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Procedure – Aviation Risk Assessment and Management Process

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Prepared by	Agricultural Protection Officer (Policy) Emergency Management Officer		
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REVISION HISTORY

Version	Date	Amendments	
		Section	**Details**
1.2	2 Nov 11		For approval
2	31 May 12	All	Remove task from risk assessment; replace Annex A with short example; include reference section (S 6); update approving Director (S 5.32)

1. Application / Scope

1.1 This procedure shall be used to assist in the development of new task profile to ensure that the potential risk of an operation falls within Departmental risk tolerance.

1.2 Every aviation task requires a task profile and associated risk assessment.

1.3 Where a task can be associated with an existing task profile and risk assessment, the person planning the task shall refer to and comply with the task profile. If the task is covered by a task profile and risk assessment and no deviations are foreshadowed, then the task may proceed without further authorisation, although all aviation operations should involve ongoing operational risk assessments by the pilot and any crewmembers throughout a flight.

1.4 If any task profile is altered, the corresponding risk assessment must be reviewed.

1.5 If Planning or tasking personnel recognise that a proposed task falls outside an existing task profile, then a new task profile and associated risk assessment shall be developed in consultation with relevant stakeholders.

1.6 A task that does not comply with existing task profiles and associated risk assessment shall not be conducted without completing 1.5 above and gaining appropriate approvals.

1.7 A new task profile and associated risk assessment may also be used as the basis for identifying any new procedures or resources that may be required.

1.8 All staff associated with aircraft operations shall have ready access to task profiles and associated risk assessments at all times.

1.9 NSW DPI aviation policy requires, “the effective and efficient use of aircraft to achieve operational objectives within acceptable risk parameters. All aircraft utilisation shall comply with national and state regulations, rules, and standards.”

1.10 The risk assessment and management process is not intended to stop operations, but rather to ensure the level of associated risk is identified, understood, assessed and controlled.

1.11 Understanding risk and its control is central to Departmental aviation management. Risk management does not end with the development of a risk assessment, but is an ongoing process by all those involved in the use or management of aviation.

1.12 Aviation operators should have Safety Management Systems that include risk assessment and management.

1.13 The Department’s aviation risk management system takes a qualitative rather than quantitative approach although historical data is relevant in determining the likelihood of an event occurring and provides some indication as to the potential consequence.

1.14 The Department’s risk assessment process involves identifying hazards, assessing their consequence and likelihood, and identifying risk mitigation strategies. This procedure is issued to assist with the development of aviation-relation risk assessments. The assessments generally conform to the principles of AS/NZS ISO

31000:2009 “Risk management – Principles and Guidelines” and IEC/ISO 31010:2009 “Risk management – Risk assessment techniques”.

1.15 Risk Assessment is an integral part of the Expression of Interest and task profile processes. They are inextricably linked and should be cross-checked to ensure that no deviations or contradictions develop. Relevant elements of a task profile can be used to determine the context of the risk assessment and the subsequent assessment can be used to further develop the task profile. The context can include existing or planned risk controls, but these still need to be evaluated in the risk assessment.

1.16 All personnel involved in aviation resource planning and management should use this aviation risk management process during both planning and operational employment of aviation assets.

1.17 Accident and incident causation models illustrate the importance of considering risks at all levels. The models focus on the observed factors involved in accidents and incidents which show the potential for a number of seemingly independent and inconsequential events that when considered in concert, present a significant risk.

1.18 The risk management process adopted by the Department is designed to identify hazards, enable them to be treated and monitor the success or otherwise of the treatments. Aircraft operators who are subcontractors to Department may also be required to demonstrate the implementation of a similar process.

1.19 The risk management process is also used to identify policies and processes that may require amendment in order to streamline and make aircraft operations in support of Department safer.

1.20 Aviation risk assessment and management of aviation tasks can be daunting for those unfamiliar with aviation hazards, risks, practices and regulations and therefore it is important that aviation expertise input is sought. Due to the safety and financial considerations and imperatives in the provision of aviation services, it cannot be over-stressed that the end-user needs to know what their objectives are for the use of aviation services so that the assessment is relevant.

1.21 As noted before, the Department’s risk assessment process involves, in part, the identification of risk mitigation strategies.

1.22 The three key mitigation principles are:

a) Do not accept unnecessary risk

Unnecessary risk-taking usually comes without a commensurate return in potential benefits or opportunities. The most logical options for accomplishing tasks are those that meet all task/contractual requirements with the least risk possible to personnel and property.

b) Accept risk only when the potential benefits outweigh the potential cost

Risk in Department aviation operations is judged to be tolerable if the importance and benefits of the task and the desired outcomes are sufficiently significant to justify acceptance of the associated risks. Extreme risk can only be accepted by the Director General or delegate and the aircraft operator (see Figure 3).

c) Risk decisions are made at the appropriate management level within the Department, the management of the sub-contracting company and the unit performing the task

Those people in the organisations and the individual aircraft operator that are accountable for the conduct of a flight and/or task shall be included in the risk assessment and decision process.

1.23 'Safety Management' and obligations under OH&S regulations have become central to Department operations. The implementation of safe practices in sub-contracted aircraft operations is to be addressed through the Department and its sub-contractors' ongoing development of safety policies, procedures and systems. The sub-contractors will be required to demonstrate that they have Safety Management Systems in place and these are to include risk management principles, procedures and practices.

1.24 The Department will use risk management processes to assess the suitability or otherwise of potential and existing aircraft operators who seek to provide aviation services to the Department.

1.25 Risk is measured in terms of consequence and likelihood in order to derive an overall risk rating. As a general policy, assessed levels of Negligible to Low risk may be accepted by the Local Control Centre. Medium to High shall be referred for acceptance by the State Coordination Centre or Department. Extreme Risk can only be accepted by the Director General or delegate and the aircraft operator so normally, controls must be put in place to lower the risk or the task is not done.

1.26 *Consequence* is an outcome of an event expressed in qualitative rather than quantitative terms, as a loss, injury or disadvantage. Consequence is described in terms that indicate the significance to the subcontractor and/or the Department of the potential adverse effects of events associated with the task measured in dimensions of safety, economic, organisation and public perception. The selection of the dimension depends on the risk criteria and nature of the risk.

1.27 Expert opinion or historical information including the results of past accidents, incidents or events associated with the subcontractor, aircraft or equipment – or a combination of both - should be used to assist in determining the consequence of an event.

1.28 The Department uses qualitative definitions for *likelihood*, or the probability or frequency of an event. It is a measure of the probability that an event will have a given consequence, together with a degree of exposure to the event during the period of the task. Exposure may be considered in terms of how often the event would occur and the duration of the occurrences within the activity under consideration. Past historical statistics regarding the subcontractor, aircraft or equipment may be used to assess the likelihood of an event.

2. Definitions

Term	Meaning
Consequence	Outcome of an event. An event can lead to a range of consequences. A consequence can be certain or uncertain and can have positive or negative effects on objectives.
Control (also can be called mitigation)	Measure that is modifying risk.
Establishing the context	Defining the external and internal parameters to be taken into account when managing risk, and setting the scope and risk criteria for the risk management policy.
Event	Occurrence or change of a particular set of circumstances. An event can be one or more occurrences and can have several causes. An event can consist of something not happening.
Level of Risk	Magnitude of risk or combination of risks, expressed in terms of the combination of consequences and their likelihood.
Likelihood	Chance of something happening.
Monitoring	Continual checking, supervising, critically observing or determining status in order to identify change from the performance level required or expected.
Residual Risk	Risk remaining after risk treatment.
Risk	The effect of uncertainty on objectives –potential of events and their consequences or a combination of these.
Risk Analysis	Process to comprehend the nature of risk and to determine level of risk.
Risk Assessment	In this context, the overall process of risk identification, risk analysis, risk evaluation and identification of controls (mitigation).
Risk Criteria	Terms of reference against which the significance of a risk evaluated.
Risk Identification	Process of finding, recognising and describing risks.
Risk Management	Coordinated activities to direct and control a task with regard to risk.
Risk Management Plan	The scheme within the Department's risk management framework specifying the approach, management components, and resources to be applied to the management of risk.
Risk Management Process	Systematic application of management policies, procedures and practices to the activities of communicating, consulting, establishing the context, and identifying, analysing, evaluating, treating monitoring and reviewing risk.
Risk Owner	Person or entity with the accountability and authority to manager risk.
Risk Profile	Description of any set of risks.
Risk Source	Element, which alone or in combination has the intrinsic potential to give rise to risk.
Risk Treatment	Process to modify risk.
Stakeholder	Person or organisation that can be affected, or perceive themselves to be affected by a decision or activity.

3. Resources

3.1 The planner/tasking person should have access to all stakeholders including the operator and relevant Departmental personnel as well as the Department's aviation advisor (aviation expert).

3.2 The planner/tasking person should have access to all current task profiles and associated risk assessments.

4. Warnings

4.1 In attempting to find ways of undertaking the task, there is an inclination to 'make the figures fit' through downplaying the risk or overstating the control effectiveness. This must be avoided and the risk assessment process conducted honestly.

5. Procedure

Overview

5.1 Departmental aviation risk assessments should follow a standard format (see Annex A). The format identifies the task and the context, the hazards and likelihood, current and potential mitigation strategies as well as the resultant level of risk.

5.2 As a principle, the assessor identifies all potential practical risk controls, identifies those that already exist, assesses the current risk level, and then if needed, selects further risk strategies in an effort to lower the risk level to one that would normally be acceptable to the Department.

5.3 It is acknowledged that aviation has an inherent risk derived from the fact that being airborne in a helicopter or aeroplane involves mechanical and human hazards at height and speed. In many circumstances, the consequence is difficult to control so improvements in likelihood are more likely to achieve the risk lowering sought.

5.4 Consequence may be controlled through such considerations as crash-worthy seating and PPE including helmets and fire-resistant clothing. Likelihood may be controlled through design, training, standards, or even task profile.

5.5 When deciding on controls, consideration should also be given to the hierarchy of controls in the assessment of effectiveness (Fig. 1) The least effective method (PPE) of controlling risk is at the bottom of the diagram indicating that a greater number of controls within this group would be needed to mitigate the risk. Ideally, a selection of controls from more than one group should be utilised to increase the effectiveness of any risk mitigation.

5.6 Through a process of review and consultation, the result should be assessed to ensure that new risks and hazards have not been introduced or if they have, that they are also adequately controlled.

5.7 The standard format for conducting the risk assessment is shown at Annex A.

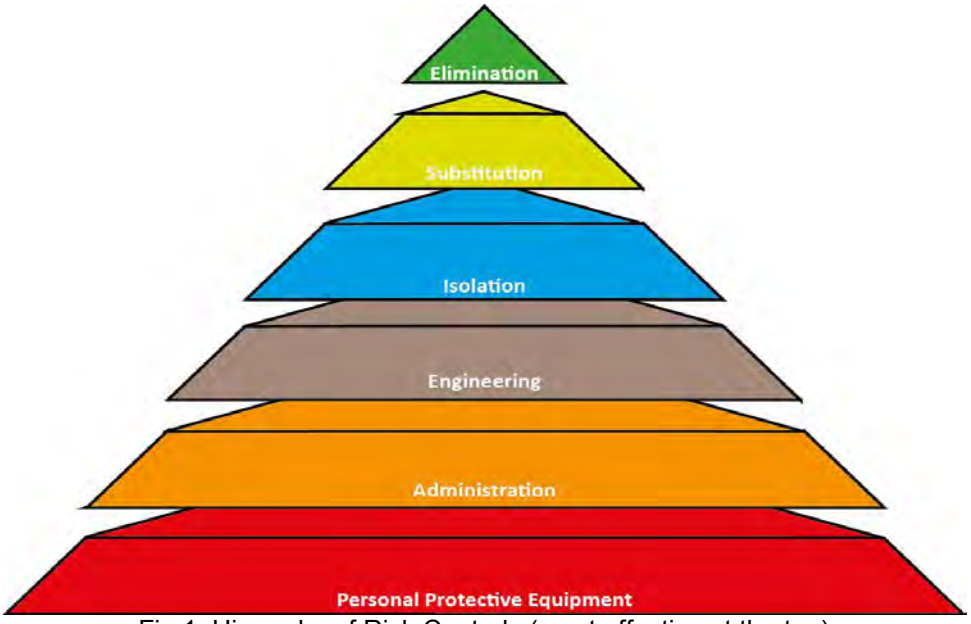

Fig 1. Hierarchy of Risk Controls (most effective at the top)

Procedure

5.8 The **steps in developing a risk assessment** are as follows:

A. Establish the Context (5.12 – 5.17)
B. Identify the Risk (5.18 – 5.20)
C. Analyse the Risk (5.21 – 5.23)
D. Identify the current treatment (if applicable) and Evaluate the Risk (5.24 – 5.26)
E. Devise (select) further treatment if required (5.27 – 5.28)
F. Re-evaluate the Risk (5.29 – 5.30)
G. If risk still considered unacceptable or the task would benefit from a further lowering of risk, further treatment and evaluation is required (5.32)
H. Approval (5.33)

5.9 Throughout the process, the assessor should communicate and consult with all relevant stakeholders and subject-matter experts while continually monitoring and reviewing the decisions and risks.

5.10 Figure 2 represents the Departmental risk assessment and management process model. This assists to visualise the process although while the process may appear complex, the actual conduct should be relatively simple. Using the standard format should assist with the risk process.

5.11 The standard format repeats normal aviation considerations. These are included to round out the total picture of the aviation task. No task can be considered without regard to standard aviation activities.

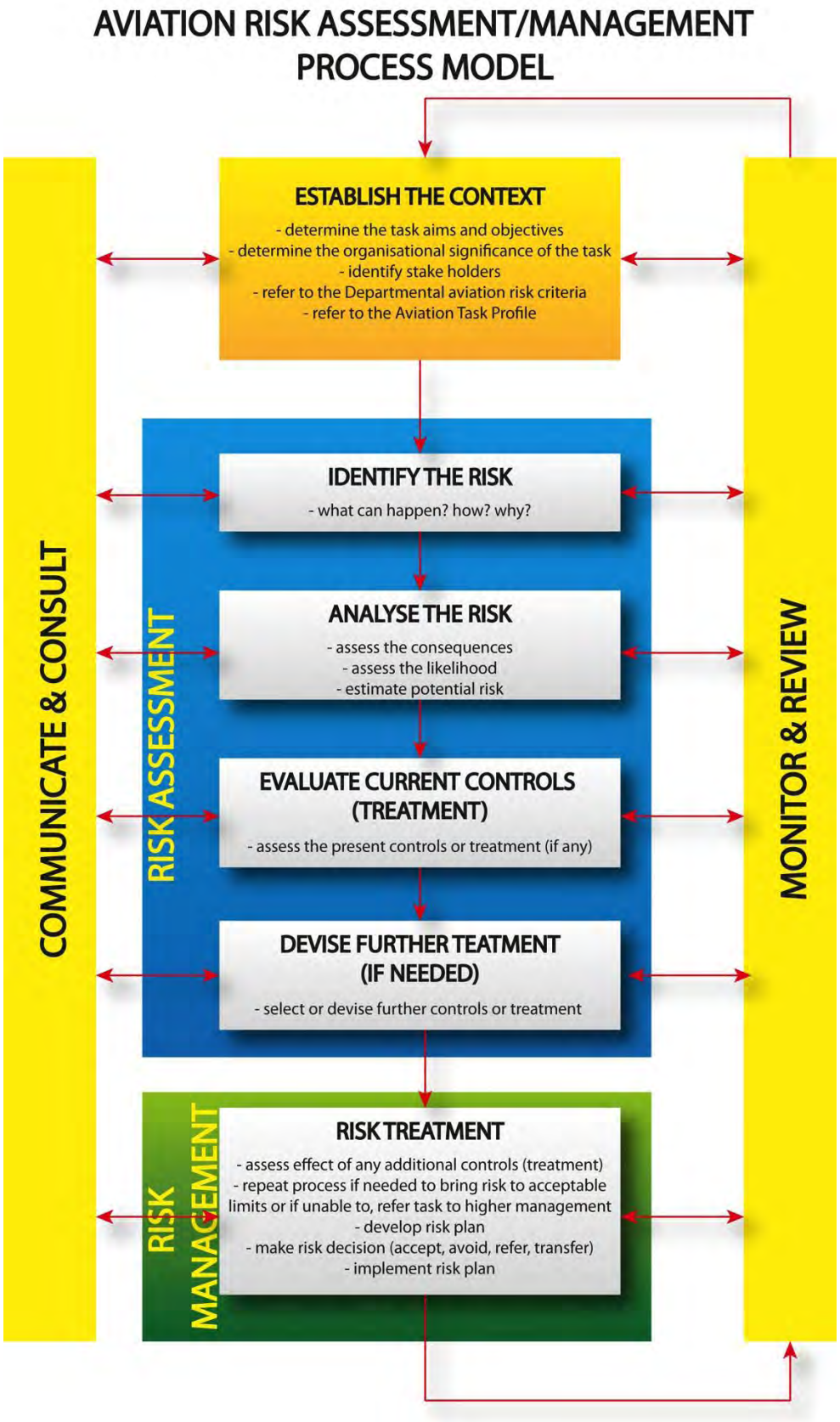

Fig 2. NSW DPI Risk Assessment and Management Model

A. Establish the Context

5.12 According to AS/NZS ISO 31000:2009, by establishing the context, the organisation articulates its objectives, defines the external and internal parameters to be taken into account when managing risk, and sets the scope and risk criteria for the remaining process.

5.13 The risk criterion is a standard set within the Department for aviation operations (see figure 3). Annex A shows an example of how the risk assessment should look after being completed.

5.14 Before delving into conducting the actual risk assessment, it is important that the task is understood including under what conditions it is to be conducted. Will it be conducted in summer for example? Summer would introduce considerations around the temperature and length of day (fatigue) whereas winter may introduce considerations concerning personnel staying warm and even icing conditions that may affect aircraft performance or the type of aircraft to be used.

5.15 Establishing the context of the task enables a narrowing of the risks to be considered. For example, if the task is to be conducted in summer, it is unlikely that icing will be a significant risk when operating at low levels. However, if the task or activity under consideration is being conducted throughout the year, then icing does become a consideration in certain areas of the State.

5.16 The assessor should establish the external as well as internal context. The external context may include social, regulatory, economic, financial and natural considerations. Internal context considerations may include objectives of a particular project and its importance to the Department, or the internal policies, information systems, standards and guidelines of the Department.

5.17 The Department has, through this procedure, defined the risk criteria including measures of consequence and likelihood.

B. Identify the Risk

5.18 Sources of risk, its areas of impact, causes and potential consequences need to be identified.

5.19 The standard format (template) provides most of the considerations, but the assessor when considering a new task or a familiar task in a different context needs to look beyond the obvious. For example, the conduct of spray operations is usually conducted in areas well away from built up or congested areas. Yet the spray area may be within a Low Jet Route through which military aircraft operate a very low level at high speed. The chances of mid-air collision can be high if the pilot does not check NOTAMs (Notice to Airmen) that advise which and when such routes are active.

5.20 All significant causes and consequences should be considered. It should also be noted that in aviation, the ‘flight’ begins at the planning and preparation stages so issues of fatigue, access to proper information, power margin calculations, availability of landing areas, etc need to be considered.

C. Analyse the Risk

5.21 Risk analysis involves developing an understanding of the risk. The analysis involves the causes and sources of risk, the positive and negative influences, and the likelihood of the consequences involved. In aviation, there are within the regulations a certain level or risk mitigation (consequence (see Fig. 4) and likelihood (see Fig. 5)) involved through such processes as aircraft certification and pilot licencing but different levels of regulation apply to different parts of the industry. For example a helicopter used in mustering is not design-certified to the same high levels as an airliner.

5.22 Both consequence and likelihood considerations can be based on historical data although the use of historical data should be tempered by ensuring its relevance to the task under consideration. For example, there is no point considering engine failures in jet airliners when considering operations of a helicopter. The historical consideration should also include consideration of NSW DPI's current controls in comparison to the controls that existed or may have existed in the historical information. This is a judgement call but the historical consideration is useful in providing a background understanding of the chances of the event occurring.

5.23 Ideally, a like for like consideration should be made without narrowing the circumstances significantly. For example, if considering piston engine helicopter mustering risks relating wire strikes, then it would be reasonable to examine historical information related to helicopter operations conducted in mustering. Whereas, if examining engine failures, then it would be reasonable to consider all piston engine helicopter engine failures, not just those that occurred during mustering.

D. Identify the Current Treatment and Evaluate the Risk

5.24 This is also part of the 'Analyse the Risk' but is worth highlighting. Current treatment or mitigation should be identified, considered and evaluated for probable effectiveness. Fig 6 shows the determination of the risk level based on the assessed consequence and likelihood.

5.25 As a rule, no one measure is considered effective. Multiple treatments or levels of defence are essential. If a particular risk only has one treatment identified, other than elimination of the risk, then the treatment must be considered inadequate.

5.26 In assessing or providing treatments to lower a particular risk, there needs to be an assurance that the treatments themselves do not weaken the treatments of another risk or in fact, introduce a new risk. For example, if a hypothetical treatment was to only conduct operations in winter to reduce heat-related fatigue, a new risk of exposure to cold or icing may be introduced.

E. Devise Further Treatment

5.27 If the identified existing controls do not lower the risk to acceptable levels or if there is a consensus that more controls would be advantageous to safe completion of the task, then extra controls can be included in the assessment.

5.28 Adding extra controls should not be done without keeping the task objectives in mind. Sometimes this can be a fine balancing act and reverting to the task context can often assist in keeping the risk controls in perspective.

F. Re-evaluate the Risk

5.29 If satisfied the treatment is appropriate, reassess the risk to ensure no new risks have been introduced. For example, if a decision is made to fly a helicopter with doors off to improve visibility, then a new risk of objects flying out of the cabin would have been introduced. This needs to be addressed as a new risk and an appropriate treatment devised or an alternative to the doors off approach is decided.

5.30 The example above exemplifies the criticality in continual reviewing risk treatments.

G. If risk is still considered unacceptable or the task would benefit from a further lowering of risk, further treatment and evaluation is required.

5.31 Ultimately, the cycle of assessment and review continues until one of two results are achieved;

- Task risk remains too high and so either the task is abandoned or advice is sought from senior departmental management.
- Task risk has been lowered to an acceptable level and the task profile and risk assessment is submitted for approval.

H. Submitting for approval

5.32 The final task profile and risk assessment shall be submitted by the planner/tasking person to Director, Biosecurity Operations for approval. The document is then submitted to the Emergency Management Unit to be placed on the Internet to be readily accessible to personnel involved in aviation planning and operations.

AVIATION RISK ASSESSMENT/MANAGEMENT RISK DEFINITIONS

Risk Level	HRI (Hazard Risk Index)	Description
Extreme	5	**Requires urgent attention.** A considerable potential for loss of an aircraft or multiple aircraft, fatalities involving subcontractor and/or Department personnel and/or persons working on behalf of the Department, or members of the general public. Tasks which incur an assessed 'extreme' residual risk assessment are not to be conducted until further risk mitigation measures are applied and the level of risk has been lowered to an acceptable level.
High	4	**Requires intervention.** A considerable potential for serious damage to an aircraft or multiple aircraft, serious injuries involving subcontractor and/or Department personnel and/or persons working on behalf of the Department, and/or any injury to members of the general public. Events which incur an assessed 'high' residual risk assessment are not to be conducted until further risk mitigation measures are applied; the task is satisfactorily demonstrated as the only option; recommendation by the Aircraft Controller; and approval by a qualified LCC Controller
Medium	3	**Requires active management.** A significant potential for serious damage to an aircraft or multiple aircraft, injury to subcontractor and/or Department personnel and/or persons working on behalf of the Department, and/or the public. Events which incur an assessed 'medium' residual risk assessment are to be referred to a qualified LCC Controller with recommendation from the Aircraft Controller for consideration and approval.
Low	2	**Requires ongoing monitoring.** Conduct is essential to carrying out the contracted task requirements, but involves moderate risk and is considered upper level of normally acceptable risk and does not require referral to higher levels of management of the Department
Negligible	1	Considered general level of acceptable risk involved when conducting aviation operations and events which incur this risk level may be conducted without necessarily seeking specific additional Departmental approval.

Fig 3. NSW DPI Aviation Risk Assessment and Management Risk Level Definitions

NSW DPI Aviation Risk Assessment and Management Consequence Definitions

Consequence	Consequence Definition
Catastrophic	**Safety & well being**: Fatalities involving subcontractor and/or Department personnel and/or persons working on behalf of the Department or the general public. Long lasting well-being issues. The failure to complete the task has a significant detrimental effect of the saving of human life. **Economic**: Loss of an aircraft (unrepairable). Complete failure to achieve the contracted task. Significant increases in insurance payments by the Department and/or sub-contractors, prosecution legal costs (eg for catastrophic breach of pesticides/threatened species/animal welfare or any other Act). **Organisational capability**: Department may lose control or management of contracts associated with aviation support of Department operations. Department and/or contractor's capability significantly affected through circumstances completely within the relevant organisations control. Objectives mostly not achieved. **Reputation & image**: The public and/or Government could completely lose confidence in the Department Emergency Management and/or sub-contractor and their ability to carry out present or future aviation tasks in support of the Department objectives and legislative responsibilities. Litigation actions may occur.
Major	**Safety & well being**: Serious injuries involving subcontractor or Department personnel and/or persons working on behalf of the Department, or the general public that may result in permanent disability or chronic health issues. Significant on-going well being issues. **Economic**: Loss of an aircraft for an extended time due to substantial repairs required. Failure to achieve some significant and minor aspects of the contracted task causing significant detrimental effect on the saving of property (including crops/pasture/animals). Increases in insurance payments by the Department and/or sub-contractors. Litigation may occur in response to failure (also damaging reputation). **Organisational capability**: Department and/or contractor's capability significantly affected through circumstances within the relevant organisations control. Important objectives not achieved. **Reputation & image**: Widespread (multi-region) significant and adverse questioning by the public, Government, parliament or media of the competence of the Department aviation control or management in support of Department objectives.
Moderate	**Safety & well being**: Serious injuries involving subcontractor or Department personnel and/or persons working on behalf of the Department or injuries to the general public that would result in temporary disability and impacts on well being. **Economic**: Serious damage to an aircraft that could render it incapable of further operations for more than one month. Failure to achieve a significant aspect of the contracted task causing a detrimental effect on the saving of property (including crops/pasture/animals). Possible increases in insurance payments by the Department and/or sub-contractors. **Organisational capability**: Department and/or contractor's capability affected through circumstances within and outside the relevant organisations control. Some important and minor objectives or aspects of the task not achieved. **Reputation & image**: Regional adverse reporting and questioning by the media of the competence of the Department aviation control or management in support of Department objectives

NSW DPI Aviation Risk Assessment and Management Consequence Definitions

Consequence	Consequence Definition
Minor	**Safety & well being**: Injuries to subcontractor or Department personnel and/or persons working on behalf of the Department that could result in temporary disability or impacts on well being. Minor injury or well being affects on the general public that would require some medical attention. **Economic**: Failure to achieve some minor aspects of the task which impact moderately on the task completion. No or insignificant damage to aircraft. **Organisational capability**: Local capability affected and limited impact on achieving objectives. **Reputation & image**: Department and/or subcontractor's reputation may be questioned or diminished in the eyes of the public. Usually a local issue.
Insignificant	**Safety & well being**: Minor injuries and temporary well being affects to subcontractor or Department personnel or persons working on behalf of the Department or the general public. **Economic**: Failure to achieve a minor aspect of the contracted task but the task has been substantially completed. **Organisational capability**: Capability intact and no or insignificant impact on objectives. **Reputation & image**: The subcontractor may receive some minor negative public or media comment. No impact on the Department's reputation.

Fig 4. NSW DPI Aviation Risk Assessment and Management Consequence Definitions

NSW DPI Aviation Risk Assessment and Management Likelihood Definitions

Likelihood	Likelihood Definition
Almost Certain	Occurrence is highly likely to occur at least once during the next three years of NSW DPI aviation operations. Historically, a similar occurrence has happened within an applicable sector of the Australian aviation industry or has occurred during NSW DPI aviation operations, 5 times or more in the previous 5 years.
Likely	Occurrence is likely to occur at least once during the life of the next three years of NSW DPI aviation operations. Historically, a similar occurrence has happened within an applicable sector of the Australian aviation industry or has occurred during NSW DPI aviation operations, four times or less in the previous 5 years.
Possible	Occurrence is possible but infrequent during the life of the next three years of NSW DPI aviation operations. Historically, a similar occurrence has happened within an applicable sector of the Australian aviation industry or has occurred during NSW DPI aviation operations, five times or more in the previous 10 years.
Unlikely	Occurrence is unlikely during the life of the next three years of NSW DPI aviation operations. Historically, a similar occurrence has happened within an applicable sector of the Australian aviation industry or has occurred during NSW DPI aviation operations, four times or less in the previous 10 years.
Rare	Occurrence is very unlikely to occur. Historically, a similar occurrence either has not happened within an applicable sector of the Australian aviation industry or during NSW DPI aviation operations, in the previous 10 years.

Fig 5. NSW DPI Aviation Risk Assessment and Management Likelihood Definitions

AVIATION RISK ASSESSMENT/MANAGEMENT RISK MATRIX

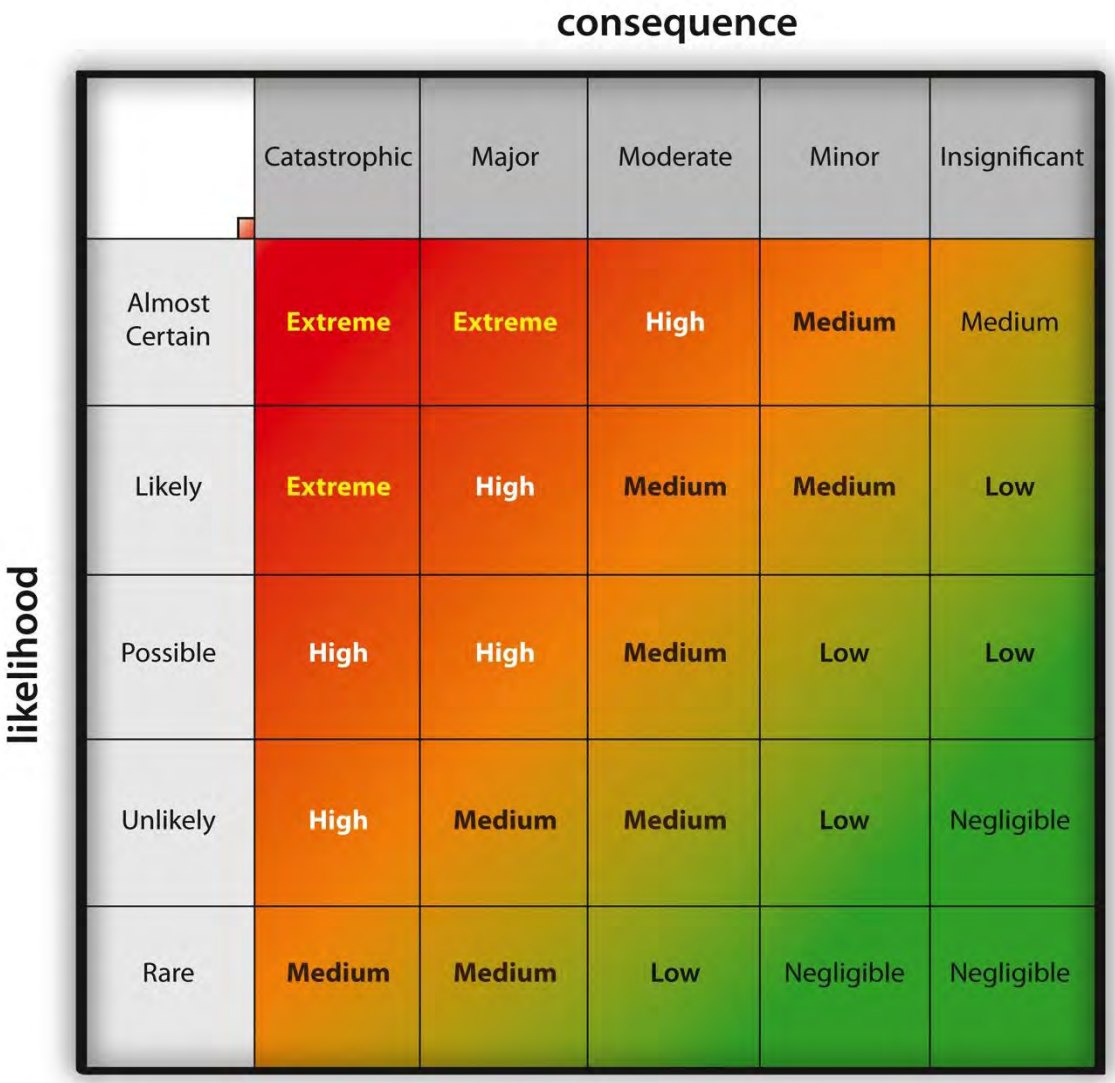

Fig 6. NSW DPI Aviation Risk Assessment/Management Matrix

6. References

Policy

- Policy TI-O-113 Emergency management – Use of Aviation

Task Profiles

- Aerial mustering
- Aerial shooting
- Aerial spotting
- Aerial spraying
- Aerial surveillance
- Aerial transport

Risk Assessments

- Aerial mustering
- Aerial shooting
- Aerial spotting
- Aerial spraying
- Aerial surveillance
- Aerial transport

Information

- AS/NZS ISO 31000:2009 Risk management – Principles and guidelines
- IEC/ISO 31010:2009 Risk management – Risk assessment techniques
- Work Health and Safety Act 2011
- Work Health and Safety Regulation 2011

Annex A – Example of a Risk Assessment

Context – Aerial Surveillance is conducted using suitable helicopters and fixed wing aircraft during emergency operations for NSW DPI with landings and take-offs being conducted at licenced and non-licenced aircraft landing areas and helicopter landing sites. The purpose of aerial surveillance is to identify and record areas of interest (includes animal support tasks, pest insect targeting, and infrastructure damage assessment) in support of emergency management operations for NSW DPI. Further details describing the context of this risk assessment are:

Description of task	The task involves planned and short notice callout to at risk areas as part of emergency management. Heights flown need to be commensurate with the type of target and conditions. Landings may be required. Some tasks may require the carriage of non-Government/Operator personnel. Personnel carried shall only be those required to achieve the task objectives.
Number of and type of engines	Both fixed wing and helicopters may be utilised, either single or multi-engine. Fixed wing aircraft may have either piston or turbine engine(s). Helicopters shall be turbine powered. The fixed wing aircraft shall be high-winged and must be capable of operating normally straight level and manoeuvring safely straight and level at speeds down to 55 knots (kts).
Task profile (sequence)	• Callout • Planning include map reconnaissance for hazards • Briefing including update of hazards as shown on appropriate map, flight following procedures, weather, task objectives, target/surveillance area, communications, aerial risk assessment. Contact landowner/manager if being picked up (include briefing on appropriate clothing) • Fuelling when required • Conduct Crew Brief • Start/Taxi/Takeoff • Transit to area of operation not below 500 feet (ft) Above Obstacles (AO). • Conduct route and area of operations identification, aerial hazard survey, and pre-descent brief prior to descent below 500ft AO. • Conduct area surveillance initially not below 500ft AO. Further descent requires prior authorisation, risk assessment, hazard identification, and required to achieve the task. • Descend to low-level operations commensurate with task objectives, authorisations, and conduct further hazard/target identification if required. • Communicate with LCC or Operator (as approved) for flight following and task update. • Land at appropriate area approximately every two hours to minimise fatigue. • Transit to additional operational area at a safe transit height (> 500ft). • Conduct further hazard reconnaissance, and route identification prior to descent to conduct low level operations as above. • Transit to operating base/fuelling area. Conduct pre-landing brief. • Land / Shut Down. • Debrief and report.

Terrain description	The areas of operations will encompass all types of terrain including paddocks, hills, and urban areas. The high terrain areas can experience high density altitudes which can adversely affect aircraft performance. Also, the terrain can experience severe downdraughts and turbulence as a result of the strong winds. Cloud can roll in quickly. The lower areas can experience extensive areas of fog, mist or smog, which can limit visibility. The areas can be extensively wooded and/or populated with domestic structures in close proximity to power lines. Fences may be hidden in long vegetation.
Limitations	The inspection is conducted in day visual conditions only in low to medium turbulence at a speed commensurate with safe operations in the environmental conditions being experienced. The inspection is preceded by an appropriate risk assessment including aerial aviation hazard identification and assessment, assessment of environmental risks and an assessment of the operational impact of conducting the inspection within the conditions established by the task profile. Descent below a safe height (clear of all known and potential obstacles - generally 500 ft AO) is not to be conducted until the pilot confirms a low level of risk factoring in the route and area of operations, aircraft performance, aerial hazard and obstacle survey, environmental conditions and has conducted a low level flying pre-descent brief. This must be conducted for each descent below a safe height. Personnel working for or on behalf of NSW DPI are considered crew. Passengers should not normally be carried on this task, however where their carriage is considered essential to achieve specific task objectives, landowners/managers may be carried after having received a thorough safety briefing. All persons on board aircraft operating on behalf of NSW DPI must have a designated essential role in the performance of the aircraft task. Doors would normally be fitted to the aircraft unless a specific reason is identified for their removal and the removal is identified as essential to conduct the task and considered in the risk assessment process. Landing to liaise with landowners/managers holders should be conducted to low risk (CAAP 92-2) Helicopter Landing Site (HLS), Air Landing Ground (ALG) or aerodromes. Traversing near ground level is considered often unnecessarily risky and is normally limited to animal welfare surveys and roosting Spur Throated Locust swarm identification and is conducted **only when essential and no other technique is available**. Traversing near ground is not permitted for Australian Plague Locust swarm identification, but descent to inspect is permitted at a height commensurate to the task (generally not below 200 feet). Landings at appropriate areas should be planned approximately every two hours to minimise fatigue. Sterile Cockpit Procedures shall be implemented when the aircraft is operating below 500ft AO.
Crew composition	2 to 3 - person crew; Pilot, aviation aware air surveillance officer(s). Occasional landowner/manager passenger.

Qualification / Training of each crew member	**Pilot –** CASA licenced, medically current, appropriate approvals and experience (see EOI) **Air Surveillance Officer –** Crew Resource Management, GPS and map reading skills, medically suitable, Work Safety Around Aircraft, Fly the Wire (optional), HUET (optional). Log book to be maintained.
Role of each crew member	**Pilot** – Identify hazards and maintain hazard clearance, operate aircraft, navigation, communication, responsible for safety of the aircraft and crew/passenger, pre-flight and in-flight briefings. **Air Surveillance Officer** – Assist the pilot in hazard identification and avoidance and communication. Responsible for identifying, recording, and mapping of targets and areas of interest. Advises where to start inspection and where to end. **Landowner/manager** – Provides local knowledge aspects, hazard identification and environmentally sensitive areas.

Discussion Flight Preparation Aspects:
PPE (personal protective equipment) is an important final control in reducing the severity of an accident. PPE should provide protection against ambient conditions (e.g. noise), impact and fire. The current controls appear sufficient to ensure that effective PPE is in place. Incorrect PPE for aircraft can affect communications and impact on hazard id. Environmental considerations such as noise should be addressed through wearing correct PPE.
Minimum of bare skin to be exposed, gloves, sturdy leather footwear shall be worn. Helmet with visor(s) should be worn in helicopters.
Preference for Nomex-type flying suits for aircrew operating helicopters.

C.	**FLIGHT PREPARATION**	1.	**PPE**						
Risk	**Possible Controls**	**Current Control**	**Likelihood**	**Consequence**	**Current Risk**	**Proposed Controls**	**Revised Likelihood**	**Revised Consequence**	**Residual Risk**
a. Not wearing or having available appropriate PPE leads to a compromise in safety for pilot, crew and passengers exposing them to impact and noise hazards	**1.** **EOI** specifies PPE requirements for helicopter operations. **2.** **NSW DPI** procedures require the wearing of correct PPE. **3.** **Operator** has been audited/assessed within the last 12 months by a competent company or authority to ensure compliance and conformance with regulations, EOI, NSW DPI Procedures and industry practice **4.** **Operator** has procedures that requires all personnel on-board an aircraft are wearing the appropriate PPE and where required, the PPE is compatible with aircraft communication / intercom equipment **5.** **Operator** issues appropriate PPE to its crews 6. **NSW DPI** checks that **Operator** has published procedures to ensure its crews wear appropriate PPE for Department operations	**1** **2** **3** **4** **5** **6**	Lack of appropriate PPE has been identified in accidents. ***Unlikely***	Lack of appropriate PPE has been identified, as a reason for causing greater injury than would otherwise be expected. Due to the required PPE, assessed as ***Moderate***	**Medium**	No further controls considered necessary			**Medium**