Australian Government
Civil Aviation Safety Authority

ADVISORY CIRCULAR
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Risk management plans for aerodromes

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Advisory Circulars are intended to provide advice and guidance to illustrate a means, but not necessarily the only means, of complying with the Regulations, or to explain certain regulatory requirements by providing informative, interpretative and explanatory material.

Advisory Circulars should always be read in conjunction with the relevant regulations.

Audience

This advisory circular (AC) applies to:

- aerodrome owners/operators
- airline operators, ground handlers or other persons/organisations who operate at the aerodrome
- persons engaged by aerodrome owner/operator to conduct technical inspections
- the Civil Aviation Safety Authority (CASA).

Purpose

This AC provides guidance for developing a risk management plan. The plan is intended to mitigate and reduce safety risks aerodrome operators are exposed to as a consequence of the hazards attributed to the operation of an aerodrome.

Operators of certified aerodromes that are not required to have a risk management plan, and operators of non-regulated aerodromes, are encouraged to do so.

For those aerodromes that have a Safety Management System (SMS), the risk management process is embedded within the SMS.

For further information

For additional information, contact CASA's Personnel Licensing, Aerodromes and Air Navigation Standards (telephone 131 757).

Status

This version of the AC is approved by the Branch Manager, Flight Standards.

Version	Date	Details
v1.0	July 2020	Initial release of this AC.

Unless specified otherwise, all subregulations, regulations, divisions, subparts and parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Contents

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Acronym	Description
AC	advisory circular
ALARP	as low as reasonably practicable
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
MOS	*Part 139 (Aerodromes) Manual of Standards 2019*
SMS	safety management system

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below.

Term	Definition
air transport passenger movement numbers	For an aerodrome, for a financial year, means the numbers, published by the Department, of air transport passenger movements at the aerodrome during the financial year, and any reference to air transport movements is to the movements compiled in these numbers.
aircraft movements	When referred to numerically for an aerodrome, for a financial year, means the numbers of aircraft movements at the aerodrome during the financial year, as compiled by the aerodrome operator or the ATS provider.
ALARP	Refers to reducing risk to a level that is As Low As Reasonably Practicable. In practice, this means that the aerodrome operator must show, through reasoned and supported arguments, that there are no other practical options that could reasonably be adopted to reduce risks further.
control / defence measure	Any system, procedure, process, device or other means of eliminating, preventing, reducing or mitigating the risk of hazardous events arising at or near the aerodrome.
hazard	A hazard is a condition or an object with the potential to cause or contribute to an aircraft incident or accident.
probability	The likelihood that an unsafe event may occur.
risk assessment	The overall process of risk identification, risk analysis and risk evaluation.
risk management	The identification, analysis, and elimination and/or mitigation to an acceptable or tolerable level, of hazards, as well as the subsequent risks, that threaten the viability of an organisation.
stakeholder	A person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity or risk.

1.3 References

Regulations

Regulations are available on the Federal Register of Legislation website https://www.legislation.gov.au/

Document	Title
Part 139 of CASR 1998	Aerodromes

International Civil Aviation Organization documents

International Civil Aviation Organization (ICAO) documents are available for purchase from http://store1.icao.int/

Document	Title
Doc 9859	Safety Management Manual
Doc 9981	Procedures for air navigation services - Aerodromes (PANS Aerodromes)

Advisory material

CASA's advisory circulars are available at http://www.casa.gov.au/AC

CASA's Civil Aviation Advisory Publications are available at http://www.casa.gov.au/CAAP

Document	Title
Sector Risk Profile	Aerodromes

2 Safety risk management

2.1 Introduction

2.1.1 The primary objective of risk management is to carefully examine the aerodrome's operating environment to identify aviation safety risks and assess those risks to determine if enough precautions have been taken to eliminate the risks, or where the risks cannot be eliminated, mitigate those risks to an acceptable level.

2.1.2 The Part 139 Manual of Standards (MOS), requires aerodrome operators to reduce risks to a level that is as low as reasonably practical (ALARP).

2.1.3 The risk management process not only provides the basis for identifying, assessing, evaluating, implementing, and reviewing the selection of control measures to eliminate or reduce the risks, it also provides supporting evidence to demonstrate that risks to the safe operation of aircraft have been considered, and where appropriate, have been reduced to ALARP.

2.2 What does as low as reasonably practicable (ALARP) mean?

2.2.1 A risk can only be acceptable when it can be demonstrated that:

- all justifiable risk reduction and control measures have been considered and implemented
- any additional mitigation strategies identified cannot be justified.

2.2.2 When applying the principles of acceptability, risks should only be tolerable if they are reduced to ALARP regardless of what level risk they are. Making sure a risk has been reduced to ALARP is about weighing the risk against the measures needed to further reduce it.

2.2.3 Continual reassessment is required as both the risks and the controls can evolve over time.

2.3 Aviation safety risk context

2.3.1 At an aerodrome, aviation safety risk management is about the impact of hazards and risks that are present to:

- aircraft
  - parked on the apron
  - manoeuvring on the ground
  - in flight.
- aerodrome personnel and passengers, from operating aircraft.

2.3.2 For example, wildlife (other than attacks on a person) and obstacles, will never be a risk to the aerodrome. The lack of control or effective mitigations may result in the risk to aircraft when in flight, and therefore ineffective wildlife control or ineffective obstacle control, may result in the aerodrome being unsafe for aircraft to operate to and from.

2.3.3 While the aerodrome manual documents the most fundamental levels of risk controls, the likelihood or severity of a risk increases where:

- people don't comply with the manual
- there are changes in the operations at the aerodrome
- training, equipment, personal protective equipment (PPE) and other tools are ineffective
- monitoring is ineffective.

3 Risk management plan

3.1 What is a risk management plan?

3.1.1 A risk management plan is an integrated series of documents, practices and processes that sets out the strategies and methodologies that will enable an aerodrome operator to effectively manage, to an acceptable level, the safety risks associated with their aerodrome's aviation activities.

3.1.2 Risk management practices may already be established within an organisation's (e.g. Council's) risk management framework. As long as the specific risk management standards required by the Part 139 MOS have been met, the aerodrome operator is not required to duplicate risk management practices. This is on the proviso that hazards unique to the aerodrome operating environment, and their associated risks, are clearly identified and considered.

3.1.3 It is essential that the aerodrome operator engages in the risk assessment process if they engage a third party to assist in the development and implementation of a risk management plan. This will ensure that the aerodrome operator understand the results and the need for any resultant risk mitigation program.

3.1.4 The risk management plan should be agreed by all members of senior management and be approved by the person that is ultimately responsible for aerodrome safety. This is likely to be the accountable manager or the chief executive officer.

3.2 When is a risk management plan required?

3.2.1 The operator of a certified aerodrome must develop a risk management plan when the aerodrome does not have a Safety Management System (SMS) that meets the requirements of the Part 139 MOS, and the aerodrome has:

- 25,000 or more air transport passenger movements in a financial year
- 20,000 or more aircraft movements in a financial year.

3.2.2 For existing certified or existing registered aerodromes that will be deemed to hold a transitional aerodrome certificate on commencement of the revised Part 139 MOS in August 2020, the risk management plan is required to be implemented in accordance with the transition timeframes.[1] In all other instances, the risk management plan must be in place within twelve (12) months of the aerodrome reaching the air transport passenger or aircraft movement trigger criteria.

3.2.3 Operators of aerodromes that have less passengers or aircraft movements are encouraged to have a risk management plan because it promotes safety awareness and behaviours.

[1] Refer AC 139.A-03 Application of aerodrome standards.

3.3 Risk management plan content

3.3.1 The risk management plan should be commensurate with the size of the aerodrome and the complexity of its activities.

3.3.2 To satisfy the Part 139 MOS, the risk management plan must address:

- processes for identifying, reporting and recording hazards
- processes for analysing the identified hazards and assessing their risks
- processes to mitigate / control the risks
- creation and management of:
  - a risk register
  - records of dedicated risk assessments performed to address aerodrome hazards.

3.3.3 To ensure a consistent approach to risk management practices, the risk management plan should also identify:

- the roles and responsibilities for risk management
- the process to monitor and track the implementation of agreed control measures
- triggers that instigate a review of identified risks and their control measures
- communication strategies with relevant stakeholders to:
  - ensure risks and control measures are appropriately identified
  - promote awareness of the risks and their control measures.

3.4 Risk management plan reviews

3.4.1 The Part 139 MOS requires the risk management plan is to be reviewed at least once every twelve (12) months.

3.4.2 Regular review(s) of the risk management plan is essential for identifying new risks and for monitoring existing controls / defences to ensure they remain effective.

3.4.3 To demonstrate compliance with the Part 139 MOS, records of each review should be maintained as evidence.

4 Risk management process

4.1 Introduction

4.1.1 The aerodrome operator should develop a risk management process that will allow a consistent and systematic approach for the assessment of safety risks. This should include a method that will help determine what safety risks are acceptable or unacceptable and to prioritise actions for mitigating the identified risks.

4.1.2 Safety risk management is a continuous activity because:

- the aerodrome operating environment is constantly changing
- new hazards can be introduced
- some hazards and associated safety risks may change over time.

4.1.3 There are eight essential steps to managing risk:

1. Communicate and consult.
2. Identify the hazards.
3. Assess the risk(s).
4. Identify the controls / defences in place to manage the hazards.
5. Assess the effectiveness of the current controls / defences.
6. Identify and implement further controls / defences required.
7. Record all of this information in a risk register.
8. Review controls / defences.

4.2 Step 1 - communicate and consult

4.2.1 An aerodrome is a complex operating environment. By drawing on different knowledge and experience both internally and externally, it is more likely that the aerodrome operator may become aware of unknown risks and a level of known risk.

4.2.2 Although the aerodrome operator is accountable for the development and implementation of a risk management plan, through each step of the risk management process aerodrome management should involve:

- aerodrome operational personnel (i.e. aerodrome reporting officers / works safety officers etc.)
- airlines
- ground handlers
- other aerodrome users
- land use planning authorities.

4.2.3 Where it is not possible to involve all stakeholders in the risk assessment process, they should be provided with an opportunity to review and comment on the identified:

- hazards
- risks associated with those hazards
- control / defence measures.

4.3 Step 2 - identify the hazards

4.3.1 A hazard is a condition that could foreseeably cause, or contribute to, an aviation safety incident. Hazard identification is critical because hazards that remain undetected will continue to pose a risk to aviation safety.

4.3.2 Hazard identification should focus on conditions or objects that could cause or contribute to the unsafe operation of aircraft, or aviation safety-related equipment, products, services and aerodrome operations personnel. This includes hazards that may be introduced by an aircraft, i.e. jet blast or prop wash.

4.3.3 The hazard identification process should be a product of:

- brainstorming sessions with persons who have relevant industry knowledge and experience
- safety surveys
- interrogating reporting systems / trend analysis
- reviewing serviceability and technical inspections reports
- outcomes of incident investigations (accident causal factors)
- learnings from events that have occurred at other aerodromes
- exploring findings from internal and external audits.

4.3.4 While the simple brainstorming technique may identify most hazards, it is important to use a combination of methods to check that known hazards (i.e. those that may have been identified through incident investigation, or as a result of an audit or inspection) have not been missed.

4.3.5 The hazard identification process should be ongoing, and a review to consider new hazards should be conducted:

- when a change to the aerodrome's infrastructure or facilities is proposed
- when a new type of aircraft is being considered for operation at the aerodrome
- when there is a change in operating procedure(s) or key aerodrome personnel
- after any significant incident or accident
- when a control measure deficiency is identified.

4.3.6 The aerodrome operator should have a formal process that can be used by all stakeholders for reporting hazards and safety concerns. A record of all reports made should be maintained and the identified hazards should be recorded in the risk register.

4.4 Step 3 - assess the risk(s)

4.4.1 Risk assessment considers the likelihood of the hazardous event occurring and the severity of its consequence.

4.4.2 To evaluate the risk level, a matrix may be used to align horizontally and vertically, the two assessed values for:

- probability (likelihood) of the occurrence of the hazardous event
- severity of the consequence (potential impact or outcome) of that hazardous event.

4.4.3 The classification of the severity of an event should be based on a worst credible case and not on a worst case scenario. A credible case is expected to be possible under

reasonable conditions (probable course of events). A worst case may be expected under extreme conditions and combinations of additional and improbable hazards.

4.4.4 Combining the probability and the severity of the hazardous event will allow the aerodrome operator to determine the level of risk the hazard poses.

4.4.5 Aerodrome operators should not eliminate hazards from further consideration simply because they have a very low likelihood. The exposure to risk (i.e. types and frequency of aircraft operations, duration of change, time before implementation of control measures) should be considered in deciding whether the risk is ALARP.

4.4.6 The classification of each risk should be recorded in the risk register with the risks ranked in order of severity.

4.5 Step 4 - identify the control/defences in place to manage the hazards

4.5.1 Once the level of risk has been determined, a current list of controls/defences against each hazard should be identified. Control/defence measures require careful consideration as they aim to eliminate, prevent, reduce, or mitigate risk.

4.5.2 All control/defence measures, whether currently being applied or considered for implementation, must be evaluated for the effectiveness of their risk management treatment.

4.5.3 The current controls/defences should be recorded in the risk register.

4.6 Step 5 - assess the effectiveness of the current controls/defences

4.6.1 The effectiveness of existing mitigation measures require regular evaluation. This will assist an aerodrome operator to determine whether the existing controls / defences:

- are effective
- require improvement.

4.6.2 Although the aerodrome operator determines their own risk acceptance criteria, they should consider input from other stakeholders who use the aerodrome.

4.6.3 The classification resulting from the evaluation of existing controls/defences for each risk should be shown in the risk register.

4.7 Step 6 - identify further controls/defences required

4.7.1 Additional mitigation measures to reduce either or both the severity and probability may be required to reduce the risk to a level that is ALARP. In the interim, and to ensure safe aerodrome operations, operating restrictions might be needed until the mitigation measures identified can be implemented.

4.7.2 All new control/defence measures identified for consideration should be documented in the risk register and the basis for selecting or rejecting each one should also be recorded.

4.7.3 To maintain oversight of additional controls/defences that have been agreed to be implemented, the aerodrome operator should also record on the risk register.

- each control measure to be implemented
- a breakdown of tasks required to implement each of the control measures
- the person who has been assigned responsibility to complete each task
- the date each task is required to be completed.

4.7.4 It is the responsibility of the aerodrome operator to ensure that agreed control measures are effectively implemented.

4.7.5 The aerodrome operator should convene regular meetings to monitor the completion of tasks. All personnel with assigned responsibilities should be present so they can report the status of their actions.

4.8 Step 7 - record all information in a risk register

4.8.1 The risk register should contain sufficient detail to enable the reader to comprehend what steps have been taken to identify aviation safety hazards and the mitigation measures proposed/implemented.

4.8.2 Maintaining a risk register will not only allow for the recording of identified hazards and their controls / defences, it will demonstrate:

- how decisions to reduce risks to ALARP were determined
- provide an understanding of risk acceptance, in particular why decisions were made
- allow for consistent decision making
- assist future decisions based on related analysis.

4.9 Step 8 - review control / defence measures

4.9.1 The effectiveness of implemented safety risk control/defence strategies should be continuously monitored to determine:

- their ongoing suitability
- if further action is required.

4.9.2 An aerodrome operator should monitor and test the ongoing effectiveness of control measures:

- when the control measure fails to control the risk that it was implemented to control
- after the occurrence of an incident
- if a new hazard or risk is identified
- at regular intervals, not exceeding twelve (12) months (control measures for serious risks should be reviewed more frequently).

4.9.3 Changing circumstances may result in some risks increasing or decreasing in significance.

4.9.4 Records of each review should be maintained.

5 Sector risk profile - aerodromes

5.1 Emerging, strategic, and operational risk considerations

5.1.1 In collaboration with industry, CASA has developed an aerodrome sector risk profile which, in addition to promoting safety improvement opportunities, identifies emerging, strategic and operational risks that are likely to effect aerodrome operators.

5.1.2 Aerodrome operators are strongly encouraged to read the statements, decide which ones apply to their operation, and then determine what they can do to minimise that risk.

The sector risk profile is available on CASA's website.
<https://www.casa.gov.au/sites/default/files/sector_risk_profile_aerodrome_sector.pdf>

6 Other useful resources

6.1 Air Transport Safety Bureau

6.1.1 The Australian Transport Safety Bureau (ATSB) is Australia's prime agency for the independent investigation of civil aviation accidents, incidents and safety deficiencies.

6.1.2 The ATSB National Aviation Occurrence Database is publicly accessible and contains a list of matters that are subject to mandatory occurrence reporting as required by the *Transport Safety Investigation Act 2003* and associated *Transport Safety Investigation Regulations 2003*.

6.1.3 Reported bird strike data/trends and incident/investigation reports may provide a useful source of information.

6.1.4 The ATSB National Aviation Occurrence Database can be accessed via the following link <https://www.atsb.gov.au/avdata>

6.2 Aircraft and ground handling equipment manufacturers and aircraft operators

6.2.1 Aircraft and ground handling manufacturers and aircraft operators can provide information on hazards associated with aircraft, equipment, substances, or processes.