AIR AMBULANCE STANDARDS

David Waters

ISAS Conference 2010

10th September 2010

Air Ambulance Standards

David Waters

Chief Executive of Ambulance New Zealand

Project Manager for the Air Ambulance/Air SAR standard drafting committee.

AGENDA

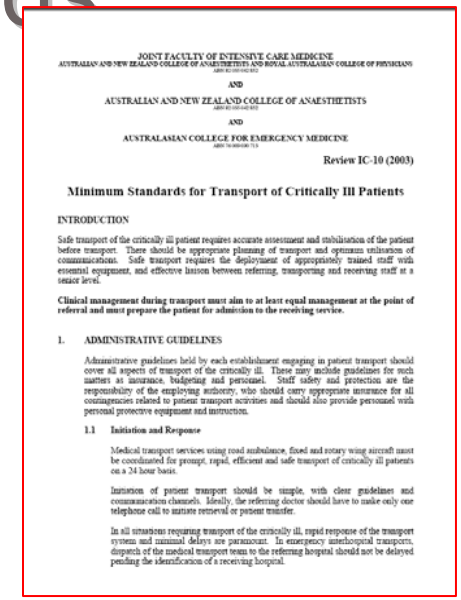
- Standards Landscape
- Air Ambulance / air search and rescue service standard
- Current Review
- Implications

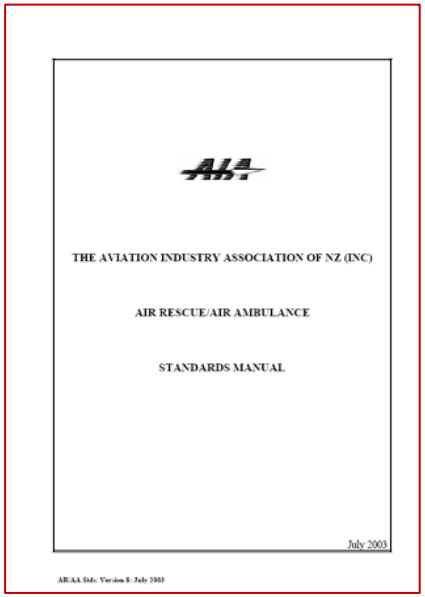
STANDARDS LANDSCAPE

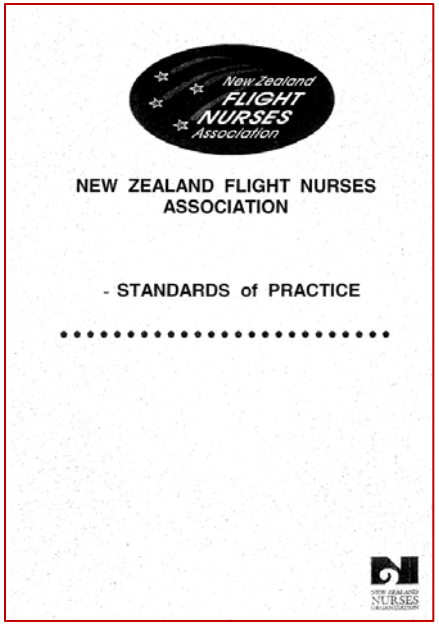
The current standards landscape

History of:

- Multiple – overlapping standards
- Conflicting requirements
- A mixture of mandatory and voluntary standards
- Confounded by contract requirements
- A perception of change control issues and lack of process
- Examples include: AIA Std, NZS 8156, Flight Nurses stds, IC 10 – Joint Medical Colleges etc.


JOINT FACULTY OF INTENSIVE CARE MEDICINE
AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS AND ROYAL AUSTRALASIAN COLLEGE OF PHYSICIANS
AND
AUSTRALIAN AND NEW ZEALAND COLLEGE OF ANAESTHETISTS
AND
AUSTRALASIAN COLLEGE FOR EMERGENCY MEDICINE
Review IC-10 (2003)
Minimum Standards for Transport of Critically Ill Patients
INTRODUCTION
Safe transport of the critically ill patient requires accurate assessment and stabilisation of the patient before transport. There should be appropriate planning of transport and optimum utilisation of communications. Safe transport requires the deployment of appropriately trained staff with essential equipment, and effective liaison between referring, transporting and receiving staff at a senior level.
Clinical management during transport must aim to at least equal management at the point of referral and must prepare the patient for admission to the receiving service.
1. ADMINISTRATIVE GUIDELINES
Administrative guidelines held by each establishment engaging in patient transport should cover all aspects of transport of the critically ill. These may include guidelines for such matters as insurance, budgeting and personnel. Staff safety and protection are the responsibility of the employing authority, who should carry appropriate insurance for all contingencies related to patient transport activities and should also provide personnel with personal protective equipment and instruction.
1.1 Initiation and Response
Medical transport services using road ambulance, fixed and rotary wing aircraft must be coordinated for prompt, rapid, efficient and safe transport of critically ill patients on a 24 hour basis.
Initiation of patient transport should be simple, with clear guidelines and communication channels. Ideally, the referring doctor should have to make only one telephone call to initiate retrieval or patient transfer.
In all situations requiring transport of the critically ill, rapid response of the transport system and minimal delays are paramount. In emergency interhospital transports, dispatch of the medical transport team to the referring hospital should not be delayed pending the identification of a receiving hospital.


AIA
THE AVIATION INDUSTRY ASSOCIATION OF NZ (INC)
AIR RESCUE/AIR AMBULANCE
STANDARDS MANUAL
July 2003
AR/AA Stds: Version 8: July 2003


New Zealand FLIGHT NURSES Association
NEW ZEALAND FLIGHT NURSES ASSOCIATION
- STANDARDS of PRACTICE


STANDARDS NEW ZEALAND
NZS 8156:2002
New Zealand Standard
Ambulance Service Sector Standard
NZS 8156:2002
Ambulance NEW ZEALAND

AMBULANCE NEW ZEALAND / AIA AIR AMBULANCE / AIR SAR STANDARD

Purpose of the new standard

To:

- Gain greater alignment with existing ambulance Standards;
- Ensure focus remains on aircraft and crew safety;
- Ensure service are provided to meet the needs of the patient;
- Reflects current international best practice;
- Define quality parameters around pilot performance, skills and equipment;
- Ensure consistent standards and service collaboration;
- Ensure a robust framework exists to enable audit of services.

Development process

Representatives of: Owner/operators – Pilots – Air Crew – Flight Nurses – Clinicians - AIA – ACC – MOH – Road – DHB – RCCNZ – NZDF– Amb. NZ etc.

Use existing sections of AIA – air ambulance Standard as an initial draft – to be developed further by the committee.

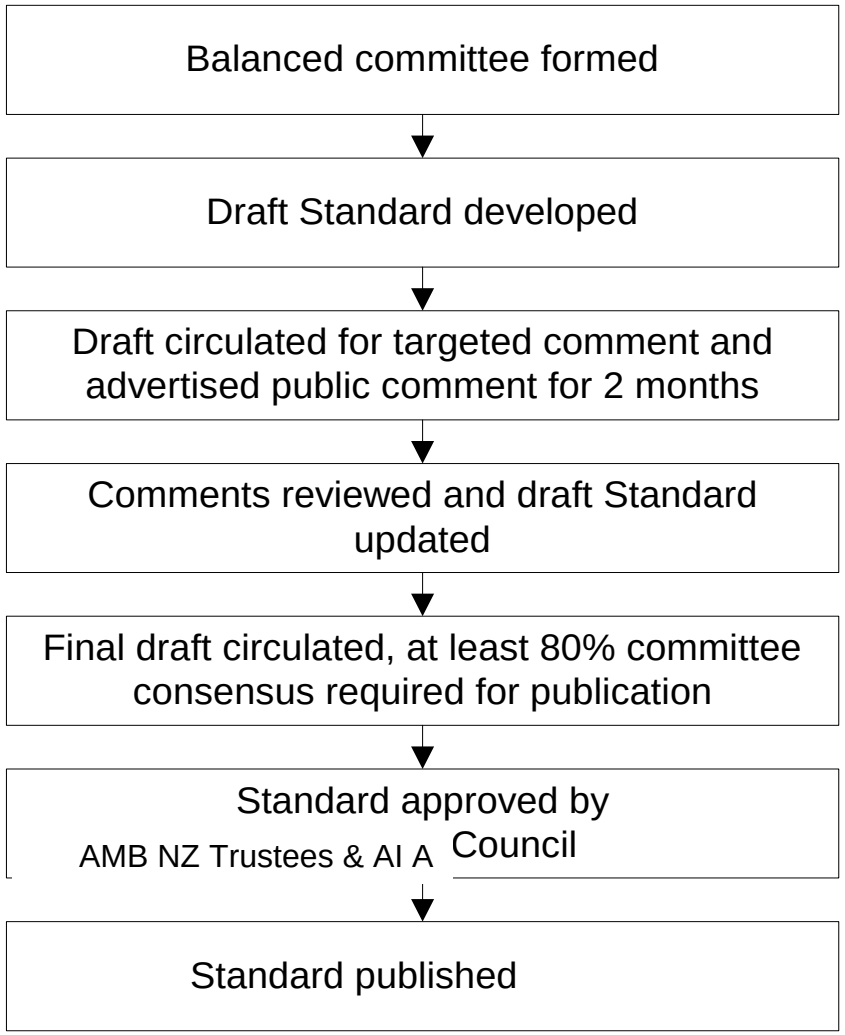
Circulate to all affected stakeholders including wider circle of above plus others as identified by the committee.

Committee reconvenes to incorporate stakeholder feedback as appropriate.

Committee retains responsibility for final acceptance and sign-off of Standard – consensus based and equal voting rights.

Formal approval from Ambulance New Zealand Trustees and AIA Council – provides assurances to all parties that due process to international standards are met.

Published and maintained.



Perceived Benefits

A joint approach by Ambulance NZ and AIA will result in:

- Agreed single Standard;
- Improved interoperability of services;
- Improved communication, data and records;
- Improved understanding of mission capability;
- Consistent audit methodology;
- Benchmarking opportunities.

CURRENT REVIEW

Expert Committee

1.	Mark Masters	Ambulance New Zealand & Committee Chair
2.	David Waters	Ambulance New Zealand & Project Manager
3.	Rea Wikaira	Aviation Industry Association of NZ (Inc)
4.	John Funnell	Chief Pilot
5.	Pete Turnbull	Chief Pilot
6.	Peter Kidd	Chief Pilot
7.	Francis Kruger	Chief Pilot
8.	Grant Withers	Chief Pilot
9.	Roger Hortop	Chief Pilot
10.	Brent Williams	Chief Pilot
11.	Graeme Gale	Chief pilot
12.	Toby Clark	Chief Pilot & AIA Representative
13.	Grant Bremner	Chief Pilot
14.	Dona Shiell	NASO
15.	Nigel Clifford	RCCNZ
16.	Shay McGuiness	DHBNZ Auckland DHB
17.	Troy Browne	DHBNZ Bay of Plenty DHB
18.	Dianna Keys	DHBNZ Bay of Plenty DHB
19.	Karyn Hathaway	New Zealand Flight Nurses' Association
20.	Fernah Peacey	New Zealand Flight Nurses' Association
21.	Henny Nicholls	DHBNZ Capital and Coast DHB
22.	Flt Sgt Russell Clarke	NZDF
23.	Dave Comber	LandSAR NZ
24.	John Fogden	CAA
25.	Dave Greenberg	Crewmember Life Flight Trust

Contents

What we wanted to achieve

- ✓The goal of this Standard is to ensure that the service provided by air ambulance/air rescue services in New Zealand promotes safety, consistency and is patient focused.
- ✓The desired outcome of this Standard is the promotion of national consistency, best practice, mature quality and risk management practices that will ensure patient and crew safety remains paramount in all aspects of air ambulance and air rescue service provision.
- ✓The concept of safety and risk minimisation underpins the development of this document and builds upon the excellent safety record experienced in the sector to date.
- ✓These Standards have been peer reviewed and critiqued not only by the providers of air ambulance/air rescue services, but also key stakeholder organisations such as RCCNZ, NASO, other health providers, search and rescue organisations and medical experts.
- ✓The Standard contains the air-sector agreed standards for pilots, crew, aircraft and essential equipment.
- ✓It is anticipated that this Standard will provide the framework for the contracting of air ambulance and air search and rescue services throughout New Zealand.

Who does it apply to?

1.1 Scope of application

This Standard applies to:

a. Air-based primary (emergency) ambulance services;
b. Air-based secondary (IHT) ambulance services;
c. Air-based search and rescue (SAR) responses;
d. Aircraft nominated to provide the back-up operations to certified operators;
e. Hospital helipads

Note: - Air Ambulance and Air SAR dispatch operations (tasking centres) should ensure dispatch staff are conversant with this Standard and incorporate the requirements into their decision-making process to ensure the most appropriate resource is tasked to meet the specific patient and mission requirements where these are known.

Table 1 - Aircraft Groups

For the benefit of this Standard, aircraft have been grouped in the following manner:

Rotary aircraft	Technical capability	Mechanical capability	Night vision goggles	T-CAS	Ground proximity warning system and EGPWS	Flight tracking	Radar altimeter	Standby artificial horizon
Group 1	IFR/VFR operations	Multi engine - Turbine	Yes	Recommended in congested traffic areas	TAWS/HTAWS recommended Or Moving map with terrain warning	Yes	Yes	Yes
Group 2	VFR operations	Multi engine - Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
Group 3	VFR operations	Single engine - Turbine	Yes	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Yes	Yes
Group 4	VFR operations	Single engine – Turbine or Piston	Not applicable	Not applicable	Moving map with terrain warning or GPS	Recommended	Recommended	Recommended

Table 2 - Aircraft Mission Capability

For the benefit of this Standard, aircraft mission capability has been defined for each aircraft group in the following manner:

Rotary aircraft	Mission capability	Hours of operation	EMS Primary response dispatched by EACCs	Level 1 patient transfer (ICU)	Level 2 patient transfer (non-ICU)	SAR - Search and rescue	SAR -Search only
Group 1	Air ambulance Search and Rescue	24 hr	Yes	Yes	Yes	Yes	Yes
Group 2	Air ambulance Search and Rescue	24 hr Limited at night as not IFR	Yes	Yes	Yes	Yes - Limited at night as not IFR	Yes - Limited at night as not IFR
Group 3	Air ambulance Search and Rescue	24 hr Limited at night as not IFR	Yes	Yes	Yes	Yes - Limited at night as not IFR	Yes - Limited at night as not IFR
Group 4	Search and Rescue	24 hr Limited at night as not IFR	No	No	No	24 hr Limited at night as not IFR	Yes - Limited at night as not IFR

Fixed wing aircraft	Technical capability	Mechanical capability	Cabin capability	T-CAS	Ground proximity warning system and EGPWS	Flight tracking	Radar altimeter	Standby artificial horizon
Group 1 CAR Part 125	IFR/VFR operations	Single or Multi engine - Turbine	Pressurised	Recommended in congested traffic areas	TAWS	Yes	Yes	Yes
Group 2 CAR Part 135	IFR/VFR operations	Multi engine – Turbine or Piston	Limited where non-pressurised	Recommended in congested traffic areas	TAWS recommended Or Moving map with terrain warning	Yes	Recommended	Recommended
Group 3	VFR operations	Multi engine or Single engine - Turbine	non-pressurised	Recommended in congested traffic areas	Moving map with terrain warning	Yes	Recommended	Recommended
Group 4	VFR operations	Single engine - Piston	non-pressurised	Not applicable	Moving map with terrain warning	Yes	Recommended	Recommended

Fixed wing aircraft	Mission capability	Hours of operation	EMS - Level 1 patient transfer (ICU)	EMS - Level 2 patient transfer (non-ICU)	SAR - Search only
Group 1	Air ambulance Search and Rescue	24 hr	Yes	Yes	Yes
Group 2	Air ambulance Search and Rescue	24 hr	Yes – limited where unpressurised	Yes	Yes
Group 3	Air ambulance Search and Rescue	Daylight only - Limited at night as not IFR	No	Yes	Yes
Group 4	Search only	Daylight only - Limited at night as not IFR	No	No	Yes - Limited at night

Table 3 – Minimum equipment requirements for air ambulance and air-SAR activities

Rotary aircraft	*Survival gear (adequate and appropriate)*	*Ambient temperature / climate control*	*Communication equipment – radio to tasking authority*	*Communications equipment – inter-crew*	*Communications equipment – satellite phone*	*Stretchers*	*Medical securing system or rack*	*Power supply 12, 24v Dc / 240v AC*	*Overhead hooks*	*Lighting – task/patient lighting*	*Oxygen supply*	*Direction finding/homing (406 MHz)*	*Direction finding/homing (121.5 MHz)*	*Protective clothing / helmets suitable for task*
Group 1	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 2	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 3	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 4	Yes	Yes	Desirable for SAR Op	Yes	Yes – for SAR Op	N/A	N/A	N/A	N/A	N/A	N/A	Desirable for SAR Op	Yes – for SAR Op	Yes

Fixed wing aircraft	*Survival gear (adequate and appropriate)*	*Ambient temperature / climate control*	*Communication equipment – radio to tasking authority*	*Communications equipment – inter-crew*	*Communications equipment – satellite phone*	*Stretchers*	*Medical securing system or rack*	*Power supply 12, 24v Dc / 240v AC*	*Overhead hooks*	*Lighting – task/patient lighting*	*Oxygen supply*	*Direction finding/homing (406 MHz)*	*Direction finding/homing (121.5 MHz)*	*Protective clothing / helmets suitable for task*
Group 1 Part 125	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 2 Part 135	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 3	Yes	Yes	Yes – for SAR Op	Yes	Yes – for SAR Op	Yes	Yes	Yes	Yes	Yes	Yes	Desirable for SAR Op	Yes – for SAR Op	Yes
Group 4	Yes	Yes	Desirable for SAR Op	Yes	Yes – for SAR Op	N/A	N/A	N/A	N/A	N/A	N/A	Desirable for SAR Op	Yes – for SAR Op	Yes

Table 4 – Minimum education, training and ongoing competency requirements for a ambulance and air-SAR activities (Pilots and crewmembers)

	Rotary aircraft operations	Pilot in command	Co-pilot	Crew member	Clinical support crew	Air observer	Medical passenger
1	*Induction inc. SOPs and aircraft type rating*	Yes	Yes	Yes			
2	*Specific aircraft orientation*	Yes	Yes	Yes	Yes	Yes	Yes
3	*In-flight procedures*	Yes	Yes	Yes	Yes	Yes	Yes
4	*Role specific equipment orientation*	Yes	Yes	Yes	Yes	Yes	*Yes*
5	*Safety in and around aircraft*	Yes	Yes	Yes	Yes	Yes	*Yes*
6	*Human factors / CRM /Threat & error management*	Yes	Yes	Yes	Yes	Yes	
7	*Physiological effects of altitude*	Yes	Yes	Yes	Yes	Yes	
8	*Stressors of flight*	Yes	Yes	Yes	Yes	Yes	
9	*Survival training/HUET*	Yes	Yes	Yes	Yes	Yes	
10	*Day and night flying protocols*	Yes	Yes	Yes	Yes	Yes	
11	*EMS and general communications*	Yes	Yes	Yes	Yes	Yes	*Yes*
12	*Aircraft evacuation procedures*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
13	*In-flight and ground fire suppression*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
14	*In-flight emergency procedures*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
15	*NVG Protocols (for night operations only)*	*Yes*	Yes	Yes	Yes	Yes	
16	*Emergency landing procedures*	*Yes*	Yes	Yes	Yes	Yes	
17	*Management of oxygen supplies*	*Yes*	Yes	Yes	Yes	Yes	
18	*Use of emergency locator beacons*	*Yes*	Yes	Yes	Yes	Yes	
19	*Visual search techniques*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
20	*Patient loading and un-loading*	*Yes*	Yes	Yes	Yes		
21	*Refuelling procedures with patient on board*	*Yes*	Yes	Yes	Yes		
22	*Hazardous materials recognition*	*Yes*	Yes	Yes	Yes		
23	*Human sling loads, strops and harnesses*	*Yes*	Yes	Yes	Yes		
24	*Winching operations training*	*Yes*	Yes	Yes	Yes		
25	*Direction controlled light protocols*	*Yes*	Yes	Yes	Yes		
26	*Flight following*	*Yes*	*Yes*	*Yes*			
27	*Aviation terminology*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	

	Fixed wing aircraft operations	Pilot in command	Co-pilot	Crew member	Clinical support crew	Air observer	Medical passenger
1	*Induction inc. SOPs and aircraft type rating*	Yes	Yes				
2	*Specific aircraft orientation*	Yes	Yes	Yes	Yes	Yes	Yes
3	*In-flight procedures*	Yes	Yes	Yes	Yes	Yes	Yes
4	*Role specific equipment orientation*	Yes	Yes	Yes	Yes	Yes	*Yes*
5	*Safety in and around aircraft*	Yes	Yes	Yes	Yes	Yes	*Yes*
6	*Human factors / CRM /Threat & error management*	Yes	Yes	Yes	Yes	Yes	
7	*Physiological effects of altitude*	Yes	Yes	Yes	Yes	Yes	
8	*Stressors of flight*	Yes	Yes	Yes	Yes	Yes	
9	*Survival training*	Yes	Yes	Yes	Yes	Yes	
10	*Day and night flying protocols*	Yes	Yes	Yes	Yes	Yes	
11	*EMS and general communications*	Yes	Yes	Yes	Yes	Yes	*Yes*
12	*Aircraft evacuation procedures*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
13	*In-flight and ground fire suppression*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
14	*In-flight emergency procedures*	*Yes*	Yes	Yes	Yes	Yes	*Yes*
16	*Emergency landing procedures*	*Yes*	Yes	Yes	Yes	Yes	
17	*Management of oxygen supplies*	*Yes*	Yes	Yes	Yes	Yes	
18	*Use of emergency locator beacons*	*Yes*	Yes	Yes	Yes	Yes	
19	*Visual search techniques*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
20	*Patient loading and un-loading*	*Yes*	Yes	Yes	Yes		
21	*Refuelling procedures with patient on board*	*Yes*	Yes	Yes	Yes		
22	*Hazardous materials recognition*	*Yes*	Yes	Yes	Yes		
26	*Flight following*	*Yes*	*Yes*	*Yes*			
27	*Aviation terminology*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	

12 INDEPENDENT CERTIFICATION

12.1 Certification

Outcome **15.2** *The service is independently certified to this Standard*

Criteria **15.2.1** The administrators of this Standard will:

15.2.1.1 Maintain and make available a list of independent auditors/audit agencies approved to assess operators against this Standard.

15.2.1.2 Ensure the independent audit agency is endorsed by a recognised accreditation scheme or equivalent that ensures good audit practice and audit consistency.

15.2.1.3 Ensure the independent audit agency utilises an appropriate mix of auditor competency and specific industry and technical knowledge to audit the service against this Standard.

15.2.1.4 Ensure that independent audit agency adopts a risk management approach to agreeing time frames for addressing non-compliance and audit findings. An example of this is provided in SNZ HB 8156 Ambulance Service Sector Standard - Assessment Handbook and the risk matrix is provided in Appendix C.

15.2.1.5 Ensure that independent audit agency has an escalation process that alerts the administrators of the Standard when non-compliance issues rated as 'high' or 'critical' are not resolved in the required timeframe as specified by the risk matrix.

15.2.2 The service shall demonstrate compliance with this Standard via an independent audit process, resulting in certification.

15.2.3 The service shall produce on demand evidence of current certification in relation to each air-frame used in the delivery of air ambulance and/or air SAR services. This shall include air-frames contracted to provide back up service when the primary air-frame is out of service.

15.2.4 The service shall ensure each air-frame (including any designated back-up air-frames) is designated as compliant to either; Group 1, Group 2, Group 3, or Group 4 as described in Table 1, 2 and 3.

Appendix C – Source - SNZ HB 8156 Ambulance Service Sector Standard - Assessment Handbook Risk Management Matrix

(Normative)

Consequence	Likelihood					
Level of Risk	The probability of this occurring is **almost certain**	The probability of this occurring **is likely**	The probability of this occurring is **moderate**	The probability of this occurring is **unlikely**	The probability of this occurring is **rare**	**Action Required**
The consequence of these criteria not being met would put consumers at an **extreme risk of harm or actual harm is occurring**	**Critical**	**Critical**	**High**	**Moderate**	**Low**	**Critical** *This would require immediate corrective action in order to rectify the identified issue including documentation and sign off by the auditor within 24 hours to ensure consumer safety*
The consequence of these criteria not being met would put consumers at **significant risk of harm**.	**Critical**	**High**	**Moderate**	**Low**	**Nil**	**High** *This would require a negotiated plan in order to rectify issue within one month or as agreed between the service and auditor*
The consequence of these criteria not being met would put consumers at **moderate risk of harm**	**High**	**Moderate**	**Moderate**	**Low**	**Nil**	**Moderate** *This would require a negotiated plan in order to rectify issue within a specified and agreed time frame e.g. within 6 months*
The consequence of these criteria not being met would put consumers at **minimal risk of harm**	**Moderate**	**Low**	**Low**	**Low**	**Nil**	**Low** *This would require a negotiated plan in order to rectify issue within a specified and agreed time frame e.g. within one year*
The consequence of these criteria not being met would put consumers at **no significant risk of harm**	**Low**	**Low**	**Nil**	**Nil**	**Nil**	**Nil** *This would require no additional action or planning*

Implications

- All airframes will need to be certified to a specific Group (i.e. Group 1, 2, 3 or 4).
- Most appropriate airframe should be dispatched based on its specific group classification matching the mission requirements.
- Standard should take effect from 1st January 2011 - 6 months prior to next contract round.
- Audits should ideally combine with NZS 8156 (back of aircraft).
- Contracts and SLAs issued in 2011 and onwards will cite the new Standard.
- Serious non-compliance findings which are not resolved within the agreed timeframe will be notified to the administrators of the Standard and to NASO if required under contracting arrangements.
- Back-up airframes will only be able to respond to missions based on their specific capability (Group) – this may be at a lower or higher level than the contracted airframe.

QUESTIONS?