Australian Government
Civil Aviation Safety Authority

ADVISORY CIRCULAR
AC 138-05 v2.2

Aerial work risk management

Date March 2025

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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

With the exception of Annex D and Chapter 6, this advisory circular (AC) applies to operators under Part 138 of the *Civil Aviation Safety Regulations 1998* (CASR) who are not required to have a safety management system (SMS) by regulation 138.140 of the CASR.

Note: Chapter 6 and Annex D are included to supply specific guidance to operators conducting, or considering commencing, class D external load marine pilot transfer (MPT) operations. MPT operations are required by paragraph 138.140(1)(a) of CASR to have an SMS however this requirement is deferred for some pre-2 December 2021 aerial work operators until 2 December 2024[1]. As such any risk assessment processes and risk criteria should be by that date incorporated into the operators SMS.

Operators required to have an SMS are required by subsection 13.06(3) of the Part 138 Manual of Standards (MOS) to have their operational risk assessment and mitigation processes integrated into their SMS.

Purpose

Primarily this AC provides advice for Part 138 operators on how to comply with the risk assessment provisions in the Part 138 MOS as they apply to operators who are not required to have a safety management system (SMS).

It also provides guidance material for risk criteria and considerations for class D external load marine pilot transfer operations.

For further information

For further information or to provide feedback on this AC, visit CASA's contact us page.

[1] See Parts 4 and 5 of CASA EX87/21.

Unless specified otherwise, all sub regulations, regulations, Divisions, Subparts and Parts referenced in this AC are references to the *Civil Aviation Safety Regulations 1998 (CASR)*.

Status

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

Note: Changes made in the current version are annotated with change bars.

Version	Date	Details
v2.2	March 2025	Updates to exemption references and other minor wording updates.
v2.1	November 2023	Added a reference in section 4.4.6 to the Helicopter Association International (HAI) proactive safety program encouraging the use of the Flight Risk Assessment Tool (FRAT) in partnership with Consulting Switzerland Next Generation Flight Training.
v2.0	July 2022	Added a new Chapter 6 and Annex D that provides guidance on risk assessments for class D external load MPT operations.
v1.1	July 2021	AC title amended to provide the incorrect meaning of content, which is information and guidance to all persons conducting aerial work.
v1.0	June 2021	Initial AC.

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
AWZ	aerial work zone
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*
DVE	degraded visual environment
EHST	European Helicopter Safety Team
ESPN-R	European Safety Promotion Network Rotorcraft
HOO	Head of Operations
MOS	Manual of Standards
MPT	marine pilot transfer
PIC	pilot-in-command

1.2 Definitions

Terms that have specific meaning within this AC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this AC and the civil aviation legislation, the definition in the legislation prevails.

Term	Definition
aerial work zone (AWZ)	As defined in section 1.05 of the Part 138 MOS. Generally, an area where a collision of an aircraft with a building or terrain, or a load falling off, could result in serious injury or death to persons, livestock, or serious damage to infrastructure or buildings, that are not associated with the aerial work activity. The AWZ concept allows operations in confined areas to proceed provided appropriate risk controls are in place. In most instances approval from CASA is required for an operation in an AWZ.
as low as reasonably practicable (ALARP)	This is the point where the costs of introducing further safety measures to lower a risk outweigh the safety benefit. However, a risk should be tolerated only if there is a clear benefit such as a compelling operational need.

Term	Definition
assessor	The Part 138 MOS defines a risk assessor as either the pilot in command (PIC), or a person who is identified in the operations manual. This other person must either be qualified to conduct the type of operation or approved by the operator to be an assessor. It could be the Head of Operations (HOO).
flight risk management plan	A plan that sets out the mitigators and risk controls the operator intends to employ for the particular flight or series of flights in an operation. This plan considers the matters in the pre-operational risk assessment and the specific circumstances of the actual task. This plan would normally be developed by the HOO or their delegate.
pre-flight risk review	This is a review that considers the risk criteria, the pre-operational risk assessment, the flight risk management plan and the pre-flight satisfaction check to determine if the operation can proceed safely. This review would normally be carried out by the pilot or senior pilot in control of a task.
pre-flight satisfaction check	This check requires the operator and each crew member to be satisfied that the flight risk management plan will reduce the risks of the operation to at least tolerable. This check could be carried out by the pilot on behalf of the operator.
pre-operational risk assessment	A process that requires the operator to consider and evaluate the risks associated with the type of aerial work operation to be conducted (for example - task specialist, external load and dispensing operations.). The results of a pre-operational risk assessment must be considered when preparing a flight risk management plan. **Note:** Section 13.06 of the Part 138 MOS sets out requirements for the operator to have pre-operational risk procedures for risk assessments and mitigation processes applicable to the operation and procedures for post-flight risk review. It also requires that the operator must have a flight risk management plan based on a pre operational risk assessment. This assessment could be carried out by the HOO or a delegate.
post-flight risk review	This review is to be carried out to confirm that the risk controls employed for the flight were effective and to inform the operator of any enhanced or updated procedures that could improve the safety of future operations. Section 13.06 of the Part 138 MOS requires the process to be described in the operations manual. This review could be carried out by the pilot or the HOO.
risk assessment	A process where sources of potential harm (hazards) and the chances of an adverse event happening due to the hazard are identified, analysed, and evaluated. This evaluation is expressed in terms of likelihood and consequence and should highlight risks that should be considered before and while carrying out an operation. This can be a formal, documented system or a continuous ongoing mental process carried out by a pilot or an operator or a combination of both.
risk criteria	The maximum level of risk that can be tolerated as detailed in section 13.02 of the Part 138 MOS. This provision mentions that operations must be conducted with no unacceptable risks and in a manner that is not likely to have unacceptable adverse effects on the safety of air navigation.
risk mitigation	Mitigation is the application of measures designed to reduce the risks of a particular operation by reducing the likelihood or severity of an

Term	Definition
	adverse event. It could be employed prior to the operation or during it and may vary with the nature of the risks that might appear. These measures are commonly referred to as safety risk controls.
risk register	A living document which can be separate from, or form a component of, the pre-operational risk assessment for a type of aerial operation, detailing any risks that emerge during planning or day-to-day operations that is capable of easy dissemination to flight crew. A sample separate risk register form is on page 20 of Booklet 3 of the CASA SMS toolkit.
tolerable risk	Tolerable means a situation where risks are still present, but people are prepared to accept them to achieve the benefit. Page 9 of Volume 3 of the CASA SMS toolkit outlines the ALARP principle relating to the classification of risks.
type of operation dedicated risk assessment data	Data including CASA publications, operator and personal experience, industry group information etc. that identifies any hazards associated with a particular type of aerial work operation (eg. Task specialist, external loads or dispensing operations). These hazards should be categorised and assessed using the likelihood and consequence model into risks for a particular operation by an operator. They can be included within the pre-operational risk assessment if it has this functionality. A sample hazard ID form is on page 21 of Booklet 3 of the CASA SMS toolkit. For dedicated type of operation risk assessment data, the sample risk register form on page 20 of Booklet 3 can be used, or this data can be incorporated into the type of aerial work operation pre-flight risk assessment proforma.
unacceptable risk	An unacceptable risk is a situation where an operation cannot commence or continue until risks are reduced to a tolerable or acceptable level regardless of the benefit.

1.3 References

Legislation

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

Document	Title
Part 138 of CASR	Aerial work operations
Part 138 Manual of Standards	Part 138 (Aerial Work Operations) Manual of Standards
CASA EX72/24	Part 138 and Part 91 of CASR – Supplementary Exemptions and Directions Instrument 2024
CASA EX73/24	Flight Operations Regulations – SMS, HFP&NTS and T&C Systems – Supplementary Exemptions and Directions Instrument 2024

Advisory material

CASA's advisory materials are available at https://www.casa.gov.au/publications-and-resources/guidance-materials

Document	Title
CASA SMS kit	Safety management systems kit

1.4 Forms

CASA's forms are available at http://www.casa.gov.au/forms

Form number	Title
	Application - Aerial Work Operations **Note:** This form can be used to initially apply for an aerial work certificate, or to change an aerial work certificate, or to apply for certain CASR Part 91 approvals for an aerial work operator, or to apply for CASR Part 138 approvals (whether mentioned in the CASR Part 138 regulations or in the Part 138 MOS). In the case of the main topic of this AC, the most relevant approval is the AWZ-RA approval (paragraph 13.09(5)(b) of the Part 138 MOS).

2 Overview

2.1 Risk Management - Part 138 of CASR

2.1.1 Regulation 138.370 of CASR requires an operator to conduct a risk assessment as prescribed in the Part 138 Manual of Standards (MOS).

2.1.2 Chapter 13 of the Part 138 MOS:

- provides details about what risk assessments are required
- the criteria of risks that can be tolerated
- what matters need to be considered
- sets out the processes pilots and operators need to follow when managing risk.

2.1.3 Chapter 13 of the Part 138 MOS applies to all aerial work operations, whether an aerial work certificate is required for the operation or not. This AC explains the differences between risk management processes that exist between operators that are aerial work certificate holders and limited aerial work operators.

2.1.4 The MOS also contains risk and related requirements for operations conducted over an aerial work zone (AWZ) which are more stringent than operations conducted in other areas. These requirements are provided in greater detail at Chapter 5 of this AC and include guidance on how operators can comply with them.

2.1.5 The annexes provide examples of how operators can carry out risk assessment and mitigation processes to comply with the MOS provisions in a variety of settings. The annexes are:

- Annex A - Sample risk assessment process - limited aerial work operator.
- Annex B - Sample risk assessment process - aerial work certificate holders.
- Annex C - Sample risk assessment process - aerial work certificate holder operating in an aerial work zone (AWZ).
- Annex D - Guidance on operational risk considerations Marine Pilot Transfer – Class D external load operations.

3 Procedures applicable to a limited aerial work operator

3.1 General

3.1.1 The operations covered by subregulation 138.030(2) of CASR are essentially the operations which prior to 2 December 2021 were described in paragraph 2(7)(d) of CAR as 'private operations'.

3.1.2 Subregulation 138.030(2) allows certain aerial work operations to be conducted by limited aerial work operators[2] providing certain conditions are met. For example, the flight crew must be appropriately qualified for the operation under Part 61 (refer Subparagraph 138.475(c)(i)). Further, a risk assessment must determine, after considering the nature, size and complexity of the operation, that the operation is within the capability of the operator and their aircraft. This risk assessment will also meet the requirements of regulation 61.1045 of CASR which is a condition of exercising the privileges of a flight crew member's low-level rating on any low-level operation.

3.1.3 In such circumstances, an operation conducted over land owned or occupied by the registered operator or the owner of the aircraft would not be required to hold an aerial work certificate. However, unlike under the CAR prior to 2 December 2021, the operational safety risk management requirements of Part 138 MOS need to be complied with during the operation.

3.1.4 A limited aerial work operator is not required to have an operations manual; however, Chapter 13 of the Part 138 MOS imposes requirements concerning the risk assessments that are required to be carried out by all (limited or certificated) aerial work operators. A limited aerial work operator should develop processes to enable these requirements to be met. Annex A to this AC provides sample processes and simple documentation that can assist limited aerial work operators to comply.

3.2 Risk criteria - MOS section 13.02

3.2.1 Any aerial work operation, including those conducted by a limited aerial work operator, must meet the risk criteria as detailed in section 13.02 of the Part 138 MOS. To gain further understanding of what is required by section 13.02, reference should be made to the ALARP principles section on page 09 of Booklet 3 of the CASA SMS toolkit. This provides guidance on how risks are categorised and what constitutes an unacceptable risk.

3.3 Risk assessment and mitigation processes - MOS sections 13.04 and 13.05

3.3.1 For limited aerial work operations, a risk assessment and mitigation process must be undertaken by the PIC before an operation is conducted. The risks associated with the operation must be reviewed with reference to the criteria as mentioned in section 13.02

[2] See definition section 1.04 of the Part 138 MOS. They can also be described as non-certified operators.

of the Part 138 MOS to determine if they are at least tolerable. In addition, the matters mentioned in section 13.04 must be considered. This list of matters are the:

- operation and its particular characteristics
- location of the operation and its particular characteristics
- aircraft to be used in the operation, its particular characteristics, and its performance, if applicable
- qualifications and experience of the crew members to be used in the operation
- hazards, external to the aircraft, that may be met during the operation.

3.3.2 The MOS requires that these matters be considered in the context of the nature, size and complexity of the operation and be used to perform a risk assessment to determine if the operation can be carried out safely. Planning for the task may involve the use of risk mitigation strategies. The pilot must consider any information available before and during the flight to ensure operations can continue safely.

3.3.3 It is incumbent upon the operator (who may also be the PIC) to ensure these procedures are carried out. Reference should be made to Annex A which contains an example of the matters which might be considered and simple processes that can be employed to comply with the MOS requirements.

4 Procedures applicable to aerial work certificate holders

4.1 Risk assessment and mitigation process flow chart

4.1.1 The risk assessment and mitigation process for an operation is represented by the following flow chart:

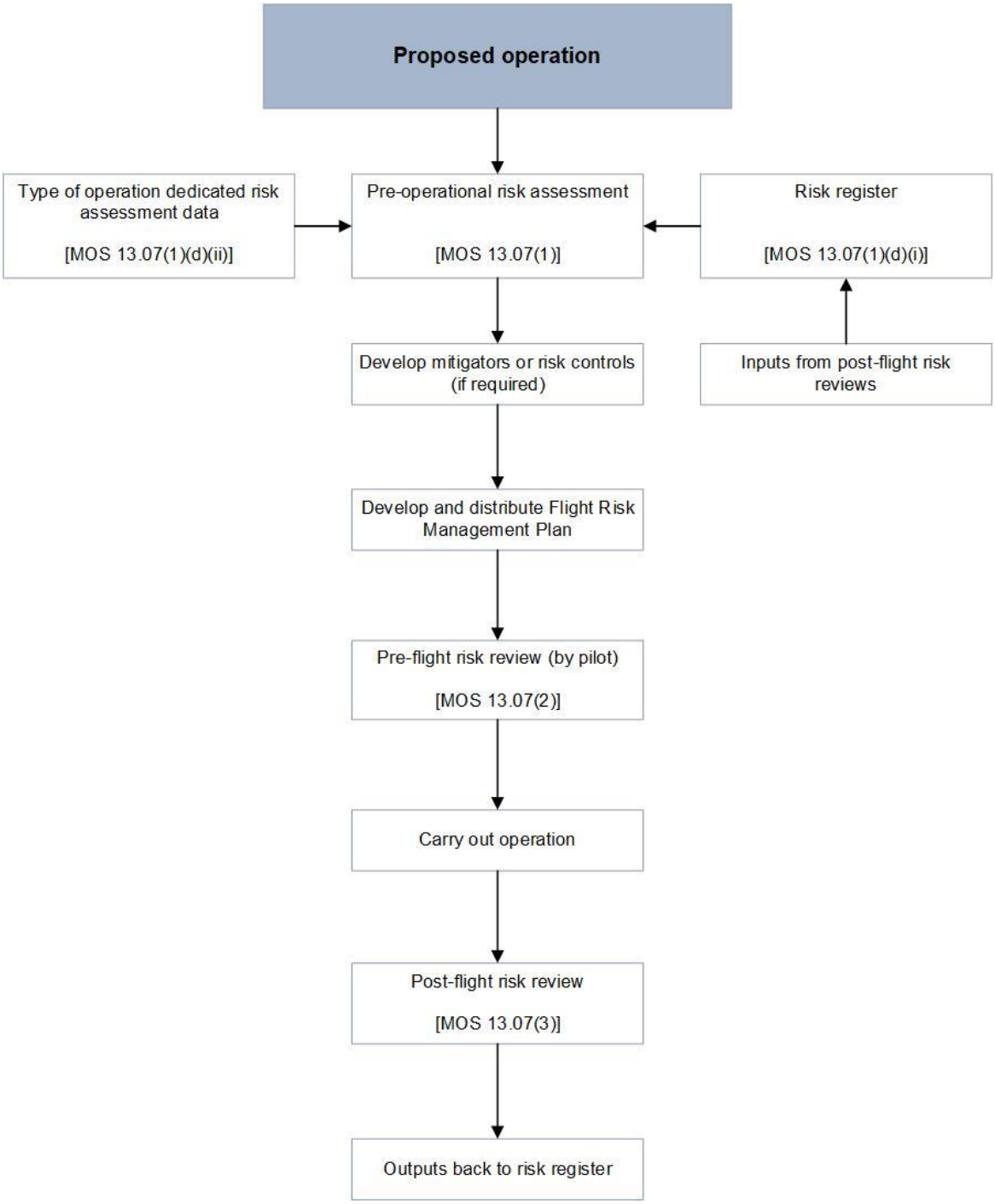

Figure 1: Risk assessment and mitigation process flow chart

4.2 Risk assessment and mitigation process steps in detail

4.2.1 General

4.2.2 In accordance with section 13.07 of the Part 138 MOS, an operator's pre-operational risk procedures must include the following:

a. processes for identifying, reporting and recording hazards;
b. processes for analysing identified hazards and assessing the risks they may pose, including for pre-flight, in-flight and post-flight stages of operations;
c. processes to mitigate the risks or control the risks, including processes for the incorporation of risk controls into standard operating procedures;
d. the creation and management of:
    i. a risk register; and
    ii. records of dedicated risk assessments performed to address each type aerial work operation that is to be conducted, including details of the risk assessors;
e. procedures to ensure that the pilot in command and the other crew members are familiar with the pre-operational risk assessment and the associated standard operating procedures (SOP);
f. in-flight procedures for the pilot in command and the other crew members to consider and manage the risks associated with aerial work operations.

4.2.3 The following sections describe the steps for setting up a basic risk assessment process. The process and procedures in section 13.07 of the Part 138 MOS are all scalable and able to be adapted to the nature, size and complexity of an operator's operation.

4.2.4 Pre-operational risk assessment risk assessment - sections 13.06 and 13.07 of the Part 138 MOS

4.2.4.1 A pre-operational risk assessment should be developed. This risk assessment focuses on the specific type of aerial work operation conducted. If an operator conducts all three types of aerial work operations, they will have three pre-operational risk assessments in their risk assessment processes. One for task specialist operations, one for external load operations and one for dispensing operations. Alternatively, if an operator only conducts task specialist operations, they will only have one pre-operational risk assessment in their risk assessment processes covering only task specialist operations.

4.2.4.2 Pre-operational risk assessments recognise the underlying principles in Part 138 of CASR, that the generic risks and hazards associated with a type of aerial work operation (a task specialist, an external load or a dispensing operation) are common to that type of operation and thus can be considered in the pre-operational risk assessment phase to simplify the development of the flight risk management plan.

4.2.4.3 The operator is required to gather data for inclusion into this document or documents. This data is the type of operation dedicated risk assessment data outlined on the top left of the flow chart at figure 1, and data from a separate risk register can also be included. Alternatively, the risk register can be merged into the pre-operational risk assessment itself. In this case the risk register becomes a form of embedded update mechanism to the pre-operational risk assessment as it is updated with new risk data.

4.2.4.4 The matters to be considered in the pre-operational risk assessment include (but are not limited to) the:

- nature of the intended operation and its particular characteristics
- location (if known) of the intended operation and its particular characteristics
- aircraft to be used in the intended operation and their performance profile and impacts of serviceability status
- qualifications and experience of the FCMs and support personnel to be used in the intended operation
- generic or known hazards particular to the type of aerial work operation, external to the aircraft, that may be met during the operation.

4.2.4.5 Some risks will be common to all operators carrying out the same type of operation. Therefore possible sources of risk assessment data are:

- 'sector risk profiles' for various types of operations as published by CASA
- ATSB regular reports on incidents and accidents by sector
- industry association safety reports.

4.2.4.6 Some risk factors may be particular to the aircraft type operated. Possible data sources are:

- manufacturer's safety bulletins and advisory notices
- input from experienced pilots, particularly trainers, checkers, flying training organisations and other experienced operators.

4.2.4.7 Other risk factors which may be unique to an operator include:

- usual area of operations (if any)
- the generic risk of "highly variable areas of operations" may be a suitable risk factor for inclusion by individual operators where there is not a usual area of operations
- flight crew members' experience and qualifications
- aircraft performance and serviceability.

4.2.5 Once populated, the pre-operational risk assessment should over time and from operational experience be updated to include lessons learnt from previous operations (see comments on the risk register above in 4.2.4.3). It should also form part of the operator's operations manual, so it is available, accessible and able to be used by the operator's crew members. The operator will need to include in their operations manual the processes and procedures for the use of the pre-operational risk assessment.

4.2.6 Risk register - subparagraph 13.07(1)(d)(i) of the Part 138 MOS

4.2.6.1 The risk assessment process includes the development of a risk register. As described above, an operator's risk register can be incorporated into the pre-operational risk assessment document to reduce the number of documents needed. If an operator elects to have a separate risk register, it could be developed using a custom form or the sample on page 20 of Booklet 3 of the SMS toolkit. As an aid to the development of the risk register and your risk mitigation processes in general, pages 1 and 2 of that booklet detail methodologies to identify safety hazards and then rank and assess them based on likelihood and consequence.

4.2.6.2 Hazard reporting forms and the results from post-flight reviews will provide further inputs into this register, which are then directed into updating the pre-operational risk assessment as necessary. It is important that all personnel have easy access to the register however, it is preferred that one key person remains in control of it to ensure its integrity.

4.2.6.3 A separate risk register can be created as an electronic document or a record within a data management system provided they are able to be backed up and the information remains recoverable. Alternatively, it can be merged into your pre-operational risk assessment for the type or types of aerial work operations you are authorised to carry out on your Part 138 certificate.

4.2.6.4 The operator must include in their operations manual the processes and procedures for the use of the register.

4.2.7 Mitigation and risk controls - pre-operational risk assessment

4.2.7.1 The pre-operational risk assessment will include a generic mitigation or risk control strategy after identifying the risks associated with a particular type of aerial work operation. Mitigation is intended to reduce the risk from unacceptable to at least tolerable in the circumstances anticipated to exist at the time of the assessment.

4.2.7.2 If the operator determines that any element of the intended type of aerial work operation may pose an unacceptable risk, a mitigation strategy and appropriate risk controls are to be developed. Page 3 of Booklet 3 of the SMS toolkit provides an example.

4.2.7.3 The results of the pre-operational risk assessment and any mitigation strategies or risk controls proposed are then used to aid in the development of any specific flight risk management plan for an aerial work flight or series of flights for that type of aerial work operation.

4.2.8 Flight risk management plan

4.2.8.1 This plan is for the flight crew to refer to at the pre-flight risk review stage and whilst conducting the operation. It should be prepared by the HOO or a senior pilot with access to all the pertinent information of the proposed operation. In smaller operations this task may be assigned to the pilot rostered for the operation and carried out under the supervision or peer review of the HOO.

4.2.8.2 This plan should outline the specific mitigators or risk controls that are to be employed during the flights associated with the proposed operation. Flight crew (if they are not the risk assessor) should receive the plan with sufficient time before the operation commences to enable it to be reviewed and confirmed.

4.2.8.3 The flight risk management plan cannot anticipate all hazards and their corresponding risks that may emerge during the operation. The pilot and other crew members must continuously monitor the conduct of the operation and act accordingly to mitigate any risks that may reduce the level of safety of the operation.

4.2.9 Pre-flight risk review – pilot – subsection 13.07(2) of the Part 138 MOS

4.2.9.1 Prior to commencing the operation, the pilot should carry out a pre-flight risk review on behalf of the operator. They should refer to the pre-operational risk assessment and the

flight risk management plan and the most recent data for the operation (aircraft serviceability, weather and site reports etc.). This is to determine that the operation can be conducted without unacceptable safety risk to the aircraft or any other person or property and that it does not impose a hazard on the safety of air navigation.

4.2.9.2 The pilot must be satisfied that the flight risk management plan will eliminate, reduce or mitigate risks and hazards under the current and expected operational conditions of the proposed operation. This review must consider the actual conditions and circumstances existing at the site or area at the time of the proposed activities.

4.2.9.3 It is possible that a circumstance is present at the pre-flight review stage that increases the proposed operation's risk profile to unacceptable. If this occurs, the pilot must not commence the operation until either the circumstance ceases to be of influence, or a mitigator or risk control is developed and actioned.

4.2.9.4 As with the flight risk management plan, the pre-flight risk review cannot anticipate all hazards and their corresponding risks that may emerge during the operation. Therefore, pilots and other crew members must continuously monitor the conduct of the operation and act accordingly to mitigate any risks that may reduce the level of safety of the operation.

4.2.9.5 The pre-flight risk review, whilst requiring an operations manual process to ensure it is carried out by the flight crew, does not need additional forms to be developed, unless the operator wishes to do so. For example, the flight risk management plan could include a box for a pilot to record the outcome of a pre-flight risk review and the pre-flight risk review could be carried out and recorded as being carried out by the pilot simply signing as accepted the flight risk management plan in this embedded signature box.

4.2.10 Post flight review – subsection 13.07(3) of the Part 138 MOS

4.2.10.1 After the operation is completed, a post-flight review must be completed to determine the effectiveness of the risk controls that were implemented and to identify and record any new or recurrent hazards and risks. This review could be conducted by the pilot or the HOO after they have received a debriefing from the pilot of the operation.

4.2.10.2 Any updates to the pre-operational risk assessment, or the risk register (if it is a separate document), can be actioned at this time. New hazards noted with safety implications or the potential for unacceptable risk scores should be passed on the HOO for dissemination to the greater pilot group of the operator.

4.3 Summary of risk assessment processes

4.3.1 Part 138 MOS section 13.07

4.3.2 For section 13.06, the Part 138 MOS section 13.07 outlines the procedures for risk assessment and mitigation processes.

4.3.3 For section 13.06, the operator’s pre-operational risk procedures must include the following:

a. processes for identifying, reporting and recording hazards;

b. processes for analysing identified hazards and assessing the risks they may pose, including for pre-flight, in-flight and post-flight stages of operations;
c. processes to mitigate the risks or control the risks, including processes for the incorporation of risk controls into standard operating procedures;
d. the creation and management of:
    i. a risk register; and
    ii. records of dedicated risk assessments performed to address each type aerial work operation that is to be conducted, including details of the risk assessors;
e. procedures to ensure that the pilot in command and the other crew members are familiar with the pre-operational risk assessment and the associated standard operating procedures (SOP);
f. in-flight procedures for the pilot in command and the other crew members to consider and manage the risks associated with aerial work operations.

4.3.4 The highlighted elements are all scalable considering the nature, size and complexity of the operation.

4.3.5 Non-complex aerial work certificate holder operations

4.3.6 For non-complex operations, the operator should establish a type of aerial work operation pre-operation risk assessment and a risk register in their operations manual and outline the generic and other recorded risks of the type of aerial work operation.

4.3.7 With this process in place, the risk assessment process from that point can be satisfied by five reasonably simple steps:

a. pre-flight - review of the operations manual type of aerial work operation pre-operational risk assessment
b. pre-flight - completing the risk management plan for the flight, including hazard mitigation as necessary
c. pre-flight - pilot conducts the pre-flight risk review
d. in-flight - crew members following the inflight risk assessment and management processes of the operator
e. post flight – update the pre-operational risk assessment or risk register (if necessary) and file the risk management plan as a record.

4.4 Flight risk assessment tools

4.4.1 A number of aircraft manufacturers and software developers have worked with industry participants to provide useful safety apps to all pilots and operators free of any commercial interest.

4.4.2 These apps are designed to help pilots to understand and mitigate the risks they might face during a flight. The goal is to reduce the number of accidents and incidents that occur due to operational factors. These apps have been designed especially with pilots and smaller operators in mind.

4.4.3 Operators may wish to integrate the use of these tools into their risk assessment procedures. The following sections provide a brief outline of some of the risk

assessment tools which CASA is aware of and that were publicly available at the time this AC was published.

4.4.4 Airbus Helicopters - 'Before Your Flight'

4.4.4.1 Airbus Helicopters has developed a flight risk assessment app called 'Before Your Flight' that is now available free of charge to anyone, both customers and non-customers. Updates are also provided free of charge.

4.4.4.2 The app provides a structured way for pilots to assess and control risks before a flight. It evaluates the risk profile of a flight and then prompts the pilot or operator to take the appropriate mitigation actions. In extremely challenging situations, the app might even help with decision making on whether it is safe to conduct the flight at all. Informing a customer of the need to cancel a flight when the risks are too high, for instance in bad weather is much easier with the back-up of a tool like this to help explain the decision.

4.4.4.3 The app is based on the pre-flight risk assessment checklist that was previously developed by the European Helicopter Safety Team (EHEST), now the European Safety Promotion Network Rotorcraft (ESPN-R). This means there is the whole weight of the industry and regulators behind the app.

4.4.4.4 The app has an operations-friendly interface, features automatic save and send functions and contains a library of links to rotorcraft safety publications. It can be used on smartphones and tablets and is compatible with iOS and Android operating systems. It also includes an optional back office so that SMS managers can review the reports from their company.

4.4.4.5 Contact contact.aviationsafety.ah@airbus.com or download it from the Apple App Store or Google Play to your device if you wish to review its potential for use in your operations.

4.4.5 Leonardo Helicopters - 'Skyflight'

4.4.5.1 Leonardo Helicopters has developed a mobile solution called 'Skyflight'. According to the developers, this is designed to ease daily operations, increase operational effectiveness, optimise costs, reduce flight crew workload and to help pilots and operators to perform an effective flight risk assessment. Human Factors and other factors known to impact safety are combined into a total risk picture for ease of use.

4.4.5.2 The Skyflight risk assessment tool is also based on the EHEST risk assessment checklist and on aeronautical risk management factors with respect to the pilot, environment, aircraft and external pressures. It keeps a history of completed and planned risk assessments, stores data and allows future review of answers to risk assessment queries at a later stage.

4.4.5.3 Various functionalities are provided, such as selecting operation specific checklists, inserting mitigations, accessing the flight plan and checking relevant weather, displaying the total risk score before and after mitigation, saving checklists, sharing information with other users and printing and sending out PDF files.

4.4.5.4 Skyflight risk assessment is also customisable. For example, it allows you to create your own checklists, define mitigations, inform decision to go or not to go fly, send

automatic emails to managers, view who performed the checklists and when they were performed.

4.4.5.5 Various pre-flight checklists are provided for different types of operations, such as recreational private flights, Degraded Visual Environment (DVE), maintenance, training and check flights, HEMS (now referred to as Medical Transport Operations (see Part 133 of CASR) single pilot and multi crew, passenger transport single pilot and multi crew (see Parts 121, 133 and 135 of CASR) and firefighting. For a quick analysis of the operation Skyflight also provides in-flight and post-flight checklists.

4.4.5.6 Skyflight app is available for free in the Apple App Store. It can be used on iPad tablets and is compatible with iOS operating system. A Skyflight app compatible with Android is also available, limited to risk assessment (only).

4.4.5.7 Contact Skyflight.support@leonardocompany.com if you wish to review its potential for your operations.

4.4.6 Consulting Switzerland - 'Next Generation Flight Training'

4.4.6.1 Next Generation Flight Training (NGFT) Consulting Switzerland has developed a safety app called 'Safety Tools' which is geared to the needs of small operators and General Aviation.

4.4.6.2 The operator can choose to use as little or as much of the functionality of the app as they require. It is not limited to only the flight risk assessment tool (however, they may only wish to use that element) and they can incorporate as much of the safety tool capability into the operation as they wish. The extent that the app is used by an operator should be detailed in their operations manual procedures.

4.4.6.3 Various additional functions are provided such as 'TST Briefing' ('TST' meaning 'Task Specialist Third Party') targeted for aerial work operators that need to perform and document briefings with task specialists from third parties before commencing an operation. It includes 'safety reporting' for sending safety reports to a safety manager for review and analysis. NGFT has produced a video tutorial published on their YouTube channel.

4.4.6.4 Go to https://ngft.com if you wish to download this App and review its potential for your operations.

4.4.6.5 CASA notes the proactive safety program that the Helicopter Association International (HAI) has introduced by partnering with NGFT to provide and encourage the use of the Flight Risk Assessment Tool (FRAT) module of the company’s Safety Tools program by its members in their operations. Further information on this program may be gained at Flight Risk Assessment Tool (FRAT) Program - Helicopter Association International (rotor.org) https://rotor.org/resources/frat-program.

5 Additional procedures applicable for operations over an AWZ

5.1 General

5.1.1 In general, the processes employed by an operator in conducting an aerial work zone risk assessment (AWZ-RA) will be identical to any risk assessment and mitigation process. Operations over an AWZ can only be conducted by an operator holding an aerial work certificate. The procedures in this Chapter are additional to those contained in Chapter 4 of this AC.

5.1.2 The significant difference between routine aerial work operations and operations over an AWZ is that due to the potential presence of persons and infrastructure under the proposed area of operations, the enhanced risk assessment ('RA') requirements of section 1.05 and Division 2 of Chapter 13 of the Part 138 MOS are triggered. This is due to the expanded risk envelope generated by operations in close proximity to persons or infrastructure that may be harmed as a result of a mishap or an emergency situation, if they were to occur.

5.1.3 This expanded risk envelope requires a wider focus by the operator on risk assessment and mitigation. In addition, the details of the RA processes are required to be retained and approvals sought from CASA before conducting some operations.

5.2 Requirements for flight over populous areas or public gatherings - Chapter 9 of the Part 138 MOS

5.2.1 In general, sections 9.22 and 9.23 of the Part 138 MOS permits flight below the minimum height rules in regulation 91.265 of CASR provided the area is an AWZ (amongst other criteria).

5.3 Definition of an AWZ- (section 1.05 of the Part 138 MOS)

5.3.1 Operators are advised to review this definition in section 1.05 of the MOS. Additionally, the criteria in subregulation 91.265 of CASR and the requirements of Chapter 9 of the Part 138 MOS should be considered if flight over populous areas and public gatherings is proposed.

5.4 Applicability of these procedures – subsection 13.09(3) of the Part 138 MOS

5.4.1 This subsection of the MOS relates to preparation of an AWZ-RA. It applies to the following operations conducted over an AWZ by an aerial work certificate holder:

a. an external load operation
b. a dispensing operation
c. a task specialist operation if the aircraft is flown below the height, and closer than the distance, specified in paragraph 91.265 (2) (a) or (3) (a) of CASR, respectively.

5.5 Emergency Service Operations (ESO) (subsection 13.09(4) of the Part 138 MOS)

5.5.1 Provided the general risk assessment and mitigation procedures for any aerial work operation in chapter 4 of this AC have been completed, an ESO with an external load can be conducted in an AWZ without prior notice to and approval from CASA if the PIC of the aircraft is satisfied that, having considered all foreseeable safety risks, a reasonable pilot would conduct the ESO.

5.5.2 For the purposes of this provision, a reasonable pilot is someone who possesses the technical qualifications, training and experience to carry out the role they are assigned under the circumstances they encounter. In order to consider all foreseeable risks and make an assessment, the pilot would need to be able to assess the circumstances at the time and place of the proposed entry to the AWZ.

5.6 Procedures for AWZ operations – subsection 13.09(5) of the Part 138 MOS

5.6.1 An AWZ-RA must be prepared and documented. The process and procedure of the AWZ-RA are the same as the general risk assessment and mitigation procedures specified in Chapter 4 of this AC.

5.6.2 Approval for the operation from CASA is required unless the aircraft will be above 500 ft, and when below 1000 ft above the highest obstacle within 600 m, and has a suitable forced landing area available.

5.6.3 Any operation in an AWZ must be conducted in accordance with the AWZ-RA, that is specific to the operation and which considers the unique circumstances associated with it.

5.6.4 CASA approval is also not required for certain external load operations as defined in section 5.7 of this AC.

5.7 CASA approval not required for certain external load operations – subsection 13.09(6) of the Part 138 MOS

5.7.1 Approval from CASA is not required for an external load operation if:

a. the entire operation, including pick-up and set-down points, is planned to occur in an AWZ
b. the AWZ is totally under the control of:
    i. the operator

    or

    ii. the person requesting the operation
c. access to the AWZ is limited to persons essential for the conduct of the operation.

5.7.2 This is intended to cater for operations wholly contained in places like mine or building sites where the only persons present are involved in the operation. The AWZ-RA must still be prepared and documented.

5.7.3 The transit of a rotorcraft into and out of an AWZ if it is not carrying an external load is not a Part 138 aerial work operation and must comply with all applicable Part 91 general operating and flight rules.

5.8 Specific contents of an AWZ-RA for a Class B external load operation – subsection 13.09(9) of the Part 138 MOS

5.8.1 As defined in the MOS, Class B external loads refer to sling loads. The MOS requirements for the content of AWZ-RA for this style of operation are reproduced below:

a. include the pick-up and set-down points of the operation
b. include the routes between the pick-up and set-down points
c. subject to paragraph (d), be for an AWZ that is of a size sufficient for the safe management of all risks and hazards identified in the operator's risk management process
d. be for an AWZ:
    i. that is free of risk of injury to persons who are not associated with the operation
    ii. that minimises, as far as practicable, risk of injury to the persons:
        A. carrying out the operation

        or

        B. for whom the operation is being carried out
    iii. in which hazard to property not associated with the operation is not likely to arise.

5.9 AWZ-RA retention periods for external load operations

5.9.1 An AWZ-RA must be retained by the operator for at least 3 years after the operation has ended.

5.10 CASA approval for an AWZ operation

5.10.1 The Part 138 MOS requires an operator to hold an approval for an AWZ operation except for certain circumstances (which are mentioned in section 5.7 of this AC). There is no specific format for an application seeking the approval. However, operators would be expected to provide evidence of correctly following their operations manual processes for the AWZ-RA.

6 Additional considerations for marine pilot transfer class D external load operations

6.1 General

6.1.1 MPT class D external load operations (i.e., winch operations), and in particular night winch operations, contain a high level of complexity that must be carefully risk managed to ensure the maintenance of acceptable aviation safety standards.

6.1.2 An operator's operations manual must provide clear and detailed information that covers aircraft equipment requirements, pilot and aircrew member experience requirements, risk profiles for each sequence and detailed operational and emergency procedures.

6.2 Risk assessment

6.2.1 A risk assessment must be provided by the operator that assesses the stated risk and/or articulates the nature and details of the stated risk controls for their MPT winching operations.

6.2.2 An MPT operator’s risk assessment should consider the hazards that may reasonably occur during a winching operation and Annex D to this AC is designed to assist operators with development of this risk assessment process and their MPT class D external load (winching) operations procedures.

Note: Annex D is provided as a guide only and operators must consider any additional specific requirements for their operation in addition to its content.