Aviation Industry Safety Update

Policy and System Interventions Group

1 July to 31 December 2011

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Introduction

This report uses calendar years; the first quarter is 1 January to 31 March.

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

Occurrence Statistics

The "Three Year Moving Average" graphs in the Occurrence Analysis section give an indication of the levels of safety failure in New Zealand aviation during the period 1 January 2009 to 31 December 2011. They are constructed from data in the Civil Aviation Authority Management Information System, and use actual data reported to the CAA.

Industry Activity Statistics

Registered Aircraft

The following table summarises the number of aircraft on the register by Aircraft Category as at 31 December 2011 and 6 months prior:

Aircraft Category	30 Jun 2011		31 Dec 2011		Change	
	Number	Percent	Number	Percent	Number	Percent
Large Aeroplanes	128	2.9	127	2.8	- 1	- 0.8
Medium Aeroplanes	86	1.9	84	1.9	- 2	- 2.3
Small Aeroplanes	1,518	33.8	1,517	33.7	- 1	- 0.1
Agricultural Aeroplanes	110	2.4	109	2.4	- 1	- 0.9
Helicopters	765	17.0	767	17.0	2	0.3
Sport Aircraft	1,883	41.9	1,895	42.1	12	0.6
Total	**4,490**		**4,499**		**9**	**0.2**

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 at 31 December 2011 and 6 months prior:

Licence Type (Medical Certificate)	30 Jun 2011	31 Dec 2011	Change	
			Number	Percent
RPL (RPL Medical)	180	205	25	13.9
PPL (Class 1 & 2)	3,603	3,513	- 90	- 2.5
CPL (Class 2 only)	2,229	2,284	55	2.5
CPL (Class 1)	2,339	2,362	23	1.0
ATPL (Class 2 only)	909	962	53	5.8
ATPL (Class 1)	1,188	1,124	- 64	- 5.4
ATCL (Class 3)	361	362	1	0.3
LAME (N/A)	2,519	2,549	30	1.2
Total Licences	**13,328**	**13,361**	**33**	**0.2**

Note — the statistics above for pilot licences count only those with active class 1 or active class 2 medical certificates or, for RPL holders, a certificate, issued in accordance with the NZTA medical fitness standards that are applicable for a Class 2, 3, 4 or 5 driver licence with passenger endorsement. 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.
These statistics do not show the number of licence holders as each client may hold more than one licence.

Certificated Operators

The following tables show the number of Civil Aviation Rule Part certificate holders at 31 December 2011 and 6 months prior.

Rule Part	30 Jun 2011	31 Dec 2011	Change Number	Change Percent
Part 109 Regulated Air Cargo Agent	63	63	0	0
Part 115 Adventure Aviation Operator	0	1	1	-
Part 119 Air Operator	184	185	1	0.5
Part 129 Foreign Air Operator	33	30	- 3	- 9.1
Part 137 Agricultural Aircraft Operator	104	105	1	1.0
Part 139 Aerodromes	26	26	0	0
Part 140 Aviation Security Service	1	1	0	0
Part 141 Aviation Training Organisation	54	57	3	5.6
Part 141 Restricted Training Organisation	0	0	0	-
Part 145 Aircraft Maintenance Organisation	60	63	3	5.0
Part 146 Aircraft Design Organisation	14	14	0	0
Part 148 Aircraft Manufacturing Organisation	21	23	2	9.5
Part 149 Aviation Recreation Organisation	9	8	- 1	- 11.1
Part 171 Aeronautical Telecommunication Service Organisation	2	2	0	0
Part 172 Air Traffic Service	1	2	1	100.0
Part 173 Instrument Flight Procedure Service Organisation	3	3	0	0
Part 174 Meteorological Service Organisation	2	2	0	0
Part 175 Aeronautical Information Service Organisation	1	1	0	0
Part 19 Supply Organisation Certificate of Approval	58	60	2	3.4
Part 92 Dangerous Goods Packaging Approval	65	57	- 8	- 12.3

Note: For organisations with Part 92 and for those with Part 172 certificates the figures show the total number of approvals held.

119 Air Operator	30 Jun 2011	31 Dec 2011	Change Number	Change Percent
Part 108 Security Programme	17	18	1	5.9
Part 121 Large Aeroplanes	9	9	0	0
Part 125 Medium Aeroplanes	15	15	0	0
Part 135 Helicopters and Small Aeroplanes	174	175	1	0.6

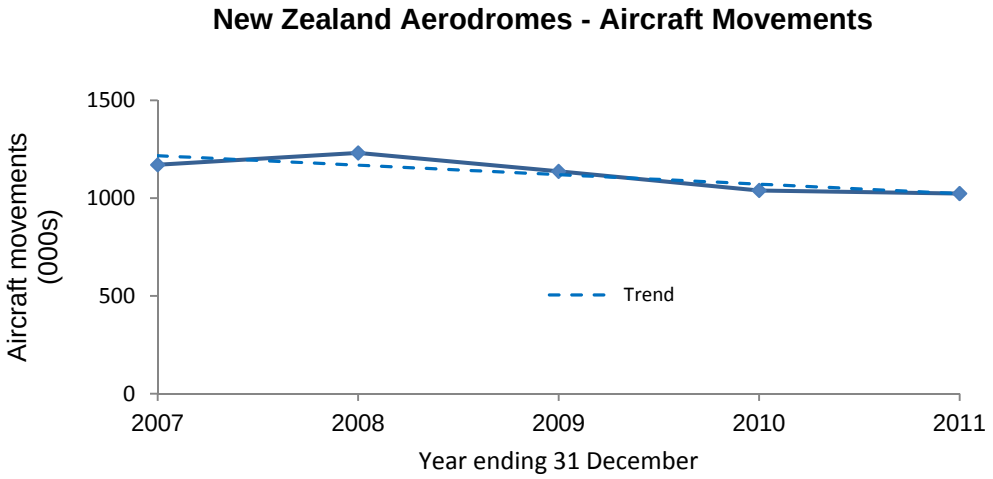
129 Foreign Air Operator	30 Jun 2011	31 Dec 2011	Change Number	Change Percent
Part 108 Security Programme	25	21	-4	- 16.0

Aircraft Movements

The following graph and table show the number of aircraft movements 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. These figures are as reported to CAA by Airways Corporation and Taupo Airport.

Long-Term Change in Aircraft Movements

The following graph shows the annual number of aircraft movements for the five-year period 1 January 2007 to 31 December 2011.



The average annual decrease in the number of aircraft movements was 3.3% from the year ended 31 December 2007 until the year ended 31 December 2011 during which 1,023,472 movements were recorded.

The average annual increase in the number of aircraft movements has been 0.6% from the year ended 30 June 2007 until the year ended 30 June 2011 during which 1,023,318 movements were recorded.

Six-Monthly Comparison

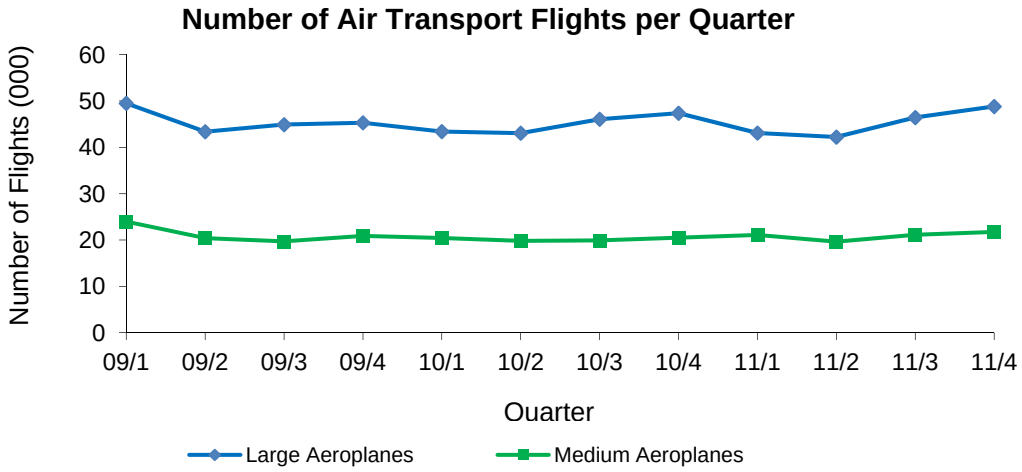
Number of Aircraft Movements

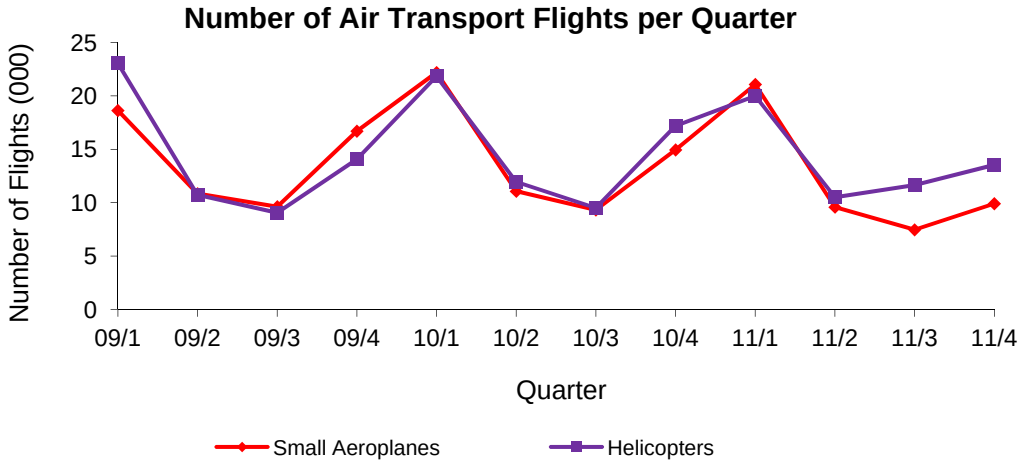
Activity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change Number	Change Percent
Aircraft Movements	509,155	523,984	14,829	2.9

Air Transport Flights

Note that these graphs exclude the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes, and foreign registered aircraft that are operated in New Zealand.

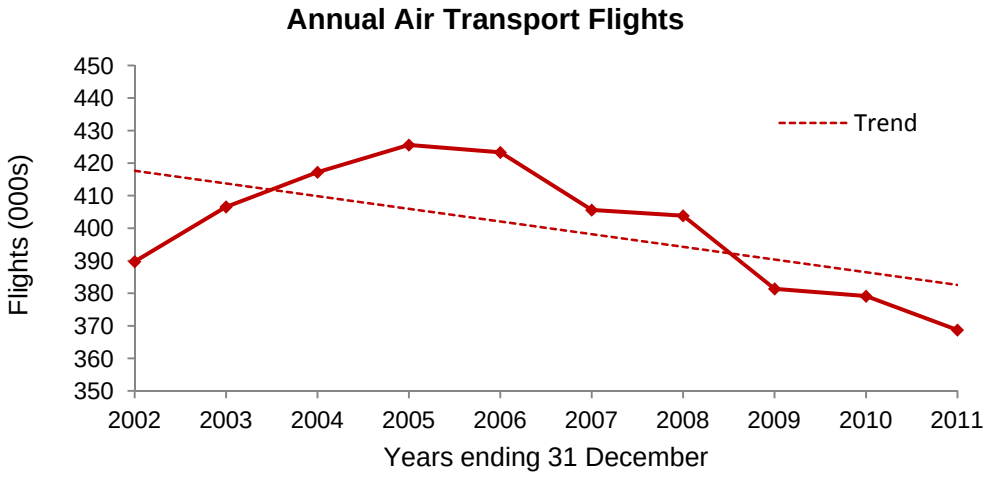
The following graphs show the estimated number of air transport flights per quarter during the three year period ending 31 December 2011. The estimates are based on the reported numbers of flights with an allowance for aircraft for which reports were not received.





Long-Term Change in Air Transport Flights

The following graph shows the number of air transport flights (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period ending 31 December 2011.



The change in the estimated number of annual air transport flights between the years ended 31 December 2002 and 31 December 2011 is equivalent to an annual decrease of 0.6%.

Six-Monthly Comparison

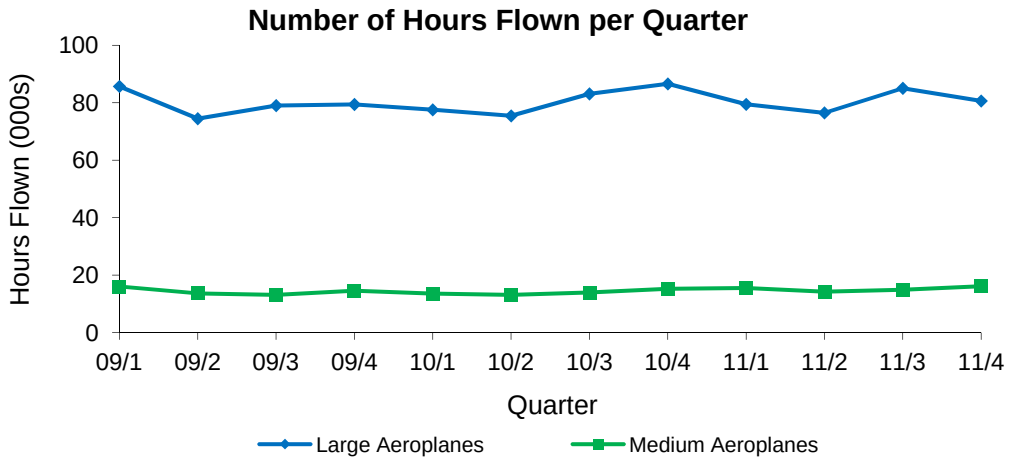
Number of Air Transport Flights

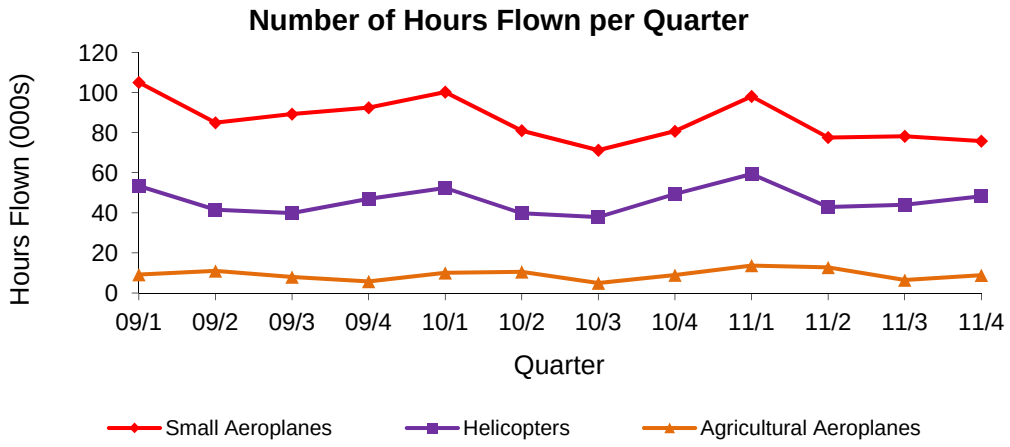
Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change Number	Change Percent
Large Aeroplanes	93,438	95,240	1,802	1.9
Medium Aeroplanes	40,414	42,878	2,464	6.1
Small Aeroplanes	24,266	17,370	- 6,896	- 28.4
Helicopters	26,706	25,177	- 1,529	- 5.7
Sport Aircraft (Aeropl, FB, Helo only)	191	374	183	95.8
Total	**185,015**	**181,039**	**- 3,976**	**- 2.1**

Hours Flown

Note that these graphs exclude the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes, and foreign registered aircraft that are operated in New Zealand.

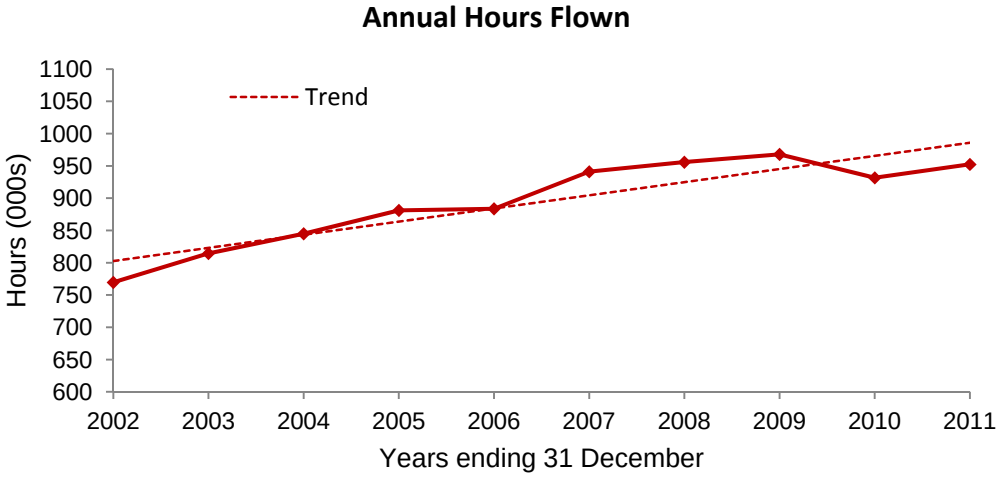
The following graphs show the estimated number of hours flown per quarter during the three year period ending 31 Dec 2011. The estimates are based on the reported hours with an allowance for aircraft for which reports were not received.





Long-Term Change in Hours Flown

The following graph shows the annual hours flown (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period ending 31 December 2011.



The change in the estimated number of annual hours flown between the years ended 31 December 2002 and 31 December 2011 is equivalent to an annual increase of 2.4%.

Six-Monthly Comparison

Number of Hours Flown by Safety Target Group

Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change	
			Number	Percent
Airline Operations - Large Aeroplanes	169,711	165,739	- 3,972	- 2.3
Airline Operations - Medium Aeroplanes	29,245	31,102	1,857	6.3
Airline Operations - Small Aeroplanes	17,831	18,188	357	2.0
Airline Operations - Helicopter	28,728	29,170	442	1.5
Sport Transport (Aeropl, FB, Helo only)	604	440	- 164	- 27.1
Other Commercial Operations - Aeroplane	116,925	120,537	3,613	3.1
Other Commercial Operations - Helicopter	22,444	26,655	4,211	18.8
Agricultural Operations - Aeroplane	13,636	16,163	2,527	18.5
Agricultural Operations - Helicopter	28,429	28,388	- 41	- 0.1
Agricultural Operations - Sport (Aeropl, FB, Helo only)	0	0	0	-
Private Operations - Aeroplane	17,768	14,806	- 2,962	- 16.7
Private Operations - Helicopter	7,624	8,049	426	5.6
Private Operations - Sport (Aeropl, FB, Helo only)	1,190	743	- 446	- 37.5
Total	**454,135**	**459,981**	**5,846**	**1.3**

Industry Size and Shape

The following table shows the size and shape of the aviation industry as determined from Aircraft Operating Statistics in the relevant 2010 Safety Target Group categories for the year ending 31 December 2011. For each Safety Target Group the total number of hours flown is multiplied by the average number of seats and the appropriate load factor, to give the number of seat hours utilised by the group (person exposure). For Safety Target Groups that are not predominantly passenger carrying a surrogate of 500 kg of aircraft weight is used instead of seat hours.

Aircraft Category	Average No. Of seats	Seat Hours Offered (000's)	Percent seat hours
Airline Operations - Large Aeroplanes	199.00	46737	96.1
Airline Operations - Medium Aeroplanes	20.59	752	1.5
Airline Operations - Small Aeroplanes	3.89	115	0.2
Airline Operations - Helicopter	3.60	136	0.3
Sport Transport *		84	0.2
Other Commercial Operations - Aeroplane	2.00	249	0.5
Other Commercial Operations - Helicopter	3.60	107	0.2
Agricultural Operations - Aeroplane	2.00	48	0.1
Agricultural Operations - Helicopter	3.60	88	0.2
Agricultural Operations - Sport *			
Private Operations - Aeroplane	2.00	43	0.1
Private Operations - Helicopter	3.60	36	0.1
Private Operations - Sport *		226	0.5

* most sport aircraft do not report hours or seats, so a standard estimate of seat hours offered is used as well as reported data for such aircraft in these groups.

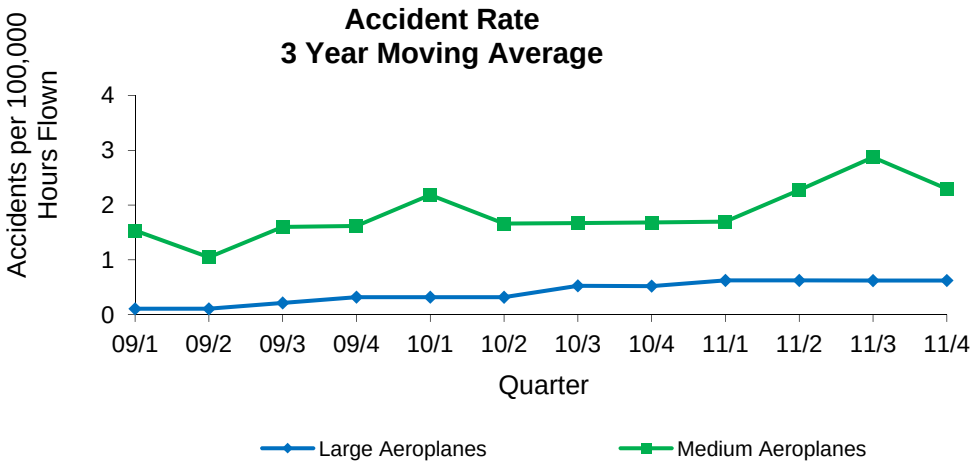
Note that the percentages may not sum exactly to 100.0% due to rounding.

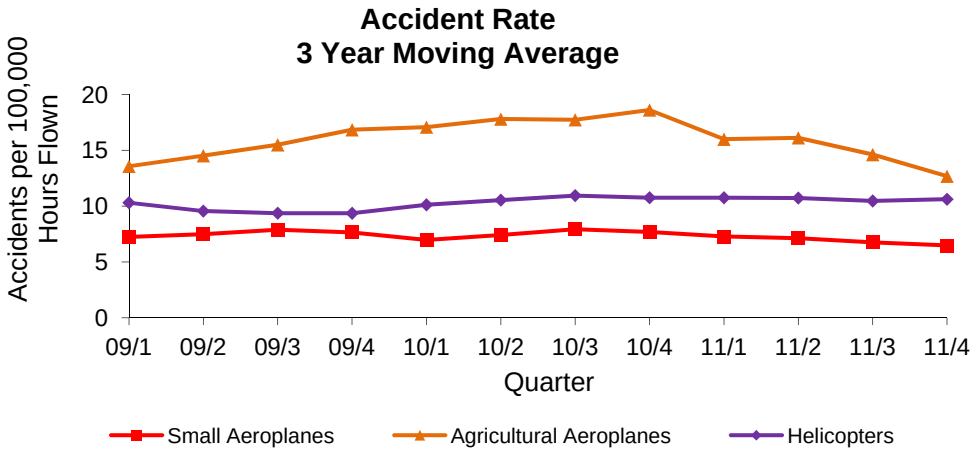
This table shows that approximately 96.1% of seat hours are offered by the Airline Operations – Large Aeroplanes group, around 1.5% by the Airline Operations – Medium Aeroplanes group, with the remaining 2.3% of seat hours offered being split between the other safety target groups.

Occurrence Analysis

Aircraft Accidents

The following graphs show the aircraft accident rates (accidents per estimated 100,000 hours flown) three year moving average for the three-year period ending 31 December 2011 (excluding the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes). Trends for each group are shown in the table on the following page.



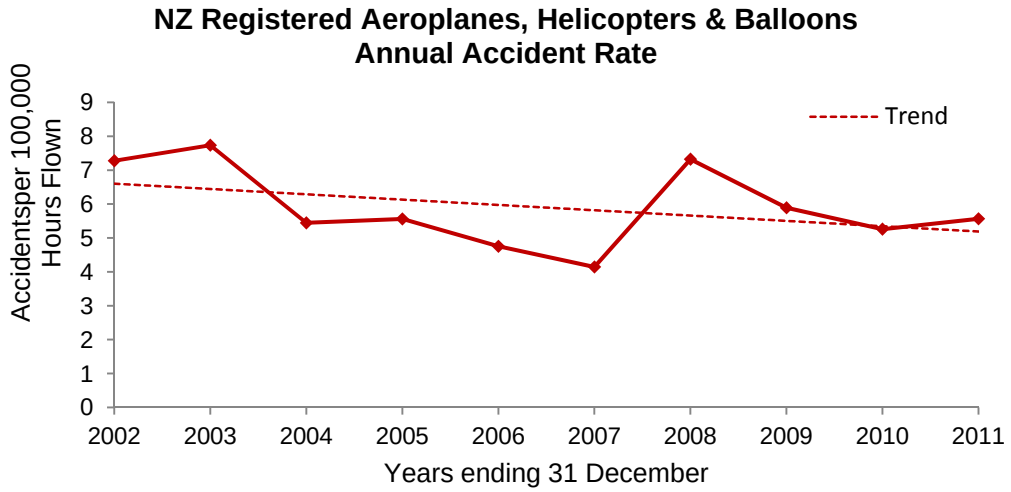


Accident Rate Trends

Aircraft Category	Straight Line Trend of 3 year moving Average
Large Aeroplanes	Trending up
Medium Aeroplanes	Trending up
Small Aeroplanes	Constant
Agricultural Aeroplanes	Constant
Helicopters	Constant

Long-Term Accident Rate

The following graph shows the overall annual accident rate per 100,000 hours flown (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period ending 31 December 2011.



Note that this graph does not show a moving average and because it also includes some but not all sport aircraft it is not appropriate to compare it to the graphs on the previous page.

Six-Monthly Comparison

Number of Aircraft Accidents

by Aircraft Category

Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change Number	Change Percent
Large Aeroplanes	2	0	- 2	-100.0
Medium Aeroplanes	0	1	1	...
Small Aeroplanes	10	10	0	0.0
Agricultural Aeroplanes	1	1	0	0.0
Helicopters	7	12	5	71.4
Sport Aircraft (excluding hang gliders and parachutes)	18	11	- 7	-38.9
Hang Gliders	4	1	- 3	-75.0
Parachutes	3	5	2	66.7
Unknown	0	1	1	...
Total	**45**	**42**	**- 3**	**-6.7**

by Aircraft Category and Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large Aeroplanes	Critical	0	0	0
	Major	1	0	- 1
	Minor	1	0	- 1
Medium Aeroplanes	Critical	0	0	0
	Major	0	1	1
	Minor	0	0	0
Small Aeroplanes	Critical	6	6	0
	Major	4	4	0
	Minor	0	0	0
Agricultural Aeroplanes	Critical	0	1	1
	Major	1	0	- 1
	Minor	0	0	0
Helicopters	Critical	7	9	2
	Major	0	3	3
	Minor	0	0	0
Sport Aircraft	Critical	8	6	- 2
(excluding hang gliders and parachutes)	Major	10	5	- 5
	Minor	0	0	0
Hang Gliders	Critical	0	1	1
	Major	1	0	- 1
	Minor	3	0	- 3
Parachutes	Critical	1	1	0
	Major	2	3	1
	Minor	0	1	1
Unknown	Critical	0	0	0
	Major	0	0	0
	Minor	0	1	1
Total	**Critical**	**22**	**24**	**2**
	Major	**19**	**16**	**- 3**
	Minor	**4**	**2**	**- 2**

Safety Target Structure

The 2010 Safety Targets have all New Zealand aviation classified 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. A diagram of the grouping is shown in the Definitions section.

Number of Accidents

The following table shows the number of accidents each year for the three years ending 31 December 2009, 2010 and 2011 and includes all aircraft types.

Safety Target group	2009	2010	2011
Airline Operations - Large Aeroplanes	3	2	2
Airline Operations - Medium Aeroplanes	1	1	2
Airline Operations - Small Aeroplanes	3	1	2
Airline Operations - Helicopter	3	2	2
Sport Transport	17	10	10
Other Commercial Operations - Aeroplane	9	16	8
Other Commercial Operations - Helicopter	3	6	10
Agricultural Operations - Aeroplane	3	4	6
Agricultural Operations - Helicopter	5	3	6
Private Operations - Aeroplane	15	4	8
Private Operations - Helicopter	6	8	5
Private Operations - Sport	52	48	44
Other	1	0	1
Total	**121**	**105**	**106**

The following table shows the number of accidents in six-monthly periods.

Safety Target group	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Airline Operations - Large Aeroplanes	2	1	- 1
Airline Operations - Medium Aeroplanes	0	1	1
Airline Operations - Small Aeroplanes	1	1	0
Airline Operations - Helicopter	0	1	1
Sport Transport	3	4	1
Other Commercial Operations - Aeroplane	8	4	- 4
Other Commercial Operations - Helicopter	3	6	3
Agricultural Operations - Aeroplane	1	1	0
Agricultural Operations - Helicopter	1	3	2
Private Operations - Aeroplane	1	4	3
Private Operations - Helicopter	3	2	- 1
Private Operations - Sport	22	14	- 8
Other	0	0	0

The following table displays the social cost in millions of dollars (2011) for each Safety Target Group for the 6-month periods 1 July to 31 December 2010 and 1 July to 31 December 2011. Social cost is the cost of fatal, serious and minor injuries, and aircraft destroyed.

Safety Outcome Target group	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Airline Operations - Large Aeroplanes	0.00	0.03	0.03
Airline Operations - Medium Aeroplanes	0.00	0.00	0.00
Airline Operations - Small Aeroplanes	0.00	0.17	0.17
Airline Operations - Helicopter	0.00	0.39	0.39
Sport Transport	0.81	0.81	0.00
Other Commercial Operations - Aeroplane	42.55	0.17	-42.38
Other Commercial Operations - Helicopter	7.70	12.64	4.94
Agricultural Operations - Aeroplane	0.00	0.00	0.00
Agricultural Operations - Helicopter	0.00	0.31	0.31
Agricultural Operations - Sport Aircraft	0.00	0.00	0.00
Private Operations - Aeroplane	0.00	4.63	4.63
Private Operations - Helicopter	2.94	0.00	-2.94
Private Operations - Sport	4.63	2.07	-2.56
Total	**58.62**	**21.20**	**-37.42**

Note that the individual values in the table may not sum exactly to the total shown due to rounding.

Safety Outcome Targets

Each target group had its own target level expressed as social cost per unit of passenger exposure, the unit being per seat hour. For target groups that are not predominantly passenger carrying a surrogate of 500 kg of aircraft weight is used instead of passenger exposure. These outcomes represent the maximum level of social cost considered acceptable for each group.

The table below shows the Safety Outcomes (in dollars per seat-hour) for the three year period ending 31 December 2011 (including the cost of aircraft destroyed). Target groups highlighted in yellow are groups where major safety improvements need to be achieved. Red outlining has been used to draw attention to groups with significant recent safety failure.

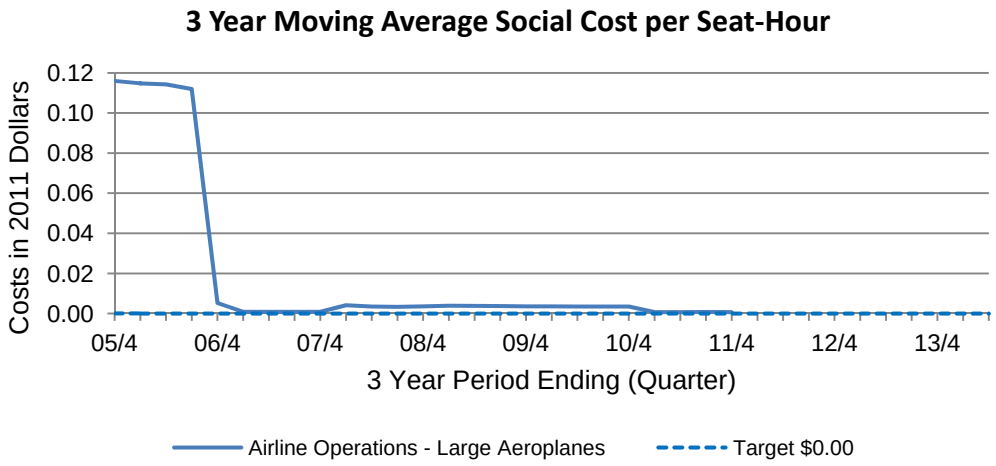
Safety Outcome Target group	Current * Estimate $	Target $
Airline Operations - Large Aeroplanes	0.001	0.000
Airline Operations - Medium Aeroplanes	0.02	0.02
Airline Operations - Small Aeroplanes	2.40	2.34
Airline Operations - Helicopter	5.29	6.50
Sport Transport	75.56	13.00
Other Commercial Operations - Aeroplane	59.25	6.50
Other Commercial Operations - Helicopter	99.22	6.50
Agricultural Operations - Aeroplane	13.86	14.00
Agricultural Operations - Helicopter	5.55	8.56
Agricultural Operations - Sport Aircraft	0.00	28.00
Private Operations - Aeroplane	81.73	10.00
Private Operations - Helicopter	69.68	10.00
Private Operations - Sport	81.35	20.00

* Current Estimate:

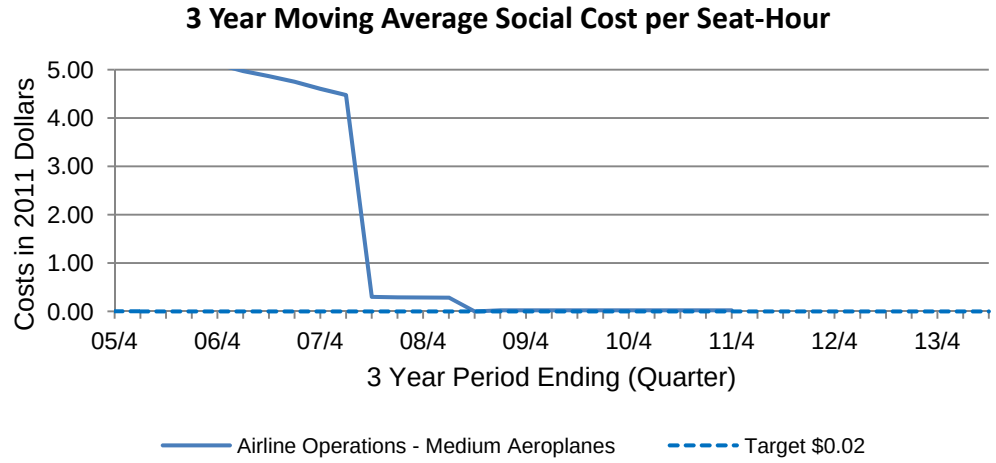
This is the estimated social cost of injuries and aircraft destroyed per seat hour for the three year period. Note: Aviation Safety reports prior to July to December 2008 used a 10 year averaging period for large and medium aeroplanes and a one year period for all others.

Safety Target Graphs

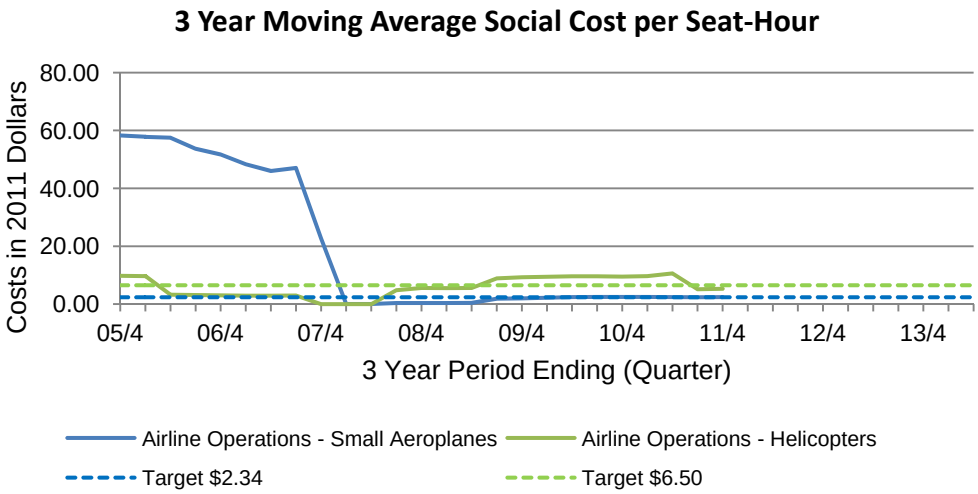
Graphs displaying the Safety Outcome Targets and the quarterly progress of Safety Outcomes derived using 3 year averages are shown on the following pages. These graphs span the period from 1 October 2005 when Social Cost targets were introduced to 30 June 2014 when the current targets are due for review.



The outcome for Airline Operations – Large Aeroplanes remained well below the initial target level of $0.10 per seat hour of exposure from late 2006 until the targets were revised in 2011. The new target appears on the graph as 0 but is actually $0.0034 and the current performance is significantly below the target. There is no significant recent trend either up or down. No fatal, no serious and 6 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

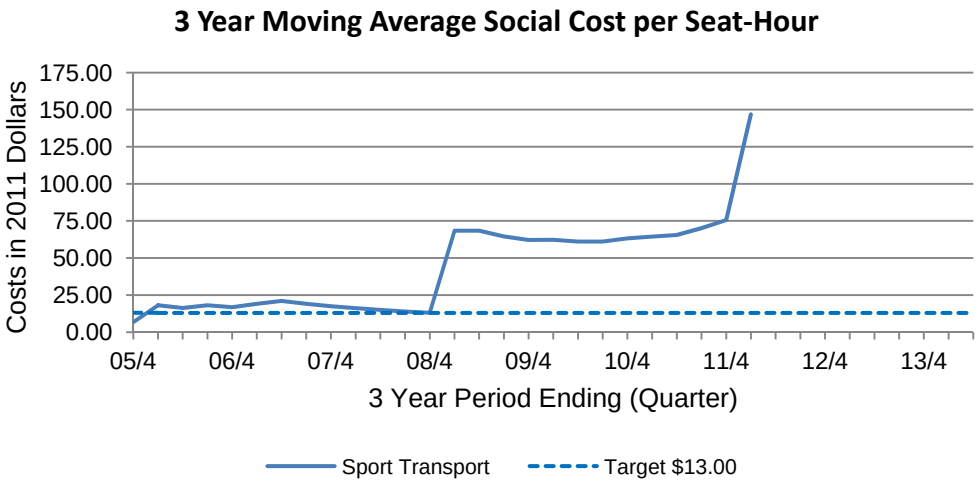


The outcome for Airline Operations – Medium Aeroplanes dropped below the initial target during the second quarter of 2009 and is trending down. The outcome is above the new target of $0.02 but, at 20% of the previous target may well be acceptable. No fatal, no serious and 3 minor injuries were reported in this group during the 3 year period ending 31 December 2011.



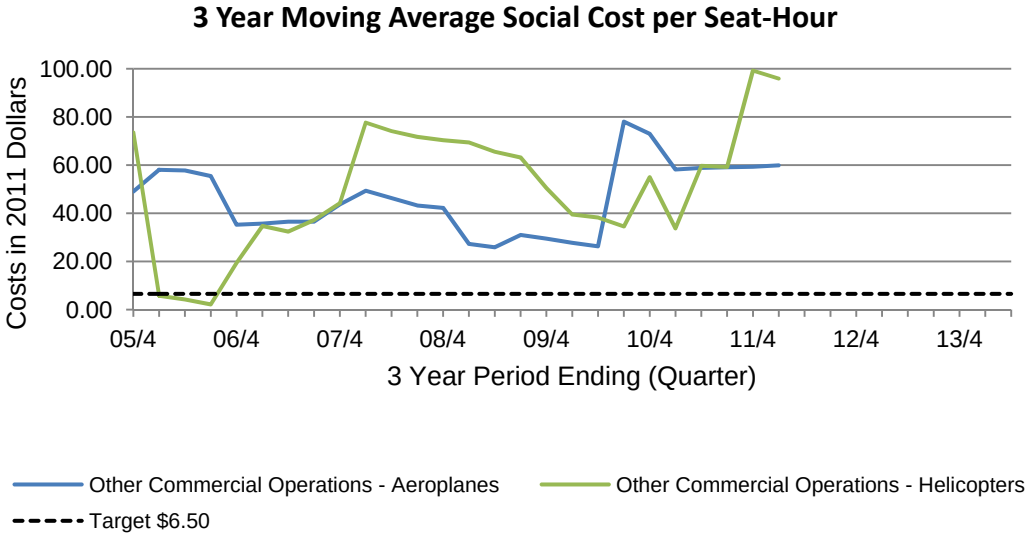
The outcome for Airline Operations – Small Aeroplanes shows a significant long term downward trend from the high starting point of $47.06 per seat-hour of exposure in the three years to September 2007. The safety outcome for this group has been below the initial target level since the January to March 2008 quarter but exceeds the new target of $2.34 by a small amount. No fatal, 1 serious and 2 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

The outcome for Airline Operations – Helicopter exceeded the target level until the second quarter of 2006 and it has done so again since the 3rd quarter of 2009. A small upward trend is evident. The new target is $6.50, the same as the old value and has not been exceeded during this reporting period. No fatal, 1 serious and 4 minor injuries were reported in this group during the 3 year period ending 31 December 2011.



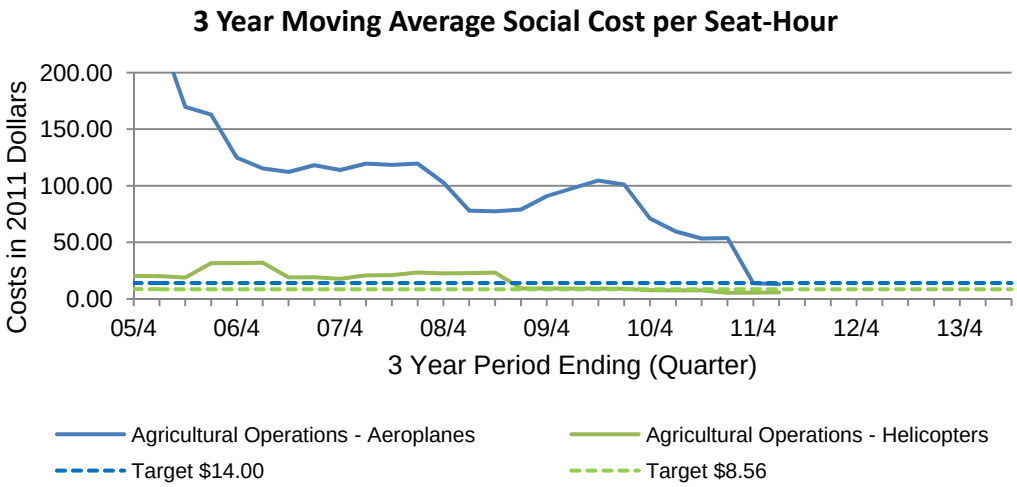
Two hang glider, two microlight and one glider fatalities during the first quarter of 2009 contributed to a significant increase in the upward trend displayed by this group. The outcome exceeds the target of $13.00 by a large margin. 5 fatal, 15 serious and 16 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

Note that this group includes hang gliders and parachutes used on transport operations.



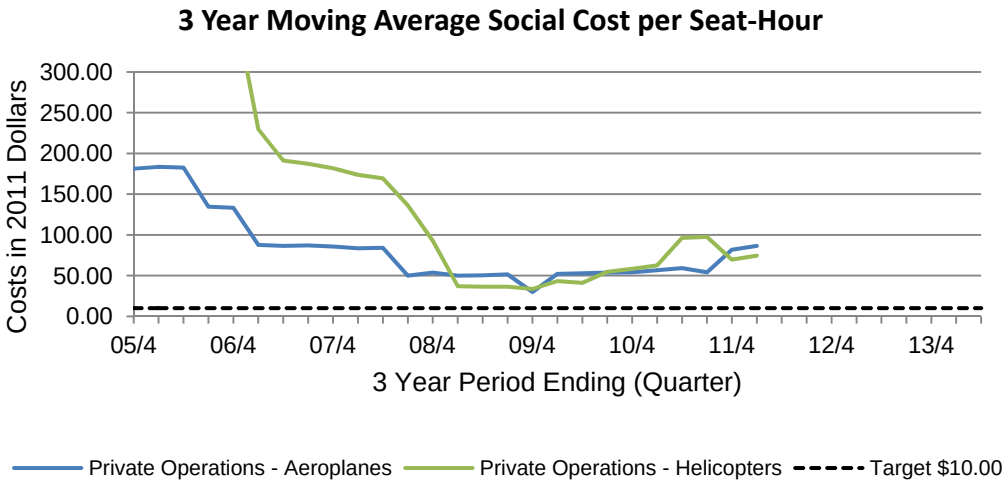
The outcome for Other Commercial Operations – Aeroplane remains above the target of $6.50. 12 fatal, 3 serious and no minor injuries were reported in this group during the 3 year period ending 31 December 2011.

The outcome for Other Commercial Operations – Helicopter turned sharply upwards during the first quarter of 2008 and remains well above the target level of $6.50. 7 fatal, 2 serious and 3 minor injuries were reported in this group during the 3 year period ending 31 December 2011.



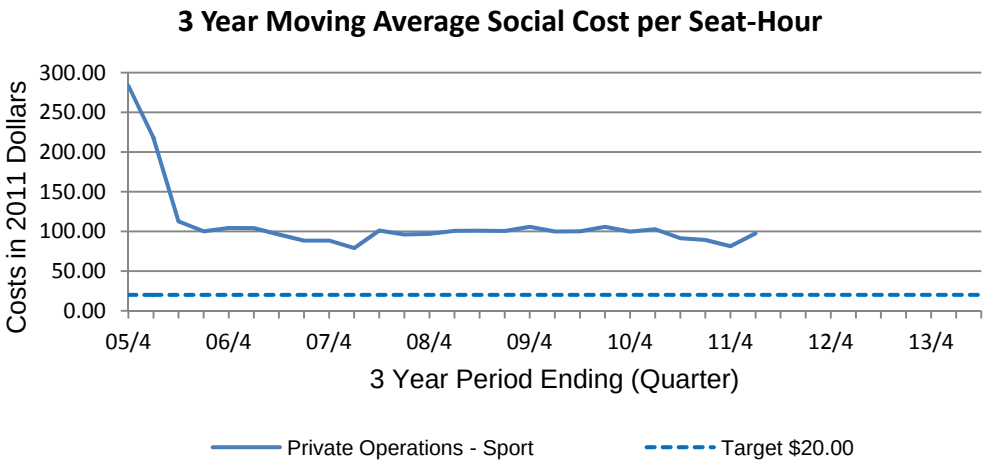
The outcome for Agricultural Operations – Aeroplanes is now below the target level of $14.00. No fatal, 1 serious and 2 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

The outcome for Agricultural Operations – Helicopter is below the target level of $8.56. No fatal, no serious and 2 minor injuries were reported in this group during the 3 year period ending 31 December 2011.



The outcome for Private Operations – Aeroplanes after slowly trending down since late 2005 has recently begun to trend upwards. 3 fatal, 2 serious and 1 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

The outcome for Private Operations – Helicopters after trending down since early 2006 has recently begun to trend upwards. 1 fatal, 3 serious and 5 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

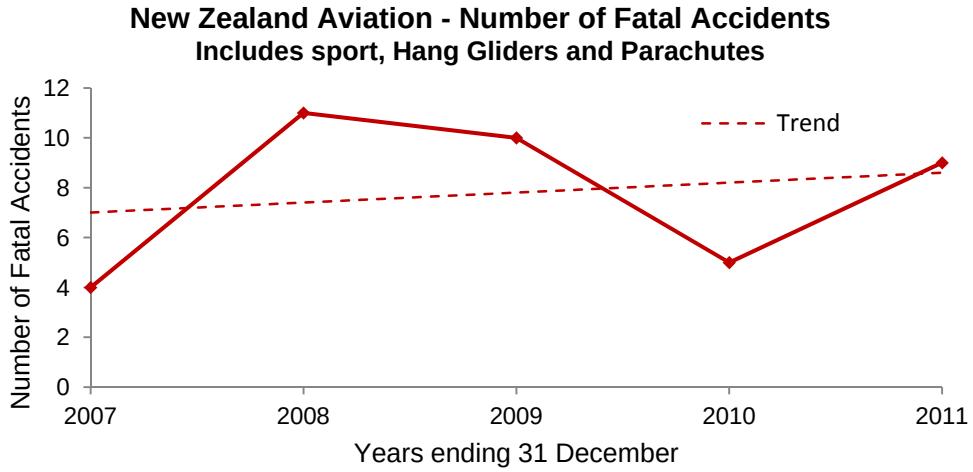


The outcome for Private Operations – Sport is well above the target level and shows no significant trend. 11 fatal, 26 serious and 24 minor injuries were reported in this group during the 3 year period ending 31 December 2011.

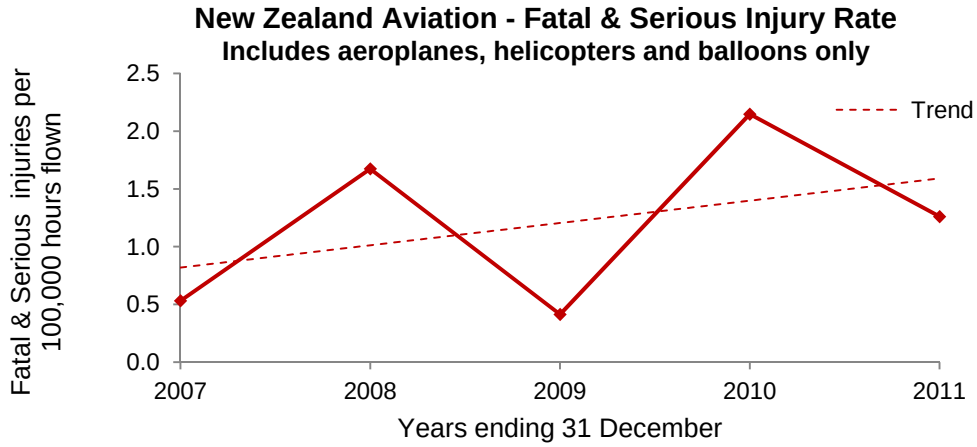
Note that this group includes hang gliders and parachutes used on private operations.

Injury Accidents

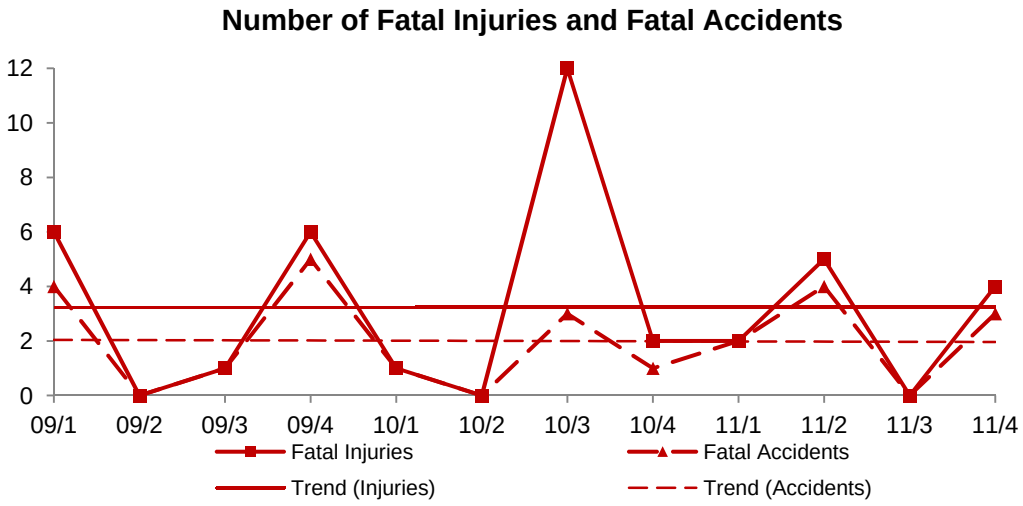
The following graph shows the number of fatal accidents in each year of the 5-year period ending 31 December 2011 (including the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes).



The following graph shows the overall annual average fatal and serious injury rates per 100,000 hours flown (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 5-year period ending 31 December 2011.



The following graph shows the quarterly number of fatal injuries and fatal accidents (including the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes) for the three-year period ending 31 December 2011.



Six-Monthly Comparison

Number of Fatal Accidents and Number of Fatal Injuries

Aircraft Category	1 Jul to 31 Dec 2010		1 Jul to 31 Dec 2011		Change	
	Fatal Accidents	Fatal Injuries	Fatal Accidents	Fatal Injuries	Fatal Accidents	Fatal Injuries
Large Aeroplanes	0	0	0	0	0	0
Medium Aeroplanes	0	0	0	0	0	0
Small Aeroplanes	2	11	1	1	-1	-10
Agricultural Aeroplanes	0	0	0	0	0	0
Helicopters	1	2	2	3	1	1
Sport Aircraft	1	1	0	0	-1	-1
Hang Gliders	0	0	0	0	0	0
Parachutes	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**4**	**14**	**3**	**4**	**-1**	**-10**

Number of Serious Injuries

Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large Aeroplanes	0	0	0
Medium Aeroplanes	0	0	0
Small Aeroplanes	3	2	- 1
Agricultural Aeroplanes	0	0	0
Helicopters	2	1	- 1
Sport Aircraft	1	1	0
Hang Gliders	0	1	1
Parachutes	3	4	1
Unknown	0	0	0
Total	**9**	**9**	**0**

Number of Minor Injuries

Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large Aeroplanes	0	0	0
Medium Aeroplanes	0	0	0
Small Aeroplanes	0	0	0
Agricultural Aeroplanes	0	0	0
Helicopters	1	1	0
Sport Aircraft	3	1	- 2
Hang Gliders	0	0	0
Parachutes	0	0	0
Unknown	0	0	0
Total	**4**	**2**	**- 2**

Flight Phase

The following table shows the flight phase recorded for accidents. The figures include sport aircraft, hang gliders and parachutes.

Flight Phase	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
AEROBATICS	0	0	0
AGRICULTURAL MANOEUVRES	1	0	- 1
APPROACH	0	3	3
CIRCUIT	1	1	0
CLIMB	6	3	- 3
CRUISE	4	5	1
DESCENT	2	1	- 1
HOLDING	0	0	0
HOVER	0	3	3
HOVER TAXI	0	0	0
LANDING	14	13	- 1
PARKED	2	2	0
TAKEOFF	7	5	- 2
TAXIING	1	1	0
UNKNOWN	3	1	- 2
Total	**41**	**38**	**- 3**

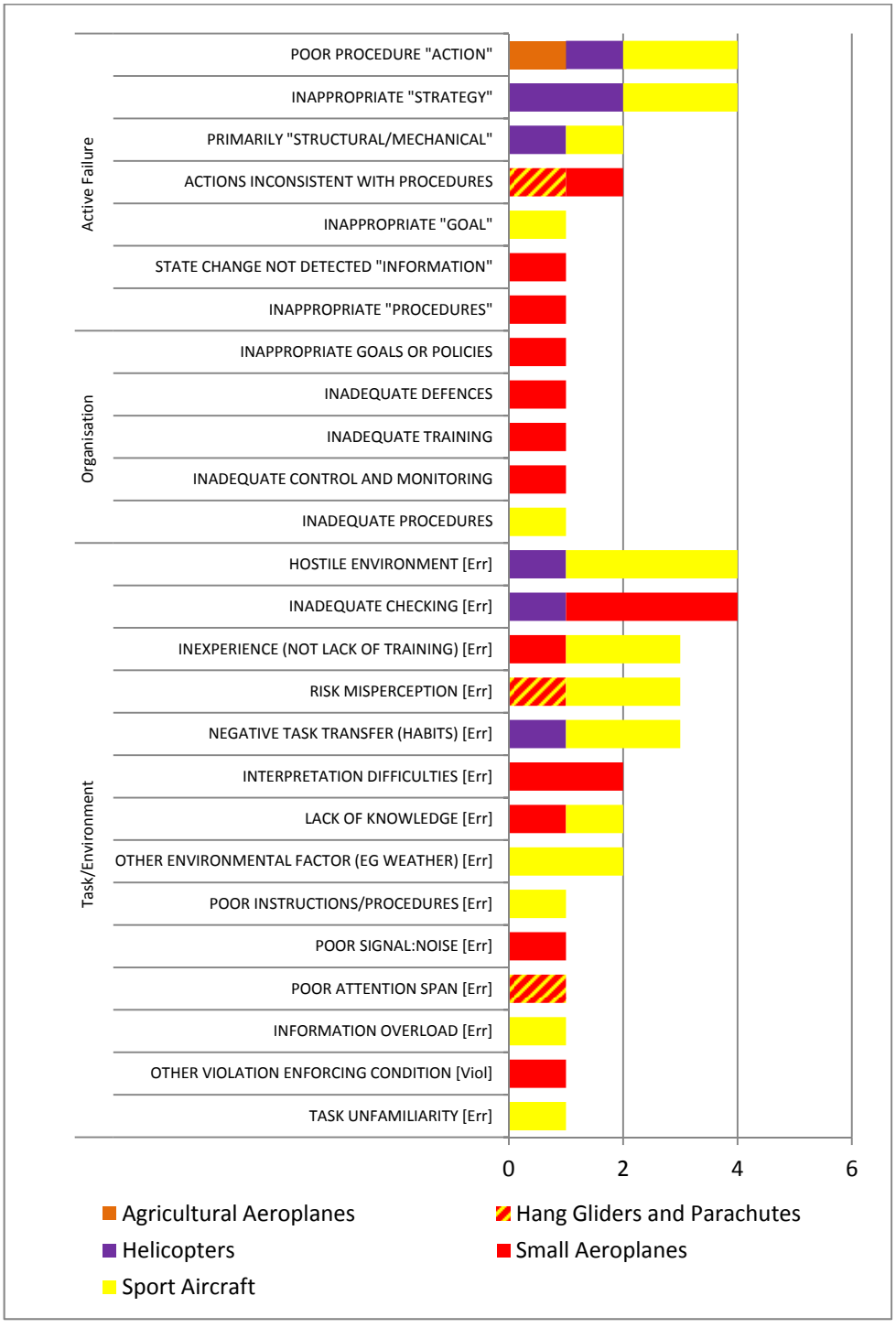
Accidents in the period 1 July to 31 December 2011 were most common during the Landing phase (34.2%)

Analysis of recorded descriptors for Landing phase accidents in the period 1 July to 31 December 2011 shows that the most common descriptors were 'Nose Gear' and 'Hard Landing' (17.4%).

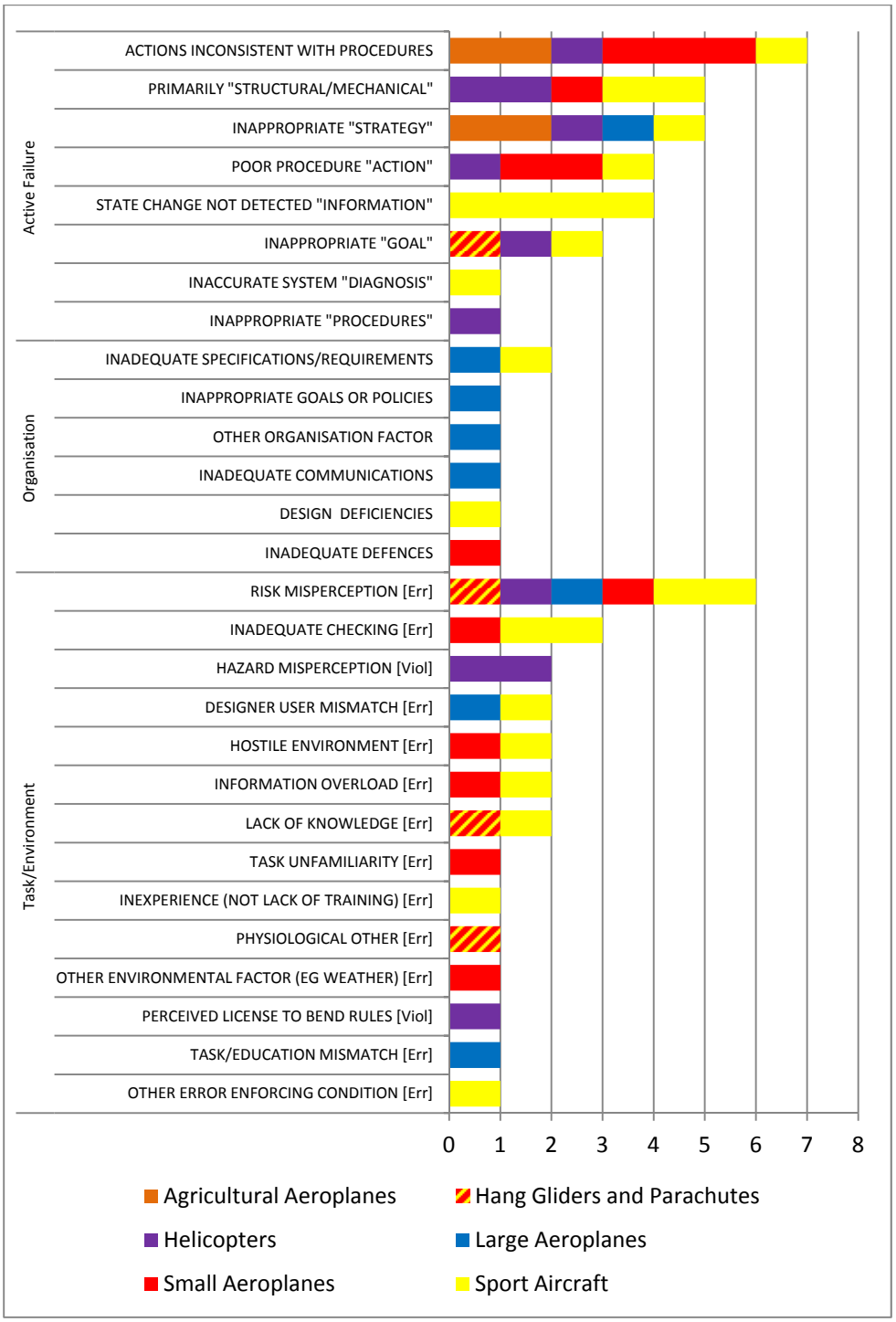
Analysis of recorded causes for Landing phase accidents in the period 1 July to 31 December 2011 shows that the most common cause was ‘Local Error Factors - Inexperience (Not Lack Of Training)’ (20.0%)

Accident Causal Factors by Aircraft Category

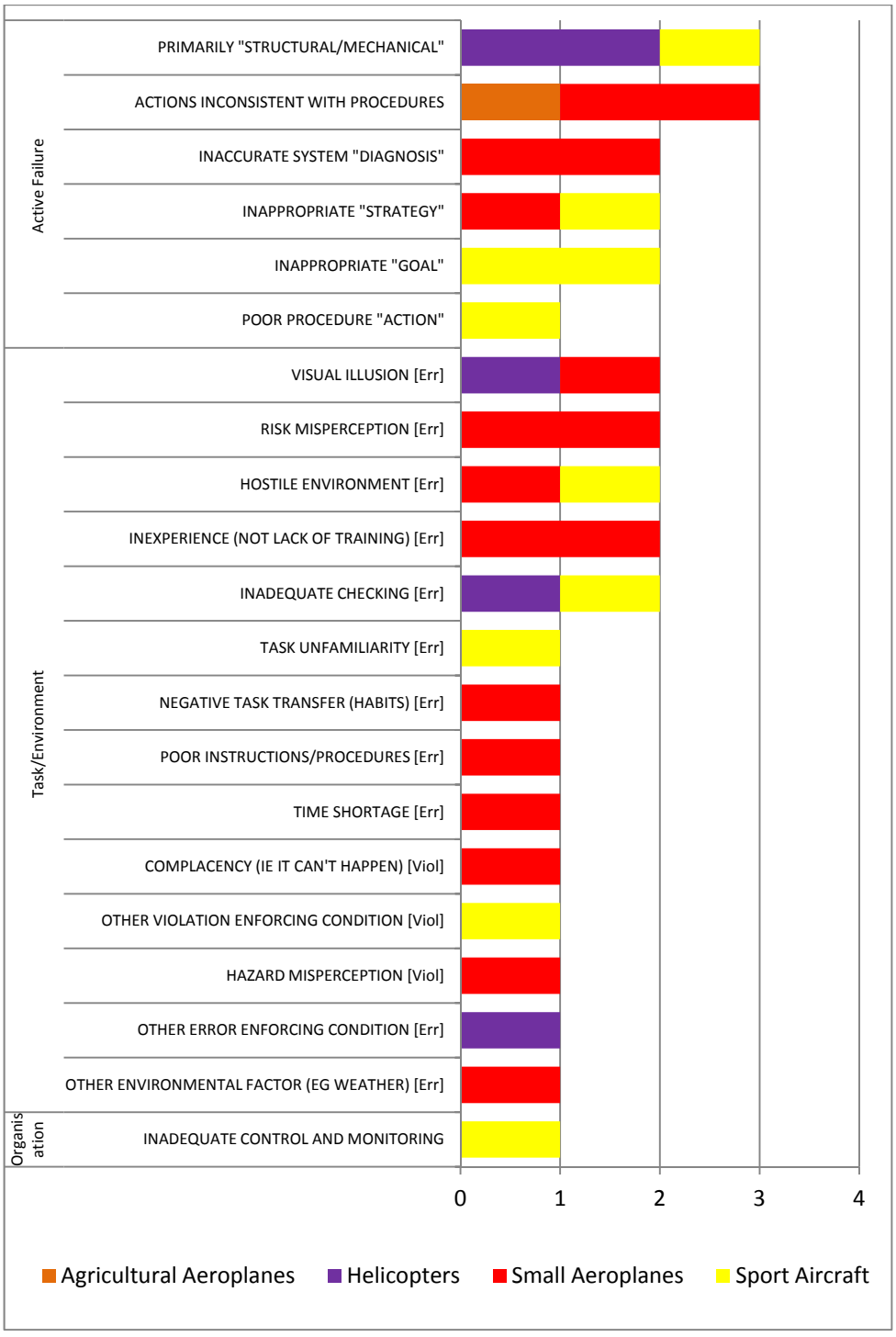
The following graph shows the number of causal factors recorded for accidents that occurred during the period 1 July to 31 December 2010 for the various aircraft statistics categories. Causal factors have been assigned to 28 (62%) of the 45 accidents.



The following graph shows the number of causal factors recorded for accidents that occurred during the period 1 January to 30 June 2011 for the various aircraft statistics categories. Causal factors have been assigned to 38 (59%) of the 64 accidents.



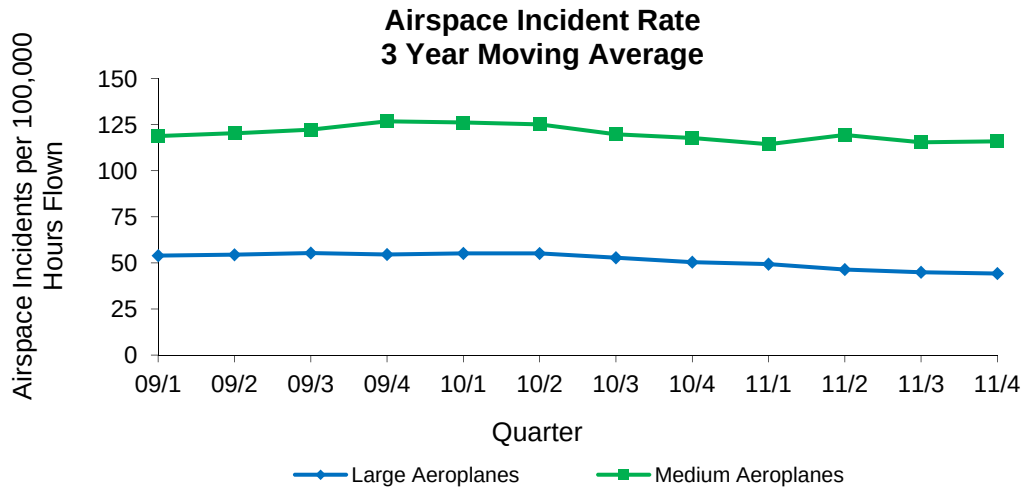
The following graph shows the number of causal factors recorded for accidents that occurred during the period 1 July to 31 December 2011 for the various aircraft statistics categories. Causal factors have been assigned to 19 (45%) of the 42 accidents.

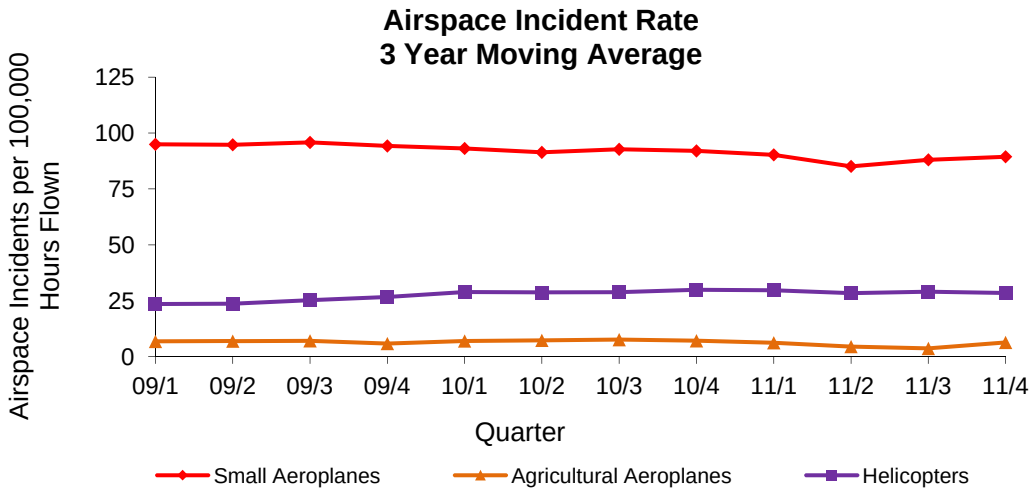


Airspace Incidents

Occurrence Trend

The following graphs show the airspace incident reporting rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 31 December 2011 (excluding the Sport Aircraft category). The graphs do not differentiate between incidents that are pilot or ATS attributable.





Aircraft Category	Straight line trend of 3 Year moving average
Large Aeroplanes	Trending down
Medium Aeroplanes	Constant
Small Aeroplanes	Constant
Agricultural Aeroplanes	Trending down
Helicopters	Trending up

Six-Monthly Comparison

Number of Reported Airspace Incidents

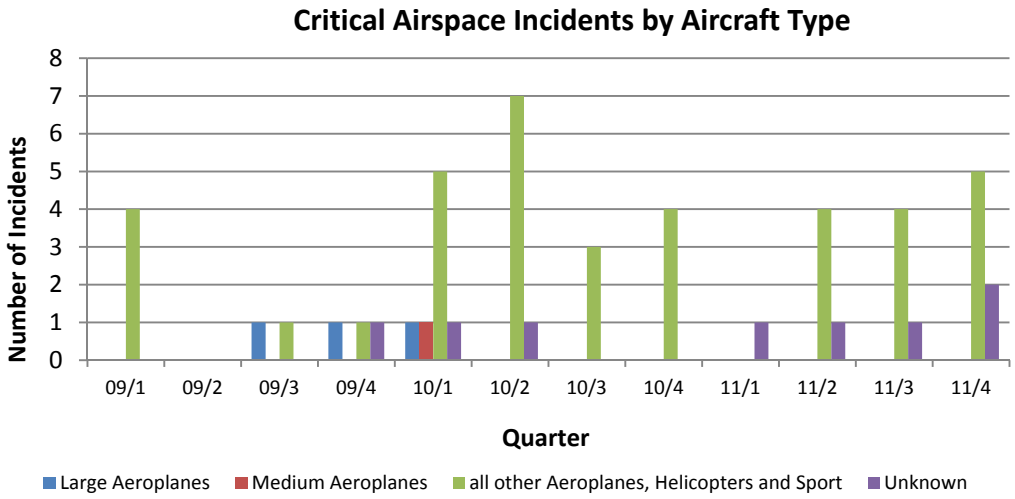
by Aircraft Category

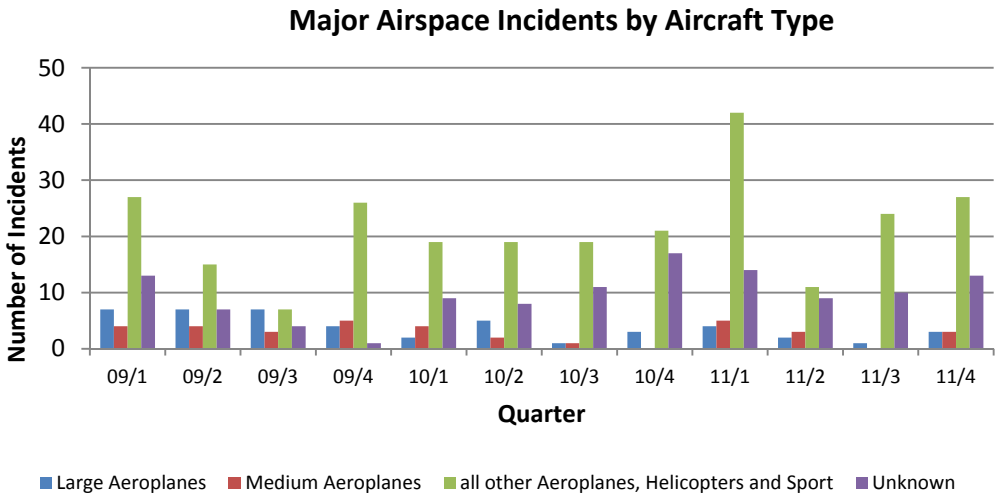
Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change Number	Change Percent
Large Aeroplanes	42	70	28	66.7
Medium Aeroplanes	22	32	10	45.5
Small Aeroplanes	143	211	68	47.6
Agricultural Aeroplanes	1	3	2	200.0
Helicopters	22	28	6	27.3
Sport Aircraft	15	21	6	40.0
Unknown	173	170	- 3	- 1.7
Total	**418**	**535**	**117**	**28.0**

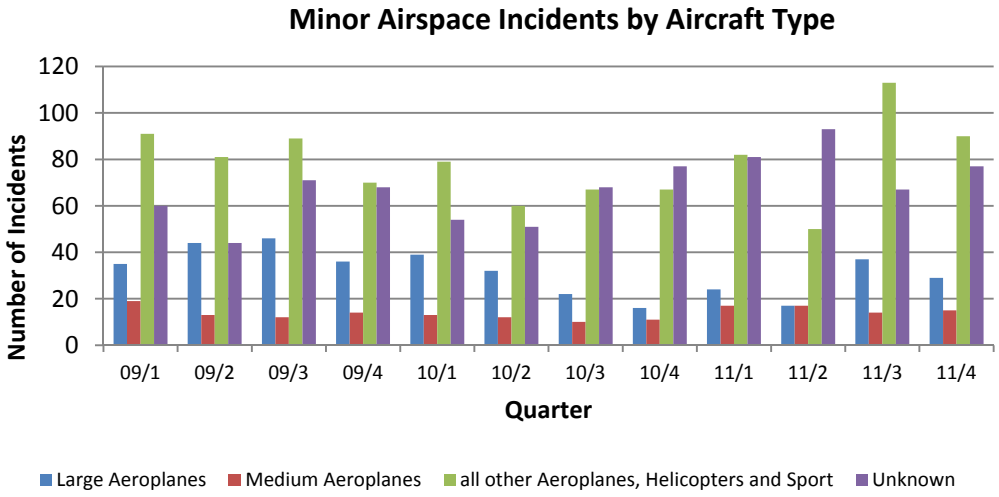
by Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large aeroplanes	Critical	0	0	0
	Major	4	4	0
	Minor	38	66	28
Medium Aeroplanes	Critical	0	0	0
	Major	1	3	2
	Minor	21	29	8
Small Aeroplanes	Critical	6	6	0
	Major	31	41	10
	Minor	106	164	58
Agricultural Aeroplanes	Critical	0	1	1
	Major	0	0	0
	Minor	1	2	1
Helicopters	Critical	0	2	2
	Major	3	3	0
	Minor	19	23	4
Sport Aircraft	Critical	1	0	- 1
(Excluding hang gliders & parachutes)	Major	6	7	1
	Minor	8	14	6
Unknown	Critical	0	3	3
	Major	28	23	- 5
	Minor	145	144	- 1
Total	**Critical**	**7**	**12**	**5**
	Major	**73**	**81**	**8**
	Minor	**338**	**442**	**104**

The graphs on the following page show the severity of airspace incidents reported as occurring during the periods shown.


Critical Airspace Incidents by Aircraft Type
Number of Incidents
0
1
2
3
4
5
6
7
8
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
11/1
11/2
11/3
11/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

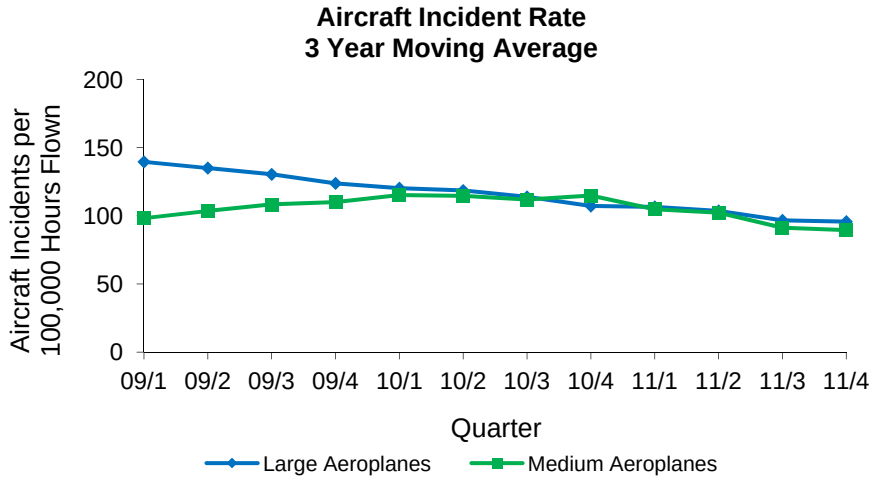

Major Airspace Incidents by Aircraft Type
Number of Incidents
0
10
20
30
40
50
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
11/1
11/2
11/3
11/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

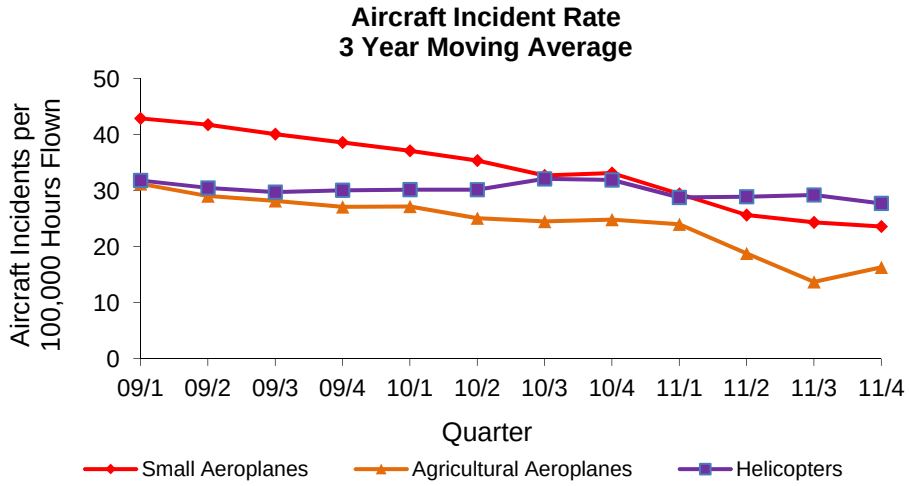

Minor Airspace Incidents by Aircraft Type
Number of Incidents
0
20
40
60
80
100
120
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
11/1
11/2
11/3
11/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

Aircraft Incidents

Occurrence Trend

The following graphs show the reported aircraft incident rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 31 December 2011 (excluding Sport aircraft).





Aircraft Category	Straight line trend of 3 year moving average
Large Aeroplanes	Trending down
Medium Aeroplanes	Constant
Small Aeroplanes	Trending down
Agricultural Aeroplanes	Trending down
Helicopters	Constant

Six-Monthly Comparison

Number of Reported Aircraft Incidents

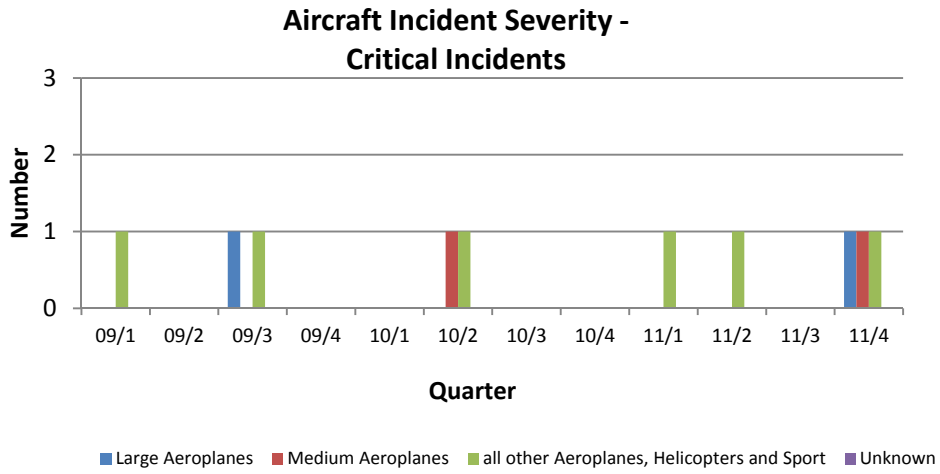
by Aircraft Category

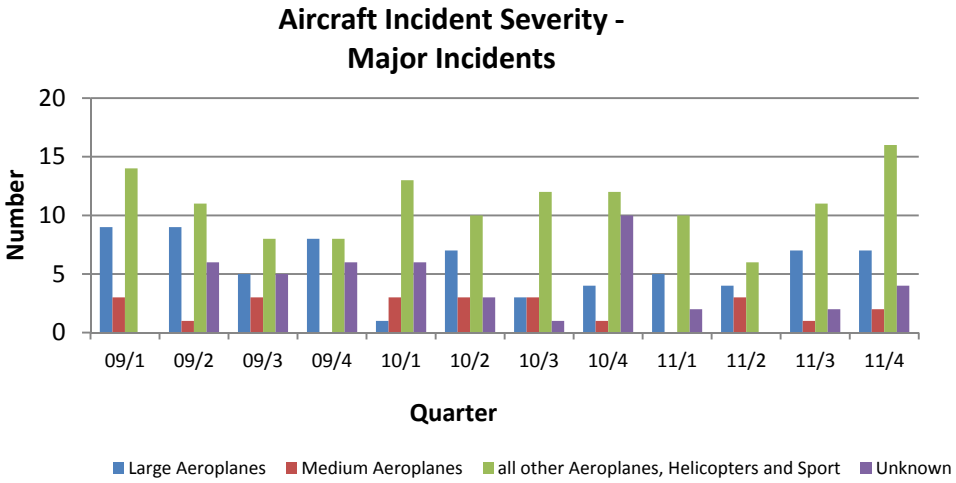
Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change	
			Number	Percent
Large Aeroplanes	123	167	44	35.8
Medium Aeroplanes	33	27	-6	-18.2
Small Aeroplanes	40	47	7	17.5
Agricultural Aeroplanes	2	4	2	100.0
Helicopters	36	29	-7	-19.4
Sport Aircraft	7	7	0	0.0
Unknown	137	55	-82	-59.9
Total	**378**	**336**	**-42**	**-11.1**

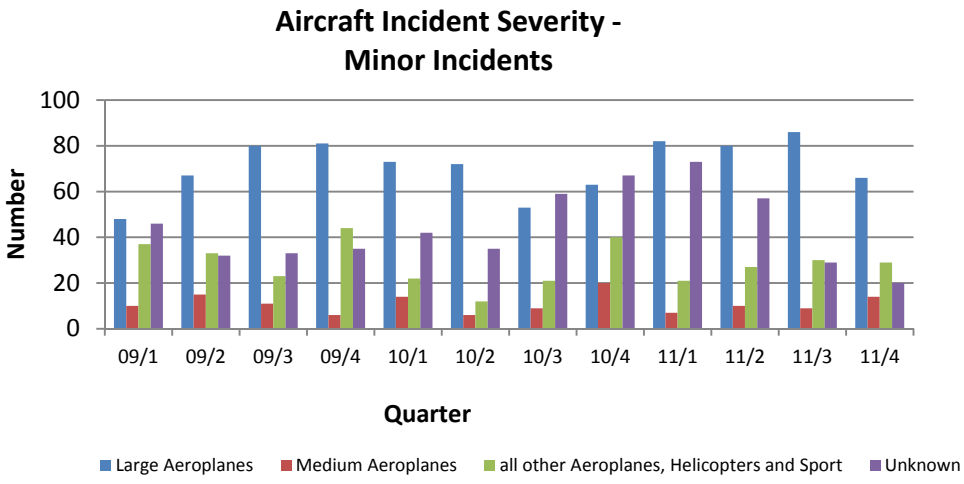
by Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large Aeroplanes	Critical	0	1	1
	Major	7	14	7
	Minor	116	152	36
Medium Aeroplanes	Critical	0	1	1
	Major	4	3	-1
	Minor	29	23	-6
Small Aeroplanes	Critical	0	0	0
	Major	8	13	5
	Minor	32	34	2
Agricultural Aeroplanes	Critical	0	0	0
	Major	1	1	0
	Minor	1	3	2
Helicopters	Critical	0	1	1
	Major	10	9	-1
	Minor	26	19	-7
Sport Aircraft	Critical	0	0	0
	Major	5	4	-1
	Minor	2	3	1
Unknown	Critical	0	0	0
	Major	11	6	-5
	Minor	126	49	-77
Total	**Critical**	**0**	**3**	**3**
	Major	**46**	**50**	**4**
	Minor	**332**	**283**	**-49**

The following graphs show the severity of aircraft incidents recorded reported as occurring during the 3 year period ending 31 December 2011.



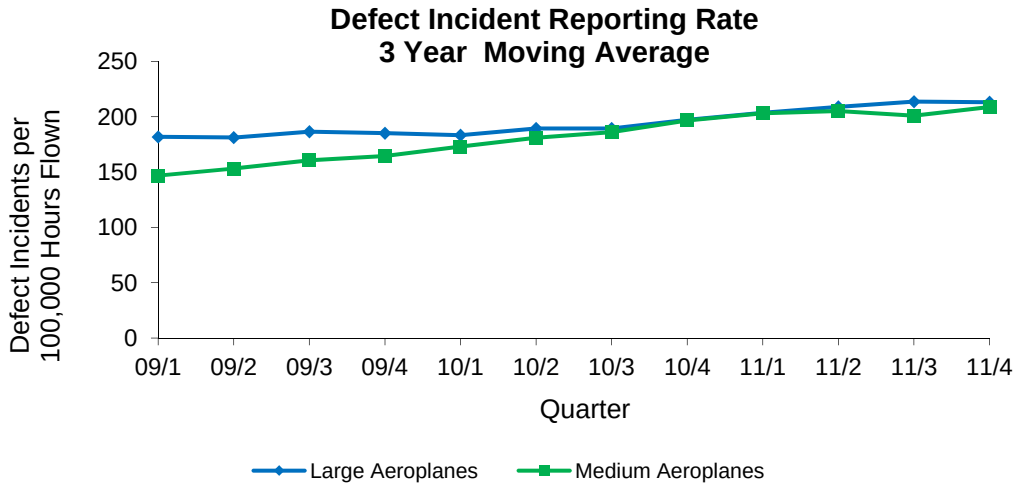


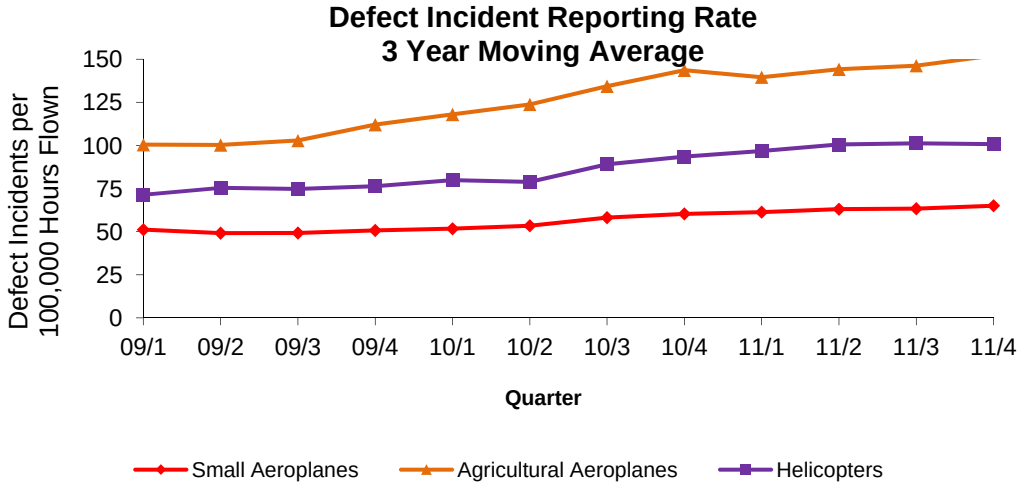


Defect Incidents

Occurrence Trend

The following graphs show the aircraft defect incident reporting rates (incidents per 100,000 hours flown) three year moving average for the three-year period ending 31 December 2011 (excluding Sport).





Aircraft Category	Straight line trend of 3 year moving average
Large Aeroplanes	Constant
Medium Aeroplanes	Trending up
Small Aeroplanes	Trending up
Agricultural Aeroplanes	Trending up
Helicopters	Trending up

Six-Monthly Comparison

Number of Reported Defect Incidents

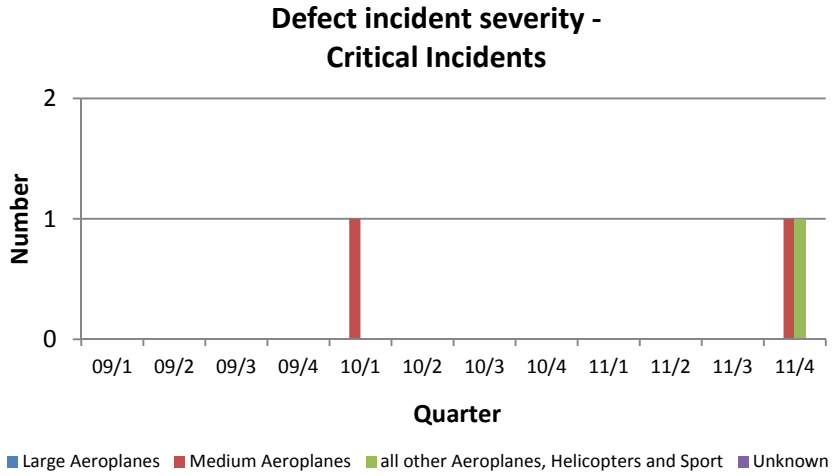
by Aircraft Category

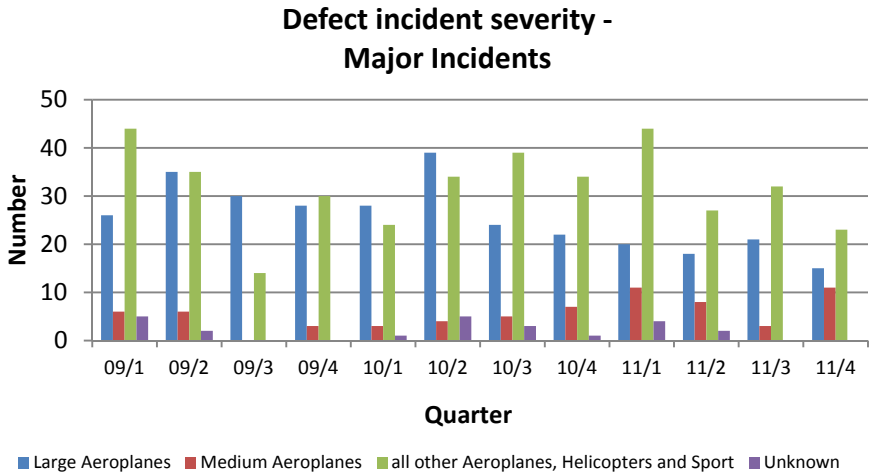
Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change Number	Change Percent
Large Aeroplanes	321	411	90	28.0
Medium Aeroplanes	62	66	4	6.5
Small Aeroplanes	137	84	-53	-38.7
Agricultural Aeroplanes	31	25	-6	-19.4
Helicopters	140	70	-70	-50.0
Sport Aircraft	13	15	2	15.4
Unknown	43	10	-33	-76.7
Total	**747**	**681**	**-66**	**-8.8**

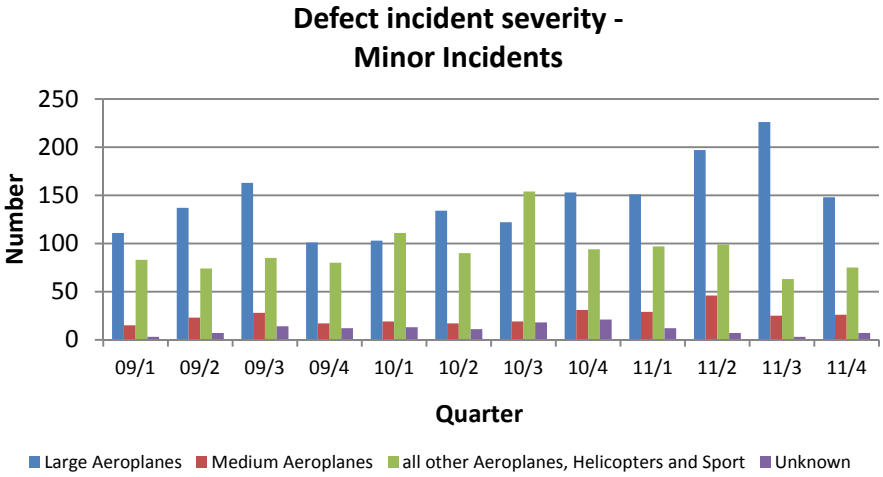
by Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change
Large Aeroplanes	CR	0	0	0
	MA	46	37	-9
	MI	275	374	99
Medium Aeroplanes	CR	0	1	1
	MA	12	14	2
	MI	50	51	1
Small Aeroplanes	CR	0	0	0
	MA	40	28	-12
	MI	97	56	-41
Agricultural Aeroplanes	CR	0	0	0
	MA	7	7	0
	MI	24	18	-6
Helicopters	CR	0	1	1
	MA	22	15	-7
	MI	118	54	-64
Sport Aircraft	CR	0	0	0
	MA	4	5	1
	MI	9	10	1
Unknown	CR	0	0	0
	MA	4	0	-4
	MI	39	10	-29
Total	**CR**	**0**	**2**	**2**
	MA	**135**	**106**	**-29**
	MI	**612**	**573**	**-39**

The following graphs show the severity of defect incidents recorded over the 3 year period ended 31 December 2011.







Bird Incident Rates

12-Month Moving Average Strike Rate

Bird occurrence rates are measured quarterly by aerodrome. This is achieved by querying the database for the number of strikes reported at aerodromes by quarter. The results of this query are then divided by the aircraft movements at each aerodrome and multiplied by 10,000 to achieve strikes per 10,000 aircraft movements. Aircraft movements at aerodromes are obtained from the ACNZ, and, where available, from individual airport companies.

The following table shows the 12-month moving average strike rates for identified aerodromes for each quarter of the three year period ending 31 March 2012.

	Quarter											
Aerodrome	**09/2**	**09/3**	**09/4**	**10/1**	**10/2**	**10/3**	**10/4**	**11/1**	**11/2**	**11/3**	**11/4**	**12/1**
Auckland	2.1	1.9	2.3	2.4	3.0	3.1	2.9	2.9	2.4	2.6	3.1	3.2
Chatham Islands	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Christchurch	2.5	2.5	2.1	1.9	2.0	2.8	2.7	3.0	3.1	2.8	3.0	3.0
Dunedin	3.4	3.4	4.5	4.5	4.3	5.5	4.1	4.8	4.8	4.9	5.8	5.1
Gisborne	6.2	5.5	5.4	4.7	3.0	3.1	4.1	4.2	5.8	5.3	5.3	6.7
Hamilton	2.4	2.1	1.6	1.8	1.9	2.6	2.6	1.9	1.9	1.5	1.4	1.3
Hokitika	3.5	3.5	3.5	3.6	3.7	3.8	7.5	3.7	3.7	3.6	0.0	3.6
Invercargill	7.4	5.7	5.0	7.0	6.9	7.8	6.8	5.5	5.8	6.6	6.2	5.2
Kerikeri	7.5	11.3	10.0	8.8	8.8	6.3	6.3	11.3	8.8	10.0	12.5	8.8
Manapouri	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Napier	5.0	6.9	6.6	8.2	12.9	12.0	10.7	11.4	6.9	5.8	9.1	7.5
Nelson	1.8	1.8	1.7	1.4	1.6	2.0	2.3	2.2	2.0	2.3	2.6	2.4
New Plymouth	5.3	4.7	4.6	4.5	4.4	5.2	5.7	5.3	5.8	4.7	3.7	4.4
Ohakea	2.3	1.8	1.5	1.9	2.5	2.6	2.7	1.9	2.5	2.9	3.1	3.3
Palmerston North	5.0	5.3	6.0	5.5	4.3	4.6	4.3	3.8	3.9	2.8	2.1	1.9
Paraparaumu	0.0	0.0	0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4	0.0	1.1
Queenstown	2.4	2.8	2.8	1.8	1.6	1.8	1.4	1.9	1.9	1.0	2.2	2.1
Rotorua	5.4	5.7	6.3	6.8	6.0	6.7	6.0	4.4	3.6	2.6	3.1	4.0
Taupo	2.5	2.3	2.9	2.0	2.4	2.1	2.8	5.6	5.9	5.7	4.5	2.7
Tauranga	2.0	1.3	1.0	0.7	0.9	1.4	2.0	2.6	2.6	2.2	1.2	1.4
Timaru	8.8	7.5	7.5	6.3	3.8	1.3	2.5	5.0	10.0	10.0	8.8	6.3
Wanganui	1.0	1.1	1.1	0.6	1.2	1.7	1.7	3.4	3.6	2.9	3.9	2.6
Wellington	1.6	1.5	1.4	1.3	1.6	1.8	1.7	1.7	1.5	1.2	1.9	2.2
Westport	19.4	29.1	24.4	23.9	24.6	19.6	19.5	10.0	4.8	4.8	4.8	14.5
Whangarei	3.0	6.8	7.5	6.0	6.8	5.3	5.3	6.8	7.5	7.5	8.3	8.3
Whenuapai	7.7	7.9	10.6	9.9	12.5	12.6	13.2	12.0	10.0	11.2	10.9	13.5
Woodbourne	2.9	2.9	2.9	5.4	5.2	5.7	5.7	4.8	4.2	4.6	4.6	3.8
Overall	3.1	3.0	3.0	2.9	3.2	3.6	3.5	3.6	3.4	3.2	3.3	3.3

Data with a pink background is based on CAA estimates of aircraft movements for the aerodrome because the CAA has either no data or incomplete data for that aerodrome.

Analysis

Each aerodrome is assigned a risk category based on the most recent 12 month average bird strike rate per 10,000 aircraft movements. These categories are:

Low	where the rate is less than 5 strikes per 10,000 movements
Medium	where the rate is not less than 5 strikes per 10,000 movements but less than 10 strikes per 10,000 movements
High	where the rate is not less than 10 strikes per 10,000 movements.

Each aerodrome is also assigned a trend category based on a straight line approximation to the 3 year history of bird strike rates. These categories are:

Trending down	where the trend graph has a slope of less than -0.059 strikes per 10,000 movements
Constant	where the trend graph has a slope of between -0.059 and +0.059 strikes per 10,000 movements
Trending up	where the trend graph has a slope of more than +0.059 strikes per 10,000 movements

The CAA then determines what if any actions are required based on the combination of the above categories

Details as at 31 December 2011 for individual aerodromes are shown in the following table.

Aerodrome	Incident Rate	Trend
Auckland	Low	Upward
Chatham Islands	Low	Downward
Christchurch	Low	Upward
Dunedin	Medium	Upward
Gisborne	Medium	Constant
Hamilton	Low	Downward
Hokitika	Low	Downward
Invercargill	Medium	Downward
Kerikeri	Medium	Upward
Manapouri	Low	Constant
Napier	Medium	Upward
Nelson	Low	Upward
New Plymouth	Low	Constant
Ohakea	Low	Upward
Palmerston North	Low	Downward
Paraparaumu	Low	Constant
Queenstown	Low	Downward
Rotorua	Low	Downward
Taupo	Low	Upward
Tauranga	Low	Constant
Timaru	Medium	Upward
Wanganui	Low	Upward
Wellington	Low	Constant
Westport	High	Downward
Whangarei	Medium	Upward
Whenuapai	High	Upward
Woodbourne	Low	Upward
Overall	Low	Constant

Security Incidents

Six-Monthly Comparison

Number of Security Incidents

by Aircraft Category

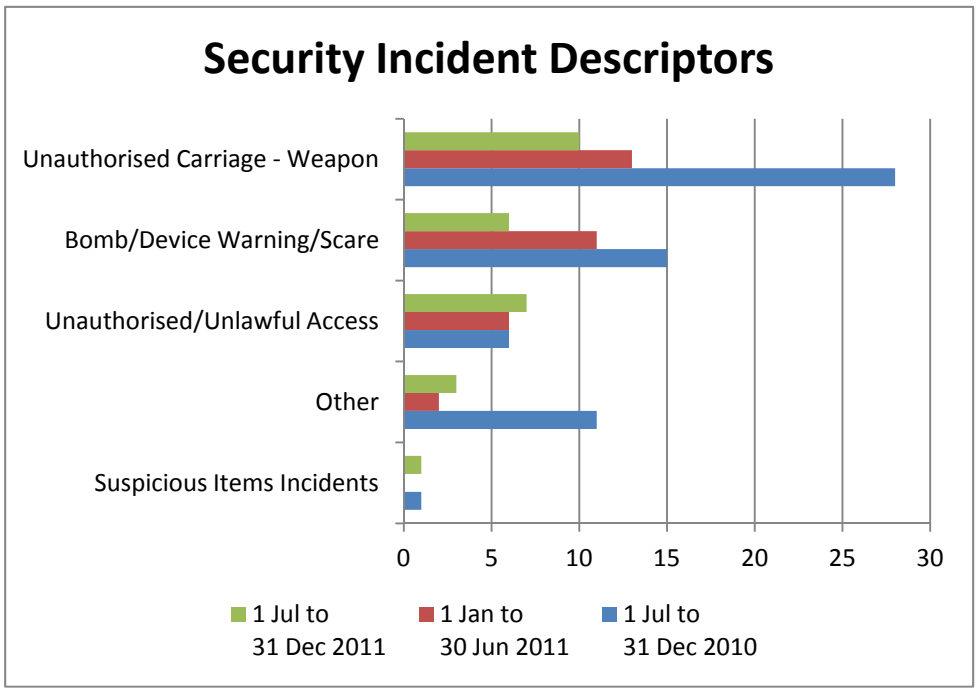
Aircraft Category	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change	
			Number	Percent
Large Aeroplanes	2	9	7	350.0
Medium Aeroplanes	2	0	- 2	- 100.0
Small Aeroplanes	0	0	0	n/a
Agricultural Aeroplanes	0	0	0	n/a
Helicopters	0	0	0	n/a
Sport Aircraft	0	0	0	n/a
Unknown	57	19	- 38	- 66.7
Total	**61**	**28**	**- 33**	**- 54.1**

by Severity

Severity	1 Jul to 31 Dec 2010	1 Jul to 31 Dec 2011	Change	
			Number	Percent
Critical	0	0	0	n/a
Major	1	10	9	900.0
Minor	60	18	-42	- 70.0
Total	**61**	**28**	**-33**	**- 54.1**

Descriptors

The following graph shows the numbers of each occurrence descriptor that has been recorded for security incidents reported as occurring during the period 1 July to 31 December 2011 and the two previous six-month periods.



Aerodrome Incidents

Runway Incursions

Runway incursion rates are calculated by dividing the total number of reported Aerodrome Incidents that have any of the five runway incursion descriptors by the total number of reported movements for the same aerodrome over the same period. The result is tabulated and graphed as runway incursions per 100,000 movements.

Usable data is available only from the 4th quarter of 2008 so the current report is limited to displaying quarterly values. When enough data has been collected this table will be modified to show three year moving average values. When movement data becomes available from additional certificated aerodromes they will also be included.

Clearly the number of runway incursions is low with many certificated aerodromes having no such incidents reported at all. With such low numbers caution needs to be exercised in drawing statistical conclusions. When sufficient data becomes available it may be more useful to present this data in a moving 12 month average format.

The following table shows reported quarterly runway incursion rates for all certificated aerodromes for which adequate movement data is available.

Aerodrome	09/1	09/2	09/3	09/4	10/1	10/2	10/3	10/4	11/1	11/2	11/3	11/4
Auckland	10.0	2.7	2.5	5.0	5.0	10.5	2.6	0.0	2.5	5.4	10.1	2.5
Taupo	0.0	0.0	0.0	12.6	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0
Christchurch	2.8	5.7	0.0	9.1	3.0	20.0	3.2	12.6	3.3	10.3	6.2	6.8
Dunedin	6.3	0.0	0.0	9.9	0.0	16.5	16.4	11.5	0.0	0.0	26.6	27.1
Gisborne	15.8	0.0	0.0	0.0	16.8	0.0	0.0	0.0	37.7	0.0	0.0	0.0
Hamilton	7.5	2.7	7.6	0.0	3.6	12.6	9.0	19.3	7.1	3.7	33.1	36.2
New Plymouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0
Napier	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.6	14.0	0.0	15.1	46.8
Nelson	8.0	16.7	8.5	0.0	22.7	7.8	8.3	0.0	31.3	0.0	14.8	8.7
Invercargill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.2	0.0	0.0	0.0
Ohakea	0.0	0.0	0.0	7.1	5.8	0.0	0.0	0.0	0.0	19.5	0.0	0.0
Palmerston North	25.0	6.6	0.0	0.0	0.0	6.4	0.0	0.0	0.0	11.5	0.0	0.0
Queenstown	7.3	10.9	0.0	0.0	15.1	0.0	0.0	19.3	31.6	24.6	10.1	18.1
Rotorua	38.4	0.0	0.0	0.0	0.0	18.3	0.0	16.5	0.0	0.0	64.6	17.7
Tauranga	0.0	3.8	4.6	4.6	3.5	0.0	0.0	5.0	4.4	0.0	0.0	22.5
Woodbourne	13.9	0.0	18.1	18.3	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0
Wellington	7.0	10.9	3.5	14.5	3.5	0.0	0.0	7.3	0.0	3.9	7.5	7.3
Whenuapai	0.0	0.0	0.0	0.0	25.2	28.4	0.0	28.7	0.0	0.0	0.0	33.9

By way of comparison, National Transportation Safety Board data puts the runway incursion rate in the United States at about 6 runway incursions per 100,000 tower operations during the 4 calendar years 2005 – 2008 with an improving outlook for 2009.

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 six months of the reporting period.

Month	ACC	ADI	ARC	ASP	BRD	DEF	DGD	HGA	INC	NIO	PAA	PIO	SEC
Jul - 11	5	9	71	68	115	175	0	0	62	1	1	0	1
Aug - 11	4	23	107	107	118	132	3	0	56	6	1	1	3
Sep - 11	7	17	88	91	110	113	3	0	61	2	1	1	7
Oct - 11	8	13	70	93	103	109	3	0	45	4	0	2	3
Nov - 11	6	18	74	90	97	84	3	0	60	1	2	7	7
Dec - 11	7	14	58	59	67	84	1	1	40	2	1	2	2
Total	**37**	**94**	**468**	**508**	**610**	**697**	**13**	**1**	**324**	**16**	**6**	**13**	**23**

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

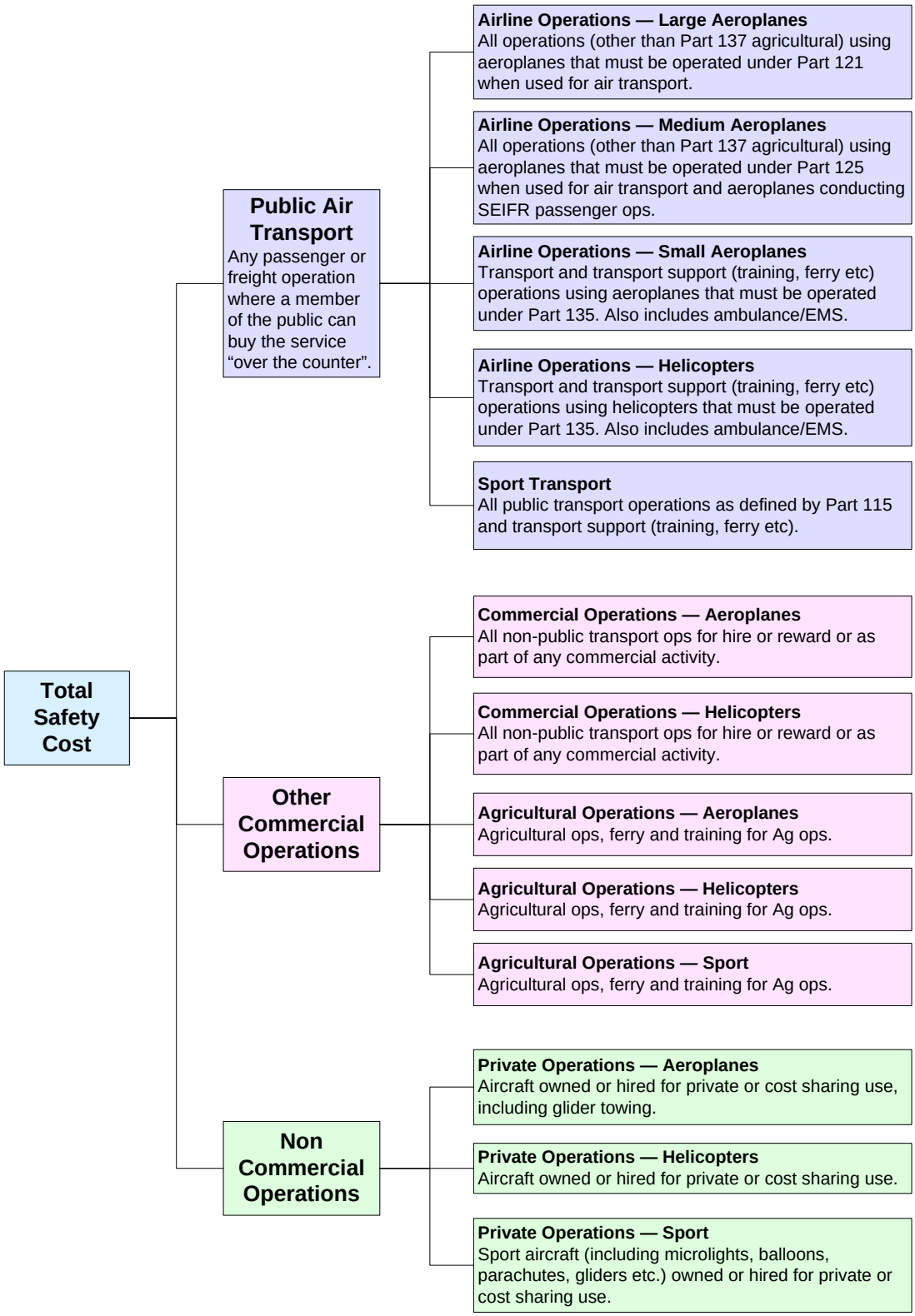
(6) involves verified exposure to infectious substances or injurious radiation.

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
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
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

Reason Model – Latent Failure Model

CAA identification of occurrence causal factors is based on the Reason Model (latent failure model). Occurrence investigations attempt to assign attributable cause by identifying the generic type of organisation or person involved and the contributing active failures, local factors, and/or organisation factors. The analysis contained in the Causal Factor Analysis section of this report summarises the results from investigation by reporting the different types of causal factors identified versus occurrence type. It should be noted that occurrence types (e.g. Accident, Defect etc.) are not mutually exclusive (e.g. an accident and a defect may be associated) and hence any causal factor recorded during the investigation will be recorded for all associated occurrence types.

The following two diagrams are designed to show the basic principles of the latent failure model:

Diagram 1

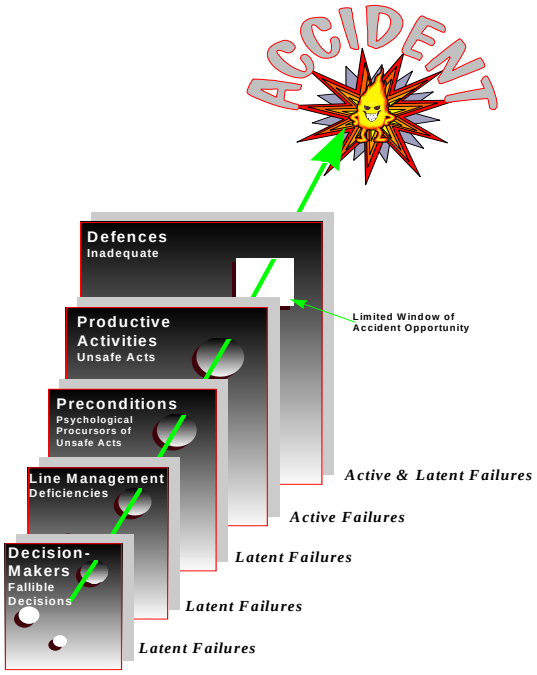


Diagram 1 shows the layers of defences that have been created within the aviation system to prevent accidents and incidents happening. It also shows how these defences have holes in them. When these holes line up there is a window of opportunity for an accident or incident. All that is needed to complete the breach in the defence is an active failure at the operational level. When this happens an accident occurs. When the defences in the system work properly and are only partially breached the end result may be an incident. Incidents are free lessons that should be investigated to show where the holes (latent failures) in the system are. Holes in the system are there all the time and a good pro-active audit program should also help in detecting them.

Diagram 2

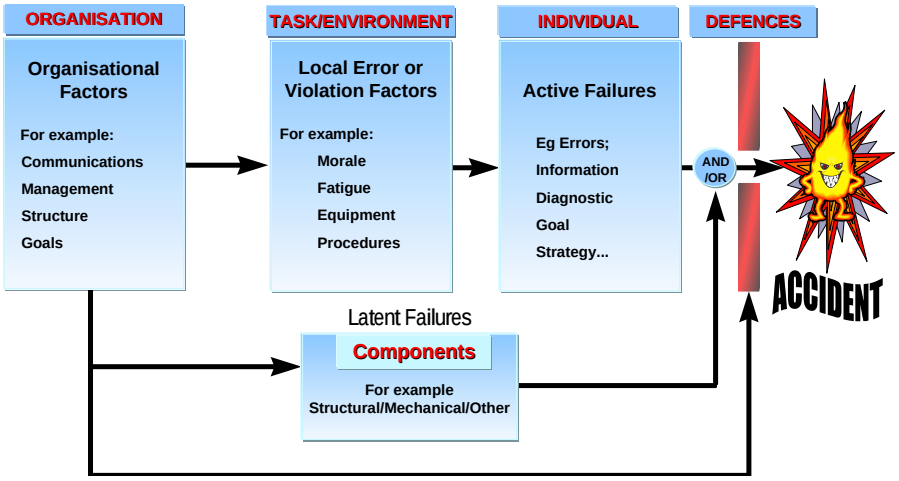


Diagram 2 shows how the latent failures are grouped into 3 areas:

1. The active failures.
2. Task/environment or local factors.
3. Organisational factors.

In basic terms the latent failure model states that an accident is predicated by deficiencies in the management and physical systems responsible for and supporting the particular operation. Management system deficiencies in the responsible organisation(s) can lead to error or violation inducing conditions in the local working environment. The existence of these conditions increases the likelihood of actual errors or violations by personnel which can place an over-reliance on, or expose deficiencies in, final defences.