Republic of the Philippines
Department of Transportation and Communications
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES
Office of the Director General

MAY 05, 2014

MEMORANDUM

TO : ALL LOCAL RUNWAY SAFETY TEAMS
ALL AIRPORT MANAGERS
ALL ATC/ATS FACILITY CHIEFS/FICs

FROM : THE DIRECTOR GENERAL
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

SUBJECT: GUIDE FOR LOCAL RUNWAY SAFETY TEAMS TO DEVELOP THEIR LRST HANDBOOK

Pursuant to the requirements of the Runway Safety Programme of the Philippines and as an obligation of the Philippines being a Contracting State of ICAO, so as to enhance runway safety in your respective airport, you are hereby directed to peruse the ***CAAP Guide for the Development of a Local Runway Safety Team Handbook Edition, 1.0 April 2014***, and make it as your own handbook adapting it to your local situation and requirements.

For airports that have not yet created their Local Runway Safety Team, you are hereby directed to comply with ***Memorandum Circular No. 10-13 Series of 2013 – Establishment of a Local Runway Safety team and a Local Runway Safety Programme for Aerodrome Operators in Collaboration with Aerodrome ATC and Airline/Aircraft Operators.***

You are given until the end of June 2014 to comply with these directives.

For strict compliance.

LT GEN WILLIAM K HOTCHKISS III AFP (Ret)

GUIDE FOR THE DEVELOPMENT OF LOCAL RUNWAY SAFETY TEAM HANDBOOK

A Component of the SSP for Philippine Civil Aviation
Edition 1.0 - April 2014

CIVIL AVIATION AUTHORITY OF THE PHILIPPINES
STATE SAFETY PROGRAMME

RECORD OF AMENDMENTS

Amendment	Affected Pages	Compiled By	Approved By	Date

GUIDE FOR A LOCAL RUNWAY SAFETY TEAM HANDBOOK

1. INTRODUCTION TO THE HANDBOOK

1.1 Purposes of the Handbook

This *Handbook* is designed to:

a) describe the components of an effective Local Runway Safety Team (LRST);
b) provide useful examples and serve as a single reference while conducting LRST activities; and
c) establish a network for sharing safety information among LRSTs within the Philippines through the CAAP data gathering and sharing network (*to be established through the SSP*), and with RSTs of other Contracting States via the ICAO Runway Safety Team Portal (https://portal.icao.int).

1.2 Scope of the Handbook

A successful Local Runway Safety Programme and LRST require all key stakeholders to cooperate in a collaborative manner. This document, therefore, is intended to serve as a reference for aerodrome operators, air traffic services organizations, commercial air operators, organizations representing the general aviation community, the regulatory authority, meteorological services and other stakeholders interested in developing their Local Runway Safety Programme and in improving runway safety.

1.3 How to use the Handbook

This *Handbook* is divided into the following sections and appendices:

- **Section 2** serves as a reference for acronyms, abbreviations and definitions the reader may find useful;
- **Section 3** is divided into two main areas—technical and administrative processes. Under **LRST Technical Processes**, the reader is presented with the core components of the Local Runway Safety Programme and LRST, and a detailed example of an LRST meeting. Under **LRST Administrative Processes**, various topics associated with operating an LRST are discussed. These include the -*Terms of Reference"* document, a discussion of roles associated with the programme, a discussion related to information sharing (both within the airport environment and with other LRSTs) and continuous improvement techniques;
- **Section 4** contains an LRST set-up checklist to ensure the programme contains the minimum requirements and processes;
- **Appendix A** (Example Meeting Organizer) and **Appendix B** (Example Agenda) help the LRST organize their activities in preparation for their first meeting;
- **Appendix C** contains guidance material related to identifying hazards and defining the operational consequences associated with each specific hazard;
- **Appendix D** contains processes and best practices related to managing operational safety risk;
- **Appendix E** provides an example -Action Log entry based on the example presented in the Technical Process section (§3.2.5);
- **Appendix F** contains a copy of the ICAO Runway Safety Form**;** and
- **Appendix G** provides a list of reference material.

It is recommended that the reader initially focuses on **Section 3** to develop a general understanding of the processes involved in operating an effective LRSP and LRST and to draft a -*Terms of Reference*‖ document. The material in the appendices helps to guide LRST members through

their first few meetings. Use the material in **Section 4** to verify that your programme contains the minimum requirements and processes to ensure continuous improvement.

2. ACRONYMS, ABBREVIATIONS, AND DEFINITIONS

2.1 Acronyms and Abbreviations:

ALARP	As Low As Reasonably Practicable
ANSP	Air Navigation Service Provider (normally refers to ATS provider)
CBA	Cost Benefit Analysis
LRSP	Local Runway Safety Programme
LRST(s)	Local Runway Safety Team(s)
MoU	Memorandum of Understanding
SMS	Safety Management System
ToR	Terms of Reference

2.2 Definitions:

***Hazard**:* Condition or an object with the potential to cause injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function.

***Risk Assessment**:* Process of determining the probability and potential severity of safety-related hazards and events and identify when the associated risks require mitigation.

***Risk Mitigation**:* Process of incorporating defences or preventive controls to lower the severity and/or likelihood of a hazard‘s projected consequence.

***Safety risk**:* Predicted probability and severity of the consequences or outcomes of a hazard.

Safety risk probability: Likelihood or frequency that a safety consequence or outcome might occur.

Safety risk severity: Possible consequences of an unsafe event or condition, taking as reference the worst foreseeable situation.

3. LOCAL RUNWAY SAFETY TEAM (LRST)

3.1 Goals and General Description of the LRST Programme

A Local Runway Safety Programme and LRST programme can form an effective element of a Safety Management System (SMS), in terms of supporting SMS reactive and proactive processes for identification and mitigation of risk. It is not a requirement to have an approved SMS in place to participate in or organize an LRST.

Although not considered a regulatory authority or intended to replace any required component of an SMS, the Local Runway Safety Programme and LRST are designed to improve runway safety by integrating the safety systems of the participating organizations. This is accomplished by identifying and managing runway safety risks in a collaborative, multidisciplinary way, and communicating safety issues to operational personnel. As described in the following sections, the LRST consists of representatives from key stakeholder organizations who meet periodically to review current and potential hazards within the airport environment. The meeting schedule depends on the situation and environment of the aerodrome. For example, if major works are proposed, or runway hazards and incidents are increasing, then the LRST may need to meet more frequently. However, if operations are stable, with few hazards identified, then the meetings may be less frequent.

During these meetings, the LRST uses a structured process to manage the level of safety risk within the operation by analyzing the consequences of the identified hazards and taking appropriate action.

The LRST and the Local Runway Safety programme cover a wide range of safety issues related to runway safety, including the following ICAO occurrence categories:

- Abnormal Runway Contact
- Bird strike
- Ground Collision
- Ground Handling
- Runway Excursion
- Runway Incursion
- Loss of Control on Ground
- Collision with obstacle(s)
- Undershoot / Overshoot, Aerodrome

3.2 LRST Technical Processes

3.2.1 Meetings

The LRST meeting is the most important component of the programme as it is the forum in which hazards are discussed, consequences determined, risks assessed, priorities determined, and recommendations developed. This type of face-to-face interaction leads to improved collaboration, problem-solving and risk management because the team members benefit from information sharing and the perspectives of representatives from other groups.

Given the LRST's operational focus, it should include representatives from the following groups:

a) aerodrome operator
b) air traffic services
c) commercial air operators
d) representatives of flight crew familiar with the aerodrome

e) members from the general aviation community (if applicable)

The team may also include:

i) the regulatory authority
ii) military operator (if applicable)
iii) support services (de-icing, catering, ground handling, etc.)
iv) emergency response service providers
v) subject matter experts (meteorologists, ornithologists, accident investigation authority, etc) (upon invitation)
vi) consideration may be given to periodically inviting members of other LRSTs to enable sharing of information and learning

While there is no rule or requirement, generally, the aerodrome operator hosts the meeting and establishes a long-term schedule to allow adequate planning by the members. This is a common arrangement as the majority of hazards and associated controls are primarily owned by the aerodrome operator. However, it is recognized that in some States, it is the ANSP, the largest commercial operator or even the Regulatory Authority that will organize and host the LRST meeting for it to be effective. It is recommended that the LRST elect a Chairperson to serve as the coordinator for the team. (Note: An example of a planning tool the Chairperson may use prior to the meeting is provided in *Appendix A*). The agenda for the meeting, as a minimum should include:

a) an update on previous recommendations
b) new hazards and associated consequences
c) risk assessments of the consequences
d) proposed recommendations of controls and mitigation measures for managing the risk
e) monitoring of the effectiveness of controls and mitigation measures taken.

3.2.2 Hazards and Associated Consequences

Once the team members are identified, the Chairperson selected, and the terms of reference and schedule are agreed to, the real work of the LRST begins with the identification of hazards. It is anticipated that each member will come to the meetings prepared to brief on the hazards related to runway safety, as identified through their respective SMS (arising mostly from safety reporting, investigation and audit activities). Appendix C contains a detailed discussion of hazard identification.

In addition to the hazard reporting systems of the member organizations, the LRST should also conduct periodic visits to various airport locations (i.e., tower facility, construction areas, taxiway intersections, etc.) and solicit input especially from organizations without formal representation at the meeting. These may include corporate operators, flight schools, industry organizations, ground services and others. By casting a wide net, the LRST will develop a deeper understanding of the operational complexity associated with the airport environment and, therefore, be better able to identify hazards and determine operational risks.

As the team discusses the damaging potential of the hazard, it is important to keep in mind that these consequences should be framed in realistic operational terms (known as the worst feasible or worst foreseeable outcome), as opposed to extremely remote and unlikely outcomes or the worst imaginable outcome. A useful technique is to identify the top-level (or generic) hazard, then to list the related specific hazards and associated consequences. For example, a generic hazard category might be airport construction. The specific hazards associated with a construction project at the airport might be the presence of construction equipment‖ and the closure of taxiways. These, in turn, may result in the LRST identifying the potential consequences of these specific hazards as an aircraft colliding with

the construction equipment and an aircraft taxiing onto a closed taxiway. By correctly identifying (and documenting) the hazard and defining the associated consequences in operational terms, the LRST is able to assess the safety risk.

Hazardous conditions can sometimes combine, resulting in an even greater severity and/or probability of outcome. For example, the hazards associated with airport construction, coupled with the hazards of low visibility and night operations, may result in a greater risk than just the airport construction hazard alone (in this situation, the probability of the risk would likely be increased).

3.2.3 Safety Risk Assessment

The reason for conducting safety risk assessments is to provide the LRST with a method for appropriately managing the risks of identified hazards, developing effective risk mitigation strategies, and prioritizing their workflow. Given that time and financial resources are limited, the following process allows the LRST to efficiently determine which areas require its immediate attention to reduce the runway safety risk to As Low As Reasonably Practicable (ALARP).

The process of runway safety risk assessment and management is the same as any risk management process. Once the hazards have been identified, the objective is to determine the safety risk severity in the context of the local system accounting for the current defences and mitigations in place at the time. This information should then be used to categorize the safety risk severity using predefined definitions and tools. (Please see *Appendix D* for an example of a Safety risk severity table.)

Based on the event that would be the worst feasible consequences, the next step is to evaluate the relative probability (or likelihood) of that event occurring in the specific operational environment, after taking into account the current defences and risk mitigation strategies in place. The team should consult associated safety and hazard report databases, incident & accident investigation reports, flight data monitoring and analysis, operational audit data and other historical sources to determine the likelihood of the identified consequence occurring. This information should then be used to categorize the probability against a set of predefined definitions. (Please see *Appendix D, Figure 4*, for an example of a Safety risk probability table.)

This information is then integrated into a severity/probability matrix to determine the overall assessment of the risk. An example of this type of matrix is located in *Appendix D, Figure 5.*

The last step in the assessment process is to determine how much safety risk in the system the LRST is willing to accept. This is known as the risk appetite, and it determines the level of acceptable risk. A safety risk tolerability matrix is a useful tool to help guide that discussion (please see *Appendix D, Figure 5* for an example). This type of table uses the assessed safety risk to determine:

a) when the risk is acceptable and the operation may continue,
b) when risk mitigation is required, or
c) when the risk level is unacceptable and that part of the operation should be suspended, restricted or modified.

One of the advantages of using the LRST to conduct the risk assessment, that that all stakeholders have been involved in the risk assessment process, thus ensuring that the worst feasible outcome, and appropriate probability have been evaluated.

3.2.4 Developing Recommendations and Action Plans

Following the safety risk assessment, the LRST should develop specific recommendations to reduce the risk, and an action plan to ensure the recommendations are implemented. In doing so, the following concepts should be considered:

a) *Prioritization*

The LRST should ensure their solutions are prioritized according to the safety risk tolerability assessment. For example, if they determine that the operation may continue with the assessed level of safety risk, their recommendations should reflect a strategy where improvements are implemented as resources become available. Conversely, if they determine the operation may continue with mitigation, their recommendations should reflect a strategy requiring immediate action(s) to address the consequences of the hazard. Thus, timeframes for completing the actions must be commensurate with the risk levels involved.

b) *Control Strategies*

Safety risk is controlled by addressing either:

1) the probability of the consequences occurring;
2) the severity level of the consequences; or
3) both simultaneously.

As discussed in *Appendix D*, key approaches to controlling safety risk include:

1) **Avoidance**: The operation or activity is cancelled because the safety risk exceeds the benefit of continuing the operation or activity;
2) **Reduction**: The frequency of the operation or activity is reduced, or action is taken to reduce the severity of the consequences of the risks; and
3) **Segregation**: Action is taken to isolate the effects of the consequences of the hazard or build in redundancy to protect against them.

c) *Evaluating Alternative Solutions*

During the process, the LRST should explore several strategies for controlling safety risks. These strategies should be evaluated against one another to find the most effective and efficient solution using objective and subjective measures. These measures may include criteria such as conducting a cost/benefit analysis, determining the enforceability of the proposal, assessing the acceptability to the affected stakeholder, and others. In all cases, however, the RST must conduct a risk assessment of their proposed solution and evaluate any potential hazards created by their strategy. (see Appendix D for further explanation)

However because a solution is easy to implement, cost effective and acceptable to all stakeholders, it does not mean that it will reduce the risk level. The effectiveness of the strategy in reducing the risk is measured by the residual or remaining risk once the strategy has been activated. A risk assessment should determine if the remaining (residual) risk is acceptable, or if more solutions and mitigations are required.

d) *Notification to Affected Stakeholder*

If the LRST determines that either a mitigation strategy is required or part of the operation should be modified or suspended, it should make a formal recommendation to the organization responsible for that part of the operation and include the rationale and risk assessment.

A summary of the entire process should be documented in a risk register, or similar system. This would include a summary record of the hazards identified, current controls and defences, risk analysis and outcome, additional controls and mitigations, action plan for implementation (owner and timelines), and residual risk.

3.2.5 Record Keeping – Data Sharing

Proper and structured record keeping of observed and identified hazards, safety events and corrective actions allow for trend analysis. The LRST should identify a gate keeper who is responsible for the maintenance of the data base and can present reports and analysis upon request of the LRST members.

A sample data base tool is shown on the ICAO Runway Safety Website. Where this is one of many possible solutions, the LRST should identify the most suitable technique of record keeping based on their available resources.

Data exchange and sharing among LRST members enhances the effectiveness of the LRST. Local Runway Safety Teams from different airports are encouraged to set a protocol in place that could allow for data sharing across various locations and will support the teams in identifying proper mitigation strategies.

3.2.6 Putting it all together: An Example

Note: This material is offered as an example "case scenario" only and not intended to serve as a standard for how LRST meetings should be conducted. It is recognized that the procedure used by a particular LRST is dependent on the needs, capabilities, and complexities of the participating organizations.

*a) **Meeting Preparation***
Three weeks prior to the meeting, the Chairperson solicited input for agenda topics from each of the members. In response to this request, the airport manager indicated that he would like to discuss a planned construction project near the approach end of one of the parallel runways. After receiving input from the rest of the members, the Chairperson consolidated the information and distributed the agenda to the team one week prior to the meeting date.

b) ***Attendance***
The following attendees were present during the meeting:

- Tower Supervisor (Chairperson), voting member.
- Airport Manager, voting member.
- Airline Operations Manager, voting member.
- Flight School Operations Manager, voting member.
- Airport Safety Manager (LRST Secretary), supporting member.
- Fire Chief, routinely invited guest.
- Regulator (AANSOO), routinely invited guest.
- Construction Foreman, subject matter expert invited by the Airport Manager.

c) ***Previous Business***

During this phase of the meeting, updates to previous action items were discussed and documented on the Action Log. Communication plans were reviewed and the next issue of the airport newsletter was presented.

d) ***New Business***

Following the Previous Business, the Chairperson asked each member to present the new hazards and issues identified through their respective safety management systems. When it was his turn, the Airport Manager asked the Construction Foreman to brief the team on the upcoming construction project. The Construction Foreman provided the following details to the LRST:

1. In an effort to address water accumulation issues, the airport plans to install a drainage system near the approach end of the secondary runway.
2. Given the location of the worksite, construction vehicles must cross the primary runway.
3. In an effort to reduce the impact on the arrival rate, the work is scheduled to occur at night.
4. In an effort to reduce the likelihood of a runway incursion by a construction vehicle, each driver will be required to attend a special training course and escorts will be used during the project.

e) ***System Description***

The Local Runway Safety Team discussed how the airport system would be affected by this project. Their comments were documented by the airport Safety Manager and included the following:

1. There will be a high volume of construction vehicles wanting to cross the primary runway during night operations.
2. The tower may have difficulty in communicating directly with the drivers of the construction vehicles.
3. Signs, markings, and lighting for taxiways and runways will be modified during the period of construction.

f) ***Hazard Identification***

The LRST then described the hazards and possible consequences associated with this project. The airport Safety Manager (in his role as the LRST Secretary) captured the following comments:

- **Generic Hazard:** Airport Construction.
- **Specific Hazard:** Construction vehicles crossing the primary runway.
- **Consequences of the Hazard:**
  - Construction vehicles may deviate from the prescribed procedures and cross the primary runway without clearance.
  - Aircraft could conflict with a crossing vehicle.

g) ***Safety Risk Assessment Process***

The LRST Secretary documented the following results of the risk assessment process:

1. The LRST concluded there is a remote probability that a construction vehicle will deviate from prescribed procedures and cross the primary runway without an escort. (Please see *Appendix D, Figure 4*, for an example of a safety risk probability table.)
2. Given there is a night airfreight operation at the airport, the LRST concluded there is a remote probability an aircraft could conflict with a crossing vehicle.
3. While the probability of an aircraft/construction vehicle conflict is remote, the LRST assessed that, should such conflict occur, the severity of the occurrence could be catastrophic. (Please see *Appendix D, Figure 3,* for an example of a safety risk severity table.)
4. The LRST assessed existing defenses (driver training programme, use of escorts for construction vehicles, signs, markings and lighting).
5. Using their safety risk assessment matrix (see *Appendix D, Figure 4*, for an example) and their safety risk tolerability matrix (see *Appendix D, Figure 5* for an example), the LRST assessed the safety risk index as *3A* (-unacceptable under the existing circumstances||).

6. The LRST concluded, therefore, that the safety risk of the consequences of the hazard generated by movement of construction vehicles to the construction site is, under the prevailing conditions, unacceptable and that control/mitigation is necessary.

h) ***Safety Risk Control Process***

Given the conflict between the need to address the drainage issues by the airport and the unacceptability of the assessed risk by the LRST, an adjustment to the original plan must be made.

1. While reviewing the airport diagram, one of the members suggested using the perimeter road to gain access to the construction site while continuing to use the escort vehicles to guide the construction crew.
2. With this mitigation as part of the plan, the LRST used the same process to assess the probability and severity of the consequences of the hazards and determined that, although the severity would remain catastrophic, the likelihood would drop to -extremely improbable.
3. This resulted in an assessment value of *1A* (-Acceptable) using the safety assessment matrix.
4. The LRST documented this recommendation in the Action Log and tasked the Airport Manager with the responsibility for ensuring their recommendation was communicated to Airport Authority prior to beginning construction.
5. The Chairperson then added an item to the next LRST meeting agenda requesting a follow-up on the status of this recommendation and the project.

i) ***Action Log Documentation***

Throughout the meeting the LRST Secretary documented the process in the Hazard Identification and Safety Risk Management Log. The purpose of this log is to provide a useful method for tracking recommendations and as a reference for future safety risk assessments. The log should be retained permanently in the safety library‖ under the care of the current Chairperson. (Please see **Appendix E** for an example of how this entry might appear in an Action Log maintained by the LRST.)

3.3 LRST Administrative Processes

3.3.1 Terms of Reference / Memorandum of Understanding

To facilitate effective decision-making, organizations seeking to establish an LRST should agree to a set of procedural rules governing the actions of their representatives. Once formally documented and accepted, these rules are referred to as either the Terms of Reference‖ (ToR) or the Memorandum of Understanding‖ (MoU). (Note: this *Handbook* uses ToR to refer to these rules.) TheToR should include the following:

a) objectives, scope of oversight, and expected frequency of LRST meetings;
b) membership selection processes;
c) roles and responsibilities of individual LRST members;
d) processes governing and protecting the sharing of safety data, safety reports, and safety information from the participating organizations;
e) processes and formal agreements governing the protection of the sources of information shared within the RST (protection form inappropriate use and protection against disclosure);
f) consultation, decision-making and conflict resolution processes; and
g) documentation and reporting requirements.

3.3.2 Role of the Chairperson

The Chairperson serves as the coordinator and spokesperson for the team. His or her responsibilities include:

a) *Meeting Planning*

The Chairperson schedules the meetings and arranges the venue. He or she gathers input from the members in the weeks prior to the meeting and distributes an agenda one week prior to the meeting date.

b) *Meeting Facilitation*

The Chairperson ensures the meetings are conducted in a collaborative manner and in accordance with the ToR processes. He or she constantly strives to enhance the programme by regularly engaging in continuous improvement activities.

c) *Maintaining the Safety Library*

The Chairperson ensures the actions of the LRST are properly documented and maintained in the LRST Safety Library.

d) *Coordinating with External Agencies*

The Chairperson serves as the point of contact with external agencies and ensures all LRST activities are properly communicated to applicable agencies/organizations.

3.3.3 Role of LRST Members

a) *Meeting Planning*

LRST members will submit items for discussion at the next scheduled meeting as soon as possible, but not later than the date requested by the Chairperson. Each member presenting during the meeting should prepare briefing material and invite subject matter experts as necessary to provide the other members with a clear understanding of the issue they wish to discuss. The members should tour the airport just prior to the meeting to familiarize themselves with the current situation and identify potential safety hazards.

Note: A tour of the airport by night time should be considered to allow identification of hazards that are particularly related to night time operation.

b) *Meeting Participation*

LRST members will openly share information and strive to achieve consensus during decision-making activities. They will constantly strive to enhance the programme by engaging in continuous improvement activities.

c) *Contributing to the Safety Library*

LRST members should contribute safety data & analysis, reports, and information from the safety management systems of their participating organizations to the LRST.

d) *Coordinating with Participating Organizations*

LRST members will communicate the findings and decisions of the LRST within their respective organizations and ensure the recommendations are properly addressed.

3.3.4 Role of the Regulator (AANSOO-CAAP, FSIS-CAAP)

Although their participation is not required, ICAO encourages members of the regulatory authority to attend LRST meetings to advise on regulatory matters, participate in the information sharing activities, understand the current hazards and risks associated with local operations, and interface with other government agencies (e.g. land use authorities) on behalf of the LRST when appropriate.

3.3.5 Continuous Improvement Process

All team members will constantly monitor the LRST and Local Runway Safety programme for areas in need of improvement and/or failure to achieve the standards set forth in the ToR. Additionally, the chairperson will schedule the following activities:

a) *Internal Audits*

At least once every six months, the team will allocate time during a regularly scheduled meeting to discuss each item on the checklist found in *Section 4*. Their responses will be recorded and maintained as part of the safety library for at least two years.

b) *External Audits*

At least once per calendar year, the LRST documentation will be audited and at least one meeting observed by a member of the regulatory authority or a contracted third-party. The results of this appraisal will be recorded and maintained as part of the safety library for at least two years.

4. LOCAL RUNWAY SAFETY TEAM SET-UP CHECKLIST

4.1 Instructions

The following checklist is provided to assist both existing and new LRSTs in determining if gaps exist in their programme, or if improvements can be made. Although not intended to be an exhaustive list, the items on the checklist are designed to identify gaps in the system that would hinder the LRST from achieving their goal of improving runway safety. Five main areas are included in the checklist: 1) Terms of Reference; 2) Hazard Identification; 3) Safety Risk Management; 4) Communication; and 5) Continuous Improvement. A negative response to any of the associated question indicates an area that should receive attention by all members of the RST (and the organizations they represent) until the gap is filled.

4.2 Checklist

Item	Question	Response	Comments
	1. Terms of Reference (ToR)		
1.1	Is there a ToR agreement in place?	☐ Yes ☐ No	
1.2	Does the ToR define the scope of work of the RST?	☐ Yes ☐ No	
1.3	Does the ToR define the roles for members of the RST?	☐ Yes ☐ No	
1.4	Does the ToR define a process for handling data/reports received from the participating organizations?	☐ Yes ☐ No	
1.5	Does the ToR describe the decision-making process to be used by the LRST?	☐ Yes ☐ No	
1.6	Does the ToR define a process for resolving disagreements between LRST members?	☐ Yes ☐ No	
	2. Hazard Identification		
2.1	Does the LRST have a formal safety data collection and processing system for documenting operational hazards?	☐ Yes ☐ No	
2.2	Do all LRST members contribute to the formal safety data collection and processing system by sharing identified operational hazards?	☐ Yes ☐ No	
2.3	Does the LRST define and document specific consequences for the operational hazards?	☐ Yes ☐ No	
	3. Safety Risk Management		
3.1	Does the LRST have a formal process to manage the operational risk?	☐ Yes ☐ No	
3.2	As part of the risk management process, are the consequences of the operational hazards assessed in terms of probability and severity?	☐ Yes ☐ No	
3.3	Is there a formalized process to determine	☐ Yes	

	the level of risk the LRST is willing to accept?	☐ No	
3.4	Does the LRST develop risk mitigation strategies to control the level of risk within the operational environment?	☐ Yes ☐ No	
3.5	Is there a formalized process for the LRST to make recommendations to applicable stakeholders?	☐ Yes ☐ No	
3.6	Is there a formalized process to document the decisions made by the LRST during the risk management process?	☐ Yes ☐ No	
3.7	Are the decisions made by the LRST periodically reviewed to determine if the desired effect was achieved by their mitigations/recommendations?	☐ Yes ☐ No	
4. Communication			
4.1	Does the LRST have a formal process to communicate with applicable stakeholders?	☐ Yes ☐ No	
4.2	Does the LRST periodically provide runway safety material to key frontline employees?	☐ Yes ☐ No	
4.3	Does the LRST participate in information sharing activities with other RSTs?	☐ Yes ☐ No	
4.4	Does the LRST solicit safety-related information from all airport users via common links embedded within websites of the LRST participating organizations?	☐ Yes ☐ No	
5. Continuous Improvement			
5.1	Does the LRST have a formal process to continuously improve their processes & products?	☐ Yes ☐ No	
5.2	Does the LRST engage in formal, periodic reviews of their programme to ensure they are improving runway safety?	☐ Yes ☐ No	
5.3	Are the results of the continuous improvement programme documented?	☐ Yes ☐ No	

APPENDIX A

LRST MEETING ORGANIZER (EXAMPLE)

1. Schedule Meeting

a) Date
b) Time
c) Location

2. Determine Invitees

a) aerodrome operator/Authority Representative (mandatory)
b) air traffic services representative (mandatory)
c) commercial air operator representative(s) (mandatory)
d) representatives of flight crew familiar with the aerodrome
e) general aviation representative(s)
f) regulatory authority representative
g) military operator representative (operating in the civil airport)
h) support services representative(s)
i) emergency response operators
j) subject matter expert(s)

3. Plan Discussion Topics

a) Three weeks prior to the meeting date:
   - notify stakeholders of the meeting date, time, and location; and
   - solicit input for agenda items from each of the members.
b) Two weeks prior to the meeting date:
   - schedule airport tours (as required); and
   - send tentative agenda to the team.
c) One week prior to the meeting date:
   - consolidate updates and information received from members; and
   - distribute the final agenda and supporting documents to the team.

4. Meeting Logistics

a) confirm availability of members;
b) schedule meeting room appropriate for the size and requirements of the RST; and
c) coordinate airfield tour with airport management , tower, etc., including vehicle and escort availability.

APPENDIX B

LOCAL RUNWAY SAFETY TEAM MEETING AGENDA (EXAMPLE)

1. Meeting Information

a) Date
b) Time
c) Location

2. Members and Guests in Attendance

a) aerodrome operator/authority representative (mandatory):
b) air traffic services representative (mandatory):
c) commercial air operator(s) representative(s) (mandatory):
d) general aviation representative(s):
e) regulatory authority representative:
f) military operator representative:
g) support services Representative(s):
h) Emergency Response Operators:
i) Other LRST guests:

3. Previous Business [Review the status of previous action items and update the Action Log as appropriate.]

4. New Business [Members present new projects, hazards, or events identified within their safety management systems. The team then: (a) defines the hazards, (b) conducts safety risk assessments, and (c) proposes recommendations for managing the safety risk.]

5. Action Log [Document findings and action plan.]

6. Next Meeting [Agree to the date, time, and location for the next meeting.]

7. Airport Tour [refer to 3.3.3. – the intent of the airport tour is to identify existing and new hazards as well as to observe rectification measures that have been implemented based on previous findings. The most suitable time for the tour, if conditions permit, is between Agenda item 3 and 4.

APPENDIX C

HAZARD IDENTIFICATION (EXPLANATION)

(Note: The following discussion and examples are from the ICAO Safety Management Manual, Third Edition. The original paragraph numbers were modified to align with the format of this Handbook.)

1. HAZARDS

Hazard identification is a prerequisite to the safety risk management process. Any incorrect differentiation between hazards and safety risks can be a source of confusion. A clear understanding of hazards and their related consequences is essential to the implementation of sound safety risk management.

1.1 Understanding Hazards and Consequences

A hazard is generically defined by safety practitioners as a condition or an object with the potential to cause death, injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function. For the purpose of aviation safety risk management, hazard should be focused on those conditions that could cause or contribute to unsafe operation of aircraft or aviation safety related equipment, product and services. (Guidance on distinguishing hazards which are directly pertinent to aviation safety from other general/ industrial hazards is addressed in 1.12.4).

Consider, for example, a 15-knot wind, which is not necessarily a hazardous condition. In fact, a 15-knot wind blowing directly down the runway improves aircraft take-off and landing performance. However, a 15-knot wind blowing in a direction ninety degrees across a runway of intended take-off or landing creates a crosswind condition that may be hazardous due to its potential to contribute to an aircraft operational occurrence, such as lateral runway excursion.

Hazards are an inevitable part of aviation activities. However, their manifestation and possible consequences can be addressed through various mitigation strategies to contain the hazards potential from resulting in unsafe aircraft or aviation equipment operations.

There is a common tendency to confuse hazards with their consequences or outcomes. A consequence is an outcome that could be triggered by a hazard. For example, a runway excursion (overrun) is a projected consequence in relation to the hazard of a contaminated runway. By first defining the hazard clearly, one can then project the proper consequence or outcome. It may be noted that consequences can be multi-layered, including such as an intermediate unsafe event, before an ultimate consequence (accident).

In the crosswind example above, an immediate outcome of the hazard could be loss of lateral control followed by a consequent runway excursion. The ultimate consequence could be an accident. The damaging potential of a hazard materializes through one or many consequences. It is therefore important for safety assessments to include a comprehensive account of all likely consequences described accurately and in practical terms. The most extreme consequence, loss of human life, should be differentiated from those that involve the potential for lesser consequences such as increased flight crew workload, passenger discomfort or reduction in safety margins. The description of consequences according to their plausible outcomes will facilitate the development and implementation of effective

mitigation strategies through proper prioritization and allocation of limited resources. Proper hazard identification leads to appropriate evaluation of their potential outcomes.

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1.2 Hazard Identification and Prioritization

Hazards exist at all levels in the organization and are detectable through use of reporting systems, inspections (including surveillance) or audits. Mishaps may occur when hazards interact with certain triggering factors. As a result, hazards should be identified before they lead to accidents, incidents or other safety related occurrences. An important mechanism for proactive hazard identification is a voluntary hazard/ incident reporting system. Information collected through such reporting systems may be supplemented by observations or findings recorded during routine site inspections or organization audits.

Hazards can also be identified or extracted from review or study of investigation reports, especially those which are deemed to be indirect contributing factors and which may not have been adequately addressed by corrective actions resulting from the investigation process. Thus, a systematic procedure to review accident/ incident investigation reports for outstanding hazards is a good mechanism to enhance an organization's hazard identification system. This is particularly relevant where an organization's safety culture may not have sufficiently matured to support an effective voluntary hazard reporting system yet.

Hazards may be categorized according to their source, or location. Objective prioritization of hazards may require categorizations according to the severity/ likelihood of their projected consequences, which will facilitate the prioritization of risk mitigation strategies, so as to use limited resources in the most effective manner.

1.3 Hazard Identification Methodologies

The three methodologies for identifying hazards are:

1. Reactive – Through analysis of past outcomes or events. Hazards are identified through investigation of safety occurrences. Incidents and accidents are clear indicators of system deficiencies and therefore can be used to determine the hazards that were both contributing to the event or are latent.

2. Proactive – Through analysis of existing or real time situations. This is the primary job of the safety assurance function with its audits, evaluations, employee reporting, and the associated analysis and assessment processes. This involves actively seeking hazards in the existing processes.

3. Predictive – Through data gathering in order to identify possible negative future outcomes or events. Analyzing system processes and the environment to identify potential future hazards and initiating mitigating actions**.**

The following may be considered while engaged in hazard identification process:

a) design factors, including equipment and task design;
b) human performance limitations (e.g. physiological, psychological and cognitive);
c) procedures and operating practices, including their documentation and checklists, and their validation under actual operating conditions;
d) communication factors, including media, terminology and language;
e) organizational factors, such as those related to the recruitment, training and retention of personnel, the compatibility of production and safety goals, the allocation of resources,

operating pressures and the corporate safety culture;

f) factors related to the operational environment of the aviation system (e.g. ambient noise and vibration, temperature, lighting and the availability of protective equipment and clothing);
g) regulatory oversight factors, including the applicability and enforceability of regulations;
h) the certification of equipment, personnel and procedures;
i) performance monitoring systems that can detect practical drift or operational deviations; and
j) human-machine interface factors.

Hazards may be identified through proactive and predictive methodologies or as a result of accident or incident investigations. There are a variety of data sources of hazard identification that may be both internal and external to the organization. Examples of the internal hazard identification data sources include:

a) normal operations monitoring schemes (e.g. flight data analysis for aircraft operators);
b) voluntary and mandatory reporting systems;
c) safety surveys;
d) safety audits;
e) feedback from training; and
f) investigation and follow-up reports on accidents/ incidents.

Examples of external data sources for hazard identification include:

a) industry accident reports;
b) State mandatory incident reporting system;
c) State voluntary incident reporting system;
d) State oversight audits; and
e) information exchange systems.

The type of technologies used in the hazard identification process will depend upon the size and complexity of the service provider and its aviation activities. In all cases the service provider's hazard identification process is clearly described in the organization's SMS/ safety documentation. The hazard identification process considers all possible hazards that may exist within the scope of the service provider's aviation activities including interfaces with other systems, both within and external to the organization. Once hazards are identified, their consequences (i.e. any specific events or outcomes) should be determined.

APPENDIX D

SAFETY RISK MANAGEMENT (EXPLANATION)

(Note: The following discussion and examples are from the ICAO *Safety Management Manual*, Draft Third Edition. The original paragraph numbers were modified to align with the format of this Handbook.)

1. SAFETY RISK

Safety risk management is another key component of a safety management system. The term *safety* risk management is meant to differentiate this function from the management of financial risk, legal risk, economic risk and so forth. This section presents the fundamentals of safety risk management and includes the following topics:

a) definition of safety risk
b) safety risk probability
c) safety risk severity
d) safety risk tolerability
e) safety risk management

1.1 Safety Risk

Safety risk is the projected probability (or likelihood) and severity of the consequences or outcomes from an existing hazard or situation. While the outcome may be an accident, an intermediate unsafe event/ consequence may be identified as the most credible outcome. Provisions for the identification of such layered consequences are usually associated with more sophisticated risk mitigation software.

1.2 Safety Risk Probability

The process of controlling safety risks starts by assessing the probability that the consequences of hazards will materialize during aviation activities performed by the organization.

Safety risk probability is defined as the likelihood or frequency that a safety consequence or outcome might occur. The determination of likelihood can be aided by questions such as:

a) Is there a history of occurrences similar to the one under consideration, or is this an isolated occurrence?
b) What other equipment or components of the same type might have similar defects?
c) How many personnel are following, or are subject to, the procedures in question?
d) What percentage of the time is the suspect equipment or the questionable procedure in use?
e) To what extent are there organizational, managerial or regulatory implications that might reflect larger threats to public safety?

Any factors underlying these questions will help in assessing the likelihood that a hazard may exist, taking into consideration all potentially valid scenarios. The determination of likelihood can then be used to assist in determining safety risk probability.

Figure 1 presents a typical safety risk probability table, in this case, a five-point table. The table includes five categories to denote the probability related to an unsafe event or condition, the description of each category, and an assignment of a value to each category.

It must be stressed that this is an example only and that the level of detail and complexity of tables and matrixes should be adapted to be commensurate with the particular needs and complexities of different organizations. Also, it should be noted that organizations may include both qualitative and quantitative criteria that may include up to fifteen values.

Likelihood (Probability)	Meaning	Value
Frequent	Likely to occur many time (has occurred frequently)	**5**
Occasional	Likely to occur sometimes (has occurred infrequently)	**4**
Remote	Unlikely to occur, but possible (has occurred rarely)	**3**
Improbable	Very unlikely to occur (not known to have occurred)	**2**
Extremely Improbable	Almost inconceivable that the event will occur	**1**

Figure 1— Safety Risk Probability Table

1.3 Safety Risk Severity

Once the probability assessment has been completed, the next step is to assess risk severity, taking into account the potential consequences related to the hazard.

Safety risk severity is defined as the extent of harm that might reasonably occur as a consequence or outcome of the identified hazard. The severity assessment can be based upon:

a) Fatalities/Injury: How many lives may be lost (employees, passengers, bystanders and the general public)?
b) Damage: What is the likely extent of aircraft, property or equipment damage?

The severity assessment should consider all possible consequences related to an unsafe condition or object, taking into account the worst foreseeable situation. *Figure 2* presents a typical safety risk severity table. It includes five categories to denote the level of severity, the description of each category, and the assignment of a value to each category. As with the safety risk probability table, this table is an example only.

Severity	Meaning	Value
Catastrophic	• Equipment destroyed • Multiple deaths	**A**
Hazardous	• A large reduction in safety margins, physical distress or a workload such that the operators cannot be relied upon to perform their tasks accurately or completely • Serious injury • Major equipment damage	**B**
Major	• 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 • Serious incident • Injury to persons	**C**
Minor	• Nuisance	**E**

	• Operating limitations • Use of emergency procedures • Minor incident	
Negligible	• Little consequences	**F**

Figure 2 — Safety risk severity table

1.4 Safety Risk Tolerability

The safety risk probability and severity assessment process can be used to derive a safety risk index. The index created through the methodology described above consists of an alpha-numeric designator, indicating of the combined results of the probability and severity assessments. The respective severity / probability combinations are presented in the safety risk assessment matrix in *Figure 3.*

The third step in the process is to determine risk tolerability. Safety risks are conceptually assessed as acceptable, tolerable or intolerable. Risks assessed as initially falling in the intolerable region are unacceptable under any circumstances. The probability and/or severity of the consequences of the hazards are of such a magnitude, and the damaging potential of the hazard poses such a threat to safety, that immediate mitigation action is required.

Safety risks assessed in the tolerable region are acceptable, provided that appropriate mitigation strategies are implemented by the organization. A safety risk initially assessed as intolerable may be mitigated and subsequently moved into the tolerable region, provided that such risks remain controlled by appropriate mitigation strategies. In both cases, a supplementary cost-benefit analysis may be performed if deemed appropriate.

Safety risks assessed as initially falling in the acceptable region are acceptable as they currently stand and require no action to bring or keep the probability and/or severity of the consequences of hazards under organizational control.

For example, consider a situation where a safety risk probability has been assessed as occasional (4) and safety risk severity has been assessed as hazardous (B). The composite of probability and severity (4B) is the safety risk index of the consequence.

The index obtained from the safety risk assessment matrix must then be exported to a safety risk tolerability matrix that describes the tolerability criteria for the particular organization. Using the example above, the criterion for safety risk assessed as 4B falls in the -unacceptable under the existing circumstances‖ category. In this case, the safety risk index of the consequence is unacceptable. The organization must therefore:

a) take measures to reduce the organization’s exposure to the particular risk i.e. reduce the likelihood component of the risk index;
b) take measures to reduce the severity of consequences related to the hazard i.e. reduce the severity component of the risk index; or
c) cancel the operation if mitigation is not possible.

Risk Probability	**Risk Severity**				
	Catastrophic A	**Hazardous B**	**Major C**	**Minor D**	**Negligible E**

Frequent 5	5A	5B	5C	5D	5E
Occasional 4	4A	4B	4C	4D	4E
Remote 3	3A	3B	3C	3D	3E
Improbable 2	2A	2B	2C	2D	2E
Extremely Improbable 1	1A	1B	1C	1D	1E

Figure 3 — Safety risk assessment matrix

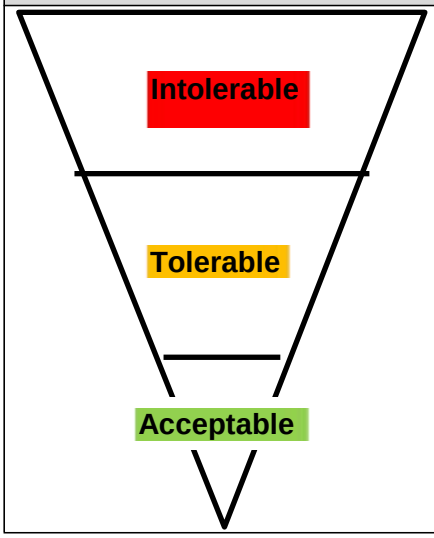
Suggested Criteria	Assessment Risk Index	Suggested Criteria
	5A, 5B, 5C 4A, 4B 3A	Unacceptable under the existing circumstances
	5D, 5E 4C, 4D, 4E, 3B, 3C, 3D 2A, 2B, 2C 1A	Acceptable based on risk mitigation. It may require management decision.
	3E 2D, 2E 1B, 1C, 1D, 1E	Acceptable

Figure 4 — Safety risk tolerability matrix

Risk Index Range	Description	Recommended Action
5A, 5B, 5C 4A, 4B 3A	HIGH Risk	Cease or cut back operation promptly if necessary. Perform priority risk mitigation to ensure that additional or enhanced preventive controls are put in place to bring down the risk index to the MODERATE or LOW range.
5D, 5E 4C, 4D, 4E, 3B, 3C, 3D 2A, 2B, 2C 1A	MODERATE Risk	Schedule for performance of safety assessment to bring down the risk index to the LOW range if viable.

3E **2D, 2E** **1B, 1C, 1D, 1E**	**LOW Risk**	Acceptable as is. No further risk mitigation required.

***A**lternate to Figure 4 — Safety risk tolerability matrix*

1.5 Risk Mitigation Strategy

A risk mitigation strategy may involve one of the approaches described above, or may include multiple approaches. It is important to consider the full range of possible control measures to find an optimal solution. The effectiveness of each alternative strategy must be evaluated before a decision can be taken. Each proposed safety risk mitigation alternative should be examined from the following perspectives:

a) ***Effectiveness.*** The extent to which the alternatives reduce or eliminate the safety risks Effectiveness can be determined in terms of the technical, training and regulatory defences that can reduce or eliminate safety risks:
b) ***Cost/benefit.*** The extent to which the perceived benefits of the mitigation outweigh the costs.
c) ***Practicality.*** The extent to which the mitigation is implementable and appropriate in terms of available technology, financial and administrative resources, legislation and regulations, political will, etc.
d) ***Acceptability.*** The extent to which the alternative is consistent with stakeholder paradigms.
e) ***Enforceability.*** The extent to which compliance with new rules, regulations or operating procedures can be monitored?
f) ***Durability.*** The extent to which the mitigation will be sustainable and effective.
g) ***Residual safety risks.*** The degree of safety risk that remains subsequent to the implementation of the initial mitigation, and which may necessitate additional risk control measures.
h) ***Unintended consequences.*** The introduction of new hazards and related safety risks associated with the implementation of any mitigation alternative.

Once the mitigation has been approved and implemented, any associated impact on safety performance provides feedback to the service provider's safety assurance process. This is necessary to ensure integrity, efficiency and effectiveness of the defences under the new operational conditions.

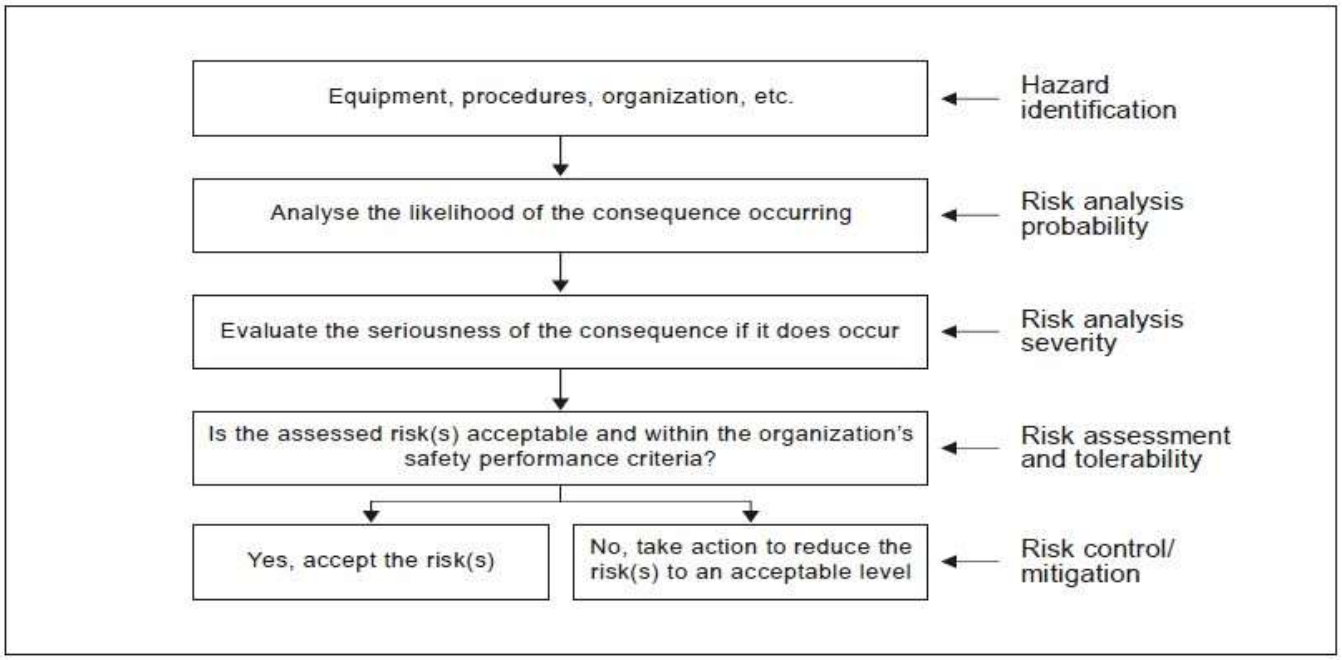


Figure 5 Process of Safety Risk Management

1.5.1 Risk Management Documentation/Worksheet

Each risk mitigation exercise will need to be documented as necessary. This may be done on a basic spread sheet or table for risk mitigation involving non-complex operations, processes or systems. For hazard identification and risk mitigation involving complex processes, systems or operations, it may be necessary to utilize customized risk mitigation software to facilitate the documentation. Completed risk mitigation documents should be approved by appropriate level of management. For an example of a basic risk mitigation worksheet, refer to Appendix 2.

APPENDIX E

ACTION LOG ENTRY (EXAMPLE)

(Note: This material is offered as an example only and not intended to serve as a standard for how Runway Safety Team meetings should be conducted. The authors of this handbook recognize that the procedure used by a particular RST is dependent on the needs, capabilities, and complexities of the participating organizations.)

Type of Operation or Activity	Generic Hazard	Specific Components of the Hazard	Hazard Related Consequences	Existing Defenses to Control Safety Risk	Further Action to Reduce Safety Risks
Airport operations	**Airport construction**	**Construction vehicles crossing primary runway**	**a) Construction vehicles may deviate from prescribed procedures and cross the primary runway without an escort.** **b) Aircraft could conflict with a crossing vehicle.**	**a) The RST assessment leads to the conclusion that there is a remote probability that a construction vehicle will deviate from prescribed procedures and cross the primary runway without an escort.** **b) There are night air carrier operations at the airport, so there is a remote probability that an aircraft could conflict with a crossing vehicle.** **c) While the probability of an aircraft/construction vehicle conflict is remote, the RST assesses that, should such conflict occur, the severity of the occurrence could be catastrophic.** **d) The RST assesses existing defences (driver training programme, use of escorts for construction vehicles, signs, markings and lighting).** **e) Using the safety risk assessment matrix (Appendix D, Figure 4) and the safety risk tolerability matrix (Appendix D, Figure 5), the RST assesses: Safety risk index: 3A and Safety risk tolerability: Unacceptable under the existing circumstances.**	**a) The RST decides to control the safety risk by using an existing aerodrome perimeter road to gain access to the construction site. All construction vehicles will be escorted on the perimeter road.** **b) With this mitigation, the RST reassesses the probability of construction vehicles crossing the primary runway without an escort, or that aircraft could conflict with a crossing vehicle, as being extremely improbable. Nevertheless, should an aircraft/construction vehicle conflict occur, the severity of such an occurrence could still be catastrophic.** **c) Use of the perimeter road as mitigation may delay construction vehicles due to the added driving distance, but in the assessment of the RST:** **1) While it does not entirely remove the possibility of the consequences of the hazard from occurring (construction vehicles may still cross the primary runway due to a number or combination of circumstances), it nevertheless brings the safety risks of the consequences (construction vehicle deviating from prescribed procedures and crossing the primary runway without an escort; and aircraft in conflict with a crossing vehicle) to an acceptable level.** **d) Using the safety risk assessment matrix (Appendix D, Figure 4) and the safety risk tolerability matrix (Appendix D, Figure 5), the RST reassesses: Safety risk index: 1A and Safety risk tolerability: Acceptable.** **e) The RST documents this decision process for future follow-up with the Airport Manager.**

APPENDIX F

RUNWAY SAFETY MANAGEMENT FORM

Runway Safety Management Form		
Reference:	Date Opened dd/mm/yy	Date Closed dd/mm/yy
General Information		
Airport:	What area is affected: runway taxiway ramp general	
Specific Identifier (runway/taxiway identifier):		
Safety Outcomes		
Safety Risk Type:	O runway excursion O runway incursion - aircraft O wildlife encounter O abnormal landing O runway incursion - vehicle O birds tike O other (specify)	
Has an event occurred, or is this a hazard (potential outcome):	O actual outcome (event occurred) O potential outcome (no event occurred)	occurrence date dd/mm/yy
Description of actual or potrential outcome		
Suppporting Document Type: O accident report O incident report O audit report O other (specify)		

Safety Issues			
O Naviation Aids	O Meteorological	O Approach Vectoring	O Other
O Runway/Taxiway Marking	O Obstacles	O Runway Surface Condition	
O VASI / PAPI	O Approach lights	O Airport Construction	
O Communications	O Runway/Taxiway Lights	O Procedures	

Once you have completed the identification of the safety issues - please submit the form to log this report.

During the runway safety team meeting you should address each of the reports as an item on the agenda.

The following sections are provided as a tool to manage the outcomes of the meeting.

Risk Assessment	
(The risk assessment portion is to be completed as part of the runway safety team meeting)	
What is the **Severity** of occurrence:	Catastrophic Hazardous Major Minor Negligable
What is the **Likelihood** of occurrence:	Frequent Occasional Remote Improbable Extremely Improbable
Risk Level (from below risk table):	High Moderate Low

If the risk level is Moderate or High, a corrective action plan is required

		Probability				
		Frequent	Occasional	Remote	Improbable	Extremely Improbable
Consequence	Catastrophic	High	High	High	Moderate	Moderate
	Hazardous	High	High	Moderate	Moderate	Moderate
	Major	High	Moderate	Moderate	Moderate	Low
	Minor	Moderate	Moderate	Moderate	Low	Low
	Negligable	Low	Low	Low	Low	Low

Corrective Action Plan		
(The corrective action plan is based on the recommendations of the Runway Safety Team and is to be completed as part of the Runway Safety Team meeting)		
Action Plan Description:		
Action Item Description:		
Executing Body:	Implementation date: dd/mm/yy	Status :
Action Plan Description:		
Action Item Description:		
Executing Body:	Implementation date: dd/mm/yy	Status :

APPENDIX G

LIST OF USEFUL REFERENCES

Advanced Surface Movement Guidance and Control Systems (A-SMGCS) Manual (Doc 9830)

Aerodrome Design Manual, Part Annex 1 — *Personnel Licensing* — Runways (Doc 9157)

Airport Services Manual (ICAO Doc 9137)

Annexes 6 — Operation of Aircraft

Annex 11 — Air Traffic Services

Annex 14 — Aerodromes

Annex 19 — Safety Management

Assessment, Measurement and Reporting of Runway Surface Conditions (Cir 329 AN191)

European Action Plan for the Prevention of Runway Excursions (Edition 1.0)

European Action Plan for the Prevention of Runway Incursions (Edition 2.0)

Global Air Navigation Plan (Doc 9750)

Global Air Traffic Management Operational Concept (Doc 9854)

Human Factors Guidelines for Air Traffic Management (ATM) Systems (Doc 9758)

Hazards at Aircraft Accident Sites (Cir 315)

Human Factors Digest No. 17 — *Threat and Error Management (TEM) in Air Traffic Control* (ICAO Cir 314)

Manual Concerning Safety Measures Relating to Military Activities Potentially Hazardous to Civil Aircraft Operations (Doc 9554)

Manual of Aircraft Ground De/Anti-icing Operations (Doc 9640)

Manual of All-Weather Operations (Doc 9365)

Manual on Airspace Planning Methodology for the Determination of Separation Minima (Doc 9689)

Manual on Air Traffic Management System Requirements (Doc 9882)

Manual on Certification of Aerodromes (Doc 9774)

Manual on the ICAO Bird Strike Information System (IBIS) (Doc 9332)

Manual on the Prevention of Runway Incursions (Doc 9870)

Manual on Required Communication Performance (RCP) (Doc 9869)

Manual on Simultaneous Operations on Parallel or Near-Parallel Instrument Runways (Doc 9643)

Manual of Surface Movement Guidance and Control Systems (SMGCS) (Doc 9476)

Operation of New Larger Aeroplanes at Existing Aerodromes (Cir 305)

Reducing the Risk of Runway Incursions (Flight Safety Foundation, May 2009)

Runway Safety Programme (FAA Order 7050.1A)

Safety Management Manual (SMM) (Doc 9859) 3rd edition