NAMIBIAN CIVIL AVIATION AUTHORITY

Advisory Pamphlet (AP)

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SAFETY RISK ASSESSMENT

12/2024

Document Control

Approval

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Change Summary

Edition Number	Brief Description of Change	Prepared by	Effective Date
1.0	First Edition	SPQ	

NOTE:

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3. APs should always be read in conjunction with the referenced regulations.

4. Safety Management Systems Manual is set out in the Schedule attached hereto.

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Effective date:

Ms Toska Sem
Executive Director

Contents

1. PURPOSE

1.1. A risk assessment must be considered for various aspects within aviation, including occurrence reports, hazard identification processes, applications for exemption, classification of findings, change management, and any other factor impacting operational safety. The risk assessment methodology is equally applicable when contemplating the introduction of new procedures or assessing the implications of personnel violations, considering the associated risks.

1.2. The purpose of conducting a risk assessment is to recognize potential safety hazards introduced into the civil aviation system during an activity. It involves determining the likelihood and severity of the consequences associated with these safety hazards. The objective is to identify circumstances, if any, under which the risk is low enough to permit the safe continuation of the activity.

1.3. Risk assessment is indispensable across various aviation contexts, encompassing occurrence reports, hazard identification processes, applications for exemption, findings classification, change management, and any matter influencing operational safety. It proves invaluable when considering the introduction of new procedures or assessing the implications of personnel violations, given the associated risks. Thus it is essential that it is done properly, and therefore NCAA provides the guidance material herein.

1.4. 1.4. While this AP serves as a foundational reference, additional information can be obtained from sources such as NAMCARS part 140, ICAO Doc 9859, etc.

1.5. The core purpose is the identification of potential safety hazards inherent in aviation activities. This requires a nuanced understanding of the likelihood and severity of these hazards, forming the foundation for informed decisions on when to proceed safely.

1.6. Risk assessment involves maintaining a delicate equilibrium, requiring an evaluation of the severity of potential issues in relation to their likelihood of occurrence.

1.7. It is not a mere checkbox exercise; instead, it represents a continuous practical endeavour aimed at sustaining operational efficacy without compromising safety. It signifies an ongoing commitment, ensuring perpetual vigilance and the evolution of safety practices in tandem with the dynamic aviation milieu.

1.8. The overarching purpose of conducting a risk assessment is to identify potential safety hazards introduced into the civil aviation system during an activity. The goal is to determine the likelihood and severity of consequences

associated with these safety hazards, providing insights into circumstances where the risk is sufficiently low to permit the continuation of the activity.

2. CONTEXTS REQUIRING RISK ASSESSMENT

2.1. Risk assessment, a fundamental component of aviation safety management, is indispensable in various scenarios, each demanding a meticulous evaluation of potential safety hazards. The versatility of risk assessment extends across a spectrum of circumstances, ensuring a systematic examination of risks and contributing to the overarching safety management framework within civil aviation.

2.1.1. **Occurrence Reports:**

- *Significance:* Whenever an occurrence report is initiated, encompassing incidents or accidents, a comprehensive risk assessment is paramount. This process facilitates the identification and in-depth analysis of potential safety hazards intricately tied to the reported events.
- *Objective:* To ascertain the likelihood and severity of consequences linked to occurrences, providing insights crucial for informed decision-making and preventive measures.

2.1.2. **Hazard Identification Processes:**

- *Significance:* During proactive hazard identification processes, where potential risks are systematically sought and scrutinized, a robust risk assessment is conducted. This aids in understanding not only the presence of hazards but also their potential impact.
- *Objective:* To evaluate the likelihood and severity of identified hazards, offering a foundation for effective risk mitigation strategies.

2.1.3. **Applications for Exemption:**

- *Significance:* When aviation entities submit applications for exemption, seeking relief from specific regulations or requirements, a thorough risk assessment is integral. This ensures a comprehensive evaluation of the safety implications associated with the requested exemptions.
- *Objective:* To determine potential risks linked to the exemption and to establish safeguards, if granted, ensuring continued operational safety.

2.1.4. **Classification of Findings:**

- *Significance:* In the process of classifying findings, especially those with safety implications, a rigorous risk assessment is undertaken. This step is crucial for understanding the potential consequences of identified issues.
- *Objective:* To assess the severity of safety-related findings and guide appropriate corrective actions, contributing to enhanced safety standards.

2.1.5. **Change Management:**

- *Significance:* Whenever changes are proposed within aviation operations, whether in procedures, equipment, training, or personnel, a thorough risk

assessment is foundational. This step evaluates potential safety hazards associated with the proposed changes.

- *Objective:* To ensure a proactive understanding of risks linked to changes, facilitating the implementation of preventive measures and ensuring smooth transitions.

2.1.6. **Post Implementation**

- *Significance:* Whenever changes are implemented within aviation operations, whether in procedures, equipment, training, or personnel, a thorough post implementation risk assessment is important for closure. This step evaluates effectiveness of the barriers put in place and identifies any new safety hazards associated with the effected changes.
- *Objective:* To determine if barriers were effective and assess any newly introduced risks. This process is critical in assessing the effectiveness of risk controls implemented and the effectiveness of the risk assessment itself, since the original assessment was predictive, where the actual events may have unforeseen consequences.

2.1.7. **Assessment of Violations or Transgressions:**

- *Significance:* In the aftermath of personnel violations or transgressions, a thorough risk assessment is conducted to evaluate the implications. This aids in understanding the risks associated with such incidents and determining appropriate corrective measures.
- *Objective:* To assess the severity and potential consequences of violations, guiding corrective actions and preventive measures to uphold safety protocols.

2.1.8. **Operational Safety Matters:**

- *Significance:* For any matter influencing operational safety, be it routine or exceptional, a comprehensive risk assessment is integral to the evaluation process. This ensures a nuanced understanding of the safety implications associated with diverse operational aspects.
- *Objective:* To provide insights into potential safety hazards influencing operational safety matters, facilitating informed decision-making and the establishment of preventive measures.

2.2. In essence, the application of risk assessment in these varied scenarios underscores its pivotal role in navigating the intricate landscape of aviation safety, aiming for continual improvement and a heightened commitment to safety excellence.

3. METHODOLOGY

3.1. A standard and recommended methodology for identifying hazards and the analysis of the risk of the consequences of the hazards materialising shall be followed. The process is shown in the diagram below.

3.2. A standard and recommended methodology for identifying hazards and the analysis of the risk of the consequences of the hazards materialising shall be followed. The process is shown in the diagram below.

3.2.1. **Standard and Recommended Approach:** In strict adherence to aviation safety best practices, a standardized and recommended methodology has been established to systematically identify hazards and conduct subsequent risk analysis. This approach aligns seamlessly with industry standards, ensuring a consistently high level of safety across aviation operations.

3.2.2. **Identification of Hazards:** The initial phase involves a meticulous examination, delving into operational processes, environmental factors, equipment functionalities, and human elements. This proactive approach is designed to uncover potential safety risks.

3.2.3. **Risk Analysis Process:** Following hazard identification, the risk analysis process is initiated. This structured assessment evaluates the consequences that may arise if identified hazards materialize, taking into consideration both likelihood and severity. This dual-dimensional approach provides a nuanced understanding of risks.

3.2.4. **Diagrammatic Representation:** A visual guide, encapsulated in the provided diagram, unfolds the step-by-step progression from hazard identification to the final risk assessment. This visual aid significantly enhances clarity and understanding, facilitating a consistent application of the methodology. (insert diagram here)

3.2.5. **Ensuring Consistency:** The utilization of a standard methodology guarantees consistency in hazard identification and risk analysis across diverse aviation contexts. This consistency is pivotal for yielding reliable, comparable results and supporting well-informed decision-making.

3.2.6. **Continuous Improvement:** Built into the methodology is the capacity for continuous improvement. Regular reviews are conducted to ensure alignment with evolving industry standards, technological advancements, and a dynamic understanding of aviation safety.

3.2.7. **Integration with Regulatory Requirements:** The recommended methodology is meticulously crafted to align seamlessly with existing regulatory requirements. This alignment ensures that hazard identification and risk analysis processes meet the stringent standards set forth by aviation authorities, enhancing credibility and applicability within the regulatory framework.

3.2.8. **Training and Familiarization:** To augment effective implementation, comprehensive training and familiarization programs are strongly recommended. These initiatives are designed to equip individuals involved in the risk assessment process with the necessary knowledge and skills, contributing significantly to overall aviation safety.

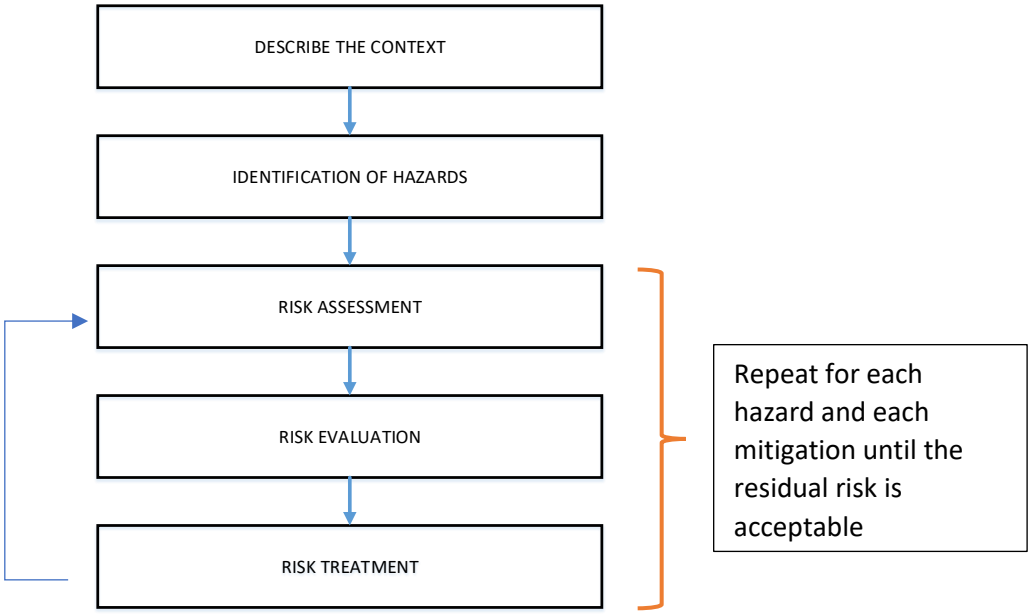
3.2.9. **Diagrammatic Representation:** The diagram, a visual representation of the iterative process through hazard identification, risk assessment, risk evaluation, and risk treatment for each hazard, illustrates the progression until the residual risk is deemed acceptable.

3.2.10. **Table Format:** The table format provided offers a comprehensive overview of the entire risk assessment process. It ensures clarity and facilitates efficient communication of each step, offering a structured reference point for stakeholders involved in the risk management process.

3.3. Table Format:

Context	**Identification of Hazards**	**Risk Assessment**	**Risk Evaluation**	**Risk Treatment**
Operational Activities	Systematic examination	Comprehensive assessment	Evaluation of likelihood and severity	Devising risk treatment
Environmental Factors	Proactive exploration	Dual-dimensional approach	Assessment of severity	Implementation of measures
Equipment Functionalities	Human Factors			Iterative process
Hazard Identification	Risk Analysis Process	Comprehensive and Diagrammatic Representation	Ensuring Consistency, Evaluation of likelihood and severity	Continuous Improvement
Integration with Regulations	Training and Familiarization			

This table format allows for a comprehensive overview of the entire risk assessment process, ensuring clarity and facilitating efficient communication of each step. This is diagrammatically represented in the flow chart below.



4. SYSTEM DESCRIPTION

4.1. **Contextual Significance:** In the pursuit of hazard analysis, comprehending the system's context is paramount. This understanding ensures a nuanced evaluation of the implications of the root cause, allowing for a meaningful comparison against the broader system safety. This includes an examination of existing safety issues and the efficacy of current controls.

4.2. **Holistic Safety Considerations:** The system description must intricately cover all safety aspects relevant to the activity under review. This involves delving into the "WHY," probing the motives and reasons behind the activity. Scrutinizing the "WHERE" entails an examination of the spatial and environmental factors influencing the operation. The "HOW" elucidates the procedural intricacies, outlining the methodological aspects of the activity.

4.3. **Stakeholder Impact Analysis:** A comprehensive system description necessitates an analysis of the stakeholders involved. Understanding "WHO" is affected by the activity is crucial for assessing potential impacts. This involves identifying individuals, groups, or entities within the system who may be influenced by the operation.

4.4. **Anticipating Outcomes:** Delving into the "WHAT" involves a forward-looking assessment of the likely outcomes for others within the system. This forward-thinking approach allows for the anticipation of potential consequences, facilitating a proactive stance in risk mitigation and control implementation.

4.5. **Systematic Review Considerations:** The system description serves as a foundational element during the review of an activity. Its depth and clarity

ensure that all pertinent safety considerations are thoroughly examined. The "WHY," "WHERE," "HOW," "WHO," and "WHAT" dimensions collectively contribute to a holistic understanding, fostering a systematic and comprehensive hazard analysis.

4.6. **Aligning with Safety Objectives:** In aligning with safety objectives, the system description acts as a guiding document. It ensures that the hazard analysis process remains attuned to the broader safety goals, promoting an integrated approach that considers both immediate and overarching safety implications.

4.7. **Documentation for Informed Decisions:** A well-crafted system description provides the necessary documentation for informed decision-making. It acts as a repository of critical information, facilitating a structured and evidence-based approach to hazard analysis and risk management.

4.8. **Continuous Improvement:** As operational contexts evolve, the system description remains a dynamic document subject to regular reviews. This commitment to continuous improvement ensures that the description remains aligned with changing circumstances, emerging risks, and evolving safety paradigms. It is important to understand the context of the hazard to ensure understanding of the implications of the root cause can be compared against the overall system safety, including any existing safety issues and controls that are in place. The system description must cover all safety aspects that needs to be considered during the review of the activity. Look at WHY, WHERE and HOW the activity is being done, WHO is affected, and WHAT are the likely outcomes to others in the system.

5. IDENTIFICATION OF HAZARDS

5.1. Given the context as reviewed, it is important to proceed to identify the main generic or specific hazards and potential accident scenarios that may be associated with the activity. Asking questions such as "What can go wrong?" and "What if...?" can assist in ranking the list of hazards that have been generated.

6. RISK ASSESSMENT

6.1. To complete a risk assessment consider using the template provided in Appendix 1. This section contains the guidelines on processes to follow.

6.2. Consequence Analysis and Existing Controls Evaluation:

6.2.1. **Examination of Hazards:** For each identified hazard, a meticulous analysis is conducted to comprehend the potential consequences it may pose. This multifaceted analysis involves a deep dive into the severity and likelihood of various outcomes. Furthermore, it necessitates a critical evaluation of the existing controls that are in place to mitigate the risk associated with each hazard. The overarching aim is to scrutinize the

effectiveness of these controls, thereby informing decisions on whether to permit the activity's continuation, request an exemption, seek approval, or proceed with proposed procedural changes.

6.3. **Customized Matrix Development:**

6.3.1. **Rationalizing Customization:** Service providers are strongly encouraged to embark on the development of their own customized risk matrices, tailored to their unique operational circumstances. This customization is driven by the recognition that the frequency of reported events can vary significantly between regulatory bodies and smaller operators. What might be deemed as frequent for a regulatory entity may demand immediate action for a smaller operator, underlining the paramount importance of having matrices that resonate with the specific operational context.

6.3.2. **Contextualizing Definitions:** It is imperative to contextualize and refine the definitions of key terms such as "frequent" and "catastrophic" to align with the scale and nature of operations. While a fatal hull loss universally signifies a catastrophic outcome, the interpretation of other terms may differ between small operators and large airlines. The tables provided offer fundamental guidelines derived from ICAO Doc 9859 and SMM. These guidelines, though foundational, should be adapted and customized based on the unique operational landscape and risk tolerance of individual service providers.

6.3.3. **Application of Guidelines:** The guidelines from these tables form the foundation for developing a comprehensive risk matrix. However, service providers must actively engage in the adaptation and enhancement of these guidelines based on their unique circumstances. By incorporating specific contextual insights, these matrices become powerful tools for consistently and effectively managing risks within the civil aviation framework.

6.4. The below text gives basic guidelines derived from ICAO Doc 9859, SMM.

6.4.1. For each of the identified hazards, determine its consequences and analyse the severity and likelihood of the consequences, using the descriptions below. In addition, it is important to look at the existing controls that are in place to mitigate the risk and to determine whether allowing the activity to continue, requesting an exemption, or approval, or continuing with the proposed procedure change would result in the control not being effective or not having any effect.

6.4.2. Service Providers should develop their own conditions based on their own set of circumstances, the reason being, for the regulator several reports a month may be normal, however if a small operator had several

of a particular type of event in a month, immediate action should be taken. Likewise, catastrophic for a small operator will have different definitions to that of a large airline although, some terms may remain unchanged, for example, both will consider a fatal hull loss the worst possible outcome. The two tables below give basic guidelines derived from ICAO Doc 9859, SMM.

6.5. When determining probability, there may not be statistics available to dictate recurrence rate, forward projection is needed, the following questions should be asked:

6.5.1. Is there a history of occurrences similar to the one under consideration, or is this an isolated occurrence?
6.5.2. What other equipment or components of the same type might have similar issues?
6.5.3. What is the number of personnel following, or subject to, the procedures in question?
6.5.4. What is the exposure of the hazard under consideration? For example, during what percentage of the operation is the equipment or activity in use?

6.6. When determining severity, one needs to assess the outcome "that might reasonably be expected to occur as a consequence or outcome of the identified hazard" (ICAO SMM 4th edition para. 2.5.4.1). Not necessarily the worst possible, but often it will be the worst possible if that is considered reasonably likely to occur.

LIKELIHOOD OR PROBABILITY CRITERIA			
Category	**Description**	**Examples of what to look out for**	**Examples of frequency**
1	**Extremely improbable (Rare)**	**Almost inconceivable that the event will occur.**	**e.g., 1 in > 5 years**
2	**Improbable (Seldom)**	**Very unlikely that the event will occur. It is not known that it has ever occurred before.**	**e.g., 1 in 3-5 years**
3	**Remote (Unlikely)**	**Unlikely but could possibly occur. Has occurred rarely.**	**e.g., 1 in 1-3 years**
4	**Occasional**	**Likely to occur sometimes. Has occurred infrequently.**	**e.g., 1 in 2 months to 1 year**
5	**Frequent**	**Likely to occur many times/regularly. Has occurred frequently/regularly.**	**e.g., daily, weekly, monthly**

Risk Severity Definition		*Consequence (i.e., can lead to….)*	*Examples of what to look out for…*
Category	*Description*		
5	Catastrophic	One or multiple deaths & complete loss / destruction of equipment	A major accident. Multiple fatalities due to collision with other aircraft, obstacles, or terrain
4	Hazardous	Serious injuries/Major Damage to equipment	Large reduction in safety margins, physical distress, or workload such that the operators cannot be relied upon to perform their tasks accurately or completely. Serious or fatal injury to small number of people Serious physical distress to air crew
3	Major	Minor injuries/ Minor equipment damage	A significant reduction in safety margins, a reduction in the ability of the operators to cope with adverse operating conditions as a result of increase in workload, or as a result of conditions impairing their efficiency. Major illness or injury Physical distress to occupants
2	Minor	Incidents	Operating limitations are breached. Procedures are not used correctly. Slight reduction in safety margin Minor illness Some physical discomfort to occupants
1	Negligible	Negligible outcome or Inconvenience	Few consequences. No safety consequences. Nuisance. Potential for some inconvenience.

7. RISK EVALUATION (ACCEPTABILITY/TOLERABILITY)

7.1. Once the risk analysis has been carried out, the risk is evaluated using matrix which matches probability to severity using the classifications discussed above. The more frequent and the more severe, the higher the risk, the less frequent and less severe the lower the risk. Normally the risk matrix is separated into

7.2. Any risk that is intolerable or tolerable with mitigation must have mitigations specified, and the risk must then be re-assessed following mitigations. One hazard may have several mitigations, only one reassessment is needed.

7.3. A decision is made as to whether or under which conditions activity should be undertaken. Any conditions (controls) that need to be recommended are considered and captured in the conclusion provided with respect to the review of the safety implications of the process.

7.4. When assessing the risk factor of a finding, the following should be applied:

7.5. **Level One Findings (High Risk):**

7.5.1. *Immediate and Urgent Mitigation:* Findings categorized as Level One denote a critical and high-risk status, demanding swift and immediate mitigation measures. The urgency attached to these findings stems from their potential to disrupt operations significantly and pose imminent threats to safety. Immediate action is imperative to address these high-risk scenarios promptly and effectively.

7.5.2. *Ensuring Continuity of Operations:* The primary objective in mitigating Level One findings is to immediately address the danger, to ensure the uninterrupted continuity of operations. This entails swiftly implementing measures that directly counteract the identified risks, preventing their escalation and mitigating potential adverse consequences. The focus is on rapid response to safeguard both personnel and assets from the immediate threats posed by these high-risk findings.

7.6. **Level Two Findings (Medium Risk):**

7.6.1. *Time-Dependent Assessment:* Level Two findings undergo a nuanced assessment, taking into account the time available for mitigation efforts. This category recognizes that the urgency and risk associated with these findings can vary based on the timeframe within which mitigations are implemented. Depending on this temporal aspect, Level Two findings are further categorized into three distinct medium-risk levels.

7.6.2. *Dynamic Nature and Potential Escalation:* What distinguishes Level Two findings is their dynamic nature, acknowledging the potential for risk scenarios to evolve. An overdue medium-risk event carries the prospect of being upgraded to a high-risk status, emphasizing the need for vigilance and timely intervention. This dynamic classification ensures that risk assessments remain adaptive to changing circumstances, preventing the escalation of threats.

7.7. **Level Three Findings (Low Risk):**

7.7.1. *Lower Urgency and Severity:* Level Three findings are characterized by a lower level of urgency and severity compared to higher risk categories. While these findings merit attention and remediation, the immediacy of mitigation efforts is comparatively lesser. The focus is on addressing these

risks in a systematic and prioritized manner, recognizing that the urgency for intervention is reduced.

7.7.2. *Balanced Approach to Mitigation:* Mitigating Level Three findings involves a balanced approach, taking into consideration the potential consequences and ensuring that corrective actions are proportional to the identified risks. This category allows for a more deliberate and systematic response, aligning interventions with the risk's actual impact and urgency.

7.8. Cumulative risk factor should be considered when determining the likelihood of the event. This is where data trending is essential. An occurrence which is considered minor in isolation, reoccurs within a short period of time must be escalated in probability.

7.9. When assessing residual risk, it is noted that the consequence (severity) rarely changes, for example for a CFIT precursor occurrence such as a terrain warning (TAWS or EGPWS alert) the consequence will be hull loss, as this can be reasonably expected from CFIT precursor events, the mitigation may be terrain awareness training programmes, promotional material on minimum safe altitudes, and IFR procedure workshops, which all should reduce the likelihood of a CFIT event, however the severity, hull loss, will not change. There can however be situations where it does change, for example, certification of service provider according to ICAO methodology would reduce the consequence from an SSC to a finding, so the severity does change.

8. RISK MATRIX

8.1. When using the tables above, it is recommended to add the two conditions whereupon the risk matrix assigns a numerical code, from 2 to 10, depending on the severity and probability.

8.2. NCAA adopts the matrix below because it provides a wider variance and numerical equivalence, compared to the example in ICAO document 9859 page 2-16. Operators may adopt the ICAO matrix, the below matrix or a combination of the two.

8.3. Note: if you have a risk matrix in your SMS manual which has been accepted by the authority you must use that one.

8.4. Service providers shall establish a safety risk management process that includes the prioritization of safety risks. This process must ensure that risks are:

(i) Evaluated and categorized based on their severity and likelihood of occurrence.

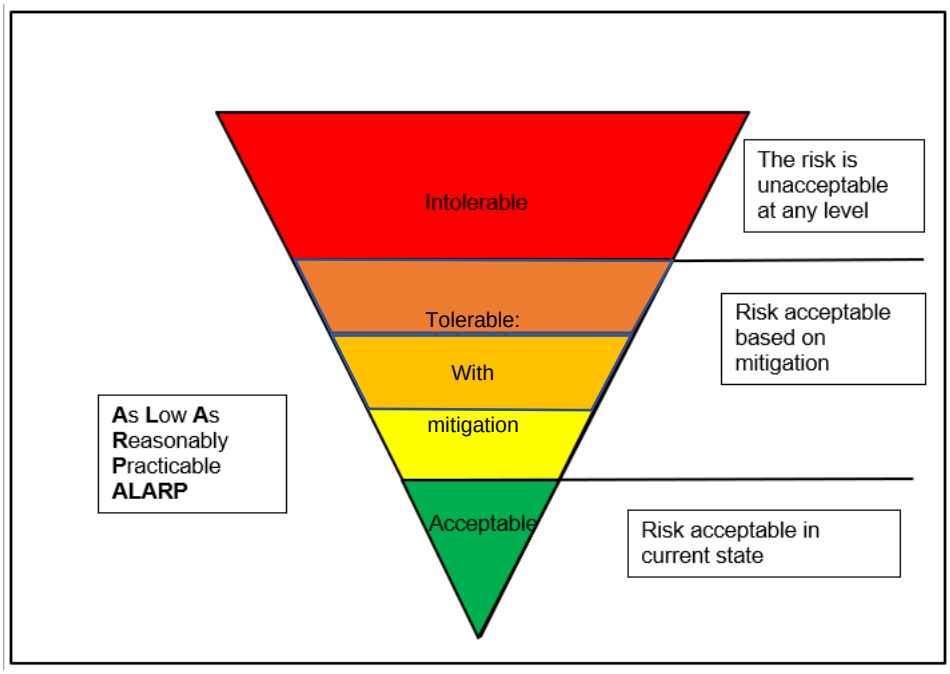
(ii) When multiple risks are identified at the same level of severity and likelihood, the service provider shall implement a method to prioritize these risks to manage and mitigate them effectively.

(iii) The prioritization process should take into account factors such as the potential impact on operations, the effectiveness of existing mitigations, and the resources available for risk management.

8.4.1. This prioritization shall be documented and integrated into the overall safety management system to ensure continuous monitoring and control of safety risks.

8.4.2. This encompasses risk-based evaluation of safety risks, evaluation of the effectiveness safety risk controls and the re-evaluation once controls have been implemented.

			Extremely Improbable (1)	Improbable (2)	Remote (3)	Occasional(4)	Frequent(5)
L	no mitigation needed	Cantastrophic (5)	6	7	8	9	10
M1	mitigation required should be treated as important - eg time frame 90 days	Hazardous (4)	5	6	7	8	9
M2	mitigation required should be treated as urgent - eg time frame 30 to 90 days	Major (3)	4	5	6	7	8
M3	mitigation required should be treated as critical - eg time frame less than 30 days	Minor (2)	3	4	5	6	7
H	activity must be stopped or immediate action required	Negligible (1)	2	3	4	5	6



9. RISK MITIGATION / CONTROL ACTIONS

9.1. It is essential that risk mitigations have:

9.1.1. *A timeline* – Only with a timeline can one assess the effectiveness of a solution. High risk events must have immediate mitigation of cessation of the activity. Medium risk events may fall between immediate and 90 days typically, this should be outlined on your risk matrix descriptors. Where an item can be addressed immediately, within the scope of normal operations and without undue stress of financial losses, there is no reason why it should not be, however other actions may take more time, and hence the matrix normally provides a window of completion. When addressing the actions required there must be a realistic time assigned and one that falls within the risk tolerability window. (See suggestions in section 8).

9.1.2. *A responsible party* – It is essential to know who will carry out the actions, and who is responsible for ensuring the actions are completed. This may be more than one individual, however at a minimum the person who has the authority for the implementation of the action must be assigned as a responsible party. Normally as a matter of accord the quality manager is automatically responsible for tracking of completed actions.

9.1.3. Entry in the risk register for tracking – The risk register must be updated for every risk identified in the risk assessment.

10. CONCLUSION (RISK TREATMENT)

10.1. Once the risk assessment process is completed and documented, the final step of the risk assessment is the treatment. That is, the decision on the risk involved with continuation of the activity or mitigation can now be actioned. The conditions defined are intended to mitigate or treat the safety risk.

10.2. Once the actions are complete and evidence is provided the item shall be downgraded to moderate or low risk, if not the activity must be stopped. However, the risk/hazard remains on the risk register.

11. POST IMPLEMENTATION RISK ASSESSMENT

11.1. After the implementation of any significant change which has introduced a new system, the system should be monitored to ensure that the safety of the system is maintained and determine whether strategic objectives are achieved.

11.2. If after implementation, unforeseen events do occur, the project team should put mitigation measures in place as soon as possible. In exceptional circumstances, this could require the withdrawal of the introduced system while specific problems are addressed.

11.3. It is evident that during the development and implementation of an airspace change reviews should take place before and after implementation.

11.4. The post-implementation review is concerned with monitoring and checking the effects of the implementation to ensure that unforeseen consequences do not arise. If they do, the airspace design team should put mitigation measures (or redundancy procedures) in place as soon as possible.

11.5. As can be appreciated, the proper planning of any significant change, and robust implementation planning should ensure that drastic or radical action during the implementation and 'switch on' is not necessary during the post-implementation review phase. Nevertheless, the team should be ready for all possible eventualities.

11.6. The post- implementation review phase will enable the design team to critically assess the implementation scenario in the same way as it had done with the Reference Scenario in the planning phase.

11.7. The output of this review will then be fed back into the System Safety Assessment (SSA) and it will also form the basis of the review when the next airspace/system change is to be made.

11.8. Verifying all aeronautical data and aeronautical information, ensures that the output of the applied processes or actions still conforms to the specified data quality requirements without introducing errors.

11.9. The template provided in Appendix 2 may be use for the post implementation review.

12. ASSESSMENT OF SERVICE PROVIDERS RISK ASSESSMENT

12.1. This assessment process is recommended by the regulator and will be the basis for assessing a service provider's risk assessment.

12.2. As noted the matrix may differ in nature from the one indicated in section 7, additionally the qualifiers in section 5 will be specific to the entity making the assessment, for example frequent for NCAA whom receives all the occurrence reports will be different from frequent for an AMO who may have reliability factors such as 10 to the power of negative 5.

12.3. NCAA Risk assessment checklist for a service provider shall be completed on form FSS-GEN-FORM-701-05.

12.4. An example of a risk assessment is provided overleaf

Risk Assessment for <insert name of applicant>

OPERATION:	LOCATION:	Type of Application:

1. *Description of operation*

   Describe the type of operation to take place, the date, general equipment to be used and location of operation. (WHAT, WHERE, WHEN, HOW AND WHO)

2. *Existing Operational Procedures and Current Risk Index*

   The information included in the operation and the safety concerns in the current state including current likelihood and severity rating. Locations can be combined on a single risk assessment when a single application is made. Explain current procedures and limitations that significantly reduce the associated risks involved with the application/locations. Explain in detail, procedures that are overarching for all locations and how these procedures will affect in reducing the likelihood and severity for the operation.

			Extremely Improbable (1)	Improbable (2)	Remote (3)	Occasional(4)	Frequent(5)
L	no mitigation needed	Cantastrophic (5)	6	7	8	9	10
M1	mitigation required should be treated as important - eg time frame 90 days	Hazardous (4)	5	6	7	8	9
M2	mitigation required should be treated as urgent - eg time frame 30 to 90 days	Major (3)	4	5	6	7	8
M3	mitigation required should be treated as critical - eg time frame less than 30 days	Minor (2)	3	4	5	6	7
H	activity must be stopped or immediate action required	Negligible (1)	2	3	4	5	6

3. *Individual Locations for Hazard Identification and Mitigation Measures*

EXAMPLE

Location: Star River Lodge FYSR *Note: S: Severity; L: Likelihood; R: Risk*

HAZARD	S	L	R	CONTROL/MITIGATION	S	L	R	ACTION FOR FURTHER MITIGATION	S	L	R
What is the Danger				What are we already doing or have we done to reduce the Hazard				What can we do to reduce the risk further			

OPERATION:	LOCATION:	Type of Application:

1	*Obstacles:* *There are a nr of tall trees and some buildings in the surrounding area to used for the aviation event*	*3*	*3*	*6*	*The landing area is 100+ meters away from the tall trees. The landing area is situated in a large pan with enough space to land.* *Responsible Person: N/A* *Time Frame: Immediate*	*1*	*2*	*3*	*The airfield owner will cut down the tall trees 1 week before the event.* *Responsible Person: Joe Van Der Merwe* *Time Frame: Before July 15th 2024*	*1*	*1*	*2*
2	*Landing Surface:* *The landing area is in a large pan with holes and large rocks. Participants can injure themselves when landing.*	*2*	*3*	*5*	*The landing area is being filled and large rocks are being moved* *Responsible Person: Joe Van Der Merwe* *Time Frame: Before June 15th 2024*	*3*	*2*	*5*	*The airfield owner will scrape and compact the landing area to make sure it is flat and free of debris 1 week before the event.* *Responsible Person: Joe Van Der Merwe* *Time Frame: Before July 15th 2024*	*1*	*1*	*2*

4. Conclusion to Risk Assessment

Give the conclusion to the Risk Assessment and new Risk Assessment Score after all the mitigation has been included

5. List of Appendices and Supporting Documentation

List the names or references if there are any pictures, appendices and/or supporting documentation required to strengthen the mitigation and reduction risk severity.

Appendix 2 Post Implementation Report Template

Post Implementation Report [project name]

Project Scope:

Date of Review: [Insert Date]

Participants: [List of Participants]

1. **Executive Summary:**

   Brief overview of the project, including objectives, processes, and major outcomes.

2. **Project Objectives:**

   Recap of the original objectives of the project.

3. **Key Achievements:**

   Highlight the main accomplishments and successes of the project.

4. **Challenges Faced:**

   Document any obstacles, difficulties, or unexpected issues encountered during the implementation.

5. **Risk Assessment**

   Outline the strengths of the barriers put in place for perceived risks, assess any unforeseen risks, determine if there are any additional barriers or mitigations needed.

   Revisit the risk assessment completed and reassess each risk with a revised actual post implementation score on the effectiveness of the barrier or mitigation.

   Repeat mitigation steps for any barriers that fall in the acceptable with mitigation or unacceptable,

   Review if there are any additional risks which were unforeseen during the pre-implementation risk assessment and complete the risk assessment process.

   Attach the risk assessment in the appendix and refer to the same.

6. **Lessons Learned:**

   Reflect on lessons learned throughout the project, including what went well and what could have been improved.

7. **Recommendations for Future Projects:**

Provide suggestions or recommendations for improving future PBN projects based on the experiences gained from this one.

8. **Performance Metrics:**

   Assess the performance of the project in meeting its objectives. Include relevant metrics such as traffic, rankings, conversions, etc.

9. **Compliance and Risks:**

   Evaluate compliance with relevant regulations. Discuss any risks associated with the implementation.

10. **Stakeholder Feedback:**

    Summarized all feedback from stakeholders involved in or impacted by the project.

11. **Next Steps:**

    Outline any follow-up actions or next steps to be taken based on the outcomes of the review.

12. **Conclusion:**

    Summarize the overall findings of the post-implementation review and express any final thoughts or recommendations.

Appendix:

Include any additional documents, data, or supporting materials relevant to the review.