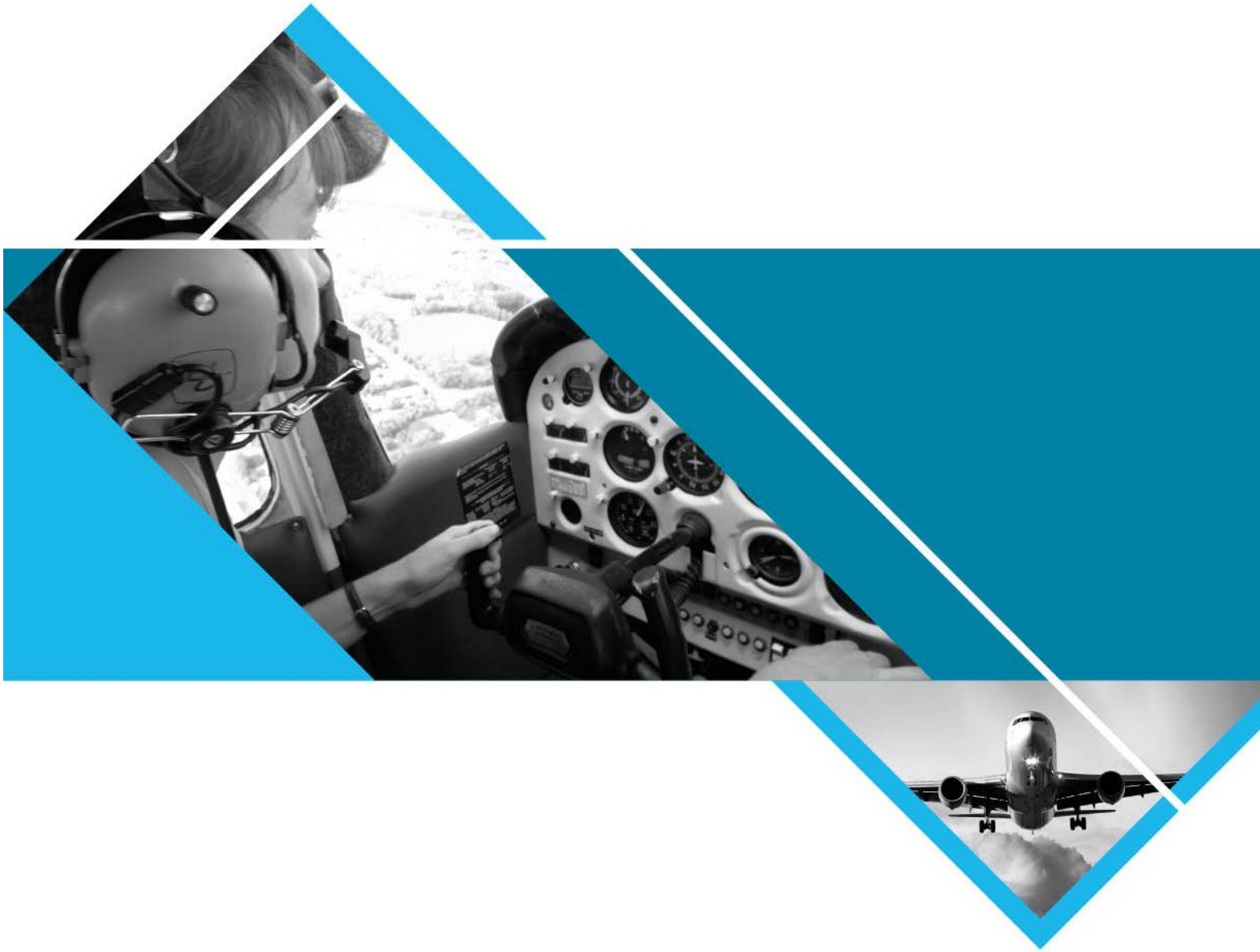
Australian Government
Civil Aviation Safety Authority



Air Display Administration and Procedure Manual

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This document contains guidance material intended to assist CASA officers, delegates and the aviation industry in understanding the operation of the aviation legislation. However, you should not rely on this document as a legal reference. Refer to the civil aviation legislation including the Civil Aviation Act 1988 (Cth), its related regulations and any other legislative instruments—to ascertain the requirements of, and the obligations imposed by or under, the law.

Preface

As a Commonwealth government authority, CASA must ensure that the decisions we make, and the processes by which we make them, are effective, efficient, fair, timely, transparent, properly documented and otherwise comply with the requirements of the law. At the same time, we are committed to ensuring that all of our actions are consistent with the principles reflected in our Regulatory Philosophy.

Most of the regulatory decisions CASA makes are such that conformity with authoritative policy and established procedures will lead to the achievement of these outcomes. Frequently, however, CASA decision-makers will encounter situations in which the strict application of policy may not be appropriate. In such cases, striking a proper balance between the need for consistency and a corresponding need for flexibility, the responsible exercise of discretion is required.

In conjunction with a clear understanding of the considerations mentioned above, and a thorough knowledge of the relevant provisions of the civil aviation legislation, adherence to the procedures described in this manual will help to guide and inform the decisions you make, with a view to better ensuring the achievement of optimal outcomes in the interest of safety and fairness alike.

Finally, I would like to dedicate the CASA Air Display Manual to Flight Operations Inspector, Stephen Guerin. May this manual, in no small way, serve as a testament to his collaborative leadership, passion and steadfast commitment to aviation safety.

Shane Carmody
Chief Executive Officer and
Director of Aviation Safety

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Glossary

Acronyms and abbreviations

Acronym / abbreviation	Description
AAC	Australian Aerobatic Club
AGL	Above Ground Level
APF	Australian Parachuting Federation
ASA	Australian Skydiving Association
AWAL	Australian Warbirds Association Limited
CAAP	Civil Aviation Advisory Publication
CFIT	Controlled Flight into Terrain
ERP	Emergency Response Plan
OAR	Office of Airspace Regulation
ReOC	Remotely Piloted Aircraft Operator Certificate
RPT	Regular Public Transport
TIF	Trial Introductory Flights

Definitions

Term	Definition
Aerobatic manoeuvres	Manoeuvres of the aircraft that involve: • bank angles that are greater than 60 degrees, • pitch angles that are greater than 45 degrees or are otherwise abnormal to the aircraft type; or • abrupt changes of speed, direction, angle of bank or pitch.
Air display	Organised flying, including cross-country events, contests, exhibitions of flying or local flights made for the purpose of carrying passengers for hire or reward performed at a public gathering. For the purposes of this guide, examples of an air display are described below: • **Airshow / Pylon Racing:** An organised event with multiple acts to demonstrate aircraft capability for the enjoyment of the general public on the basis of a general public invitation • **Single Ship Display:** A single aircraft display, conducted for an organised event on the basis of a general public invitation • **Flypast:** One or more aircraft overflying a public gathering for a non-aerobatic demonstration on the basis of a general public invitation • **Fly-in, Competition or Cross country event :** A gathering of aircraft at an event or competition not on the basis of a general public invitation (A club event where no invitation is made to the general public [[similar clubs or groups exempted]) does not need to apply for an air display approval from CASA. CASA recommends that the safety management and third party considerations are followed. **Note:** A further description of these displays and a list of what needs to be submitted with each of these displays can be found in Appendix F
Designated airspace	CASA may make a declaration designating an area of Australian Territory to be a prohibited area, restricted area or danger area pursuant to the *Airspace Regulations 2007*
Public gathering	An assembly of people at a place on the basis of a general public invitation of attendance, regardless if a charge for attendance is made.
Flying in formation	Flying in formation if they: • Are operating as a single unit with regard to navigation, position reporting and control, and • Are so close to each other that any change in height, heading or airspace of any aircraft used for station keeping results in a need for one form or of the other aircraft to manoeuvre to maintain station or avoid a collision, and Taken to be flying in formation • When the aircraft are changing station, and • During join up or break away.
Knock it Off	The call made to cease either an individual item in an air display or to cancel the entire program.

References

Regulations

Document	Title
	Civil Aviation Act 1988 (the Act)
	Airspace Regulations 2007
Subregulation 2(7A) of CAR	Interpretation: Private operation of an aircraft
Regulation 149 of CAR	Towing
Regulation 150 of CAR	Dropping of articles
Regulation 156 of CAR	Flying over public gatherings
Regulation 157 of CAR	Low flying
Regulation 262AN of CAR	Approved organisations
Regulation 101.055 of the *Civil Aviation Safety Regulations 1998 (CASR)*	Hazardous operation prohibited (Unmanned / model aircraft)
Regulation 101.410 of CASR	Model flying displays
Regulation 132 of CASR	Limited category aircraft
CAO 20.16.1	Loading - General
CAO 29.4	Air displays
CAO 29.6	Helicopter External Sling Operations
CAO 95.8	Exemption from provisions of the Civil Aviation Regulation 1988 - Hang gliders Civil Aviation Order 95.8 Instrument 2011
CAO 95.10	Civil Aviation Order 95.10 Instrument 2014
CAO 95.12	Exemption from provisions of the Civil Aviation Regulations 1988 - Gyroplanes having an empty weight not in excess of 250 kilograms Civil Aviation Order 95.12 Instrument 2011
CAO 95.12.1	Exemption from provisions of the Civil Aviation Regulations 1988 - 2 place gyroplanes and single-place gyroplanes certificated as light sport aircraft Civil Aviation Order 95.12.1 Instrument 2011
CAO 95.32	Exemption from provisions of the Civil Aviation Regulations 1988 - Weight shift controlled &powered parachutes
CAO 95.54	Manned balloons and hot airships - private operations
CAO 95.55	Exemption from the provisions of the Civil Aviation Regulations 1988 - certain ultralight aeroplanes
CASA EX 26/15	Exemption - Low level operations at air displays

Advisory material

Document ID	Title
Civil Aviation Advisory Publication (CAAP) 155-01	Aerobatics

Forms

Form ID	Title
Form 694	Post Display Report Form
Form 695	Display Participant signature sheet
Form 696	Application for Approval to Conduct an Air Display
Form 697	Display Pilot Details Sheet
Form 1284	Airspace Change Proposal
Form 1589	Airspace Risk Assessment Template

Revision history

Amendments/revisions of this Manual are recorded below in order of most recent first.

Version No.	Date	Parts/Sections	Details
2.0	September 2017	All	All content reviewed via workshops and updated and is now Part 61 compliant.. Reformatted into new CASA template
1.3	November 2010	Table of Contents	Added preface
1.2	May 2004	All	Sponsor and CASA logo updated
1.1	November 2001	All	Version 1.0 prepared for online issue.
1.0	May 1998	All	First issue

1. Introduction

The *Civil Aviation Act 1988 (the Act)*, through the *Civil Aviation Regulations 1988 (CARs)* and Civil Aviation Orders (CAOs), provides the CASA with the power to regulate exhibitions of flying, commonly referred to as air displays, flying displays or airshows, that involve civil aircraft, within Australia.

This guide provides guidance on the minimum safety and administrative procedures necessary to run such an event.

The information in this manual occasionally goes beyond statutory requirements, to allow experience gained by past air Display Organisers to be passed to those new to the organisation of such an event.

This manual should be read in conjunction with CAR 156 of and CAO 29.4, which stipulate the regulatory requirements for the conduct of air displays.

Regulation 150, subregulation 155 (4) and paragraph 157 (4) (b) of *Civil Aviation Regulations 1988* may also be relevant and should be read for applicability in respect to the proposed air display.

Note: Throughout this manual, the singular includes the plural.

2. Responsible personnel

The responsibilities of personnel and committees are as given below.

2.1 Display Organiser

The organising body must appoint one person as the Display Organiser to assume overall responsibility. This person must be acceptable to CASA. If the Display Organiser is also assuming the role of Display Coordinator they will need to meet the requirements of the Display Coordinator as detailed in section 2.2.

The Display Organiser must have the appropriate experience commensurate with the size and complexity of the event. Details of relevant experience should be included with the display application.

Responsibility for particular aspects (such as site survey, designated airspace, air traffic services, provision of emergency services and conduct of flying activities, pyrotechnics of ground based effects) should only be allocated to people with the appropriate experience and, if applicable, licences.

The Display Organiser is responsible for, but not limited to the following:

Event personnel

- The written appointment of a Display Coordinator
- The written appointment of a flying display committee
- The written appointment of a ground control coordinator
- The appointment of officials
- Flight crew

Event site and display management

- Conduct and compile risk assessment
- Where designated airspace is identified as a risk treatment, compile and submit Form 1284 to CASA
- Site suitability
- Marking of the display axis and pyrotechnical ground based effects
- Aircraft parking areas and if applicable underwing camping
- Public access areas
- The siting and control of public enclosures
- Car parking and pedestrian safety
- Spectator safety
- Extended third party safety
- Documentation checks and display insurance confirmation
- Pilots' display programs (both normal and weather-restricted programs)
- Adventure flights, Trial Introductory or Joy flights

- In consultation with the Display Coordinator and Ground Coordinator the development and implementation process of the Emergency Response Plan (ERP)
- Responsibility for the safety of spectators and third parties not associated with the event. This is one of the most important responsibilities placed on the Display Organiser for which personal liability may well be a significant factor

This list, however, is not exhaustive and is to serve as a guide; reasonable steps must be taken in the planning and execution of the event to provide safe outcomes. Each of the above items is dealt with in detail in the section entitled Site and Display Management (Section 3).

2.2 The Display Coordinator (Ringmaster)

The Display Coordinator is sometimes referred to as the Ringmaster because they control the actual flying program and assumes overall responsibility for the airborne component and safety of the display event.

Where the air display comprises a significant number of items greater than a single ship air display, the person appointed to be the Display Organiser should have considerable and verifiable aviation experience if they are also assuming the function of Display Coordinator. If the Display Organiser does not have this experience, they should appoint a suitably qualified person, preferably with air display management experience, as the Display Coordinator. This person shall be acceptable to CASA and is required to declare competency.

Note: Details of relevant experience should be attached to the display application. CASA may conduct an assessment if required to assess competency to hold the position as Display Coordinator

2.2.1 The Display Coordinator is responsible for:

- Flying discipline and coordination of acts within the display for the safe and effective execution of the event
- The compiling, approval and modification of individual flying routines in the interests of safety commensurate with pilot experience and qualifications
- The overall flying program, sequence of events,
- The cancellation or modification of the flying program in the event of unsuitable weather or other such conditions, such as aircraft unserviceability, accident / incident and Knock it off procedures
- Confirming minimum heights, maximum speeds during display
- Stipulating weather minima criteria
- Marking and coordinating pyrotechnics and other ground special effects
- Pre-display briefing material and facilities
- Conducting pre-display briefing

It is strongly recommended that, before being appointed as a Display Coordinator, the Display Coordinator should have had the experience of being an Assistant Display Coordinator or being in a similar subordinate role in at least one air display of similar complexity.

Air display competency declaration may include such things as:

- Have you had any previous applications to CASA rejected?
- Have you had reason to be interviewed about a matter of concern to the CASA or any other aviation regulator?
- Have you ever been sanctioned for providing false or misleading information?
- Have you had aviation licence revoked or suspended?
- Have you been convicted of any CASA regulated offences?
- Do you have a history or are you currently experiencing any physical or mental health problems?
- Do you have a history or are you currently experiencing any serious behavioural problems, such as drug or alcohol?
- Dependency, which may interfere with your ability to do the role effectively?

If you have answered yes to any of the questions above, please provide full details in the air display application (Section G of Form 696).

2.3 The Display Committee

At a larger display, in addition to the Display Coordinator, the Display Organiser may appoint in writing a small group of experienced people to act as a display committee. The display committee may be delegated tasks by the Display Organiser, based on the areas of expertise and experience of its members.

2.4 The Ground Control Coordinator

The Ground Control Coordinator is an essential component of a Fly-in, Competition or Airshow. The Ground Control Coordinator should have a considerable and verifiable aviation background in order to identify aviation ground based hazards and their impact on persons and property during the event.

2.4.1 The Ground Control Coordinator is responsible for:

- Crowd control barriers and public safety
- Aircraft parking and participant safety
- Emergency services access
- Disabled aircraft recovery
- Aircraft marshalling
- Refuelling arrangements and safety
- Ground marshaller and officials safety briefing
- Emergency services briefing
- Actioning ground component of ERP if required.

Experience

- Should have experience commensurate with event.

2.5 Officials

Experienced staff shall be nominated as officials and rostered to:

- Supervise the marshalling and parking of aircraft or cars
- Operate any public address system, under normal or emergency situations
- Control messengers and any other staff deemed necessary by the Display Organiser
- Provide crowd control and aircraft safety related duties.

It is usually possible to find persons competent to undertake such duties among the membership of a flying club or other suitable aviation organisation however, a base level of understanding should not be taken for granted. All officials should be briefed on their respective role and understand the risks involved in participating in the display.

Experience

Generally, only persons experienced in flight-line ground-handling of aircraft should be used in the aircraft movement area.

Should be trained or be knowledgeable in the ground marshalling signals.

All officials must be thoroughly briefed on the duties expected of them. They must be provided with some means of easy identification, such as high visibility vests, armbands or coloured shirts.

2.6 Flight crew

Each participating flight crew member must hold:

- A valid flight crew licence and flight activity endorsements, which entitles the holder (pilot) to fly the type of aircraft which is to be displayed
- A current medical certificate
- If a sport and recreational participant, valid membership to the appropriate administering organisation and appropriately certificated and endorsed.

Civil Aviation Advisory Publication (CAAP) 155-01 advises the following recent aerobatic experience as the minimum required to provide an adequate level of current practice to safely conduct aerobatics:. The recent experience section at paragraph 7.27 of the CAAP is the minimum requirement in respect to aerobatic displays.

- Below 3,000 ft above ground level (AGL) – the pilot has performed an aerobatic sequence at least three times in the preceding 12 months;
- Below 1,500 ft AGL – the pilot has performed an aerobatic sequence in the preceding 30 days down to a height of 1500' AGL or below;
- Below 1,000 ft AGL – the pilot has performed an aerobatic sequence in the preceding 30 days down to a height of 1000' AGL or below; and preferably performed a sequence down to 1000' preparatory to performing below 1000'.

A private or sport and recreational pilot may participate in an air display providing they meet the requirements of subregulation 2 (7A) of *Civil Aviation Regulations 1988* with respect to the requirements pertaining to private operations.

Full details of each pilot, including their previous experience, must be submitted on the Application for Approval to Conduct an Air Display form (see Form 696) to CASA region office.

No persons other than operating crew may be on board a civil aircraft during the air display unless the prior written permission from CASA has been obtained.

Regular Public Transport (RPT) aircraft carrying passengers to or from the air display site are not given approval to conduct a flypast while carrying passengers, however, normal departures and arrivals in accordance with the normal course of navigation are permitted.

The responsibility for ensuring that an aircraft is operated in accordance with its Certificate of Airworthiness, Permit to Fly and Air Display Approval rests with the pilot in command. This does not absolve the Display Organiser from the responsibility to take such action as is necessary should a display aircraft deviate from the bounds of any approval or operate in an unsafe manner.

3. Site and display management

3.1 Display types

Differing classifications of displays may carry varying degrees of safety requirements depending on the display type. The minimum requirements for each type of display are listed in Appendix F. These are the minimum requirements and Display Organisers should use reasonable judgement to ensure that the display is under taken with adequate due diligence in the interests of public safety.

3.2 General

This section covers the following aspects of site and display management:

- Site assessment
- Risk Assessment
- Where designated airspace is identified as a risk treatment, compiling and submitting Form 1284
- Emergency Response Plan (ERP)
- Marking of display axis
- Display area
- Marking of pyrotechnics displays
- Parking of aircraft
- Public enclosures and car parking
- Setting of minimum heights
- Weather minima
- Ground special effects safety
- Briefing
- Set up and use of Unicom including discrete frequency applications
- Document checks and insurance
- Pilots' display programs
- Joy flight, adventure flights and trial Introductory flight operations
- Post display report
- Post-display planning.

3.3 Site assessment

Many air displays are held at licensed aerodromes and can take advantage of facilities already available, a number are staged at other sites that may not include aircraft landing areas. In assessing any proposed site, the Display Organiser or a delegated official should take into account the following points:

- The suitability of surfaces used by aircraft for take-off, landing, taxiing and parking, if required

- The take-off and landing distances required and available
- Obstructions in the vicinity, with regard to the performance of aircraft types that are expected to take part
- Whether adequate airspace is available to accommodate the planned display activities, and if not, whether the required space can be acquired
- If located within a RPT destination, whether a Temporary Restricted Area or Danger Area may be required and assessed with a risk assessment to the Office of Airspace Regulation (OAR)
- The proximity of populous areas to the display site
- The location of uninvolved third party persons who may not be aware of the display.
- If the display area is located over water, the manner of ensuring that the display site is kept clear of boats and other water-born craft (i.e. jet skis, kite surfers etc.).

A populous area is any area in a city or town and it will include areas substantially used for, or is in use for, residential, commercial, industrial or recreational purposes (such as sporting fields). CAR 157 imposes minimum altitude for flight and, with few exceptions, provides that an aircraft is not permitted to operate at a height lower than 1,000 ft. over populous areas. Consideration must be given to the proximity of populous areas to the display site as well as:

- The proximity of any prohibited, restricted or danger areas, or areas that may be considered noise sensitive, i.e. hospitals, nursing homes, horse studs
- The presence of livestock farms or wildlife conservation areas
- The proximity of other aerodromes, known aircraft landing areas or other areas of known aviation activity including unmanned aircraft operations
- The availability of clear entry and exit routes for the public and emergency service vehicles including consideration of the ERP
- People and property.

A display site does not always have to be at an aerodrome. It can be a location for the assembly of spectators, the aircraft departing from a remote location, travelling to the display site, performing their routine and returning to the remote location to land. Such as a flypast, in this case the requirements pertaining to the suitability of surfaces for take-off, landing, taxing and parking, and take-off and landing distances do not apply. See Appendix F for classification of air displays and minimum requirements to be considered in the application and planning.

When selecting a site, the following factors should also be taken into consideration:

- Can adequate and easily controlled public viewing areas be provided?
- Can safe passenger pick-up points be established for joy ride, adventure flights and trial instructional flights operations outside the display clearances?
- Is there a suitable site for model aircraft flying taking into account the aircraft type and minimum distances from general public?
- Can a suitable drop zone be established for parachute operations in consideration of other operations and turbulence?
- Can a suitable termination area for helicopters be established allowing easy arrival and departure procedures to remain clear of other traffic?

- Is there a suitable area for an aircraft static display, remote to any active aircraft movement area?
- Can safe and efficient arrangements be made for aircraft refuelling including risk of fire and public safety?

There are a number of factors in relation to the site assessment and the organisers should consider all these factors carefully when finally selecting a display site. This list is not exhaustive and all safety related factors should be considered in the selection and management.

3.4 Risk assessment

A risk assessment must be conducted in respect to the proposed air display and include the proposed site of the display. This risk assessment is to identify and mitigate against all known or anticipated hazards and threats associated with the display to provide as safe an environment as possible for the public and uninvolved third party persons not directly associated with the display.

Risk assessment guidelines and examples are found in Appendix C.

3.5 Airspace change proposal

Where a risk assessment detailed in section 3.4 identifies that a restricted area or danger area may be an appropriate risk treatment, the Display Organiser, after consultation with the assessing CASA Officer, should consider submitting Form 1284 to the OAR. If Form 1284 is submitted, then an airspace risk assessment is required. CASA provides a template form to assist proponents (see Form 1589).

3.6 Emergency Response Plan

An ERP is also an important requirement for any proposed display. It provides relevant information for the procedures that are to be followed in the event an accident or incident that may have occurred at the display. This plan must identify at least the following information:

- Emergency services on site and their location
- Communication details, who and how will details and locations of incidents or accidents be conveyed to emergency services
- What occurrence may require the cancellation of the event
- Emergency services ingress and egress points to the display site
- Details of any medical services on site
- Who has responsibility and control of any accident or incident
- Details of any emergency control(command) centre on site

A template for an ERP can be found Appendix D.

3.7 Marking of the display axis

Participating aircraft normally perform relative to a line known as the display axis. This line must be clearly defined. Where the axis is not delineated by a paved runway or other obvious features, it must be marked in a method that makes it clearly visible to aircraft throughout their display routine.

All participates must be thoroughly briefed about the display axis which may vary for differing aircraft performance types.

Most events are made up of aircraft whose display speeds vary widely. It may be unduly restrictive, from the viewpoint of display presentation, to insist that all aircraft be confined to a single display axis which is distanced for the aircraft with the highest speed. It may be acceptable to have multiple display axes for various participants or types of aircraft. Should this option be considered, all pilots must be thoroughly briefed about which display axis pertains to their operation(s), both in the oral brief and in the written briefing notes.

Section 4.2 (2) of Civil Aviation Orders (CAOs) 29.4 states, in part, that an aircraft in flight below 1,500 ft above ground level (AGL) shall not:

- track or manoeuvre towards spectators within a horizontal distance of 500 m, or
- pass within 200 m horizontal distance from spectators.

These limitations must be considered when selecting a display axis.

3.8 Display area

A display area should be clearly identified in the application, the pilot briefing material and at the air display pilot brief. All operations outside of this area shall be in accordance with the normal rules and regulations.

For aerobatic competitions or displays this is generally known as the display box.

3.9 Parking of aircraft

For ease of control, aircraft taking part in the event should be segregated from both visiting and static aircraft.

Aircraft parking areas should be patrolled to ensure interference with parked aircraft by unauthorised persons does not occur. Pilots should be advised to lock aircraft and ensure they are tied down.

Should aircraft parking areas be within the minimum distances of the crowd line and display axis, ground marshallers must ensure that the area is free from pilot / passenger, spectators or underwing campers during the display.

Aircraft should be parked to allow easy access by fire vehicles and to allow other aircraft to be moved around them.

Parking areas should be out of bounds to spectators when aircraft engines are running or aircraft are taxiing. Areas designated as 'no live propeller zones' should be considered and actively enforced by ground marshallers. Follow me vehicles and sufficient marshallers may be used to escort aircraft for departure in an area that is open to public access, however tow vehicles or manual handling is preferred. If operations within public access areas is considered then this must be included in risk assessment.

In the interests of safety, smoking must not be allowed in aircraft parking areas. If underwing camping is permitted no open camp fires should be permitted in these areas.

3.10 Car parking

Sites for public enclosures and car parks must be carefully selected in relation to the aircraft flight paths and must never be located underneath them or within the display axis clearance areas.

Public enclosures and car parks should be positioned behind the crowd line, which is parallel to the display axis and beyond minimum distances.

3.11 Public enclosures and safety

When determining the distance between the display axis and the crowd line, the Display Coordinator should consider the speed of the display aircraft and the type of display being conducted (i.e. flypast or aerobatic and/or the manoeuvrability of any formation to react to an emergency situation). For aircraft flying in formation, the distances are applicable to the aircraft performing nearest the crowd line.

Pilots and formation leads should plan their flying sequence(s) in such a manner that they can always regain the display axis without infringing the minimum separation distance from the crowd line

Rotorcraft must not be flown in such proximity to spectators' enclosures, buildings or aircraft on the ground as to cause a possible hazard either from downwash or as a result of control difficulties. Similarly, rotorcraft with underslung loads should only be flown over clear areas and away from public enclosures.

Spectators' enclosures and car parks should be confined to one side of the site, thus allowing rotor wing and display aircraft maximum freedom to operate on the other side.

Effective barriers and marshalling arrangements are required to keep spectators clear of aircraft manoeuvring areas. When selecting barrier types, take into account the possibility of small children being able to pass under single rail barriers at adult waist height (such as road construction barriers), especially in close proximity to aircraft in operational areas such as the adjoining taxi-way or refuelling areas.

Areas where spectators are not permitted must be properly enclosed and sign-posted as such.

Marshallers must be assigned to control crowd movements at all times throughout the event. Specific areas of high crowd concentration may need to be subject to further marshalling scrutiny to ensure the crowd barrier integrity is maintained.

A public address system is of great assistance in crowd control and is essential where large numbers of people, spectators or general public are involved. Such a system, when installed, should be clearly audible along the entire length of the crowd line.

No aircraft may be taxied or have its engine(s) operated in any area open to the public unless provision has been made with appropriate follow me vehicles and sufficient marshallers in order to preserve public safety. Provision must be made for the movement of both display and non-display (visiting) aircraft.

The Display Organiser should also take the following factors into consideration:

- providing temporary toilet facilities to cater for the large crowds who frequently attend air displays
- effects of the display to local operators
- rubbish bins should be provided in strategic areas for public use to prevent discarded rubbish being blown at spectators by passing aircraft or creating foreign object damage to aircraft or interfering with the ground operations of aircraft
- liaising with local authorities regarding the local requirements for the provision of sanitary facilities.

Do not lose sight of your responsibility for spectator and public safety including third parties not associated with the event. This is one of the most important responsibilities placed upon the display organiser for which personal liability may well be a significant factor.

3.12 Setting minimum heights

CASA will normally authorise the Display Organiser to allow pilots to fly to the minimum height specified on their applicable flight activity endorsement. CASA may impose a minimum height which may be higher than that specified on their applicable flight activity endorsement. CASA may specify a minimum height at any location or for any area. Otherwise section 4.2(1) of the Civil Aviation Orders (CAOs) 29.4 provides an aircraft must not operate below 500 feet, except during take-off or landing.

Display pilots will also need to be able to verify that they meet proficiency and currency requirements (refer to CAAP 155-01) for aerobatic currency).

The Display Organiser must ensure that pilots are advised of their minimum heights in both the verbal brief and the written briefing material circulated before the display.

Pilots of military display aircraft participating in civil displays should be asked to advise the Display Organiser of their individual height minima.

Note: Refer to CASA EX 26/15 (as amended or replaced) for flypast minimum heights.

3.13 Weather minima

Minimum weather conditions should be determined by the Display Organiser in advance, published and strictly observed. This makes the decision to cancel the display in the event of bad weather less subjective, and makes the Display Organiser less likely to be subject to pressure to allow the display to commence in less than favourable conditions.

In any event, no display should take place in less than the prescribed Visual Meteorological Conditions (VMC).

The Display Coordinator must consider the operating characteristics of each participating aircraft. It may be necessary for the Display Coordinator to remove the aircraft from the flying program in the event of weather conditions for which a participating aircraft is not approved. It is important that individual pilots are also aware of their individual minimum weather conditions for operations in case the Display Organiser's minimum requirements do not cover operational safety of the aircraft and or of the individual display. In any of these circumstances if the minimum weather conditions stated by the display pilot are more restrictive, these will be observed for the aircraft operation and to enhance safety.

3.14 Ground special effects safety

The use of explosive / pyrotechnic devices for simulated ground bursts, smoke and other special effects must be strictly controlled by a competent and qualified person(s) appointed by the Display Organiser.

Debris from such effects must not impinge on aircraft in flight or on the ground the crowd, and other participants. The scale of any effects must be known before the event and appropriate to ensure the safety of all concerned at the event.

The affect that smoke emitted by the special effects in relation to visual separation may have on other display participants must be considered in any risk assessment. Prevailing winds at the time of the display may also increase the risk and would need to be addressed. Excess smoke may affect an airborne aircraft's ability to maintain a constant reference to the display axis, and may therefore delay the display until the smoke has cleared in the interest of safety.

Both the Display Organiser, and Display Coordinator must be fully aware of what affect such special effects will have on the display in general.

Display officials and pilots must be made fully aware of the location of special effects on the airfield, the Display Organiser must draw attention to the hazardous nature of such devices during the display pilot briefing. Their location and safety radii, if appropriate, must be out of bounds to all staff, participants and spectators excepting those directly involved with their operation.

Ground special effects should generally be offset from the flight line to ensure the aircraft are not overflying the effects, to reduce the likelihood of debris contacting the aircraft.

Great care must be taken to ensure the safety of the general public and parked aircraft in relation to debris that might become airborne during the effects activation, especially if these are elevated, in close proximity or have little geographic shielding.

3.15 Briefing

Regardless of the size of the event, the importance of a thorough, formal verbal briefing cannot be over-emphasised. Pilots taking part in a flying display must receive the appropriate formal verbal briefing in addition to the previously supplied written material.

A written brief on the arrangements of the flying program should be circulated in advance to all participating flight crew, Air Traffic Control, adventure flight, joy flight and trial instruction flight operators and those in charge of particular functions, such as safety services and ground marshals and photographers (media).

A written brief is important for pilots who are not landing at the event, but rather flying to the display site, performing the display routine and then departing the display location. In this case, the Display Coordinator must brief such participants by phone or electronic means, of any last minute changes in program sequence or timing.

A list of points that should be covered in the written brief, as a minimum, is given at Appendix A.

A formal verbal briefing must be given on the day or as soon as practicable prior to the display and at any rehearsal. All participating pilots, relevant emergency personnel, pyro-technicians and safety-related staff should attend. Those participating pilots not able to attend the formal

verbal briefing must be given a verbal briefing on all matters covered at the formal briefing prior to participating in the display.

The briefing must include the following items as a minimum and may require further briefing points in the interests of safety:

- Roll call (circulate form 695) participant signature sheet
- Time check
- Air Traffic briefing
- Set up and use of Unicom including discrete frequency applications
- Any changes to the written brief
- Program of events and any changes since the written brief was distributed
- Radio procedures and frequencies
- Current and forecast meteorological conditions
- Runway(s) and taxiway(s) in use, and parking or movement area arrangements
- Circuit patterns, holding areas and holding heights
- Pyrotechnic brief (if applicable)
- Departure and arrival procedures during the display
- Emergency procedures and landing areas (include an alternate)
- Minimum heights and distances that apply to the display
- Confirmation low passes are not permitted unless the pilot has low level rating or in accordance with CASA EX 26/15 approval.
- Display axis and crowd line locations.
- Display areas
- Procedures in the event of movements by aircraft not participating in the air display
- ‘Knock it off’ procedures and who can call.
- Airfield conditions
- Specific or additional hazards identified
- Fly neighbourly agreements
- Information regarding joy flights
- A reminder to all participants of the authority of the Display Coordinator to stop the display program at any stage during the proceedings
- Any conditions imposed on the display event in the Air Display Approval issued by CASA should be thoroughly briefed
- Pilots should also be reminded that flying over the crowd, car park or any public enclosure is prohibited and any turns towards these areas must be completed without infringing the safety buffer between the display axis and the crowd line
  - A breach such as this is an example where the 'knock-it-off' call must be made
  - A complete review of the event and any breaches must be included in Form 694

- If a NOTAM, Temporary Restricted Area or Danger Area, has been issued for the air display, this must be reviewed at the briefing, so all participants are aware of the air display airspace boundary, and the need to remain within that boundary.

Note: Additional information regarding briefings is contained in Appendix A.

Note: The issuing of a NOTAM does not remove the responsibility of the pilots-in-command to maintain a thorough lookout for other display and non-display aircraft and to 'knock-it-off' if safety is compromised.

3.16 Document checks and insurance

3.16.1 Documents

The Display Organiser must ensure that they have sighted and, where possible, (electronic or otherwise) hold copies of all relevant documents relating to each participating pilot prior to the event.

Such documents may include, but is not limited to:

- Flight Crew Licence / pilot certificate
- Aviation Medical certificate / declaration
- Proof of aircraft class or type rating (if required)
- flight activity endorsements (where necessary)
- Air Operators Certificate, or self-administering organisation approval in respect to adventure flights and TIFs, where the participant's role in the display involves a commercial operation (for example, joy flights
- Approval to conduct a flight over a public gathering, where these have been obtained from CASA by the individual pilots

3.16.2 Insurance

Although there is no requirement in Civil Aviation legislation for minimum insurance cover for an air display, the Display Organiser and participants are strongly advised to seek professional guidance on liability aspects and to obtain advice from a reputable insurance adviser with aviation experience about the appropriate level of insurance coverage. This should be done at the earliest possible stage in planning.

The Department of Defence may require a minimum level of insurance cover if military aircraft are taking part in the display.

It is important to note that the approval of an air display by CASA does not confer on the Display Organiser, or any air display pilot, any rights as against the owner of any land over which the display may be conducted, or prejudice the rights and remedies which any person may have in common law in respect of any injury to persons or damage to property resulting directly or indirectly from the display.

3.17 Pilots' display programs

An air display is not likely to run smoothly or retain the interest of spectators unless it has been carefully planned and cogently executed.

The Display Coordinator is to be familiar with each pilot's display routine and ensure that it complies with the risk assessment and air display approval. Both the full display routine and any bad-weather alternative should be agreed upon in this way prior to the program being issued.

A sample display program has been included in Appendix B, showing the minimum information that must be included in the display program. The composition of a display can vary greatly. Any of the following may be included:

- All Civilian aeroplanes
- All Defence Force aircraft (noting CASA has no jurisdiction over State aircraft)
- Ex-Military piston/jet aircraft or rotor wing aircraft
- Gliders / motor gliders
- Balloons, tethered or free
- Parachutists, paragliders, free or powered
- Trikes and Hangliders
- Sport and recreational aircraft
- Gyroplanes
- Model aircraft displays
- Drone displays including commercial drone operation
- Helicopters
- Kites.

The combination of any of the above activities needs careful consideration and coordination in terms of facilities, location, program timing, airspace requirements and duration of the display.

When planning the program, the Display Coordinator should consider the sequence of events, to ensure that the minimum amount of time is left free between display items. Five minutes is normally adequate for any single display item.

Air display pilots form part of the display and as such are informed participants relating to the display. Positioning of display aircraft either on the ground or in the air either after or before the next display can occur provided that it has been pre-arranged between each of the participants, the Display Coordinator and the Display Organiser, so that any risk has been adequately managed and addressed.

3.18 Joy flight operations

Joy flights may only be conducted by operators who hold an Air Operators Certificate endorsed for passenger-carrying operations. The Air Operators Certificate must be endorsed for the aircraft type they intend to operate.

Joy flights would not normally be permitted during the air display itself unless otherwise approved by CASA.

Aircraft engaged in joy flights must be parked away from aircraft taking part in the flying display and static display aircraft.

Passengers must be escorted between the public enclosure and the aircraft before and after each flight. The route must be planned to ensure the passengers remain well clear of other aircraft.

In accordance with CAO 20.16.1 subsection 7, a passenger manifest must be maintained for each flight, clearly showing the following details:

- Aircraft registration
- Passenger names
- Date of departure
- Estimated time of departure
- Place of embarkation
- Destination.

3.19 Trial introductory flight operations

Trial introductory flights (TIF) may only be conducted by operators who hold a Part 141/142 authorisation or an approval to conduct training under a relevant self-administration organisation.

These operations are considered to be flight instruction in the relevant aircraft type and must be conducted as bone fide flight training under the requirements of the Part 141/142 authorisation or the requirements of the respective Self Administering Operations Manual and or Exposition, which may include

- Pre-flight briefing and acceptance of risk as an informed participant
- Temporary membership to a self-administering organisation
- Signing of indemnity waivers.

3.20 Adventure flight operations

Adventure Flight Operations may only be conducted by warbird operators who hold a permission to operate at the location under Part 132 of CASR to conduct adventure flights. These flights must be conducted under a relevant Self Administering organisation, such as Australian Warbirds Association Ltd (AWAL).

Adventure flights must be in accordance with the relevant organisations permission to operate, relevant guidance material and subject to any limitations placed on the operation by the self-administering organisation, which may include:

- Flight is conducted by an approved AWAL operator with a permission to operate at that location for the purposes of an adventure flight. This permission is available from AWAL or the aerodrome operator
- Aircraft is operated in accordance with the AWAL Exposition and adventure flight guidance
- Flights are to be conducted in approved AWAL aircraft by approved pilots.
- No more than 6 persons are to be carried on any flight unless otherwise approved by CASA or an approved limited category organisation.
- Passenger briefings must be provided in accordance with Part 132 of CASR but in any case, prior to any payment for the flight and again prior to the flight, to ensure

the person has had sufficient time to make an informed decision on the acceptance of risk and to accept this risk in writing.

3.21 Departure planning

Mass departure of aircraft and spectators following the completion of the air display is to be expected, and needs to be carefully planned and managed.

Air display timing should also take into consideration the effects of last light on pilots attending the event and wishing to return home that day. The responsibility of the Display Organiser does not end at the completion of the display, departures of display and non-display aircraft must also be planned and managed to ensure safe operations are conducted.

It will be necessary to maintain crowd control after the completion of the display to avoid having spectators moving around aircraft or onto the movement areas.

Effective pilot briefing and careful marshalling will assist in ensuring an orderly flow of departures of aircraft after the display.

Post-display activities such as fire-fighting demonstrations and drawing of raffles etc. can be used to spread the departure of spectators and avoid a situation where a good outing is spoiled by a slow and uncomfortable departure.

3.22 Post display report

As a requirement of the display approval process, CASA requires the Display Organiser to provide a Post Display Report to CASA. Form 694 identifies any safety related occurrences and details relating to the oversight and running of the event. This report is required to be provided to CASA within 14 days after the event and must include the following details:

- Any safety related occurrences at the display, these include the pre and post display arrivals and departure of display and non-display aircraft
- Any actions or operations non-compliant with the air display approval
- Any ‘knock-it-off’ calls required in the interests of safety and the reason for those calls
- Organisational or administrative issues that may have an impact on safety of further or future displays.
- Copy of the completed and signed participant signature sheet (Form 695).

4. Liaison with authorities and services

4.1 Authorities to be notified

The following authorities and services constitute the minimum that should be notified:

- Notification and approval from CASA
- Notification to aerodrome operators and owners
- Police and local authorities
- Emergency and first aid services.

4.1.1 Notification and approval from CASA

Application for approval to conduct an air display is available on the CASA website via Form 696. In addition to Form 696, the application must also include:

- the detailed program of events and aerodrome diagram must reach CASA not less than the time specified on the application form
- the display pilot(s) detail sheet(s) (Form 697).

If a large or complicated event is planned involving multiple aircraft displays, large static displays, combined events such as vintage car and motor bike clubs etc., then more than 30 days may be required by CASA to assess such an application.

The application can be submitted to the relevant CASA region office. Contact details are available on the CASA website.

As part of the assessment, CASA will ensure that:

- the proposed event is notified to Airservices Australia (if required), and airspace and traffic procedures are coordinated for the event
- the activity should be notified to other airspace users through the NOTAM system, where this is possible. If the display is to occur at a non-certified or registered aerodrome then a specific location NOTAM may not be possible. In such cases a Flight Information Region NOTAM should be arranged. NOTAMs will need to be arranged by the aerodrome operator or CASA
- consideration must be given in respect to the airspace for which the display is going to occur and if the any of the following are required
- the appropriate NOTAM is issued
- In most cases a danger area or a restricted area may be arranged through OAR and will require the submission of Form 1284. This will also require a separate airspace risk assessment (Form 1589).
- Adequate time is available for the consideration, preparation and distribution of any permissions, approvals or exemptions.

The scale of CASA attendance at the event, if any, will depend on the nature of the event, scale and location of the display.

Where a CASA officer attends the display, they will be required to ensure that the regulatory requirements are being complied with. The CASA officer is not responsible for pilot briefing, although they may attend the briefing to ensure all pertinent information is provided. Should

the CASA officer observe a breach of safety regulations, or become aware of a hazardous situation or activities outside the scope of the display approval, they will initiate action with the Display Organiser to correct the situation and may, if necessary, suspend operations.

When all arrangements have been finalised, and the display approval has been issued, CASA will issue a NOTAM advising, as appropriate, the following details:

- airspace status, ATC services, if provided - designated airspace (danger or restricted areas) or other arrangements
- vertical and lateral dimension of the Display airspace
- time period of airspace promulgated
- any special radio frequency arrangements
- any other operational requirements

Note: For large displays an AIP sup may be supplied to provide additional information for pilots.

4.1.2 Notification to Airservices Australia

The Display Coordinator is not required to contact or seek the permission from Airservices Australia in order to conduct an air display. CASA does this as part of the approval process, if necessary. However, CASA does advise that the Display Coordinator check with the local Airservices Australia representatives to clarify any local requirements prior to seeking application.

If the Display Coordinator has any queries regarding local requirements, they should contact the CASA region office processing their application.

4.1.3 Notification to, and permission from, the aerodrome owners and operators

The Display Organiser must obtain the permission of the aerodrome owner / operator at the earliest stage of planning and prior to making an application to CASA.

A copy of the permission must be attached to the CASA air display application form

4.1.4 Police and local authorities

Where applicable, the Display Organiser should involve the local police at an early stage in the display planning so that arrangements can be made to control vehicular traffic as well as providing emergency services. In some instances, approval from the police may be required.

Provide local authorities having control of various public services which a Display Organiser may wish to use, with early advice of the intention to hold the display so that any subsequent approach for assistance will not be unexpected. In any case, such local authorities may wish to be aware of the additional air activity which is to take place, in anticipation of any queries or complaints which may arise.

4.1.5 Emergency and first aid services

Suitable arrangements must be made to have first aid facilities available for both spectators and participants. Minor first aid should be available on site for such cases as severe sunburn and heat exhaustion which are common occurrences at air displays. Voluntary first aid organisations such as St. John Ambulance Australia or the Red Cross may be able to assist with this service.

Emergency Management Services must be advised and directly briefed by the Display Organiser, Display Coordinator or the Ground Coordinator of the proposed display and they shall be provided a copy of the ERP. In many cases, fire brigade and ambulance officials may decide to station emergency vehicles at the event and are required to be briefed of the risks that may be present if an on-field event may occur, this brief should also include such things as the location of on-field emergency access and event procedures in case of an emergency to control crowds and participants.

Written instructions on the actions to be taken in the event of an aircraft accident or other emergency should be drawn up by the Display Organiser in conjunction with local emergency services for the guidance of all persons concerned with the running of the event. These instructions should include emergency contact numbers where appropriate and be contained in the ERP.

A suitable, reliable means of contacting emergency services should be readily available to the Display Organiser, Display Coordinator and the Ground Coordinator at all times.

5. Special program events

5.1 Program events

This section covers regulations and other details pertaining to the following special events:

- Sport and recreational aircraft displays
- Balloon displays
- Parachuting displays
- Model aircraft displays
- Drone displays
- Glider displays
- Banner towing displays
- Kite flying
- Military aircraft
- Military re –enactments, air and ground
- Firebombing or Ag displays.

5.1.1 Sport and recreational aircraft displays

Hang gliders, recreational aircraft, gyroplanes, gliders, ex-military aircraft, weight shift microlight and powered and non-powered paragliders may be included in the program of an air display.

Many of these aircraft operate under exemptions to certain regulations, while some operate to requirements of the CARs.

The CAOs governing the operation of the above machines are:

- Hang gliders CAO 95.8
- Recreational fixed wing CAO 95.10 and CAO 95.55
- Weight shift Microlights CAO 95.32
- Gyroplanes CAO 95.12 and CAO 95.12.1
- Gliders CAO 95.4

References for ex-military aircraft can be found under regulation CAR 262AN and relate to an approved organisation administering ex-military and replica aircraft.

Whilst full details of the planned routine must be included with the display application, it is important to remember that some of these aircraft are restricted in their operations and many are not permitted to engage in aerobatic flight. It is also required that the administering organisation has viewed and approved the routine to be acceptable for demonstration at the air display commensurate with the pilot's skill level, qualifications and competence.

All sport and recreational aircraft must be identified by their manufacturer, trade name and model. All non-sport and recreational pilots must provide their pilot certificate number and aircraft registration in order for this to be confirmed as current and appropriate for the operation and display sequence with their administering organisation.

5.1.2 Balloon displays

Permission may be granted for both fixed (CAR 260) and manned free balloons (CAO 95.54) to operate at the event.

It should be noted that the minimum heights for aircraft at the display are related to the highest point of the terrain, or any obstacle thereon, within a radius of 600 m of a line extending vertically below an aircraft. A poorly placed tethered balloon could force other aircraft to operate at greater heights than would otherwise be necessary.

Because of the inflation and deflation process, manned free balloon flights can be a time-consuming operation. This should be timed accordingly within the event program.

5.1.3 Parachute displays

The requirements for a parachute display, including the minimum distances from spectators and aircraft to the centre of the dropping zone, are set out in the Australian Parachuting Federation (APF) and Australian Skydiving Association (ASA) operational regulations. These requirements may depend on the parachutist's certificate category and must be sanctioned by a licensed parachute Display Organiser.

Any parachutists conducting the display must be approved by the APF or ASA as being current and competent to conduct the display as well as possessing the required qualifications and experience to conduct the operation safely.

Pilots of parachuting aircraft should allow sufficient time for take-off and climb to exit altitude. If the parachute descents are to be made from 5000 ft or above, it should be possible to stage another event during the climb to the exit altitude.

The pilot of the drop aircraft climb profile should be downwind of the aerodrome and then be advised by radio when it is clear to commence the drop run.

Any dramatic or sudden changes to surface wind speed and direction should be communicated to the parachuting aircraft.

No aircraft engines or rotors are to be running near the proposed parachute landing area while a parachute descent is under way. This is to avoid possible contact with rotating propellers or turbulence created by rotors or jet wash.

5.1.4 Model aircraft displays

Model aircraft displays may be held on the movement area within but no closer than 30 m from the crowd line. They can be held as part of the main program or independently of the program in an area remote from the movement area.

Model aircraft displays must not take place in the vicinity of the aerodrome while other aircraft movements are in progress.

Under regulation CASR 101.410, a person may conduct a model aircraft flying display only in an approved area (an area approved by CASA under regulation CASR 101.030); and in accordance with the rules and procedures of an approved aviation administration organisation.

The model aircraft operator is required to attend the pre-display briefing in order to fully appreciate and integrate into the broader air display context.

All model aircraft must comply with regulation CASR 101.055, which states a person must not operate an unmanned aircraft in a way that creates a hazard to another aircraft, another person, or property.

An unmanned aircraft cannot operate over a movement area or runway of an aerodrome or the approach or departure path of a runway of an aerodrome, without an approval of ATC (for a controlled aerodrome), or CASA under regulation 101.080 (for a non-controlled aerodrome).

Commercial operations

Aerial filming of the air display by an unmanned aircraft is common with the advent and advancement in drone technology; however these operations in close proximity to an air display can have the possibility of distracting air display pilots from the operation of the aircraft and in extreme circumstances could represent a hazard to the display aircraft and an elevated risk.

Commercial operations of unmanned aircraft at an air display must be undertaken only by accredited Remotely Piloted Aircraft Operator Certificate (ReOC) operators unless the unmanned aircraft is being operated in the excluded category. Operations conducted under a ReOC may be closer to spectators than 30m under the conditions granted in the ReOC operator's certificate, approval by CASA or the CASA Air Display Approval.

Requirements and limitations that may be considered:

- Geo fencing etc.

5.1.5 Glider displays

Gliders may be incorporated in a display program but must be conducted in accordance with any requirements of the Gliding Federation of Australia (GFA) under CAO 95.4. Careful consideration should be given to the launching method and selection of the launch area and risks associated with such launching modes such as winch launching. Unless proper management is exercised and personnel experienced in operating gliders to a tight schedule are available, the airfield may become cluttered with vehicles, tow ropes and aircraft.

Further increased risk may also be encountered with overflying or inbound aircraft to the display not being aware of the winch launched gliders and the dangers of their support equipment both in the airborne environment and on the ground.

If a winch is to be used to launch gliders, you will have to be very careful about cable laying and cable drift during launch. Display Organisers/Coordinators shall plan the display to allow time for the cable layout and recovery so that the movement area is not obstructed during the powered aircraft operations.

Consideration of the wind during launch is also paramount to ensure safety of the launch cable drifting onto the crowd when released or in the event of a cable break.

This risk may need to be considered by the Display Organiser so as to ensure the safety of other airspace users and all parties on the ground. Should these risks be identified as unacceptable the winch-launched glider operations will need to be reconsidered in the interests of safety.

Gliders being launched by tug should also be considered for the increase in risk their towing operations may introduce. Gliders to be held on tow in conditions of poor thermal activity to ensure the glider display can be closely coordinated with other program items.

Winch-launch glider operations depend entirely on thermal activity for sustained flight and are much more difficult to coordinate within a program. To allow for an unpredictable flight profile, a winch-launched glider display should be allocated a block time and strictly coordinated.

CAO 95.4 covers the requirements for glider operations. The minimum height for aerobatic demonstrations in gliders is 1,000 ft AGL or 2,000 ft AGL if within 2 NM of a licensed aerodrome, unless the pilot has prior approval from CASA to conduct aerobatics at a lower height.

5.1.6 Banner towing

Specific permission is required from CASA under regulation 149 of CAR for a pilot to tow and drop banners, and for an aircraft to pick up a banner in flight. Additionally, the area used for pick-up and drop must be approved.

Aerial work organisations must be licensed for banner towing and this should be provided during the application process.

If intrusions by persons and equipment onto the runway strip are required for an aerial pick-up of a banner, the aerodrome may need to be closed for an adequate time to ensure safety of operations. A ground launch of the banner is a much simpler procedure and does not need the aerodrome to be closed.

The type of banner launch is required to be assessed when banner towing is part of the display program.

5.1.7 Sports aviation bodies

All Sports Aviation Associations or Federations in Australia are governed by a dedicated sports aviation administration relevant to the type of activity. For example, the gliding is governed by the Gliding Federation of Australia and recreational fixed wing flying is governed by Recreational Aviation Australia.

A full list of these bodies is can be found on the Air Display Manual website

Where an activity is to be included in the program of the air display, and that activity is governed by a Self-administering organisation or the like, written confirmation from the relevant body that the participant and the aircraft are suitably qualified and appropriately registered participate in the display should be included with the submission to CASA.

CASA also requires each administering organisation to provide written acceptance of the proposed display routine in order to provide a declaration that the person is competent to perform the routine and that the routine is acceptable to the organisation to display at a public event without compromising the safety of the participant or the public.

5.1.8 Kite flying

To fly kites at an aerodrome a CAR 260 permission is required. Kites may only be flown in accordance with Part 101 of CASR.

Appendix A. Points for inclusion in written brief

The contents of the written brief appropriate for any event will vary with the scope and complexity of the event itself.

The following list is a minimum.

- Airspace aspects, including:
  - display area and other airspace boundaries
  - air traffic services
  - flight paths
  - avoidance of noise sensitive areas
  - holding points
  - circuit procedures
  - radio frequencies (including any dedicated air display frequency, if allocated)
- Timings
- Map or sketch showing crowd lines, display axis and minimum separation from spectators. If more than one display axis exists, these should all be shown and clearly marked
- Display area
- A map of the aerodrome showing general parking areas, marshalling areas and static display areas
- Minimum heights and weather minima
- Procedures for cancellation or variation of the program
- Aircraft parking and refuelling arrangements
- Arrangements for joy flights, adventure flights, Trial introductory flights and visiting aircraft
- Emergency arrangements particularly ‘knock it off’ procedures.
- Details of place and time where the formal pre-display briefing will be conducted, at the event.

In addition to the above topics, the following specific points should be included in any written brief:

- The need for the pilot-in-command to ensure that the aircraft is operated in accordance with its certificate of airworthiness or permit to fly
- Pilots shall ensure that they meet recency and competency requirements including relevant flight review requirements.
- Aerobatic displays should meet the CAAP 155-1(0) recommendations.
- Only manoeuvres that are known and have been practiced, including bad weather displays, are to be flown
- Aircraft positioning at all times is to be such that, in the event of an engine failure or other airborne emergency necessitating a forced landing, such a forced landing will be outside of the crowd area
- No unauthorised persons are to be carried on the aircraft.

Appendix B. SAMPLE - Display Program

Table 1: SAMPLE - Program of events

ITEM	DISPLAY START TIME (Local)	DISPLAY DURATION	AIRCRAFT and DISPLAY (and comments)	REGISTRATION	PILOT(s)	ARN	MINUMUM HEIGHT AUTHORISED
1	11:20	00.30	Ultralight Display Chinook Sapphire Thruster		J Pilot R Rabbit C Yeager E Flynn	111222 333444 555666 777888	500'
	12:25		RPT Arrival and Departure				
2	12:40	00:35	Official Opening				
3	13:15	00:25	Dragon Fly Aerobatic Display		D Wasp	111999	500'
4							
5							
6							
7							
8							
9							
10							

Appendix C. Risk assessment

C.1. Overview

A Risk Assessment should not only be viewed as being a regulatory requirement but also as being a practical approach to systematically reviewing risks. By conducting a thorough risk assessment, risk mitigating strategies (risk treatment) may be devised. The devised risk mitigation strategies may then be incorporated into the normal operational procedures for the event. In addition to this, the risk assessment document may also be used as a reference document and form part of the induction and training of event staff thus reducing the training time required.

A risk assessment document details what is required to operate safely and within the conditions of the approval. A Risk Assessment Plan therefore may be viewed as a quality control document with a focus on risks and as such, should be treated as a “living document” that is reviewed and updated periodically.

An appropriate starting point in the development of a Risk Assessment is defining the terms that are used; a Glossary of Terms. These four terms are the most important terms used and form the basis of a risk assessment. They are:

- **Hazard** – anything that may cause harm to people, or damage to aircraft, equipment or structures. (A piece of equipment, a process, situation or practice)
- **Risk** – the possibility that something may occur due to exposure to the Hazard; this is measured in terms of Likelihood and Consequence.
- **Likelihood** – a description of the probability that the Risk may occur. (e.g. 5-10% chance that the risk may occur)
- **Consequence** – the outcome of an event. (E.g. Non-compliance to Regulations or approval. Mid-Air collision, airspace incursion)

Examples of these terms for use in the Risk Assessment;

1. **Hazard** – Radio
    a. **Risk** – Failure of the Radio which leads to the;
    b. **Consequence** – Lack of ability to communicate with other aircraft and heightened risk to other airspace users.
2. **Hazard** – Mechanical.
    a. **Risk** – Failure of Engine;
    b. **Consequence** – Aircraft not able to return to land at the Aerodrome and consequently experiences an out landing with aircraft damage/destruction and possible injuries/death.
3. **Hazard** – Crowd control.
    a. **Risk** – Spectators breaching the display aircraft parking area during the display;
    b. **Consequence** – Risk of injury/death to spectator due to the poor visibility from the cockpit of tailwheel aircraft while taxiing.

C.2. The Risk Assessment

The Risk Assessment includes all of the following information:

1. The **Risks** (which may be identified by asking "What can go wrong?") in conjunction with the **Consequences** of those Risks; these are tabulated and given a Risk Rating (**Likelihood + Consequence**). It is important that this step is done before treatment of these identified risks.
2. **Risk mitigation strategy** (e.g. Robust fencing and security staff to ensure no spectator can easily access the display aircraft area) and the subsequent risk rating after using the risk mitigation strategy.

It is this information that is used by CASA to assess all applications for air display approvals. To assist further, a risk assessment template is included as an example of the format and presentation of the required information in a format that is widely used within CASA. You may note that there are blank sections (Description of Risk, Residual Likelihood, Residual Consequence) that, when completed, will develop a more comprehensive and focussed Risk Assessment An example spreadsheet is available from CASA upon request.

By presenting the risks and the treatment strategies that you devise, CASA will be able to fully analyse the information and effectively evaluate your application. Given that regulations are in place to mitigate risk, a substantial safety case may be required so as to provide CASA with assurance that the approval conditions will be complied with and risk levels will be reduced to as low as reasonably practicable. Please Note: It is not generally possible to reduce the Consequence of any hazard by the introduction of risk mitigating strategies. This is due to the outcome (consequence) of the situation often being the same . E.g. Aircraft crash will always have the possible outcome of injury/death and destruction of the aircraft irrespective of the risk mitigators employed. In this instance it is more likely that only the Likelihood that an aircraft crash can be reduced. If the likelihood is reduced then the overall residual risk is still reduced.

Another common question relates to "How low does a Risk need to be before it becomes acceptable?"

ALARP – (as low as reasonably practicable), means all efforts should be made to reduce risks to the lowest level possible until a point is reached where any further risk reduction (by additional mitigation strategies) is either a waste of resources or the risk has reached an acceptable level. The acronym ALARP depicts the notion that in aviation safety, risks cannot be completely eliminated; however they may be reduced to a level that is either tolerable or broadly acceptable.

So when does a risk become tolerable? The answer to this is dependent on a number of factors:

- **Legal requirements** - Aviation organisations must comply with applicable CASA and relevant state-based legislation. A control, based on a legal requirement, must always be considered 'reasonably practicable'.
- **Expert judgement** - A proposed control should be considered reasonably practicable if an appropriate group of experts has established it has a clear safety benefit, and the costs associated with its introduction are considered reasonable.
- **Cost-benefit analysis** - Where expert judgement or contemporary good practice does not provide clear evidence that a specific control or group of controls are reasonably practicable, a cost-benefit analysis may be necessary. This establishes whether the cost of implementing a specific control is grossly disproportionate to its safety benefit.

- **Industry good practice** - If the proposed control represents current, relevant, established good practice, which is sufficiently evidenced to conclude that it is reasonably practicable. For example, it:
  - complies with aviation industry standards, rules or procedures
  - is a practice of other operators that are similar in scale and operation
  - is established and widely implemented in another industry sector
  - matches other countries' legislated enforcement of the practice
  - is proven to have demonstrably improved safety, or can be implemented without significant modification or cost.

    Note: There can be no specific cut-off in terms of the Risk Factor number that is deemed acceptable. A high Risk Factor number may be within the extreme category, but still be as Low as Reasonably Practicable. In the case where this situation is evident, it would be expected that a detailed treatment plan be presented.

The standard approach to the Treatment of Risk is by utilising the Hierarchy of Control method. This simple procedure assists in ranking the best and most appropriate method of dealing with the Risks identified. The prioritisation of the methods of dealing with the Risks begins with the most effective method and proceeds to the least effective method available. It is more appropriate to deal with the Risk at the upper level of the Hierarchy of Control, however, sometimes it is not possible to use the highest level of control and therefore a lower level of control must be used to control the Risks.

C.3. Hierarchy of Control

The hierarchy of control is as follows:

1. **Eliminate** risk – Remove the Risk completely (e.g. **Risk** – Spectators breaching the display aircraft parking area during the display. **Control** – Unable to Eliminate risk without removing spectators)
2. **Substitute** – Find a substitute to deal with the Risk directly – (e.g. **Risk** – Spectators breaching the display aircraft parking area during the display. **Control** – Unable to find a Substitution method to control risk)
3. **Engineer** a control method – Find a solution that requires some modification to the equipment used (e.g. **Risk** – Spectators breaching the display aircraft parking area during the display. **Control** – Erect secure and robust fencing)
4. **Administer** the Risk – Provide Training and Education or signage to ensure knowledge of the **Hazard** and to reduce the risk (e.g. **Risk** – Spectators breaching the display aircraft parking area during the display. **Control** – Erect highly visible signage and ensure security staff are onsite to prevent access by unauthorised persons.)

5. **Personal Protection Equipment** (PPE) – Use safety clothing and equipment to reduce the consequences of the **Hazard** (e.g. **Risk** – Spectators breaching the display aircraft parking area during the display. **Control** – Unable to use PPE methods to control risk)

During the Risk Assessment process it is also beneficial to examine preventative mitigation strategies as well as the operating response required should a particular situation occur. For example; Risk - Spectators breaching the display aircraft parking area during the display. Preventative – Fencing and Security.

Responsive – Security staff in display aircraft parking area to be equipped with Air-band Radio on Ground frequency for immediate contact with PIC.

To assist with the continuing preparation of the Risk Assessment, CASA has included some common air display risks that may need to be assessed and dealt with prior to the Issue of the Display Approval;

- Pilots operating in breach of the brief
- Pilots flying within the 200m display axis limit due to poor visibility of the display axis while in flight
- Display not conducted in accordance with the approval
- Adverse weather conditions
- Lack of appropriate refuelling facilities or procedures
- Arrival of unexpected aircraft during display
- Mechanical failure of aircraft during display
- Loss of control of aircraft due to fatigue/spacial disorientation etc.
- Wind speed and direction leading to display pilot breaking the 200m display axis limit due to drift while airborne
- Bird strike during display.

These risks are only an example of common risks and should not be considered to be a conclusive list of all risks involved in an air display.

A good guide for deciding which risks to cover within the risk assessment is to cover off on the major and most likely risks with a focus being on the uninformed participants. (i.e. The pilots are aware of the risks involved with the manoeuvres that they are conducting, however the spectators may not realise the level of risk that they are being exposed to. As a result risk mitigation is required to protect the uninformed participants from the hazards that exist during an air display).

Should you require any further information, or a copy of the Risk Assessment Template, please do not hesitate to contact sport@casa.gov.au

C.4. Risk assessment Template

The following risk assessment template contains examples of numerous known risks associated with air displays. The template also provides some examples of the assessment of those risks using the Risk Matrix (refer to Figure 3).

Risk mitigation strategies have been applied to some of these example risks and the subsequent resultant risk score has been obtained. This risk template is designed to be used by the Display Organiser to develop their own risk assessment. The risk assessment should be based, not only on the proposed air display, but also the display location and the risk to third party persons not directly associated with the display. Site specific risks should be determined by the Display Organiser and included in the risk assessment to enable mitigation strategies to be formulated thus reducing the risk as much as possible.

Table 2: SAMPLE - Risk Assessment

Risk No.	Description of Hazard	Description of Risk	Consequence	Likelihood	Consequence	Risk Level	Risk Treatment Strategy	Residual Likelihood	Residual Consequence	Residual Risk
1	Display Flying Operations	CFIT - Pilot Loss of SA	Injury, loss of life (pilot), destruction of aircraft.	3	5	8	Pilot must be trained and properly qualified and hold necessary aircraft endorsements.	1	5	6
2		Airspace incursion								
3		Unauthorised flight over populous area/public gathering								
4		UCFIT - GLOC								
5		CFIT - Crash into Spectators								
6		Pilots operating in breach of the brief								
7		Insufficient deconfliction plan - Formation collision								
8		Handling errors - Formation collision								
9		Aircrew fatigue								

10		Pilot distractions/pressure (both perceived and real) and loss of control of aircraft									
11		Display Axis incursion by Pilot									
12		Wind speed and direction leading to display pilot breaking the 200m display axis limit due to drift while airborne									
13		Medical emergency - Pilot									
14		Use of Recreational/Sport aircraft in Display - Certification/airworthiness/approvals									
15		Display brief conducted inadequately									
16		Display brief conducted to all participants									

17	Ground Ops	Display/joy flight/adventure flight aircraft hitting person on ground while taxiing	Death or permanent disability or ill health and damage to aircraft and infrastructure.	5	4	9	All flight crew to attend daily flight briefing. Flight crew to have location plan. All commercial operators to maintain pax log. All pax to be informed of airside risks and escorted by designated flight crew. All operators to be familiar with airside requirements. Temp fencing separating all active /non-active areas. Signage identifying live prop areas. Marshals patrolling fencing. Chief Marshal aware of aircraft movement's airside. PA Announcements to ensure awareness of restricted areas. No Alcohol sold on site and site is alcohol-free. Display of restricted areas at strategic points around Display areas.	1	5	6
18	Uninvolved third-party persons	Persons not directly associated with the Air Display being put at risk due to proximity of their residence to the display axis	Death or serious injury and damage to aircraft and infrastructure.	4	5	9	Invite the property owner to the Air Display and provide free tickets to encourage their attendance. If they choose to remain in their house then they must be warned of the increased risk being presented and ensure that they are aware of the possible outcomes.	3	5	8
19		Spectator/ Non participant entering live prop area										
20		Comms failure - Ground/Unicom	Pilot unable to be contacted in the event of a "knock it off" call being made or in the event of an unannounced aircraft arrival during the display.									
21		Spectator's aircraft hitting person in parking area/camping area										

22		Aircraft fire during refuelling.									
23	Unicom Operations	Arrival of unexpected/unannounced aircraft during display	Aircraft collision, injury, loss of life, destruction of aircraft.				CTAF is monitored on ground. Ground will manage the incoming aircraft before incursion. In case of incursion, cease display until threat has been managed or has vacated airspace.				
24		Post and Pre-Display arrivals and departures									
25		Acceptable rest breaks and crew relief during display and pre-post display arrivals and departures									
26		Unicom Radio failure									
27	Animal Hazard	Low-level Bird strike	Catastrophic damage to aircraft and infrastructure. Personal harm.	3	5	8	Early morning site drive by Chief Marshal or other to assess and to chase birds off runway area. Continual ground monitoring during display to advise and alert aircraft to any potential hazards.	1	5	6
28		Animal Hazard on airfield (Kangaroos, dogs etc.)				0				0
29	Weather/Location	Degradation of the flying conditions leads to pilot flying outside the limits of the Display Approval.	Death or permanent disability or ill health and damage to aircraft and infrastructure.	3	5	8	All flight crew to attend daily flight briefing. Weather conditions (forecast and current) to be displayed at briefing. Weather conditions monitored via computer. Activities suspended/cancelled if required.	2	5	7
30		Wet weather affecting runway surface									
31		Wet weather affecting taxiway surfaces									

32	Maintenance/Mechanical	Major Aircraft Malfunction (e.g. Landing gear malfunction)	Significant damage or serious injury may occur to Pilot.	2	4	6	Pilot to review critical emergency action procedures prior to display, pilot to be current in practicing EFATO procedures, aircraft to have completed all recent servicing requirements. Partial engine failures - divert to Archerfield or Amberley). Aircraft to compliant with MR requirements.	11	44	5
33		Defective flight instruments								
34		Engine Failure - Mechanical								
35		Engine Failure - Fuel Starvation								
36		Aircraft being operated in breach of its CofA								
37		Comms failure - Aircraft								
38	Organisation and Controls	Display not conducted in accordance with requirements								
39		Briefing materials not available to display pilots								
40		Reduced operational control due to Display Coordinator /organiser being in the display								

41	Ground Effects	Pyrotechnics causing damage to aircraft conducting display	Aircraft damage leading to loss of control and impact within crowd lines, multiple fatalities.	2	5	7	Used by approved person under Department of mines and industry, same person is responsible for the firing of the explosives in close consultation with pilot of aircraft. Pyro staff to attend pilot briefing and have two way communications on the site during display. Direction of run in for air display will limit an effected aircraft from entering crowd lines.	1	5	6
41		Pyrotechnics causing injury or death to spectators								
42		Pyrotechnics causing damage to property/ aircraft on the ground								

Air Display Risk Assessment

Version: 1 **Date of next Review:**
Date: 06/2/2017 **Prepared by: Will Doitall**

Risk No.	Description of Hazard	Description of Risk	Consequence	Likelihood	Consequence	Risk Level	Risk Treatment Strategy	Residual Likelihood	Residual Consequence	Residual Risk
1	Display Pilot Issues	CFIT - Pilot Loss of SA	Injury, loss of life (pilot), destruction of aircraft.	3	5	8	Pilot must be trained and properly qualified and hold necessary aircraft endorsements.	1	5	6

Value	Consequence	Meaning
5	Severe	Multiple fatalities, equipment destroyed
4	Major	Large reduction in safety margins, serious injury, major equipment damage
3	Moderate	Significant reduction in safety margins, serious incident, injury to persons
2	Minor	Nuisance, operating limitations, use of emergency procedures, minor incident
1	Negligible	Few consequences

Likelihood		Consequence 1 Negligible	2 Minor	3 Moderate	4 Major	5 Severe
5	Almost Certain	6	7	8	9	10
4	Likely	5	6	7	8	9
3	Possible	4	5	6	7	8
2	Unlikely	3	4	5	6	7
1	Rare	2	3	4	5	6

>8	Extreme Risk	Detailed treatment plan and constant monitoring required
6-7	High Risk	Requires high level treatment and monitoring
4-5	Medium Risk	Requires moderate planning and monitoring as appropriate
<3	Low Risk	Managed by normal operational procedures

Value	Likelihood	Meaning
5	Almost Certain	Imminent - expected to occur in most circumstances
4	Likely	Once in the next month - will occur in most circumstances
3	Possible	Once in the next 12 months
2	Unlikely	Once in the next 1-5 years - could occur at some time
1	Rare	Once in the next 10 years - only in exceptional circumstances

Figure 1: Implementing risk matrix into Risk Assessment Template

An example of the risk assessment process is contained in Figure 1.

C.5. Identify the Hazard - Display pilot issues

Identify the Risk - Controlled flight into terrain (CFIT) caused by pilot's loss of situational awareness..

Identify Consequences - Possible injury or loss of life of the pilot (and/or other persons) and major damage or destruction of the aircraft.

Identify the Likelihood that this may occur should no mitigation strategies be used ie. Pilot not appropriately trained, endorsed, experienced or currency/recency standards not maintained. Using the Likelihood Table (the table identified with the column headings Value, Likelihood, Meaning) there is a chance that this may happen once in a 12 month period so a Value of 3 is selected.

Identify the Consequence rating. This is found by using the consequences that have been determined as a result of the risk that has been identified. The consequence of a CFIT is serious injury/death and destruction of the aircraft. Using the Consequence Table (column headings being Value, Consequence, Meaning) it is evident that the meaning contained in the Severe category is appropriate, therefore a 5 is inputted into the Consequence column in the risk assessment.

Total the Likelihood and Consequence to arrive at the Risk Rating (3+5=8) This Risk Level and what is required may be found in the coloured table above. Any Risk Rating greater than 8 is deemed to be an "Extreme Risk" and as a result "Detailed treatment plan and constant monitoring required" is the outcome.

Please refer to the Figure 2 for the Residual Risk explanation.

Devise the Risk Treatment (mitigation) Strategy. In this case it has been decided that the risk cannot be eliminated, substituted or engineered so an administration solution is devised; The Pilot must therefore be properly, trained, qualified, hold the appropriate aircraft endorsements and to have the required currency/recency requirements."

Identify the Residual Likelihood rating. Using only pilots who have the appropriate qualifications etc. will reduce the likelihood down from "Once in the next 12 months" to "Once in the next 10 years - only in exceptional circumstances" which has a value of 1.

Identify the Residual Consequence rating. Should the required pilot qualifications not prevent the CFIT, then the outcome will remain the same so there will not be any reduction in the Consequence rating of 5.

Total the Residual Likelihood and Residual Consequence to arrive at the Residual Risk Rating (1+5=6). Using the coloured Table; a 6 is a "High Risk" which requires "High level treatment and monitoring" however there is nothing more that can be done to reduce this risk any further and the risk is considered to be As Low as Reasonably Practicable (ALARP).

Air Display Risk Assessment

Version: 1 **Date of next Review:**
Date: 06/2/2017 **Prepared by: Will Doitall**

Risk No.	Description of Hazard	Description of Risk	Consequence	Likelihood	Consequence	Risk Level	Risk Treatment Strategy	Residual Likelihood	Residual Consequence	Residual Risk
1	Display Pilot Issues	CFIT - Pilot Loss of SA	Injury, loss of life (pilot), destruction of aircraft.	3	5	8	Pilot must be trained and properly qualified and hold necessary aircraft endorsements.	1	5	6

Value	Consequence	Meaning
5	Severe	Multiple fatalities, equipment destroyed
4	Major	Large reduction in safety margins, serious injury, major equipment damage
3	Moderate	Significant reduction in safety margins, serious incident, injury to persons
2	Minor	Nuisance, operating limitations, use of emergency procedures, minor incident
1	Negligible	Few consequences

Likelihood		Consequence 1 Negligible	2 Minor	3 Moderate	4 Major	5 Severe
5	Almost Certain	6	7	8	9	10
4	Likely	5	6	7	8	9
3	Possible	4	5	6	7	8
2	Unlikely	3	4	5	6	7
1	Rare	2	3	4	5	6

Value	Likelihood	Meaning
5	Almost Certain	Imminent - expected to occur in most circumstances
4	Likely	Once in the next month - will occur in most circumstances
3	Possible	Once in the next 12 months
2	Unlikely	Once in the next 1-5 years - could occur at some time
1	Rare	Once in the next 10 years - only in exceptional circumstances

>8	Extreme Risk	Detailed treatment plan and constant monitoring required
6-7	High Risk	Requires high level treatment and monitoring
4-5	Medium Risk	Requires moderate planning and monitoring as appropriate
<3	Low Risk	Managed by normal operational procedures

Figure 2: Implementing residual risk in Risk Assessment Template

C.6. Risk matrix

			Consequence				
			1	2	3	4	5
			Negligible	Minor	Moderate	Major	Severe
Likelihood	5	Almost Certain	6	7	8	9	10
	4	Likely	5	6	7	8	9
	3	Possible	4	5	6	7	8
	2	Unlikely	3	4	5	6	7
	1	Rare	2	3	4	5	6

>8	Extreme Risk	Detailed treatment plan and constant monitoring required
6-7	High Risk	Requires high level treatment and monitoring
4-5	Medium Risk	Requires moderate planning and monitoring as appropriate
<3	Low Risk	Managed by normal operational procedures

Value	Likelihood	Meaning
5	Almost Certain	Imminent - expected to occur in most circumstances
4	Likely	Once in the next month - will occur in most circumstances
3	Possible	Once in the next 12 months
2	Unlikely	Once in the next 1-5 years - could occur at some time
1	Rare	Once in the next 10 years - only in exceptional circumstances

Value	Consequence	Meaning
5	Severe	Multiple fatalities, equipment destroyed
4	Major	Large reduction in safety margins, serious injury, major equipment damage
3	Moderate	Significant reduction in safety margins, serious incident, injury to persons
2	Minor	Nuisance, operating limitations, use of emergency procedures, minor incident
1	Negligible	Few consequences

Figure 3: Risk Matrix

Table 3: Risk Assessment Template

Risk No.	Description of Hazard	Description of Risk	Consequence	Likelihood	Consequence	Risk Level	Risk Treatment Strategy	Residual Likelihood	Residual Consequence	Residual Risk
1										
2										
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5										
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Appendix D. Emergency Response Plan

D.1. Emergency Response Plan Guide

This document has been prepared as a guide to the preparation of ERP for the conduct of air displays.

Aim

The aim of ERP is to provide a structured and comprehensive plan and list of events to be followed in the event of an accident, incident or occurrence at an air display.

Purpose

The purpose of an effective ERP is to:

- Provide focus and structure that can be easily followed in stressful situations and assign and/or delegate responsibilities
- Save and protect lives through timely, effective and coordinated response and recovery
- Manage the risk of further injury to persons and damage or loss of property
- Inform the appropriate persons and organisations in a timely manner to manage the external components of the emergency
- Record and preserve data/information and identify witnesses and participants for investigation purposes
- Recover and restore operations.

When an ERP should be activated

The ERP should be activated whenever any of the following occur;

- An accident or serious incident
- Fatality or serious injury
- An event, or potential event, identified in the risk management plan which is catastrophic
- Near miss
- Regulatory or statutory breach occurs
- Physical or mental wellbeing of other persons is affected.

What should occur when the ERP is activated

The content of the ERP will depend on the activity and risks/threats that are present, however the following should be considered as the priority actions:

- Treat injury
- Call for assistance
- Stop all associated activity (if applicable)
- Advise relevant responsible persons
- Advise relevel authority
- Collect data and details and make records of actions taken

- Report to relevant authority.

Who is responsible for activating the ERP

The ERP can be activated by any person who holds a responsible position for the safety or conduct of the activity which the ERP is related.

- Display Organiser
- Display Coordinator
- CASA
- Local authority (Police, Fire, EMS).

However the responsibility for the ERP should be immediately assumed by the Display Organiser.

Handover of responsibilities to Authorities

The ERP should detail when and what should be handed over to the relevant local authority such as police and fire authorities. The ERP should detail the following:

- Information to the general public
- Social media policy
- Information to relatives and next of kin (usually police only)
- Information to relevant local authority (police and fire)
- Information to ATSB, CASA, transport security
- Relevant local government authority (fireworks, pollution, environment).

Return to normal operations

The ERP should detail who has the authority to return to normal operations and under what conditions that should occur. This decision will be dependent on the occurrence and the severity but should consider the following;

- Safety
- Wellbeing
- Reputation.

Post Emergency Actions

Post ERP actions generally relate to reporting and clean up if necessary. These actions should be detailed in phase three. Dependant on the occurrence this may include:

- Quarantine of documents, data and wreckage
- Identifying witnesses
- Making official reports
- Dealing with media/public comments
- Counselling and mental health considerations.

Review and testing of ERP

The ERP should be reviewed on a regular basis for correct contact information and details. The ERP should be tested in either a desk top or mock emergency exercise as this will highlight deficiencies in the plan and identify areas for improvement.

Dealing with Media and making official comments

It is recommended that a Media Coordinator is appointed to deal with any public comments or media questions. While not critical to safety, the wrong thing said to the media or public can cause great harm to reputation and cause unneeded harm or anxiety. The Media Coordinator should:

- Have pre prepared statements or announcements covering relevant occurrences
- Be able to communicate calmly, rationally and appropriately
- Be kept informed by the Display Organiser
- Not release any critical, personal or private information
- Have a social media policy and
- Be aware that today information and video can be in the public domain and the media and social media before the emergency services arrive.

Developing an ERP

- Phase 1 actions – Initial actions (prevent further loss)
- Phase 2 actions – Reporting and recording
- Phase 3 actions – Clean up, follow up and return to normal

D.2. SAMPLE – ERP

Event:	The Aussie Air Show	29 Feb 2018
Key Personnel:	Display Organiser	Joe Bloggs
	Display Coordinator	Fred Smith
	Medial Coordinator	Brent Nerks

ACCIDENT OR SERIOUS INCIDENT

This plan is to be implemented by the authority of the Display Organiser immediately after the occurrence of an accident or serious incident

Phase 1 Actions

Numbers checked current ,
date___/___/_____

Call EMS	Police Fire Ambulance	000 000 000 and onsite
Advise Display Organiser		Mob - 1234 234 567
Aircraft missing	AUSAR	1800 815 257
STOP flying operations (Knock-it-off)	Display Coordinator	VHF Radio CTAF 126.70
Public announcements	Media Coordinator	Prepared statements
Public and helpers	Prevent access, move away from dangerous areas wreckage, orderly departure	

Phase 2 Actions

Notify ATSB		1800 011 034
Notify CASA		131 757
Consider	Dangerous Goods, Pyrotechnics, PPE, Hazardous chemicals/fumes/smoke	

Report	Police/scene Commander Provide copies of details to relevant authority	Xxx xxx xxx
Record	Start making records of event, use time line type document, appoint person to do	---
Identify and quarantine	Documents Data Wreckage Witnesses Radio recordings	
Notify	CFI/Chief Pilot/Owner/NOK Note: Do not notify NOK in the event of a fatality, pass info to police	

Phase 3 Actions

Notify counselling service	Crisis care, bereavement, mental health, suicide prevention, trauma counselling	Xxx xxx xxx
Review	Documents and records, ensure accuracy	
Review	ERP ensure all actions taken	
Brief	Key personnel, review tasks completed, PA announcements continuing or cease,	
Return to Operations	Consider, meet with key personnel, who has authority to make decision	
Media, public comments	Review plan, prepared statements, general info only	

Multiple ERP's can be prepared for various levels of occurrences or a single ERP can be prepared and used as reference for minor events.

Appendix E. SAMPLE - Critical Public Address Announcements

The following are a list of suggested phrases for critical announcements should such incidents occur. These phrases can assist announcers should any of these incidents occur.[1]

LOST CHILD

If you are missing a child or have lost property please inform the nearest Police Officer or any of the Airshow Officials or Security Staff who will direct you to the lost children/property holding area

INCIDENT NOTIFICATION

Ladies and Gentlemen, as you may be aware there has been an incident (say where – tarmac, airfield, display area, car park etc). The situation is fully under control and the emergency services are responding. Please keep clear of the area and do not obstruct any emergency vehicles or personnel. If possible please remain where you are and stay calm. We will provide additional information as it becomes available

CALL FOR ASSISTANCE

Ladies and Gentlemen, we would be grateful for assistance from members of the public who are qualified

- Doctors
- Nurses
- Para-Medics
- Ambulance Personnel
- Fire Fighting Personnel
- Police Officers

Please make contact with the nearest member of the Police, Airshow Marshall or make your way to Administration.

SECURITY INCIDENT

Ladies and Gentlemen, could I have your attention please; I have a very important announcement. There has been a security incident within the air display grounds. Our Security Staff and the Police are dealing with this incident now and we ask for your co-operation while they resolve the matter. In the meantime please stay where you are. There is no need to be alarmed; the situation is fully under control. We will advise you again when further information becomes available and when the matter is resolved. Again, there is no need to be alarmed. Thank you for your co-operation.

[1] **Announcements courtesy of Mr. Peter Anderson.**

AIRCRAFT INCIDENT/ACCIDENT ON THE AIRFIELD

Ladies and Gentlemen, could I please have your attention for a very important announcement. As you may be aware there has been an aircraft incident on the airfield. The situation is under control and our Emergency Services and Air Display Marshallers are attending. Please remain where you are and remain calm. If you are in the vicinity of the incident please immediately follow any instructions given by the Emergency Response Personnel, Fire-fighters or Air Display Marshallers. If Emergency Response Vehicles are responding in your area or direction please make every effort not to obstruct their path. It is imperative that you stay exactly where you are, follow any instructions of the Emergency Personnel and remain calm. Because of this situation we regret that the Airshow will be temporarily suspended. Please listen for further announcements. We shall continually provide you with additional information as it becomes available.

AIRCRAFT INCIDENT/ACCIDENT OFF THE AIRFIELD

Ladies and Gentlemen, could I have your attention for a very important announcement. As you may be aware, an incident has occurred with an aircraft off the airfield (say location if it is evident). The situation is under control and our Emergency Services are responding. Because of the prevailing situation we regret that the Airshow will be temporarily suspended. We shall advise you when the display is to resume. Please listen for further announcements and we shall keep you informed as information becomes available.

AIRCRAFT INCIDENT ON THE AIRFIELD

Ladies and Gentlemen, could I please have your attention for a very important announcement. As you may be aware an incident has occurred with an aircraft (say location if known or evident, tarmac, taxiway, runway). The situation is under control and our Emergency Services and Air Display Marshallers are attending to the incident. If you are a member of the public near that location please remain calm and follow any instructions. There is no need to be alarmed. If instructed to do so, please move from that area quickly but calmly. We shall keep you informed and provide further information as it becomes available.

SUSPENSION OF AIRSHOW

Ladies and Gentlemen, because of the prevailing situation (mention nature of situation) we regret that the Airshow will be temporarily suspended. We shall advise you when the display is to resume. Please listen for further announcements. We thank you for your patience and will keep you advised as information becomes available.

CLEAR AN AREA

Ladies and gentlemen, could I please have your attention for an important message. A (Security Incident/Accident) has occurred at (location). Our Security staff and the Police are currently dealing with the matter and there is no cause for alarm. However, as a purely precautionary measure, we are asking people to move away from that area. Please remain calm, follow the instructions from the Security Staff or the Police. There is no need to run. I repeat, would all members of the public please move away from (location) in an orderly manner. Remember to take all of your belongings with you. Thank you for your co-operation; we will keep you fully informed and let you know when the matter has been resolved and when you can return to that area.

POTENTIAL EMERGENCY

Ladies and Gentlemen, could I have your attention for an important message. We have a potential Emergency Situation at (location). There is no need to be alarmed as our Security Personnel and the Police are dealing with the matter. Please follow their instructions exactly and remain calm. Listen for further information and instructions from the Security Personnel and the Police. We shall keep you informed of the situation as information becomes available.

CONFIRMED EMERGENCY

Ladies and gentlemen, an emergency situation has occurred at (location). The situation is under control and our Emergency Personnel, Security and the Police are dealing with the matter. There is no need to be alarmed. Those of you who are at (location) should follow the instructions of the Security Personnel immediately and remain calm. Please listen for further information and instructions. We shall keep you informed as additional information becomes available.

FIRE ON THE AIRFIELD

Ladies and Gentlemen, could I please have your attention. As you may be aware there is a fire in progress within the confines of the airfield. This fire is (detail nature and location). The situation is under control and the fire services are responding. If the fire appliances are responding in your direction, please make every effort not to obstruct their progress and follow any instructions from the fire fighters. Do not run if a fire appliance is approaching you. It is imperative that you stay exactly where you are and remain calm. The safest place for you right now is within the confines of the Airshow site. We will provide further information to you as it becomes available

GRASS FIRE

Ladies and Gentlemen, could I please have your attention. As you may be aware there is a grass fire in the vicinity of the airfield. The situation is fully under control and the fire services are responding. If fire appliances are responding in your direction please make every effort not to obstruct their progress and follow any instructions from the fire fighters. Do not run if a fire appliance is approaching you. It is imperative that you stay calm, remain where you are and follow the instructions of the firefighting personnel. We shall provide you with further information as it becomes available.

EVACUATION OF AIRFIELD

Ladies and Gentlemen can I have your attention for a very important announcement. Because of the ongoing Security Incident, we have decided to evacuate the Airshow. Therefore we ask you now to take all of your belongings and move to the exit gates and to your vehicles and the bus pick-up area for those who arrived by bus. You will be directed by members of the Airshow Staff and members of the Police who will assist you. Please do not rush. The situation is under control. I repeat, will all members of the public please move to the exit gates and to you vehicles or to the buses. Our staff and the Police will direct you. There is no cause for alarm. Remain calm and we shall keep you advised as further information becomes available.

EVACUATION OVER THE RUNWAY

Ladies and Gentlemen, could I please have your attention for a very important announcement. Because of the (indicate the nature of the incident) we have decided to evacuate the Airshow. As the incident prevents you from leaving the Airshow area by the normal entry points, it has been decided to evacuate all members of the public over the runway area to points (indicate location). All flying has ceased. Therefore we ask you to follow the instructions of the Airshow Personnel and move slowly to the points indicated along the crowd line. There is no need to rush. Please remain calm and remember to take all of your belongings with you. You shall be directed by members of the Airshow Staff over the runway to the grassed areas (indicate where). All aircraft have been diverted away and it is perfectly safe. There is no need to panic. Once located on the grassed areas the Airshow Personnel shall keep you informed as to when it shall be safe for you to return to the Airshow enclosed area. I repeat, would all members of the public please move calmly to the exit points located along the Airshow crowd line indicated by Airshow Personnel and then over the runway to the grassed areas. It is perfectly safe there is no need to panic. Please stay calm, take your belongings with you and follow the instructions of the Airshow Staff. We shall keep you advised as further information becomes available. Please follow all instructions of the Airshow Staff.

CANCELLATION – ONE DAY

Ladies and Gentlemen, please listen to this important announcement. Because of the prevailing situation (mention nature of situation) we regret to advise you that the Airshow must be cancelled for the remainder of the day. We regret this decision but it is unavoidable in the circumstances. Your entry tickets for today will however gain your admission tomorrow. Please make your way to the exit gates and the vehicle parking areas. Airshow Staff and Security personnel shall direct you to the exit points and the vehicle parking areas. Please remain calm, there is no need to rush and remember to take your belongings with you. If you have any questions ask our Airshow Staff at the main gates who will be pleased to assist you.

CANCELLATION – TWO DAYS OR REMAINING TIME

Ladies and Gentlemen, please listen to this very important announcement. Because of the nature of the prevailing situation, (mention nature of situation), we regret to announce that the Airshow has been cancelled. We have no choice considering the circumstances. We would ask that you please leave the Airshow grounds and make your way to the vehicle parking areas, main exit gates or the bus pick-up areas as we are about to close. Please remember to take your belongings with you. Please remain calm and there is no need to rush. Please follow the directions of the Airshow Personnel. We will have Airshow Staff available at the main exit gates to answer any questions. Again, we regret to announce that the Airshow has been cancelled. Please commence to leave the Airshow grounds to the car parking areas, the main gates or the bus pick-up points and follow the instructions of the Airshow Staff.

LOST DEMENTIA OR ALZHEIMERS SUFFERER

Ladies and Gentlemen, we have been advised that (full name of woman or man) has become separated from (his/her) family group. (..Christian name) suffers from Dementia/Alzheimer's and may be confused as to their location. (..Christian name) is wearing (description of clothing and hair colour). If anyone knows the location of (Christian name) or has seen them today could you please advise a member of the Airshow Staff or Security Personnel. We thank you for your assistance to locate (Full Name) and to reunite (him/her) with their family.

Appendix F. Air display classification - Minimum requirements

1. **Airshow** / Pylon Racing – An organised event with multiple acts to demonstrate aircraft capability for the enjoyment of the general public that have been invited to attend. E.g. Avalon, Warbirds Downunder at Temora.
2. **Single Ship Display** – A single aircraft display, conducted for an organised event where the general public have been specifically invited to attend. E.g. a display at a Day on the Green /concert, party.
3. **Flypast** – One or more aircraft participating in a non-aerobatic demonstration or commemoration at a public gathering e.g.: ANZAC Day.
4. **Fly-in,** Competition or Cross country event – A gathering of aircraft at an event or competition where the general public have been specifically invited to the event. E.g. World gliding competition. Note. This does not include a Fly-in where the general public have not been invited to, such as a local aero club Fly-in.

Table 4: Minimum requirements for air display Classifications

	Air Show	Single Ship	Flypast	Fly-in or Competition
General	Y	Y	Y	Y
Site assessment	Y	Y	Y	Y
Marking of display axis	Y	Y	Y	Y
Parking of aircraft	Y			Y
Public enclosures and car parking	Y	Y		Y
Setting of minimum heights	Y	Y	Y	Y
Weather minima	Y	Y	Y	Y
Ground and special effects	Y	Y		
Briefing	Y	Y	Y	Y
Documents checks and insurance	Y	Y	Y	
Pilots display programs and details	Y	Y	Y	
Sample schedule	Y	Y	Y	Y
Joy/Adventure/TIF operations	Y			Y
Post display departure planning	Y			Y
Post display report (Form 694)	Y	Y	Y	Y