Aviation Industry Safety Update

1 July 2010 to 31 December 2010

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.

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 July to 31 December 2010. 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 at 31 December 2010 and 6 months prior:

Aircraft Category	30 Jun 2010		31 Dec 2010		Change	
	Number	Percent	Number	Percent	Number	Percent
Large Aeroplanes	119	2.7	119	2.7	0	0
Medium Aeroplanes	85	1.9	84	1.9	- 1	- 1.2
Small Aeroplanes	1,523	34.2	1,516	34.1	- 7	- 0.5
Agricultural Aeroplanes	109	2.4	110	2.5	1	0.9
Helicopters	768	17.2	761	17.1	- 7	- 0.9
Sport Aircraft	1,849	41.5	1,852	41.7	3	0.2
Total	**4,453**		**4,442**		**- 11**	**- 0.2**

Licences

The following table summarises the airline transport, commercial, private and recreational pilot, air traffic controller, and aircraft maintenance engineer licences on the register at 31 December 2010 and 6 months prior:

Licence Type (Medical Certificate)	30 Jun 2010	31 Dec 2010	Change	
			Number	Percent
RPL (RPL Medical)	132	146	14	10.6
PPL (Class 1 & 2)	3,757	3,655	- 102	- 2.7
CPL (Class 2 only)	2,066	2,083	17	0.8
CPL (Class 1)	2,344	2,385	41	1.7
ATPL (Class 2 only)	913	981	68	7.4
ATPL (Class 1)	1,134	1,096	- 38	- 3.4
ATCL (Class 3)	363	362	- 1	- 0.3
LAME (N/A)	2,463	2,496	33	1.3
Total Licences	**13,172**	**13,204**	**32**	**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 2010 and 6 months prior.

Rule part	30 Jun 2010	31 Dec 2010	Change	
			Number	Percent
Part 109 Regulated Air Cargo Agent	63	63	0	0
Part 119 Air Operator	185	187	2	1.1
Part 119 Air Operator - Pacific	0	0	0	-
Part 129 Foreign Air Operator	37	34	- 3	- 8.1
Part 137 Agricultural Aircraft Operator	108	108	0	0
Part 139 Aerodromes	26	26	0	0
Part 140 Aviation Security Service	1	1	0	0
Part 141 Aviation Training Organisation	58	56	- 2	- 3.4
Part 141 Restricted Training Organisation	0	0	0	-
Part 145 Aircraft Maintenance Organisation	55	60	5	9.1
Part 146 Aircraft Design Organisation	13	14	1	7.7
Part 148 Aircraft Manufacturing Organisation	22	22	0	0
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	2	1	- 1	- 50.0
Part 19 Supply Oganisation Certificate of Approval	61	57	- 4	- 6.6
Part 92 Dangerous Goods Packaging Approval	56	57	1	1.8

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 2010	31 Dec 2010	Change	
			Number	Percent
Part 108 Security Programme	19	19	0	0
Part 121 Large Aeroplanes	10	10	0	0
Part 125 Medium Aeroplanes	15	16	1	6.7
Part 135 Helicopters and Small Aeroplanes	174	175	1	0.6

119 Air Operator Pacific

There are no current Air Operator Pacific certificates issued. Their use has been discontinued. Statistical reporting will be resumed if use of these certificates is resumed.

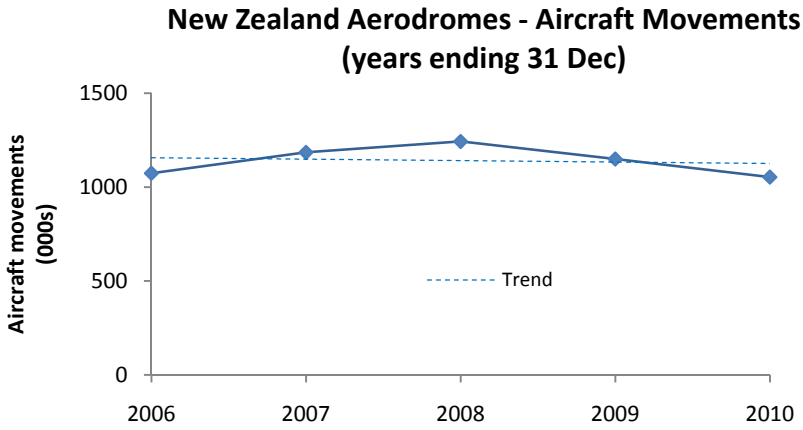
129 Foreign Air Operator	30 Jun 2010	31 Dec 2010	Change	
			Number	Percent
Part 108 Security Programme	26	26	0	0

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, Queenstown, Rotorua, Taupo, Tauranga, Wellington, Whenuapai and Woodbourne.

Long-Term Change in Aircraft Movements

The following graph shows the annual number of aircraft movements for the five-year period 1 January 2006 to 31 December2010.



The average annual decrease in the number of aircraft movements has been 0.5% from the year ended 31 December 2006 until the year ended 31 December 2010 during which 1,053,597 movements were recorded.

Six-Monthly Comparison

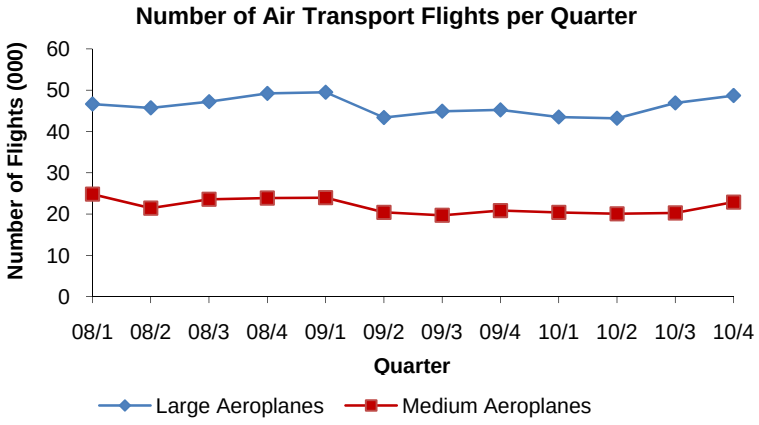
Number of Aircraft Movements

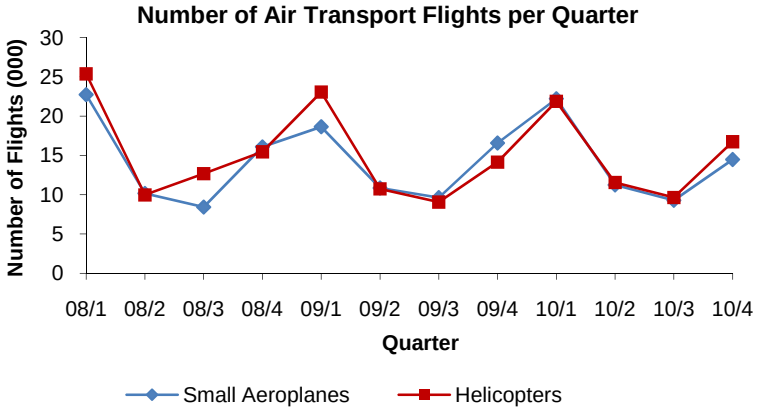
Activity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Aircraft Movements	552,668	509,155	- 43,513	- 7.9

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.

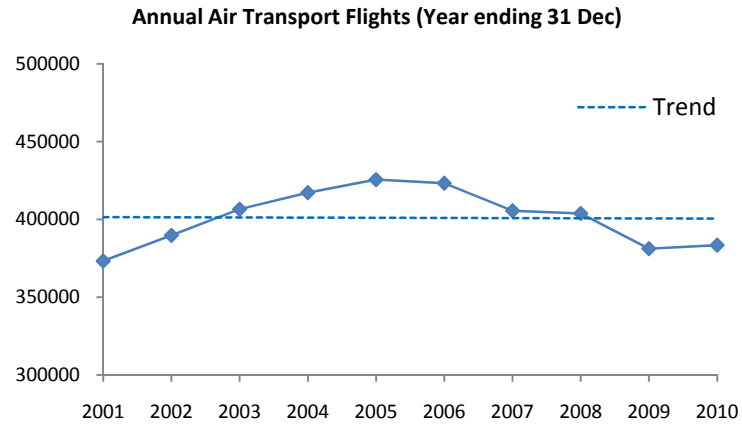
The following graphs show the number of air transport flights per quarter during the three year period 1 January 2008 to 31 December 2010.





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 1 January 2001 to 31 December 2010.



The change in the number of annual air transport flights between the years ended 31 December 2001 and 31 December 2010 is equivalent to an annual increase of 0.3%.

Six-Monthly Comparison

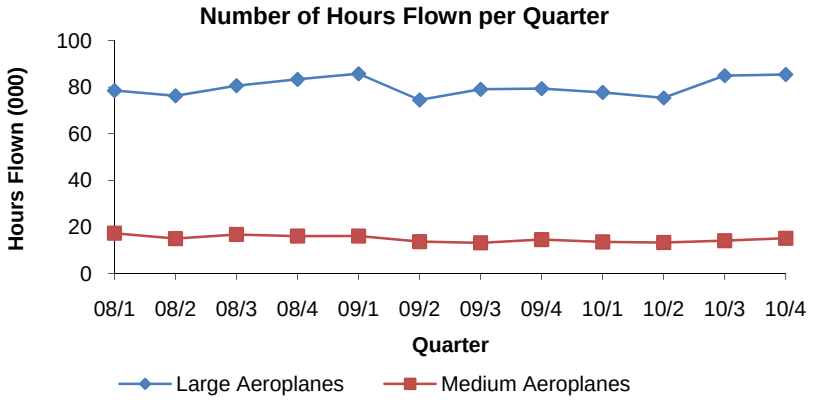
Number of Air Transport Flights

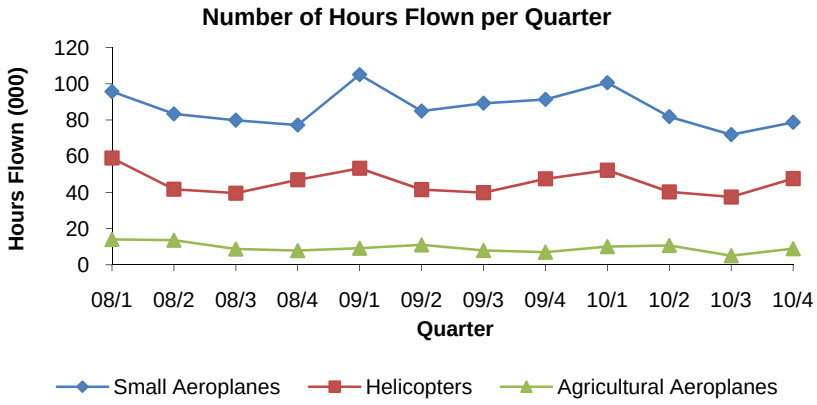
Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Large Aeroplanes	90,132	95,620	5,488	6.1
Medium Aeroplanes	40,554	43,166	2,612	6.4
Small Aeroplanes	26,195	23,744	- 2,451	- 9.4
Helicopters	23,191	26,368	3,177	13.7
Sport Aircraft (Aeropl, FB, Helo only)	244	196	- 48	- 19.7
Total	**180,316**	**189,094**	**8,778**	**4.9**

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.

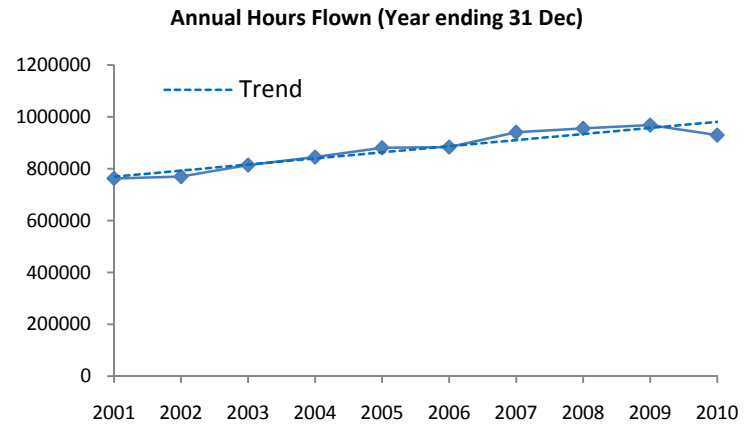
The following graphs show the number of hours flown by aircraft during the three-year period 1 January 2008 to 31 December 2010.





Long-Term Change in Hours Flown

The following graph shows the number of hours flown (includes the aircraft classes aeroplane, helicopter and balloon only; excludes other aircraft classes, hang gliders and parachutes) for the 10-year period 1 January 2001 to 31 December 2010.



The change in the number of annual hours flown between the years ended 31 December 2001 and 31 December 2010 from 762,693 to 929,735 is equivalent to an annual increase of 2.2%

Six-Monthly Comparison

Number of Hours Flown by Safety Target Group

Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Airline Operations - Large Aeroplanes	158,411	170,322	11,911	7.5
Airline Operations - Medium Aeroplanes	27,695	29,184	1,489	5.4
Airline Operations - Small Aeroplanes	19,670	17,407	- 2,263	- 11.5
Airline Operations - Helicopter	23,231	28,457	5,226	22.5
Sport Transport (Aeropl, FB, Helo only)	380	606	226	59.4
Other Commercial Operations - Aeroplane	144,507	116,298	- 28,209	- 19.5
Other Commercial Operations - Helicopter	29,652	23,131	- 6,521	- 22.0
Agricultural Operations - Aeroplane	12,846	13,386	540	4.2
Agricultural Operations - Helicopter	24,778	25,672	894	3.6
Agricultural Operations – Sport (Aeropl, FB, Helo only)	0	0	0	-
Private Operations - Aeroplane	18,612	17,474	- 1,138	- 6.1
Private Operations - Helicopter	9,728	7,844	- 1,884	- 19.4
Private Operations - Sport (Aeropl, FB, Helo only)	1,096	1,233	137	12.5
Total	**470,605**	**451,015**	**- 19,590**	**- 4.2**

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 period 1 January 2010 to 31 December 2010. 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	46979	96.3
Airline Operations - Medium Aeroplanes	20.59	692	1.4
Airline Operations - Small Aeroplanes	3.89	96	0.2
Airline Operations - Helicopter	3.60	124	0.3
Sport Transport *		122	0.2
Other Commercial Operations - Aeroplane	2.00	254	0.5
Other Commercial Operations - Helicopter	3.60	94	0.2
Agricultural Operations - Aeroplane	2.00	38	0.1
Agricultural Operations - Helicopter	3.60	99	0.2
Agricultural Operations - Sport *			
Private Operations - Aeroplane	2.00	54	0.1
Private Operations - Helicopter	3.60	45	0.1
Private Operations - Sport *		206	0.4

* 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.

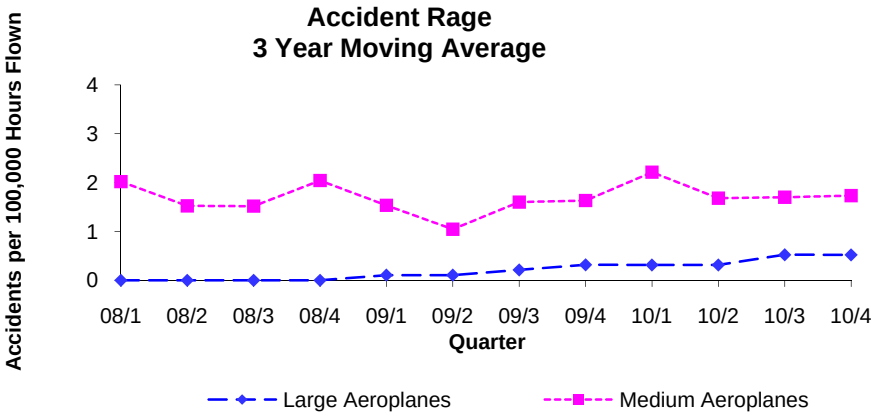
This table shows that approximately 96.3% of seat hours are offered by the Airline Operations – Large Aeroplanes group, around 1.4% by the Airline Operations – Medium Aeroplanes group, with the remaining 2.3% of seat hours offered being split between the other safety target groups.

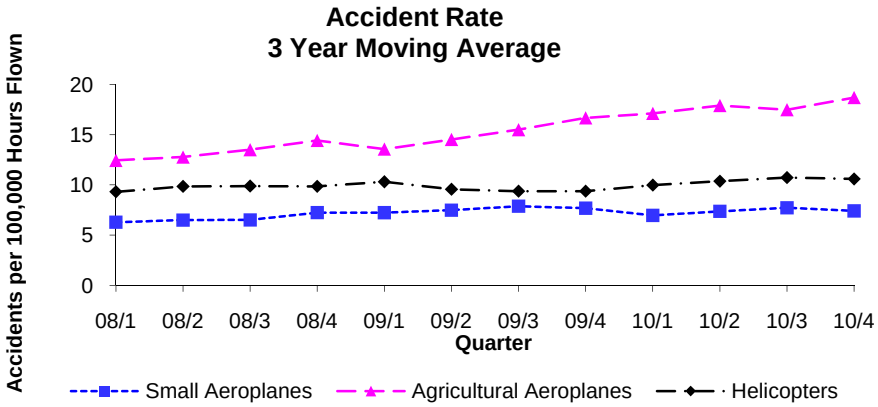
Occurrence Analysis

Aircraft Accidents

Occurrence Trend

The following graphs show the aircraft accident rates (accidents per 100,000 hours flown) three year moving average for the three-year period 1 January 2008 to 31 December 2010 (excluding the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes).

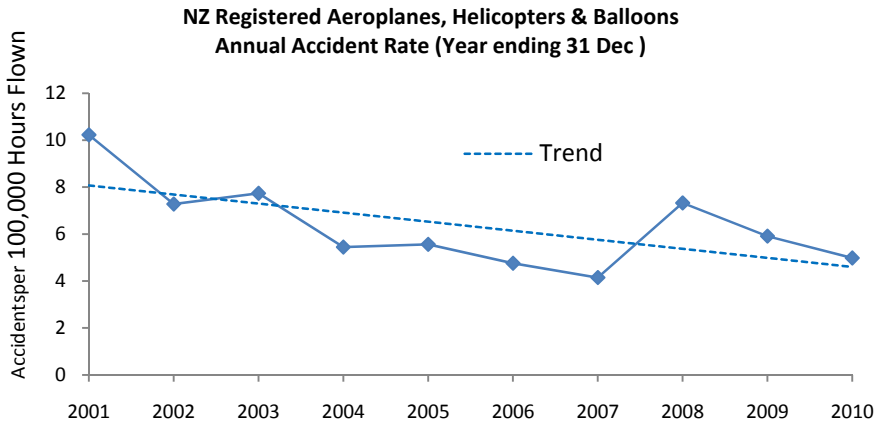




Aircraft Category	Straight Line Trend of 3 year moving Average
Large Aeroplanes	Trending up
Medium Aeroplanes	Constant
Small Aeroplanes	Constant
Agricultural Aeroplanes	Trending up
Helicopters	Constant

Long-Term Accident Rate

The following graph shows the overall 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 1 January 2001 to 31 December 2010.



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

Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	2	2	0
Medium Aeroplanes	1	0	- 1
Small Aeroplanes	15	10	- 5
Agricultural Aeroplanes	2	1	- 1
Helicopters	10	7	- 3
Sport Aircraft (excluding hang gliders and parachutes)	21	18	- 3
Hang Gliders	10	4	- 6
Parachutes	3	3	0
Unknown	0	0	0
Total	**64**	**45**	**- 19**

Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	Critical	0	0	0
	Major	0	1	1
	Minor	2	1	- 1
Medium Aeroplanes	Critical	1	0	- 1
	Major	0	0	0
	Minor	0	0	0
Small Aeroplanes	Critical	6	6	0
	Major	8	4	- 4
	Minor	1	0	- 1
Agricultural Aeroplanes	Critical	1	0	- 1
	Major	1	1	0
	Minor	0	0	0
Helicopters	Critical	3	7	4
	Major	7	0	- 7
	Minor	0	0	0
Sport Aircraft	Critical	12	8	- 4
(excluding hang gliders and parachutes)	Major	8	10	2
	Minor	1	0	- 1
Hang Gliders	Critical	2	0	- 2
	Major	5	1	- 4
	Minor	3	3	0
Parachutes	Critical	1	1	0
	Major	1	2	1
	Minor	1	0	- 1
Unknown	Critical	0	0	0
	Major	0	0	0
	Minor	0	0	0
Total	**Critical**	**26**	**22**	**- 4**
	Major	**30**	**19**	**- 11**
	Minor	**8**	**4**	**- 4**

Safety Outcome Targets

Each Safety Outcome 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 2010 (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.

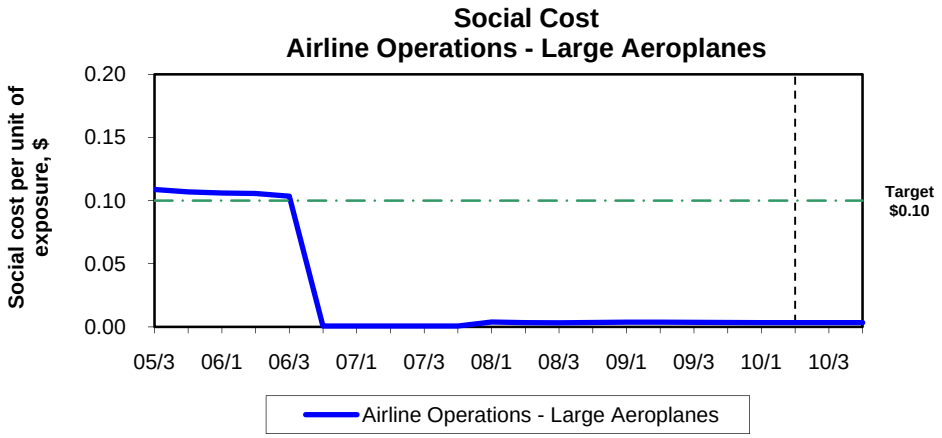
Safety Outcome Target Group	Current * Estimate $	Target $
Airline Operations - Large Aeroplanes	0.00	0.1
Airline Operations - Medium Aeroplanes	0.02	0.1
Airline Operations - Small Aeroplanes	2.38	6.5
Airline Operations - Helicopter	9.10	6.5
Sport Transport	61.38	13.0
Other Commercial Operations - Aeroplane	70.58	6.5
Other Commercial Operations - Helicopter	52.99	6.5
Agricultural Operations - Aeroplane	60.81	14.0
Agricultural Operations - Helicopter	7.46	14.0
Agricultural Operations - Sport Aircraft	0.00	28.0
Private Operations - Aeroplane	52.53	10.0
Private Operations - Helicopter	55.86	10.0
Private Operations - Sport	96.69	20.0

* Current Estimate:

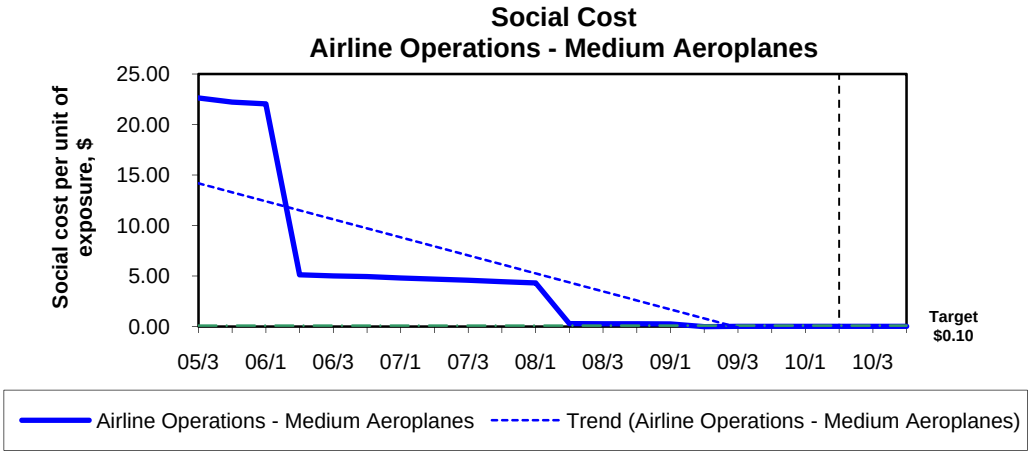
This is the estimated social cost of injuries and aircraft destroyed per seat hour for the three year period ending 31 December 2010. Note: Aviation Safety reports prior to July to December 2008 used a 10 year averaging period for large and medium aeroplanes and a one year period for all others.

Safety Target Graphs

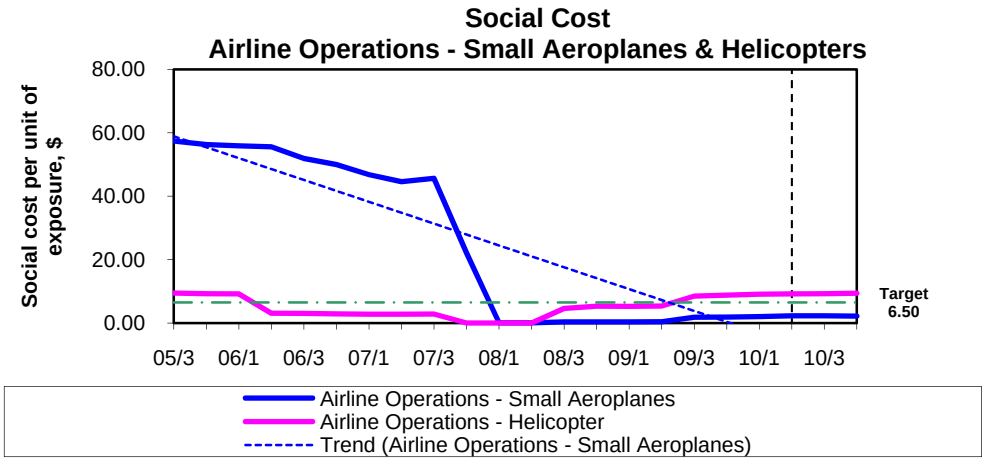
Graphs displaying the Safety Outcome Targets derived using 3 year averages and the progress over each quarter are shown on this and the following pages.



The outcome for Airline Operations – Large Aeroplanes has remained well below the target level of $0.10 per seat hour of exposure since late 2006. There is no discernable trend either up or down. There were 1 serious and 6 minor injuries reported in this group during the period January 2008 to December 2010.

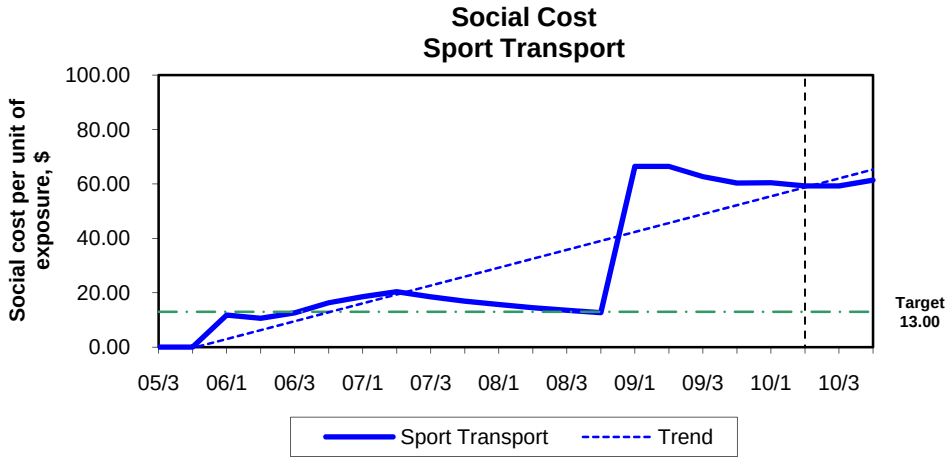


The outcome for Airline Operations – Medium Aeroplanes has now dropped below the target and is trending down. There were 3 minor injuries reported in this group during the period January 2008 to December 2010.



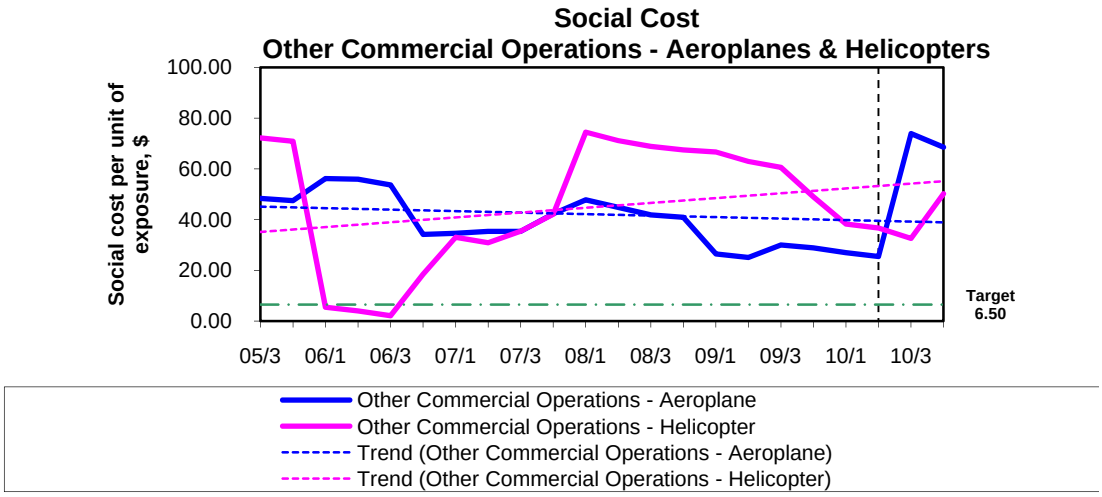
The outcome for Airline Operations – Small Aeroplanes shows a significant long term downward trend from the high starting point of $45.64 per seat-hour of exposure in the three years to September 2007. The safety outcome for this group has been below the target level since the January to March 2008 quarter. There were 1 serious and 2 minor injuries reported in this group during the period January 2008 to December 2010.

The outcome for Airline Operations – Helicopter recently exceeded the target level which it had been below since the second quarter of 2006. A small upward trend is evident. There were 2 serious and 4 minor injuries reported in this group during the period January 2008 to December 2010.



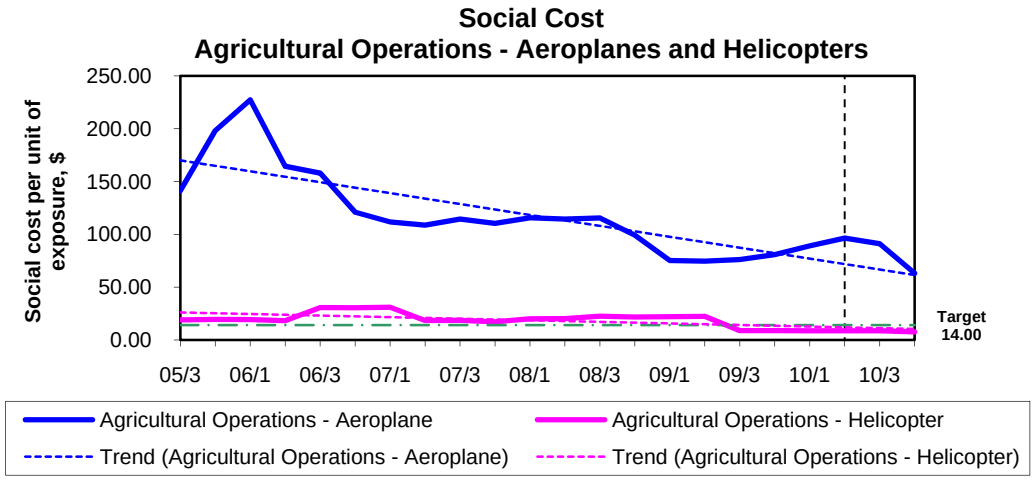
Two hang glider, two microlight and one glider fatalities during the first quarter of 2009 contributed to a significant increase in the upward trend displayed by this group. There were 5 fatal, 11 serious and 12 minor injuries reported in this group during the period January 2008 to December 2010.

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



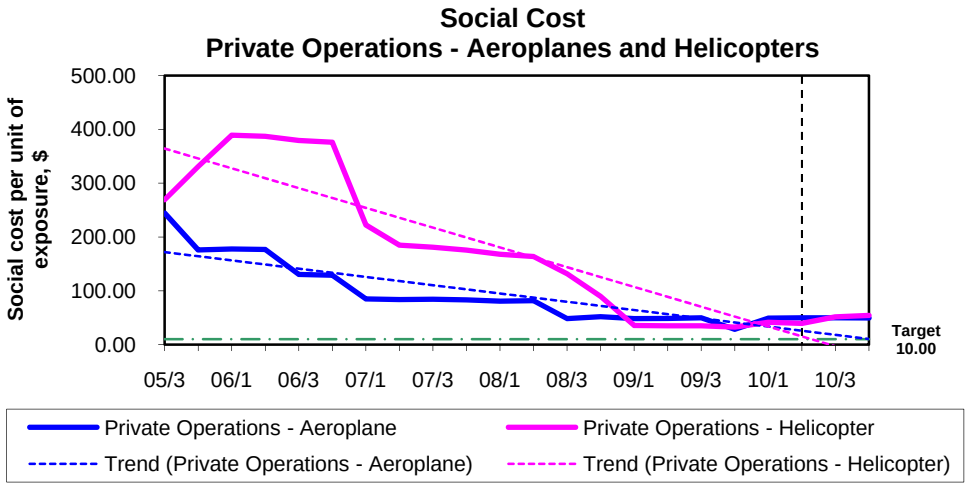
The outcome for Other Commercial Operations – Aeroplane remains above the target of $6.50. A significant part of the social cost attributed to this group arose from a single accident in which there were 9 fatalities. It is possible that the operation being conducted should more correctly be classified as Sport Transport but until that determination is made the current classification must stand. There is a small downward trend. There were 15 fatal, 3 serious and 3 minor injuries reported in this group during the period January 2008 to December 2010.

The outcome for Other Commercial Operations – Helicopter turned sharply upwards during the first quarter of 2008 and remains well above the target level. There were 4 fatal, 1 serious and 3 minor injuries reported in this group during the period January 2008 to December 2010.



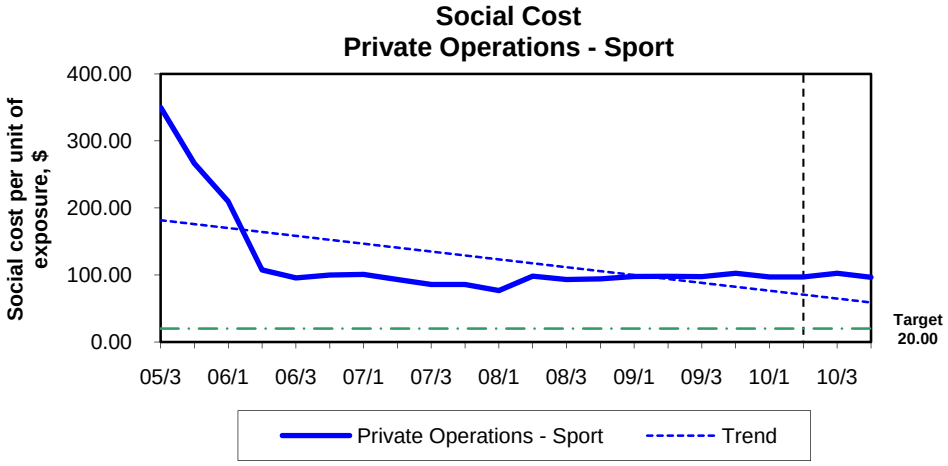
The outcome for Agricultural Operations – Aeroplanes is well above the target level of $14.00. There were 1 fatal, 2 serious and 2 minor injuries reported in this group during the period January 2008 to December 2010.

The outcome for Agricultural Operations – Helicopter is below the target level. There were 1 serious and 2 minor injuries reported in this group during the period January 2008 to December 2010.



The outcome for Private Operations – Aeroplanes has been slowly trending down since late 2005. There were 2 fatal, 3 serious and 2 minor injuries reported in this group during the period January 2008 to December 2010.

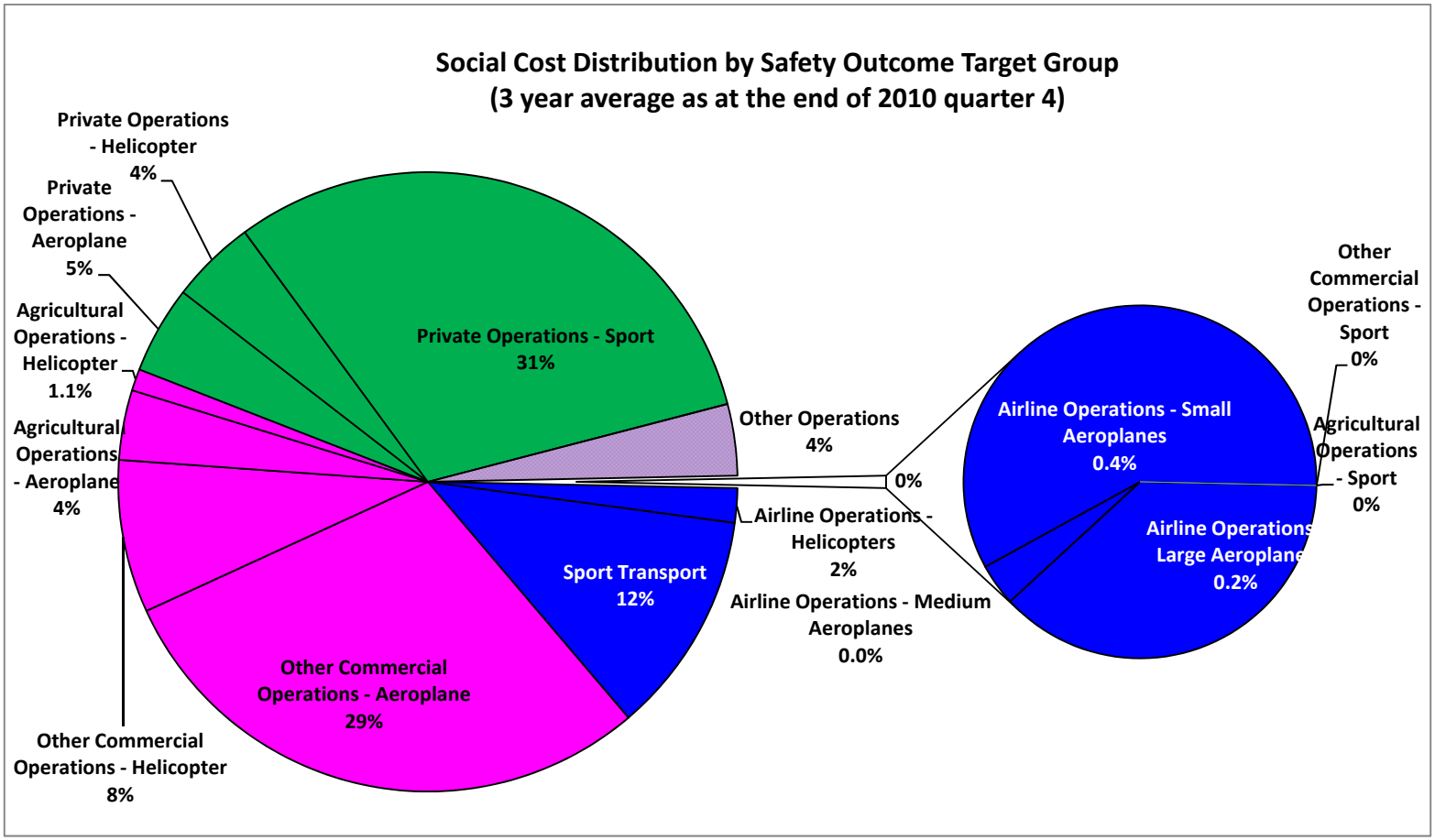
The outcome for Private Operations – Helicopters has been trending down since early 2006. There were 1 fatal, 2 serious and 5 minor injuries reported in this group during the period January 2008 to December 2010.



The outcome for Private Operations – Sport is trending gradually upwards. There were 14 fatal, 22 serious and 30 minor injuries reported in this group during the period January 2008 to December 2010.

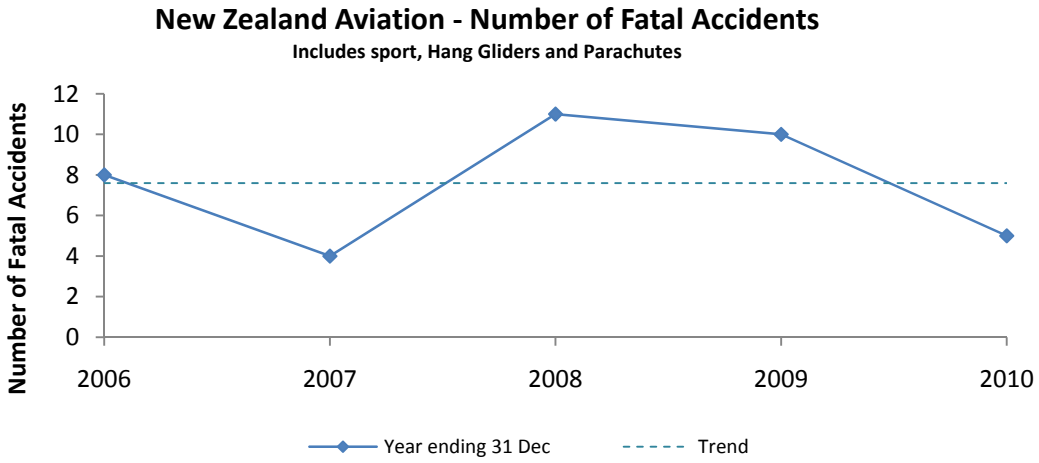
Note that this group includes hang gliders and parachutes used on private operations.

This chart shows the relative contributions to the total social cost made by each Safety Outcome Target Group over the three years ending December 2010.

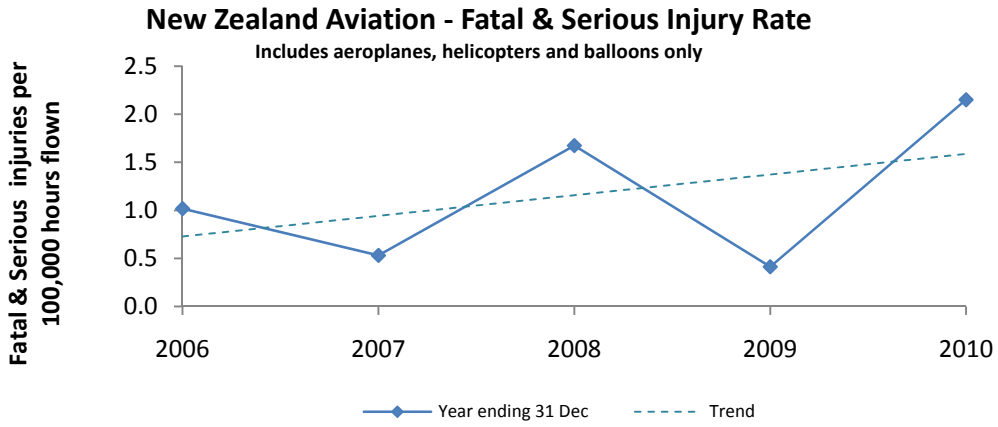


Injury Accidents

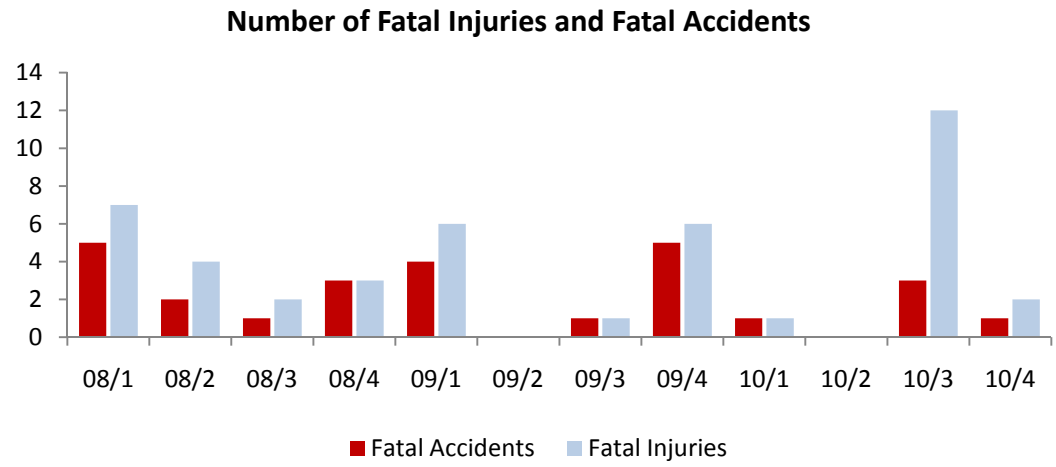
The following graph shows the number of fatal accidents in the 5-year period to 31 December 2010 (including the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes).



The following graph shows the overall fatal and serious injury 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 5-year period to 31 December 2010.



The following graph shows the number of fatal injuries and fatal accidents (including the aircraft statistics categories Sport Aircraft, Hang Gliders and Parachutes) for the three-year period to 31 December 2010.



The long-term trend of the number of fatal accidents is downward. There is no significant long-term trend of the number of fatal injuries.

Six-Monthly Comparison

Number of Fatal Accidents and Number of Fatal Injuries

Aircraft Category	1 Jul to 31 Dec 2009		1 Jul to 31 Dec 2010		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	2	2	11	0	9
Agricultural Aeroplanes	0	0	0	0	0	0
Helicopters	0	0	1	2	1	2
Sport Aircraft	3	4	1	1	- 2	- 3
Hang Gliders	1	1	0	0	- 1	- 1
Parachutes	0	0	0	0	0	0
Unknown	0	0	0	0	0	0
Total	**6**	**7**	**4**	**14**	**- 2**	**7**

Number of Serious Injuries

Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	0	0	0
Medium Aeroplanes	0	0	0
Small Aeroplanes	1	3	2
Agricultural Aeroplanes	0	0	0
Helicopters	0	2	2
Sport Aircraft	1	1	0
Hang Gliders	2	0	- 2
Parachutes	1	3	2
Unknown	0	0	0
Total	**5**	**9**	**4**

Number of Minor Injuries

Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	0	0	0
Medium Aeroplanes	3	0	- 3
Small Aeroplanes	3	2	- 1
Agricultural Aeroplanes	1	0	- 1
Helicopters	5	1	- 4
Sport Aircraft	3	3	0
Hang Gliders	3	0	- 3
Parachutes	0	0	0
Unknown	0	0	0
Total	**18**	**6**	**- 12**

Flight Phase

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

Flight Phase	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Agricultural Manoeuvres	3	1	-2
Approach	3	0	-3
Circuit	0	1	1
Climb	2	5	3
Cruise	8	4	-4
Descent	2	2	0
Hover	2	0	-2
Landing	20	14	-6
Parked	1	2	1
Takeoff	14	7	-7
Taxiing	1	1	0
Unknown	1	3	2
Not reported	7	5	-2
Total	**64**	**45**	**-19**

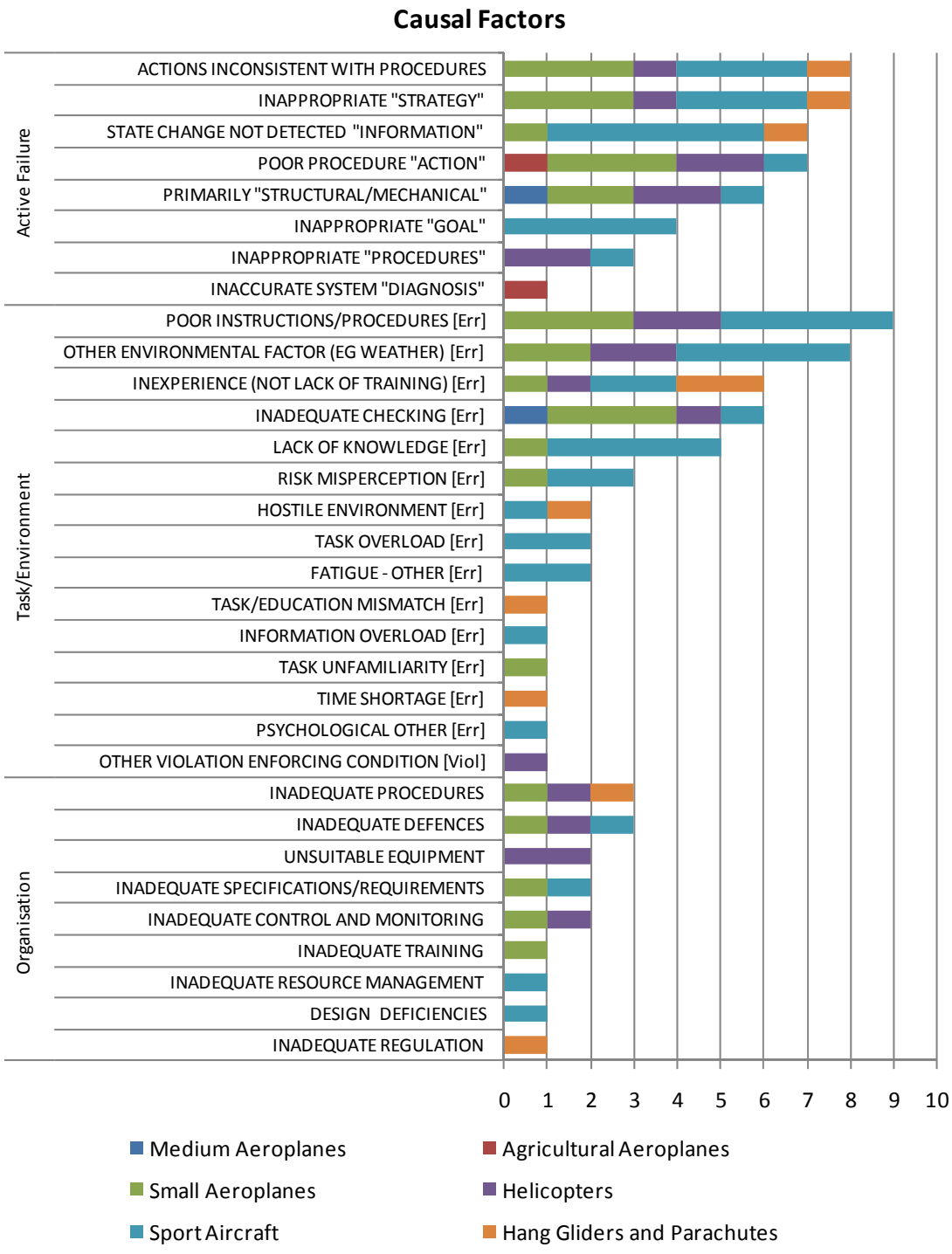
Accidents in the period 1 July to 31 December 2010 were most common during the Landing phase (36%).

Analysis of recorded occurrence descriptors for Landing phase accidents in the 1 July to 31 December2010 period shows that the most common descriptors are ‘Hard Landing’ and COLLISION/STRIKE OBJECT – Tree (13% each).

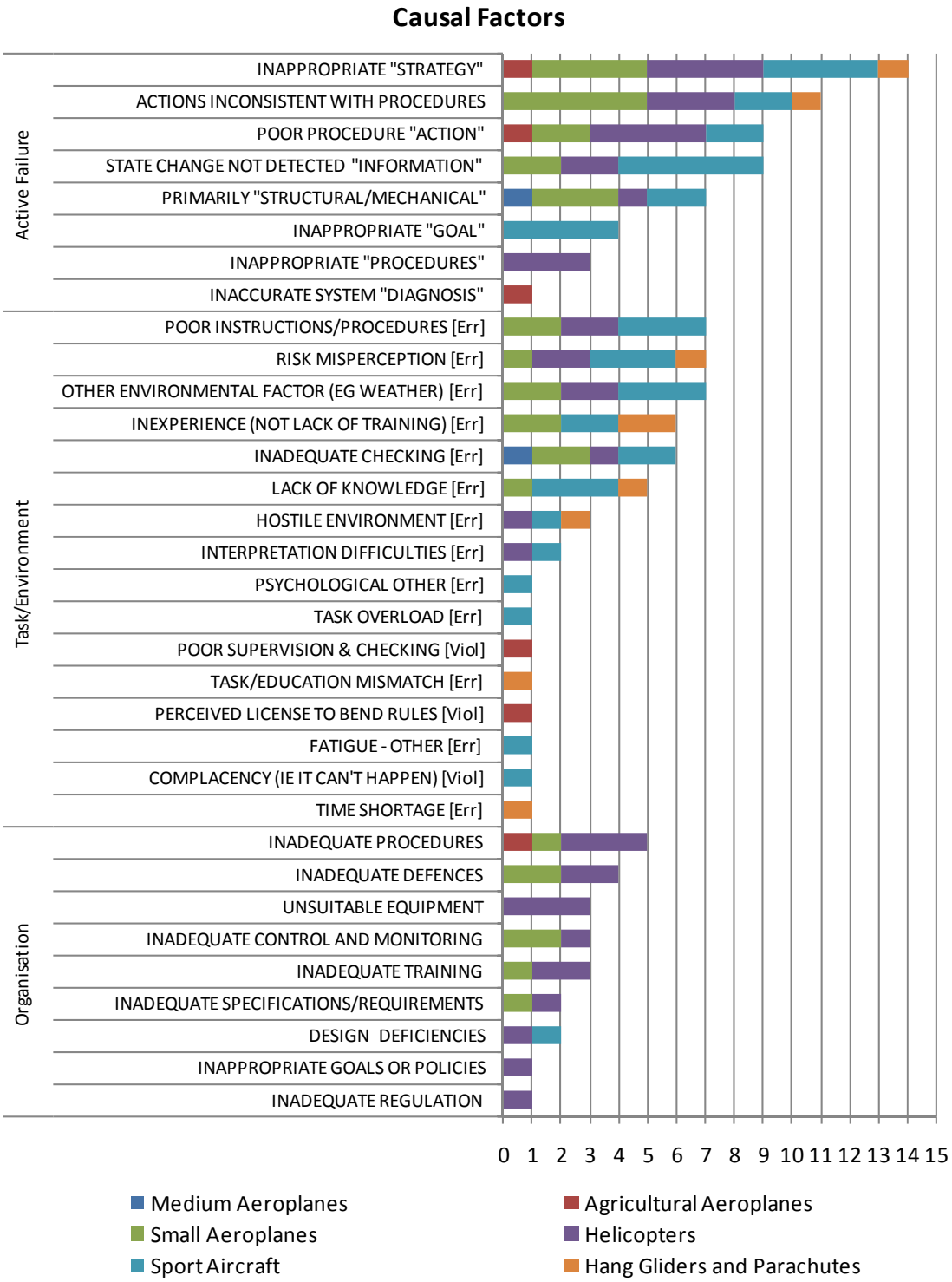
Analysis of recorded causes for Landing phase accidents shows that the most common cause is Local error factors - inadequate checking (15%).

Accident Causal Factors by Aircraft Category

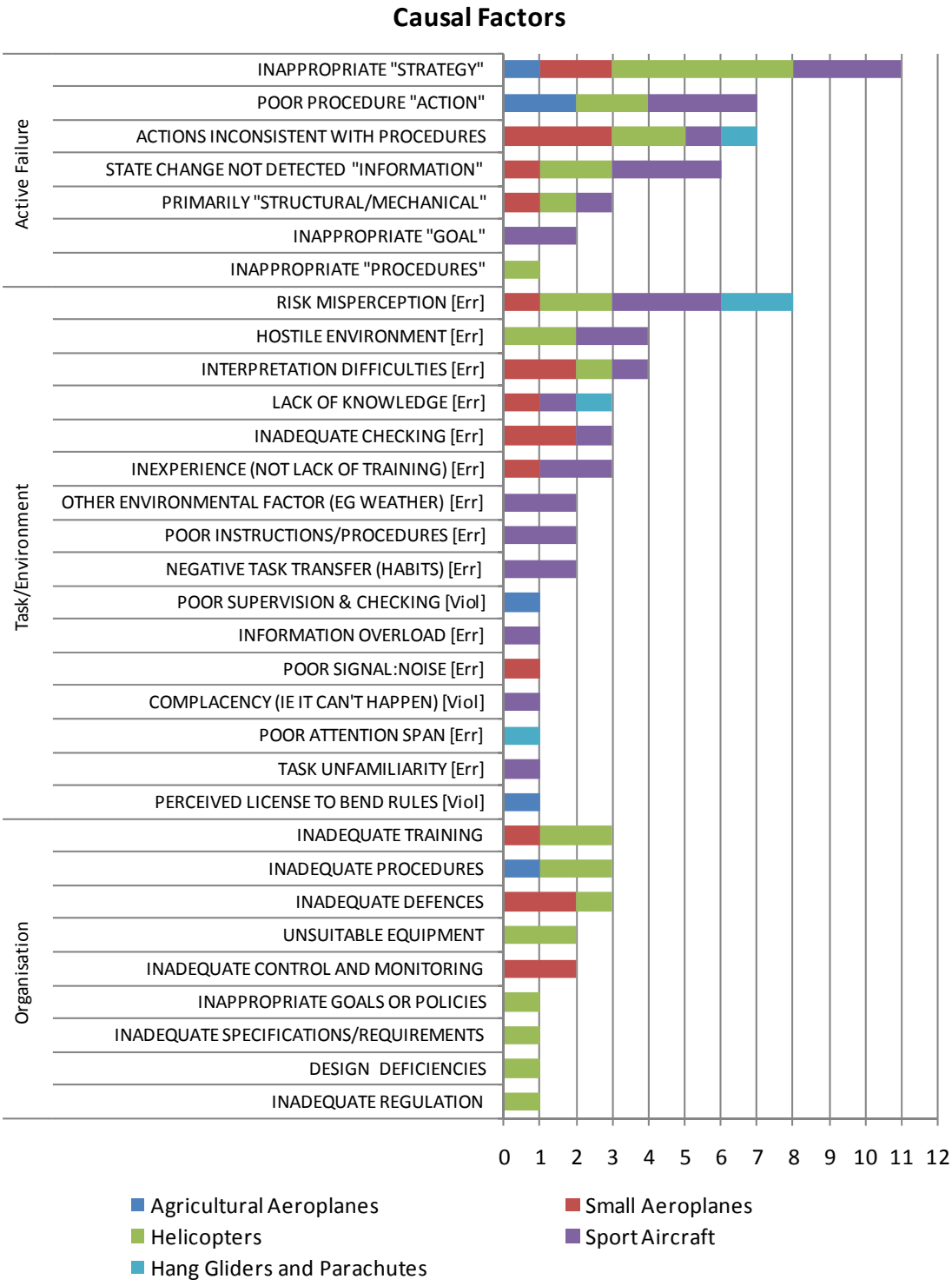
The following graph shows the number of causal factors recorded for accidents that occurred during the year ended 31 December 2009 for the various aircraft statistics categories. Causal factors have been assigned to 71 (59%) of the121 accidents.



The following graph shows the number of causal factors recorded for accidents that occurred during the year ended 30 June 2010 for the various aircraft statistics categories. Causal factors have been assigned to 82 (67%) of the123 accidents.



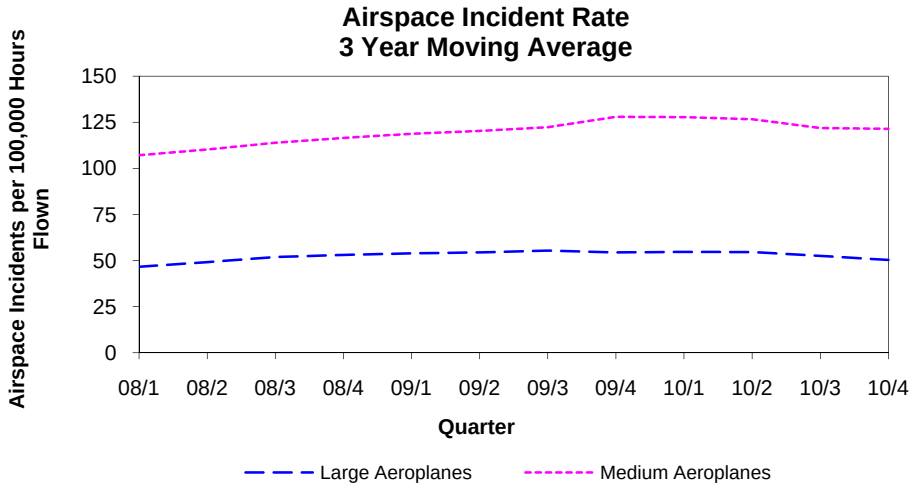
The following graph shows the number of causal factors recorded for accidents that occurred during the year ended 31 December 2010 for the various aircraft statistics categories. Causal factors have been assigned to 53 (51%) of the104 accidents.

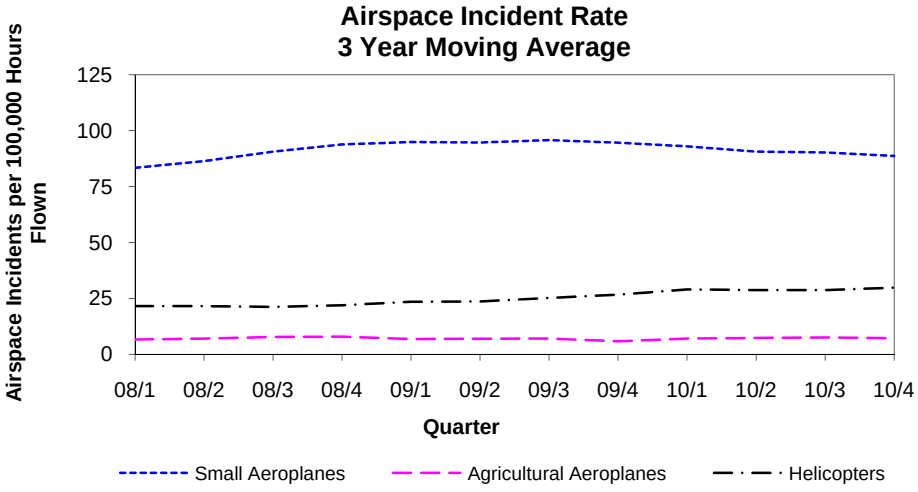


Airspace Incidents

Occurrence Trend

The following graphs show the reported airspace incident rates (incidents per 100,000 hours flown) three year moving average for the three-year period 1 January 2008 to 31 December 2010 (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	Constant
Medium Aeroplanes	Constant
Small Aeroplanes	Constant
Agricultural Aeroplanes	Constant
Helicopters	Trending up

Six-Monthly Comparison

Number of Reported Airspace Incidents

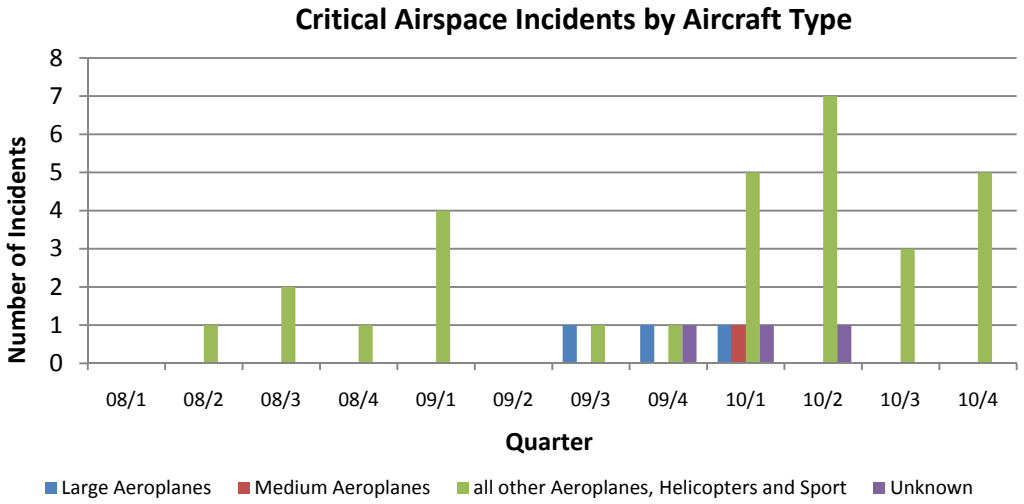
Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Large Aeroplanes	95	42	- 53	- 55.8
Medium Aeroplanes	34	22	- 12	- 35.3
Small Aeroplanes	145	143	- 2	- 1.4
Agricultural Aeroplanes	1	1	0	0
Helicopters	28	22	- 7	- 25.0
Sport Aircraft	19	15	- 4	- 21.1
Unknown	146	173	27	18.5
Total	**468**	**418**	**- 51**	**- 10.9**

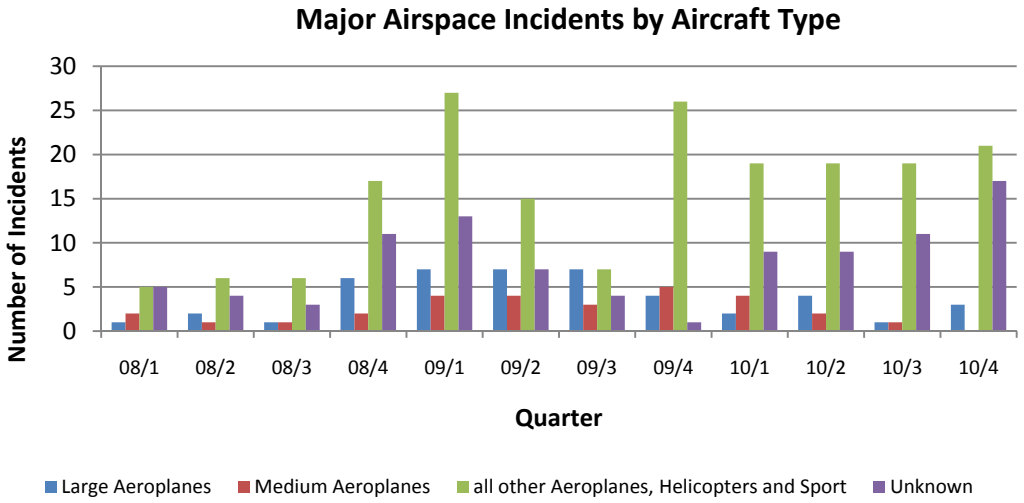
Severity

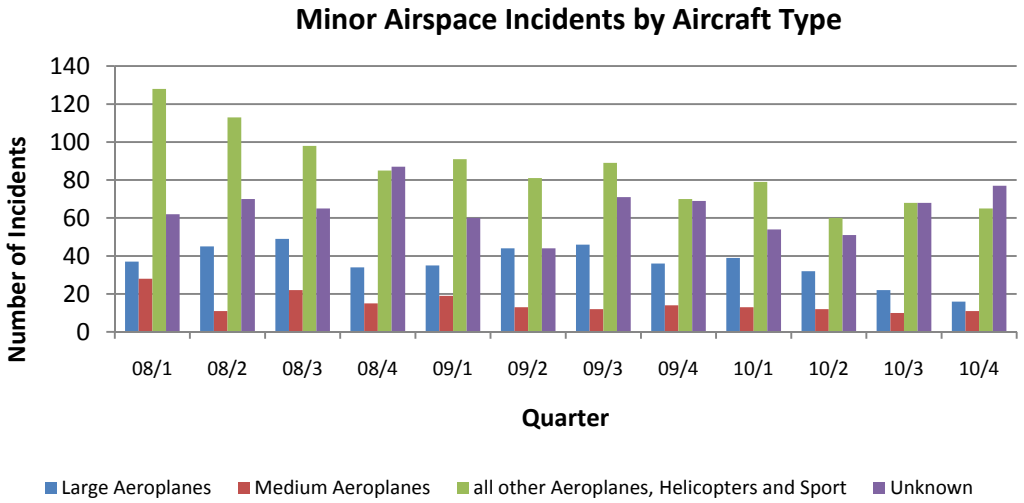
The following table and graphs show the severity of airspace incidents recorded over the period 1 July to 31 December 2010.

Six-Monthly Comparison

Aircraft Category	Severity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large aeroplanes	Critical	2	0	- 2
	Major	11	4	- 7
	Minor	82	38	- 44
Medium Aeroplanes	Critical	0	0	0
	Major	8	1	- 7
	Minor	26	21	- 5
Small Aeroplanes	Critical	1	7	6
	Major	28	31	3
	Minor	117	106	- 11
Agricultural Aeroplanes	Critical	0	0	0
	Major	0	0	0
	Minor	1	1	0
Helicopters	Critical	0	0	0
	Major	3	3	0
	Minor	25	18	- 7
Sport Aircraft	Critical	1	1	0
	Major	2	6	4
	Minor	16	8	- 8
Unknown	Critical	1	0	- 1
	Major	5	28	23
	Minor	140	145	5
Total	**Critical**	**5**	**8**	**3**
	Major	**57**	**73**	**16**
	Minor	**407**	**337**	**- 70**


Critical Airspace Incidents by Aircraft Type
Number of Incidents
0
1
2
3
4
5
6
7
8
08/1
08/2
08/3
08/4
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

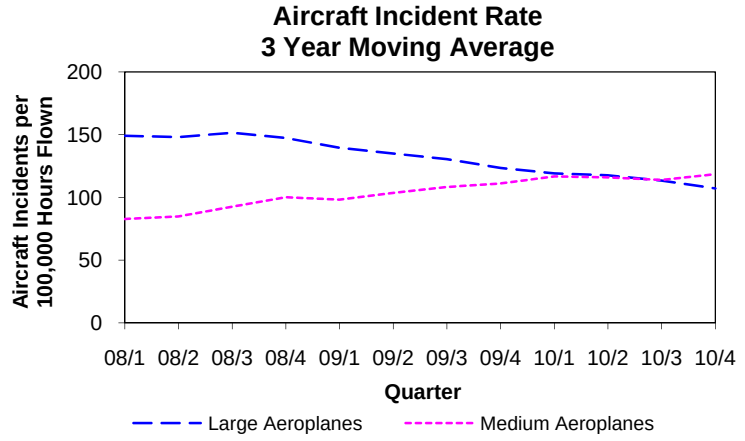

Major Airspace Incidents by Aircraft Type
Number of Incidents
0
5
10
15
20
25
30
08/1
08/2
08/3
08/4
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

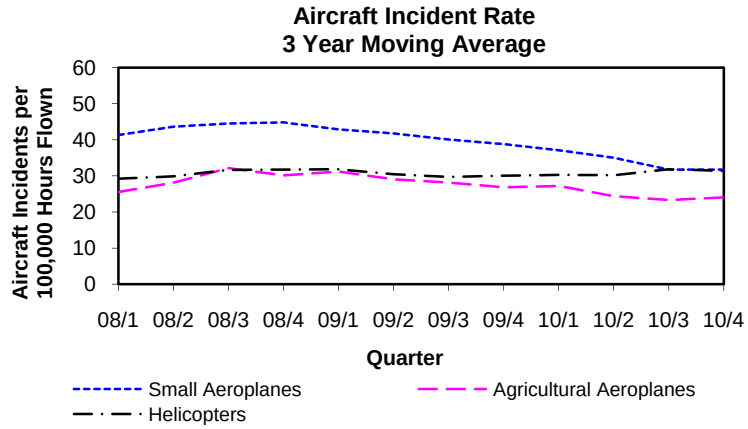

Minor Airspace Incidents by Aircraft Type
Number of Incidents
0
20
40
60
80
100
120
140
08/1
08/2
08/3
08/4
09/1
09/2
09/3
09/4
10/1
10/2
10/3
10/4
Quarter
Large Aeroplanes
Medium Aeroplanes
all other Aeroplanes, Helicopters and Sport
Unknown

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 1 January 2008 to 31 December 2010 (excluding Sport).





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

Six-Monthly Comparison

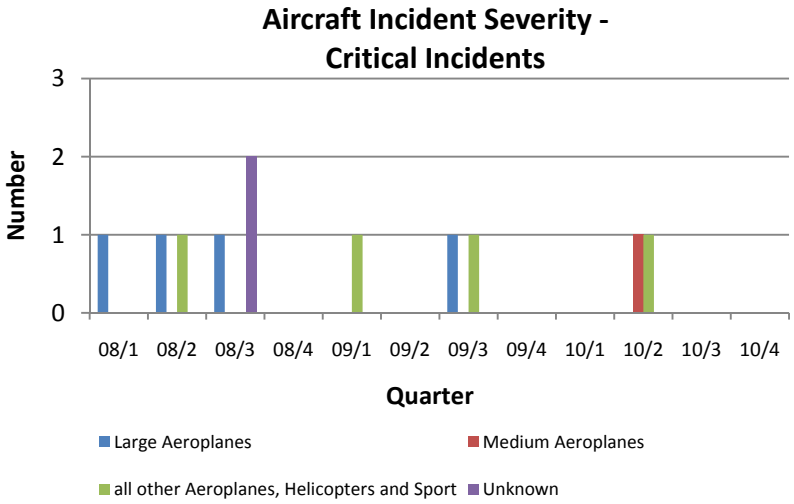
Number of Reported Aircraft Incidents

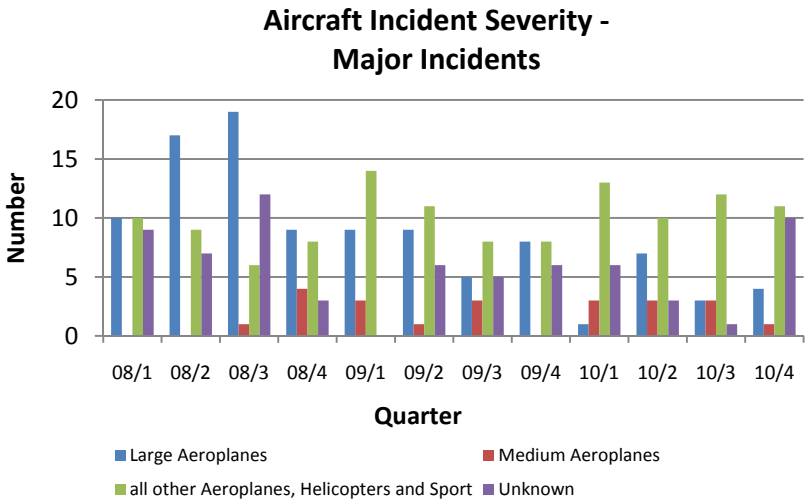
Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Large Aeroplanes	175	122	-53	- 30.3
Medium Aeroplanes	20	33	13	65.0
Small Aeroplanes	43	40	-3	- 7.0
Agricultural Aeroplanes	0	2	2	-
Helicopters	24	35	11	45.8
Sport Aircraft	17	7	-10	- 58.8
Unknown	79	137	58	73.4
Total	**358**	**376**	**18**	**5.0**

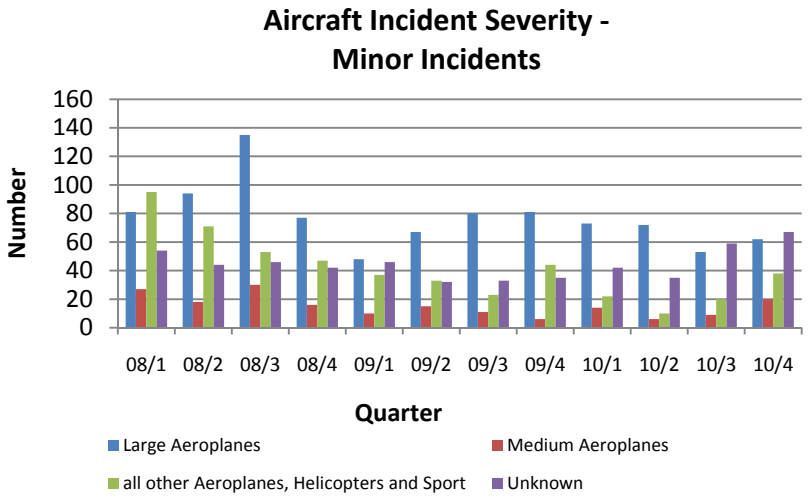
Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	Critical	1	0	-1
	Major	13	7	-6
	Minor	161	115	-46
Medium Aeroplanes	Critical	0	0	0
	Major	3	4	1
	Minor	17	29	12
Small Aeroplanes	Critical	0	0	0
	Major	8	8	0
	Minor	35	32	-3
Agricultural Aeroplanes	Critical	0	0	0
	Major	0	1	1
	Minor	0	1	1
Helicopters	Critical	1	0	-1
	Major	3	10	7
	Minor	20	25	5
Sport Aircraft	Critical	0	0	0
	Major	5	5	0
	Minor	12	2	-10
Unknown	Critical	0	0	0
	Major	11	11	0
	Minor	68	126	58
Total	**Critical**	**2**	**0**	**-2**
	Major	**43**	**46**	**3**
	Minor	**313**	**330**	**17**

The following graphs show the severity of reported aircraft incidents recorded over the period 1 January 2008 to 31 December 2010.



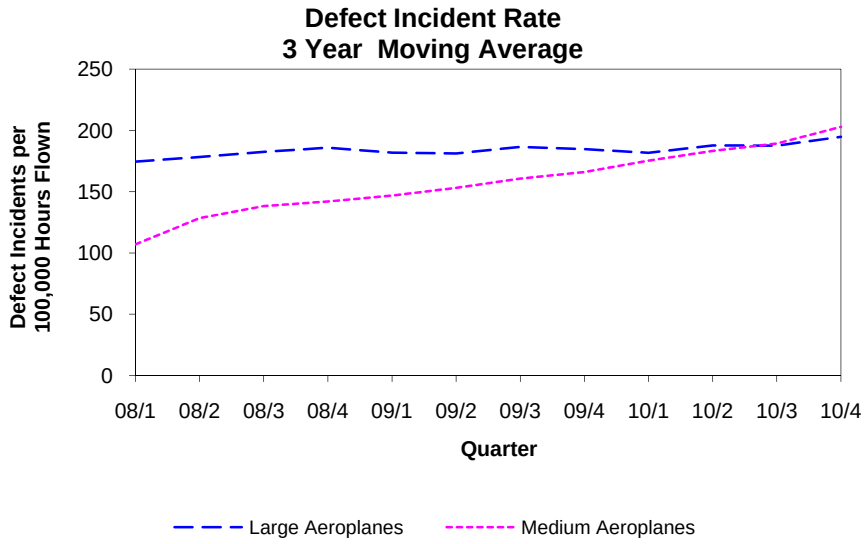


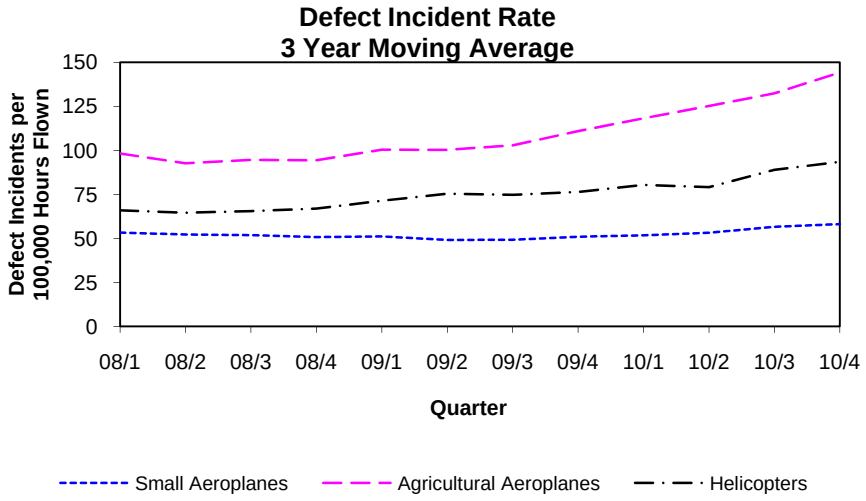


Defect Incidents

Occurrence Trend

The following graphs show the aircraft defect incident rates (incidents per 100,000 hours flown) three year moving average for the three-year period 1 January 2008 to 31 December 2010 (excluding Sport).





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

Six-Monthly Comparison

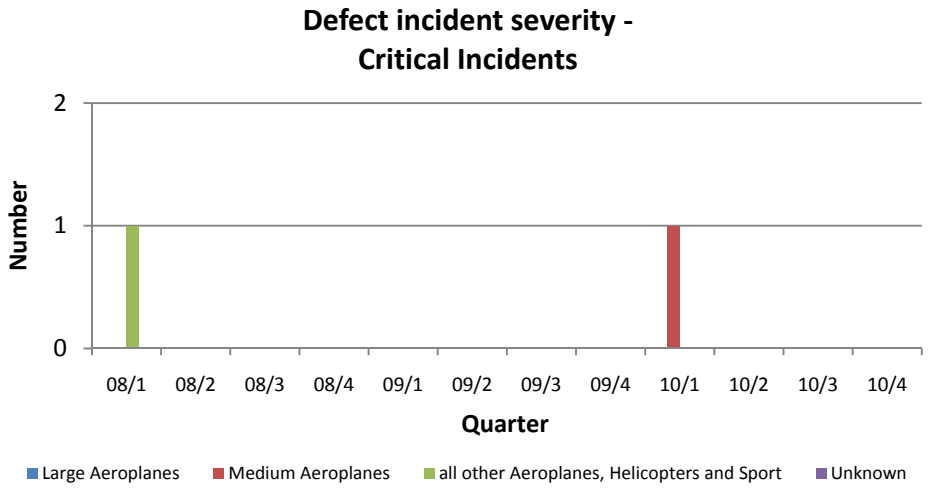
Number of Defect Incidents

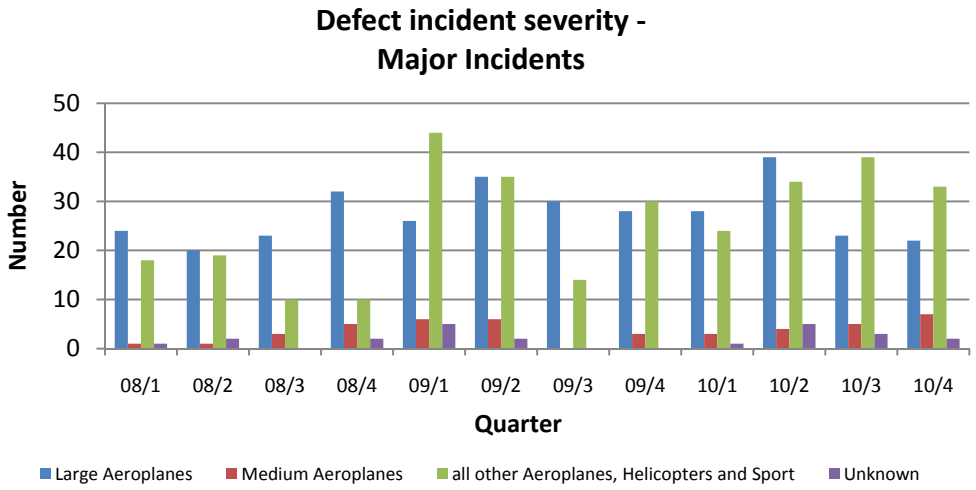
Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	
			Number	Percent
Large Aeroplanes	322	298	-24	- 7.5
Medium Aeroplanes	48	62	14	29.2
Small Aeroplanes	103	137	34	33.0
Agricultural Aeroplanes	28	31	3	10.7
Helicopters	64	139	75	117.2
Sport Aircraft	14	13	-1	- 7.1
Unknown	26	44	18	69.2
Total	**605**	**724**	**119**	**19.7**

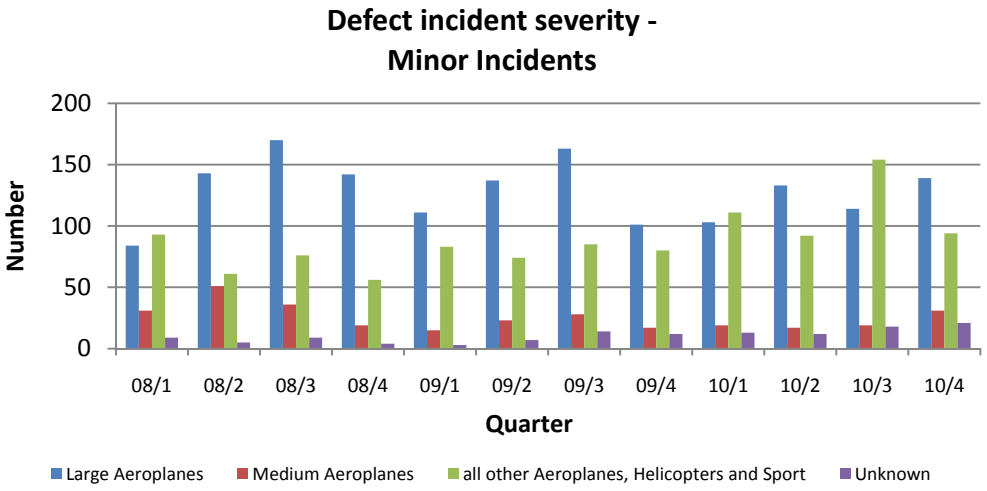
Severity

Aircraft Category	Severity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change
Large Aeroplanes	Critical	0	0	0
	Major	58	45	-13
	Minor	264	253	-11
Medium Aeroplanes	Critical	0	0	0
	Major	3	12	9
	Minor	45	50	5
Small Aeroplanes	Critical	0	0	0
	Major	24	39	15
	Minor	79	98	19
Agricultural Aeroplanes	Critical	0	0	0
	Major	5	7	2
	Minor	23	24	1
Helicopters	Critical	0	0	0
	Major	9	22	13
	Minor	55	117	62
Sport Aircraft	Critical	0	0	0
	Major	6	4	-2
	Minor	8	9	1
Unknown	Critical	0	0	0
	Major	0	5	5
	Minor	26	39	13
Total	**Critical**	**0**	**0**	**0**
	Major	**105**	**134**	**29**
	Minor	**500**	**590**	**90**

The following graphs show the severity of defect incidents recorded over the period 1 January 2008 to 31 December 2010.







Bird Incident Rates

12-Month Moving Average Strike Rate

Bird occurrence rates are measured monthly, quarterly or annually by aerodrome. This is achieved by querying the database for the number of strikes at aerodromes over a period of time summarising by month, quarter or year. 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 years ending 31 December 2010.

	Quarter											
Aerodrome	**08/1**	**08/2**	**08/3**	**08/4**	**09/1**	**09/2**	**09/3**	**09/4**	**10/1**	**10/2**	**10/3**	**10/4**
Auckland	2.5	2.9	2.7	2.6	2.8	2.1	1.9	2.3	2.4	3.1	3.1	3.0
Chatham Islands	0.0	0.0	0.0	0.0	0.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0
Christchurch	2.5	3.0	2.8	3.0	3.1	2.5	2.5	2.1	1.9	2.0	2.8	2.8
Dunedin	2.2	3.2	2.9	3.3	4.1	3.4	3.4	4.5	4.5	4.3	5.5	4.1
Gisborne	5.7	11.2	10.7	11.1	10.0	6.2	5.5	5.4	4.7	3.0	3.1	4.1
Hamilton	1.8	2.3	2.5	3.0	2.9	2.4	2.1	1.6	1.8	1.9	2.6	2.6
Hokitika	5.4	5.4	3.6	1.8	3.6	1.8	1.8	1.8	1.8	1.8	1.8	3.6
Invercargill	9.4	8.1	8.0	9.9	7.7	7.4	5.7	5.0	7.0	6.9	7.8	7.2
Kerikeri	3.8	3.8	3.8	5.0	3.8	7.5	11.3	10.0	8.8	8.8	6.3	6.3
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	5.6	6.9	5.5	6.8	5.4	5.0	6.9	6.6	8.2	12.9	12.0	10.7
Nelson	1.4	1.6	1.6	1.3	1.9	1.8	1.8	1.7	1.4	1.6	2.0	2.3
New Plymouth	2.1	2.6	2.8	3.5	4.7	5.3	4.7	4.6	4.5	4.4	5.2	5.7
Ohakea	2.0	1.7	2.2	2.7	2.3	2.3	1.8	1.5	1.9	2.5	2.6	2.7
Palmerston North	3.1	3.2	3.1	3.1	3.8	5.0	5.3	6.0	5.6	4.5	4.8	4.4
Paraparaumu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1	2.1	5.0	2.5
Queenstown	3.7	3.8	3.6	2.2	3.1	2.4	2.8	2.8	1.8	1.6	1.8	1.4
Rotorua	5.8	5.2	4.7	4.0	4.4	5.4	5.7	6.3	6.8	6.0	6.7	6.0
Taupo	1.5	1.8	2.0	1.7	2.7	2.5	2.3	2.9	2.0	2.4	2.1	2.8
Tauranga	1.4	1.3	1.7	2.0	2.1	2.0	1.3	1.0	0.7	0.9	1.4	2.0
Timaru	10.0	5.0	7.5	5.0	6.3	8.8	7.5	7.5	6.3	3.8	1.3	2.5
Wanganui	2.0	0.7	0.7	0.0	0.7	1.3	1.3	1.3	0.6	1.3	1.9	1.8
Wellington	1.0	1.0	1.1	1.3	1.6	1.6	1.5	1.4	1.3	1.6	1.9	1.9
Westport	24.2	19.4	4.8	9.7	19.4	19.4	29.1	24.4	23.9	24.6	19.6	19.5
Whangarei	10.0	1.0	0.0	0.0	3.0	4.0	9.0	10.0	8.0	9.0	7.0	7.0
Whenuapai	13.6	12.2	12.7	12.1	9.6	7.7	7.9	10.6	9.9	12.5	12.6	13.2
Woodbourne	3.7	4.1	3.5	3.1	2.9	2.9	2.9	2.9	5.4	5.2	5.7	5.7
Overall	2.9	3.0	3.0	3.1	3.3	3.1	3.0	3.0	2.9	3.2	3.6	3.6

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 3 year decrease exceeds 20% of the average
Constant	where the 3 year change is between + and – 20% of the average
Trending up	where the 3 year increase exceeds 20% of the average

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

Details as at 31 December 2010 for individual aerodromes are shown in the following table.

Aerodrome	Risk Category	Trend	CAA Action
Auckland	Low	Constant	Monitor
Chatham Islands	Low	Upward	Advise Aerodrome Operator
Christchurch	Low	Constant	Monitor
Dunedin	Low	Upward	Advise Aerodrome Operator
Gisborne	Low	Downward	Monitor
Hamilton	Low	Constant	Monitor
Hokitika	Low	Downward	Monitor
Invercargill	Medium	Downward	Monitor
Kerikeri	Medium	Upward	Advise Aerodrome Operator, Request Rectification Action
Manapouri	Low	Constant	Monitor
Napier	High	Upward	Advise Aerodrome Operator, Request Rectification Action
Nelson	Low	Constant	Monitor
New Plymouth	Medium	Upward	Advise Aerodrome Operator, Request Rectification Action
Ohakea	Low	Constant	Monitor
Palmerston North	Low	Upward	Advise Aerodrome Operator
Paraparaumu	Low	Upward	Advise Aerodrome Operator
Queenstown	Low	Downward	Monitor
Rotorua	Medium	Upward	Advise Aerodrome Operator, Request Rectification Action
Taupo	Low	Upward	Advise Aerodrome Operator
Tauranga	Low	Constant	Monitor
Timaru	Low	Downward	Monitor
Wanganui	Low	Upward	Advise Aerodrome Operator
Wellington	Low	Upward	Advise Aerodrome Operator
Westport	High	Upward	Advise Aerodrome Operator, Request Rectification Action
Whangarei	Medium	Upward	Advise Aerodrome Operator, Request Rectification Action
Whenuapai	High	Constant	Advise Aerodrome Operator, Request Rectification Action
Woodbourne	Medium	Upward	Advise Aerodrome Operator, Request Rectification Action
Overall	**Low**	**Constant**	**Monitor**

Security Incidents

Six-Monthly Comparison

Number of Security Incidents

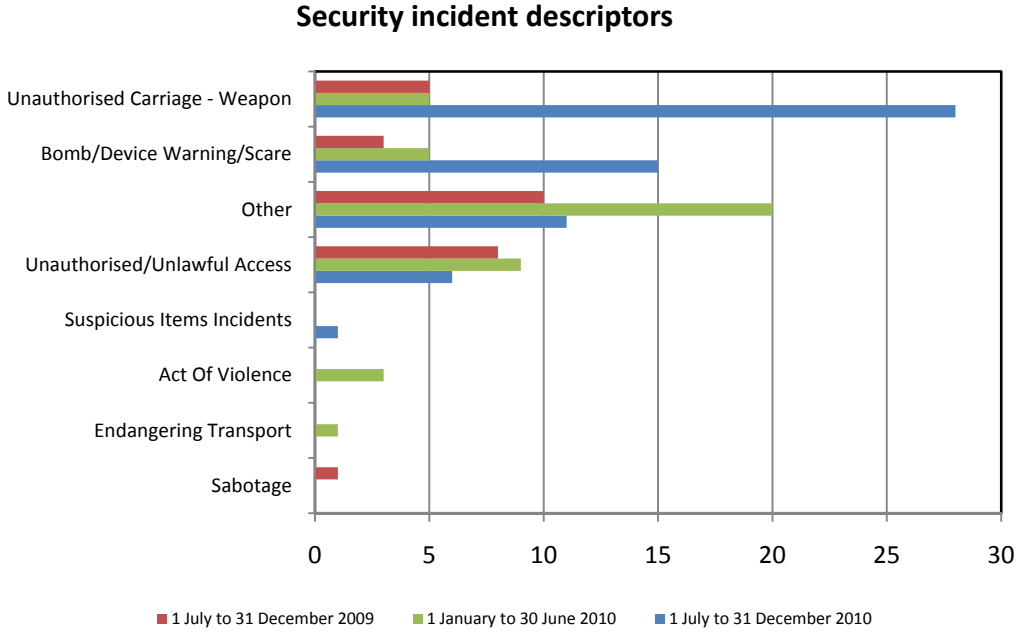
Aircraft Category	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change Number	Change Percent
Large Aeroplanes	4	2	- 2	- 50.0
Medium Aeroplanes	0	2	2	-
Small Aeroplanes	0	0	0	-
Agricultural Aeroplanes	0	0	0	-
Helicopters	0	0	0	-
Sport Aircraft	0	0	0	-
Unknown	29	57	28	96.6
Total	**33**	**61**	**28**	**84.8**

Severity

Severity	1 Jul to 31 Dec 2009	1 Jul to 31 Dec 2010	Change	Percent
Critical	0	0	0	-
Major	3	1	-2	- 66.7
Minor	30	60	30	100.0
Total	**33**	**61**	**28**	**84.8**

Descriptors

The following graph shows the numbers of occurrence descriptors recorded for security incidents that occurred during the period 1 July to 31 December 2010 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 rather limited. As time progresses the table and graphs will be extended until they cover a three year period. 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		08/4	09/1	09/2	09/3	09/4	10/1	10/2	10/3	10/4
NZAA	Auckland	12.1	10.0	2.7	2.5	5.0	5.0	10.5	2.6	0.0
NZAP	Taupo	0.0	0.0	0.0	0.0	12.6	0.0	0.0	0.0	0.0
NZCH	Christchurch	5.6	2.8	5.7	0.0	9.1	3.0	20.0	3.2	12.6
NZDN	Dunedin	0.0	6.3	0.0	0.0	9.9	0.0	16.5	8.2	11.5
NZGS	Gisborne	33.9	15.8	0.0	0.0	0.0	16.8	0.0	0.0	0.0
NZHN	Hamilton	10.3	7.5	2.7	7.6	0.0	3.6	12.6	9.0	19.3
NZNP	New Plymouth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NZNR	Napier	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.6
NZNS	Nelson	0.0	8.0	16.7	8.5	0.0	22.7	7.8	8.3	0.0
NZNV	Invercargill	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NZOH	Ohakea	0.0	0.0	0.0	0.0	7.1	5.8	0.0	0.0	0.0
NZPM	Palmerston North	0.0	25.0	6.6	0.0	0.0	0.0	6.4	0.0	0.0
NZQN	Queenstown	0.0	7.3	10.9	0.0	0.0	15.1	0.0	0.0	19.3
NZRO	Rotorua	0.0	38.4	0.0	0.0	0.0	0.0	18.3	0.0	16.5
NZTG	Tauranga	8.4	0.0	3.8	4.6	4.6	3.5	0.0	0.0	5.0
NZWB	Woodbourne	17.5	13.9	0.0	18.1	18.3	0.0	0.0	0.0	0.0
NZWN	Wellington	6.9	7.0	10.9	3.5	14.5	3.5	0.0	0.0	7.3
NZWP	Whenuapai	0.0	0.0	0.0	0.0	0.0	25.2	28.4	0.0	28.7

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 - 10	7	10	47	70	105	93	3	1	50	1	0	2	11
Aug - 10	1	9	61	66	123	101	5	0	47	2	1	0	15
Sep - 10	8	6	56	61	107	114	0	1	62	0	0	1	11
Oct - 10	8	13	49	77	116	115	3	1	64	2	0	3	6
Nov - 10	10	12	84	82	104	162	5	0	68	2	1	4	15
Dec - 10	2	10	59	50	59	106	2	0	60	5	1	1	1
Total	**36**	**60**	**356**	**406**	**614**	**691**	**18**	**3**	**351**	**12**	**3**	**11**	**59**

ACC Accident
ADI Aerodrome Incident
ARC Aviation Related Concern
ASP Airspace Incident
BRD Bird Incident
DEF Defect Incident
DGD Dangerous Goods Incident
HGA Hang Glider Accident
INC Aircraft 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

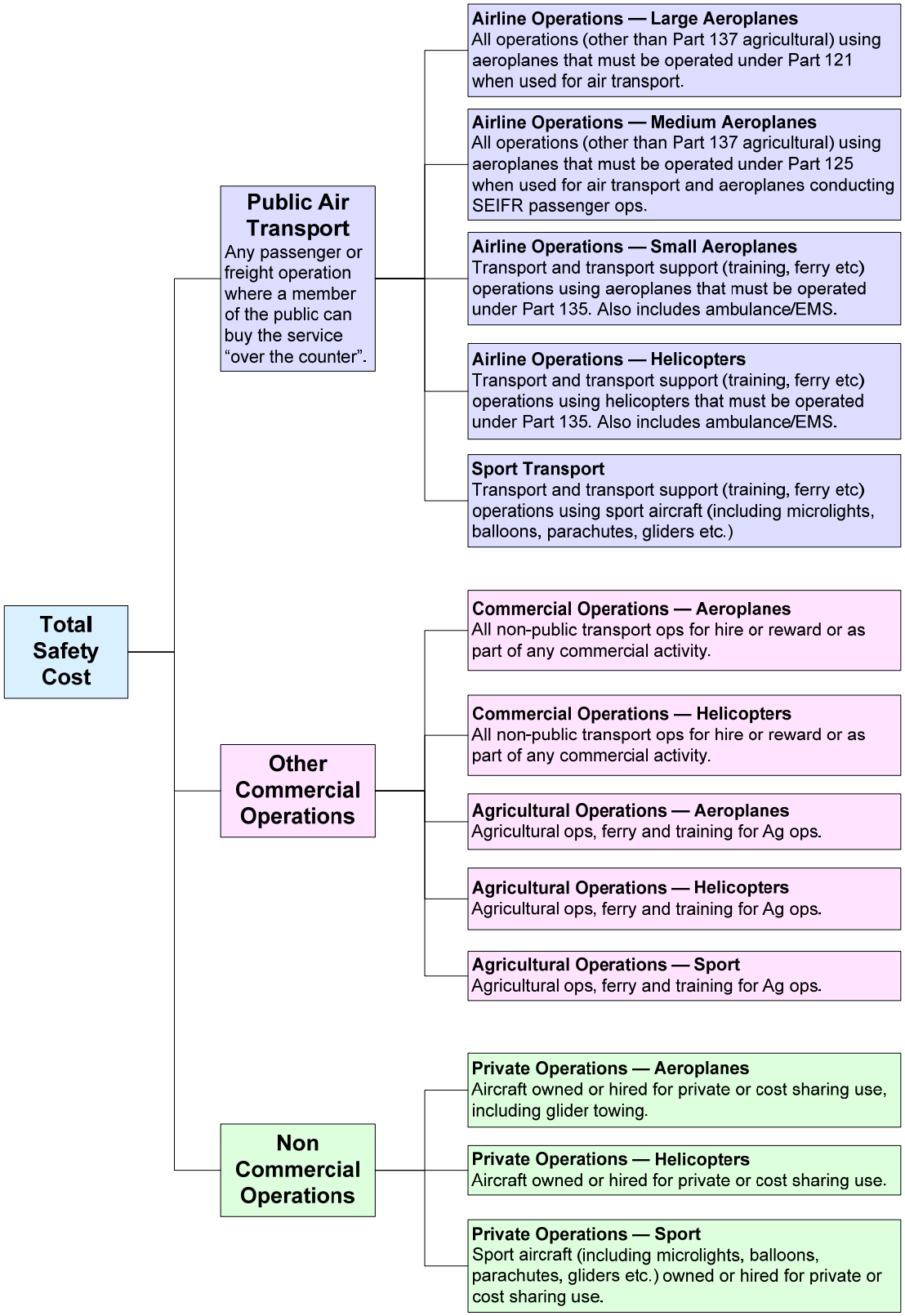
(6) involves verified exposure to infectious substances or injurious radiation.

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
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.

Target group name	General description	Includes	Excludes
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.

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

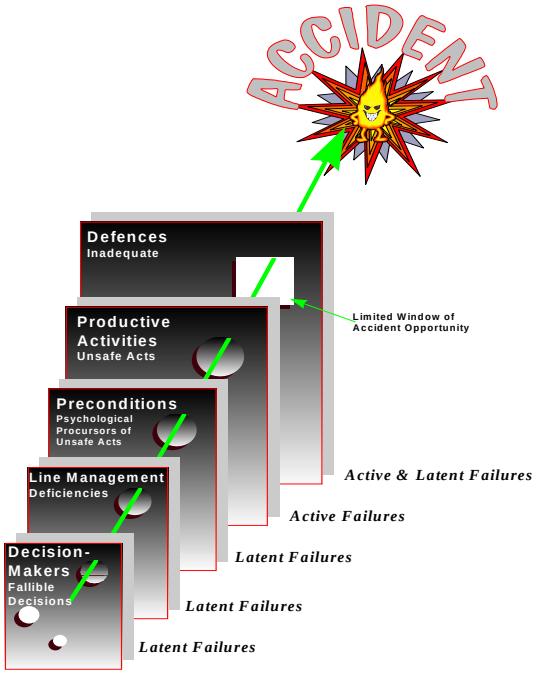


Diagram 1 shows the layers of defences that have been created within the aviation system to prevent accidents and incidents happening. It also shows how these defences have holes in them. When these holes line up there is a window of opportunity for an accident or incident. All that is needed to complete 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

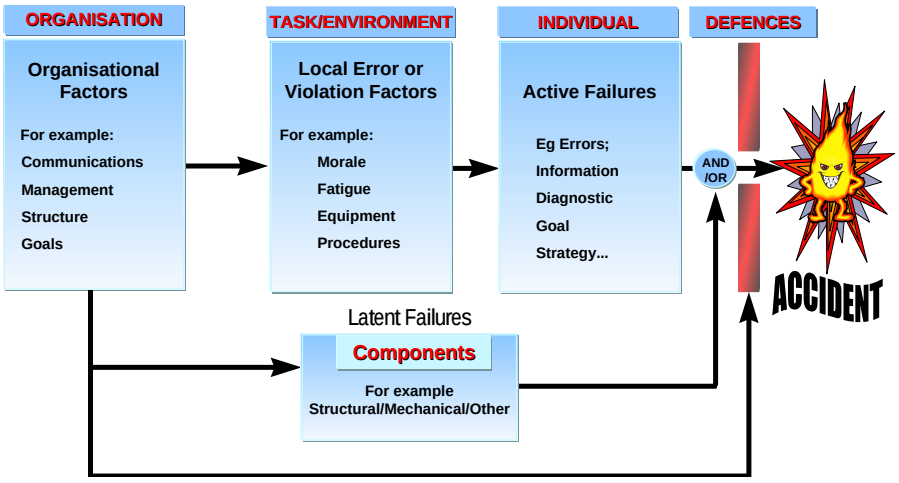


Diagram 2 shows how the latent failures are grouped into 3 areas:

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.