security Incident
DEF Defect Incident
DGD Dangerous Goods Incident
HGA Hang Glider Accident
INC Aircraft (Operational) Incident
NIO Facility Malfunction Incident
PAA Parachute Accident
PIO Promulgated Information Incident
SEC Security Incident

Appendix — Definitions

General

Accident [ACC] — means an occurrence that is associated with the operation of an aircraft and takes place between the time any person boards the aircraft with the intention of flight and such time as all such persons have disembarked and the engine or any propellers or rotors come to rest, being an occurrence in which–

(1) a person is fatally or seriously injured as a result of–

(i) being in the aircraft; or

(ii) direct contact with any part of the aircraft, including any part that has become detached from the aircraft; or

(iii) direct exposure to jet blast–

except when the injuries are self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to passengers and crew; or

(2) the aircraft sustains damage or structural failure that–

(i) adversely affects the structural strength, performance or flight characteristics of the aircraft; and

(ii) would normally require major repair or replacement of the affected component–

except engine failure or damage that is limited to the engine, its cowlings, or accessories, or damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents, or puncture holes in the aircraft skin; or

(3) the aircraft is missing or is completely inaccessible.

Aerodrome incident [ADI] — means an incident involving an aircraft operation and–

(1) an obstruction either on the aerodrome operational area or protruding into the aerodrome obstacle limitation surfaces; or

(2) a defective visual aid; or

(3) a defective surface of a manoeuvring area; or

(4) any other defective aerodrome facility.

Aircraft incident [INC] — means any incident, not otherwise classified, associated with the operation of an aircraft.

Airspace incident [ASP] — means an incident involving deviation from, or shortcomings of, the procedures or rules for–

(1) avoiding a collision between aircraft; or

(2) avoiding a collision between aircraft and other obstacles when an aircraft is being provided with an Air Traffic Service.

Bird incident [BRD] — means an incident where–

(1) there is a collision between an aircraft and one or more birds; or

(2) when one or more birds pass sufficiently close to an aircraft in flight to cause alarm to the pilot.

Cargo security incident [CSI] — means an incident involving cargo or mail that is carried, or has been accepted by a regulated air cargo agent or an air operator for carriage, by air on an aircraft conducting an international regular air transport operation passenger service, and–

(1) there is evidence of tampering or suspected tampering with the cargo or mail which could be an act or an attempted act of unlawful interference; or

(2) a weapon, explosive, or other dangerous device, article or substance, that may be used to commit an act of unlawful interference is detected in the cargo or mail.

Dangerous goods incident [DGD] — means an incident associated with and related to the carriage of dangerous goods by air after acceptance by the operator, that–

(1) results in injury to a person, property damage, fire, breakage, spillage, leakage of fluid or radiation, or other evidence that the integrity of the packaging has not been maintained; or

(2) involves dangerous goods incorrectly declared, packaged, labelled, marked, or documented.

Defect incident [DEF] — means an incident that involves failure or malfunction of an aircraft or aircraft component, whether found in flight or on the ground.

Facility malfunction incident [NIO] — means an incident that involves an aeronautical facility.

Fatal Injury — means any injury which results in death within 30 days of the accident.

Incident — means any occurrence, other than an accident, that is associated with the operation of an aircraft and affects or could affect the safety of operation. Note: Incident has many sub-categories.

Occurrence — means an accident or incident.

Promulgated information incident [PIO] — means an incident that involves significantly incorrect, inadequate, or misleading information or aeronautical data promulgated in an aeronautical information publication, map, chart, or otherwise provided for the operation of an aircraft.

Security incident [SEC] — means an incident that involves unlawful interference.

Serious Injury — means any injury that is sustained by a person in an accident and that–

(1) requires hospitalisation for more than 48 hours, commencing within 7 days from the date the injury was received; or

(2) results in a fracture of any bone, except simple fractures of fingers, toes, or nose; or

(3) involves lacerations which cause severe haemorrhage, nerve, muscle, or tendon damage; or

(4) involves injury to an internal organ; or

(5) involves second or third degree burns, or any burns affecting more than 5% of the body surface; or

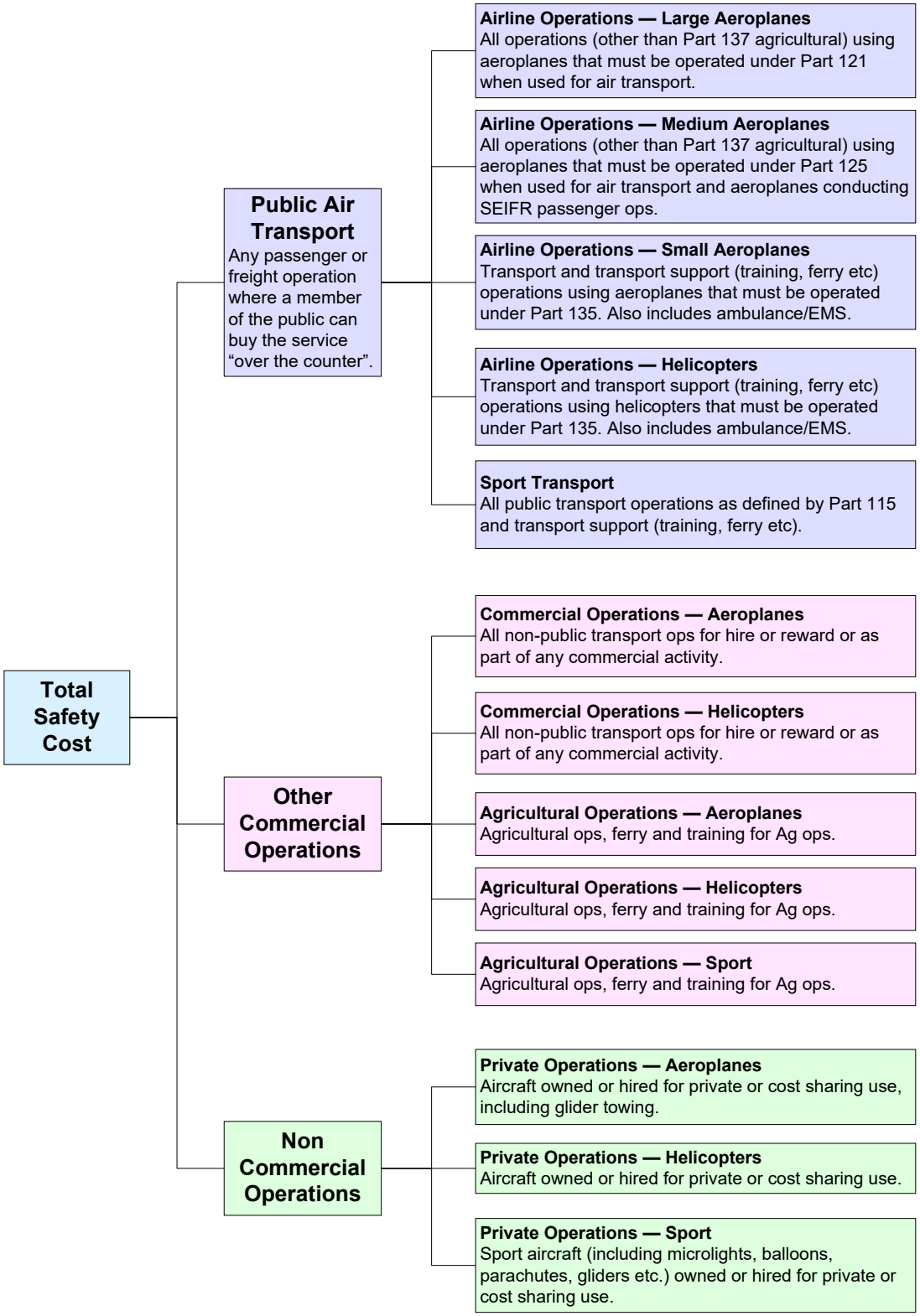
(6) involves verified exposure to infectious substances or injurious radiation.

Severity

The following definitions apply to the severity accorded to occurrences and to findings as the result of investigation of occurrences.

Severity Factor		Definition
CR	Critical	An occurrence or deficiency that caused, or on its own had the potential to cause, loss of life or limb;
MA	Major	An occurrence or deficiency involving a major system that caused, or had the potential to cause, significant problems to the function or effectiveness of that system;
MI	Minor	An isolated occurrence or deficiency not indicative of a significant system problem.

Safety Target Groups



Target group name	General description	Includes	Excludes
Airline Operation - Large Aeroplanes	All operations using large passenger and freight aeroplanes that are operated under part 121	Ferry, test, training, passenger and freight, domestic and international, Part 91 operations, and commercial operations other than Part 137 agricultural operations. Includes all aeroplanes that have a passenger seating configuration of 30 seats or more, or a payload capacity of more than 3410kg.	Part 137 agricultural operations
Airline Operation - Medium aeroplanes	All operations using medium passenger and freight aeroplanes that are operated under part 125.	Ferry, test, training, passenger and freight, domestic and international, Part 91 operations, and commercial operations other than Part 137 agricultural operations. Aeroplanes that have a seating configuration of 10 to 30 seats, excluding any required crew member seats, or a payload capacity of 3410 kg or less and a MCTOW of greater than 5700 kg, and any aeroplanes conducting SEIFR passenger operations.	Part 137 agricultural operations
Airline Operation - Small aeroplanes	All operations by 119 certificate holders using other aeroplanes.	Ferry, test, passenger and freight, domestic and international, training in support of Part 135 operations, Ambulance/EMS	Part 137 agricultural operations, Part 91 operations, and commercial operations. SEIFR under Part 125
Airline Operation - Helicopters	All operations by 119 certificate holders using helicopters	Ferry, test, passenger and freight, domestic and international, training in support of Part 135 operations, Ambulance/EMS	Part 137 agricultural operations, Part 91 operations, and commercial operations. SEIFR under Part 125

Target group name	General description	Includes	Excludes
Commercial Operations - Aeroplane	Other commercial operations Aeroplane (all non-public transport ops for hire or reward or as part of any commercial activity)	Positioning, ferrying flights, training (dual and solo), "Commercial non-certified", Business and Executive	Public transport ops, Agricultural ops & training for Agricultural ops, non-commercial ops
Commercial Operations - Helicopter	Other commercial operations Helicopter (all non-public transport ops for hire or reward or as part of any commercial activity)	Positioning, ferrying flights, training (dual and solo), "Commercial non-certified", Business and Executive	Agricultural ops & training for Agricultural ops, public transport, non-commercial ops.
Agricultural Operations - Aeroplane	Agricultural operations using aeroplanes	Agricultural ops, ferry & training for Ag ops.	Everything else.
Agricultural Operations - Helicopters	Agricultural operations using helicopters	Agricultural ops, ferry & training for Ag ops.	Everything else
Agricultural Operations - Sport Aircraft	Agricultural operations using sport aircraft	Agricultural ops, ferry & training for Ag ops.	Everything else
Private Aeroplane	Private operations in aeroplanes	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use, glider towing	Airline, commercial, agricultural operations, sport aircraft, balloons, training (dual and solo)
Private Helicopter	Private operations in helicopters	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use	Airline, commercial, agricultural operations, sport aircraft, balloons, training, ferry/positioning flights by commercial operators

Target group name	General description	Includes	Excludes
Sport Transport	All public transport ops by sport aircraft	Ferry, test, passenger and freight, domestic and international, training for such ops. And balloons	Agricultural operations.
Sport Private	Private operations using sport aircraft	Cost sharing, aircraft hired from schools and clubs for private or cost sharing use, training, gliders, power gliders, hang gliders, parachutes and all forms of inflatable wing, balloons	Airline, commercial, agricultural operations, and training for these activities

Aircraft Categories

Aircraft Statistics Category	Definition	**Aircraft Class**
Large Aeroplanes	Aeroplanes that must be operated under Part 121 when used for air transport	Aeroplane
Medium Aeroplanes	Aeroplanes that must be operated under Part 125 when used for air transport, except for those required to operate under Part 125 solely due to operating SEIFR	Aeroplane
Small Aeroplanes	Other Aeroplanes with Standard Category Certificates of Airworthiness	Aeroplane
Agricultural Aeroplanes	Aeroplanes with Restricted Category Certificates of Airworthiness limited to agricultural operations	Aeroplane
Helicopters	Helicopters with Standard or Restricted Category Certificates of Airworthiness	Helicopter
Sport Aircraft	All aircraft not included in the groups above	Aeroplane, Amateur Built Aeroplane, Amateur Built Glider, Amateur Built Helicopter, Balloon, Glider, Gyroplane, Helicopter, Microlight Class 1, Microlight Class 2, Power Glider

Significant Events

The following text is taken from the procedure SI - 0.0 Occurrence Management, 0.08 - Occurrence completion:

To facilitate in deciding whether or not your investigation file should be "tagged" as a "Significant Event" here are some occurrences that substantially meet the criteria.

- ✧ Occurrences that are investigated by TAIC unless it is known that the TAIC are using the event for their own training purposes and would not otherwise be investigating.
- ✧ Critical air transport occurrences resulting in Near Collision (provided one of the aircraft involved is airborne, nearly airborne, or has just landed). In cases where an aircraft is landing or taking off the event would not be significant unless the aircraft's speed was in excess of 10 kts.
- ✧ Critical air transport occurrences resulting in Loss of Control
- ✧ Critical air transport occurrences where a Distress or Urgency call was (or should have been) made
- ✧ Air transport occurrences where the last in a series of "redundant" systems failed in flight or during take off or landing
- ✧ SEIFR air transport occurrences involving loss of engine power to the extent that an unscheduled landing is required
- ✧ Fatal accidents
- ✧ Occurrences that are relevant to a current (group) of safety concerns. For example in 1999/2000 aircraft electrical wiring was a significant international concern therefore occurrences in the New Zealand fleet of electrical wiring problems may warrant them being tagged as significant.
- ✧ Occurrences that are relevant to the current CAA (Business) Safety Plan. For the 1999/2000-year collision with terrain, obstacles, and water; controlled flight into terrain and loss of control in flight were relevant for aircraft with a MCTOW of 5,670 kg and above.
- ✧ Engine failure in 2-plus engined air transport aircraft at critical phases of flight or failures of a nature that may have a fleet impact or significantly affect safe operations or are subject to media scrutiny.
- ✧ Significant structural or engine failure of a private GA aircraft/helicopter that may have implications for the fleet type, particularly where that type is used for air transport operations.

Serious Events

The following text is taken from the procedure SI - 2.0 Safety Investigation - Appendices, 2.02 Appendix B - Aviation Occurrence Notification Checklist:

"Serious incident" means an incident involving circumstances indicating that an accident nearly occurred. The difference between an accident and serious incident lies only in the result (ICAO Annex 13 definition). The serious incidents listed below are extracted from ICAO Annex 13 attachment D. The list is not exhaustive and only serves as guidance to the definition of serious incident.

(a) Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.

(b) Controlled flight into terrain only marginally avoided.

(c) Aborted take-off on a closed or engaged runway.

(d) Take-off from a closed or engaged runway with marginal separation from obstacle(s).

(e) Landings or attempted landings on a closed or engaged runway.

(f) Gross failures to achieve predicated performance during take-off or initial climb.

(g) Fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents.

(h) Events requiring the emergency use of oxygen by the flight crew.

(i) Aircraft structural failures or engine disintegration's not classified as an accident.

(j) Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.

(k) Flight crew incapacitation in flight.

(l) Fuel quantity requiring the declaration of an emergency by the pilot.

(m) Take-off or landing incidents. Incidents such as undershooting, overrunning or running off the side of runways.

(n) System failures, weather phenomena, operations outside the approved flight envelope or other occurrences, which could have caused difficulties controlling the aircraft.

(o) Failures of more than one system in a redundancy system mandatory for flight guidance and navigation.

Safety Failure

We have taken a Safety Failure as:

- an accident including hang glider and parachute or
- an incident where the aircraft is written off, destroyed or missing or
- a critical or major incident or
- an incident that has any of the following 31 selected descriptors, most of which relate to collision, serious landing outcomes, serious aircraft technical or operational failures or acts of violence

INJURIES TO PERSONS
FUEL/FLUIDS OCCURRENCE
LANDING OVERRUN
RUNWAY EXCURSION
General Breakup/disintegration
COLLISION/STRIKE OBJECT
Collision Level Terrain/water
Collision Hill/mountain
COLLISION WITH AIRCRAFT ON GROUND
DAMAGE TO AIRCRAFT
ENGINE POWER LOSS
Uncontained Failure
Engine Tearaway
PROPELLOR FAILURE
Propellor Separation
Propellor Runaway
FIRE/EXPLOSION/FUMES
Explosion
Struck By Propellor/rotor/jet Blast
TAKE-OFF OR LANDING
Landing Beside Runway
Undershoot
Overrun
Unintentional Wheels Up Landing
Nose Down/overturned
Critically Low Or Exhausted
Contaminated
Incorrect Type
ACT OF VIOLENCE
Aircraft excursion
Collision

Close Call

We have defined a Close Call as an incident that is not a safety failure but that has any of the following 112 selected descriptors that support the assumption that failure would have been the outcome if either the condition had escalated or adequate compensating action had not been taken.

ENGINE(S) SHUTDOWN
SIGNIFICANT LOSS OF CONTROL/PERFORMANCE
AVOIDING ACTION
OVERWEIGHT LANDING
ABNORMAL LANDING
AIRFRAME FAILURE
Initial Failure Of Control Surface
Initial Failure Of Fuselage
Initial Failure Of Empennage
Initial Failure Of Wing
Initial Failure - Other
Aircraft Standing
Aerodrome Structure
Animal (not Bird)
Bird
Chimney/mast/pole
Ditch
Embankment
Fence/fence Post
Person
Building
Approach Lights
Taxiway/runway Lights
Tree
Vehicle
Wire/cable/powerline
Other
NEAR COLLISION /STRIKE OBJECT
NEAR COLLISION AIRCRAFT ON GROUND
NEAR COLLISION TERRAIN
Both Moving On Ground

COMPONENT/SYSTEM MALFUNCTION
Avionics
Brake
De-icing
Doors/panels
Electrical
Flight Controls
Fuel
Gear
Hydraulic
Instruments
Navigation System
Pneumatic
Pressurisation
Tyre/wheel
Main Rotor
Tail Rotor
Main Rotor Transmissions/gearbox
Maint Rotor Tail Shaft
Tail Rotor Drive Shaft
Struck By Propellor / Rotor / Jet Blast
Sinking Through Surface
Struck By Object
Struck By Stairs / Equipment
GEAR COLLAPSED/RETRACTED
Main Gear
Nose Gear
Complete Gear
Other Gear
LOSS OF CONTROL
Directional Control
Mush/stall
Spin
Spiral
Pitch Control (porpoise)
Other
LOSS OF CONTROL (HELICOPTER)
Dynamic Roll-over (heli)
Inadequate Rotor Rpm (heli)
Settling With Power (heli)
Uncontrolled Rotation (heli)
Other
Fuel Starvation
Mechanical/engine Failure
Non Mechanical Engine Failure
Simulated Engine Failure
Transmission Failure
Driveshaft Failure
Unspecified
Fire
Fumes/smoke
Other
EVACUATION
Insecure Barrier
Scraped Wingtip/cowling/float
Tail Scrape/overrotation
Groundloop/swerve
Hard Landing
Wheels Down Landing On Water
Intentional Wheels-up Landing
Intent Unknown Wheels-up Landing
MISSING AIRCRAFT
Fire/smoke/fumes
Gpws
FAILURE OF EMERGENCY EQUIP/PROCS
EMERGENCY DECLARATION
Incorrect Quantities Loaded
Airspace Incident
NEAR COLLISION
AIR PROXIMITY
Near Miss
Runway Incursion Category A
Runway Incursion Category B
SPILLAGE/LEAKAGE
FUMES/GAS/SMOKE
SABOTAGE
HIJACK/UNLAWFUL SEIZURE
BOMB/DEVICE WARNING/SCARE
Endangering transport
UNLAWFUL INTERFERENCE
Theft