



# MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA RISK ASSESSMENT BEFORE & AFTER CONTROL MEASURES.

(Use as many sheets as needed)

<b>Risk No 1: Public Safety</b>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 1:</b>  Model hits a vehicle on the Monaro highway, or crashes onto the road.			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Damage or crash of manned aircraft</li> <li>2. Vehicle Accident</li> <li>3. Loss of RPAS/Model aircraft components</li> </ol>	2	3	5
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Promotion and enforcement of club flying procedures, requiring all fixed wing flying to be west of the centerline of the runway.</li> <li>2. Ensure all transmitters used comply with MAAA approved lists.</li> <li>3. Ensure club safety rules are understood and observed.</li> <li>4. Ensure Failsafe's are correctly programmed.</li> <li>5. All members generally undertake surveillance during flying days.</li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
	1	3	4
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Additional separation standards greater than the regulatory minimum applied through the design of the field.</li> </ol>			

<b>Risk No 2: Public Safety</b>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 2:</b>  Model hits visitors on the CMAC lease			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Injury to persons</li> <li>2. Damage to property</li> </ol>	2	4	6
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Safety barriers erected and fences to keep visitors away from pits and runup areas.</li> <li>2. Safety Signage advising visitors of safety rules.</li> <li>3. Ensure club members are aware of their responsibility's with respect to visitors and the proper control of their access to higher risk areas</li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Additional separation standards greater than the regulatory minimum applied through the design of the field.</li> </ol>	1	3 (with additional separation standards)	4

Risk No 3: Public Safety	LIKELYHOOD (L)	CONSEQUENCE (C)	REESULTANT (R) (L+C=R)
<b>Hazard 3:</b> Workers transiting on public grasslands			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Injury to persons</li> <li>2. Damage to property (vehicles)</li> </ol>	1	4	5
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Members to not operate in areas where workers are present.</li> <li>2. Members encouraged to remain vigilant</li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Workers generally carry out activities on weekdays, and not during high activity times.</li> <li>2. Workers know to alert members to their presence prior to entering area</li> </ol>	0 (Workers are rarely there during flying activities, and alert members to their presence)	4	4

Risk No 4: Public Safety	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 4:</b> Visitor injured on CMAC lease in a non-model related accident			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Injury to persons</li> <li>2. Damage to property (vehicles)</li> </ol>	3	3	6
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Car parking areas to be clearly marked with suitable barriers and access control</li> <li>2. Styles to have hand rails and non-slip steps</li> <li>3. Young children to be accompanied at all times</li> <li>4. Dogs not permitted on the site</li> <li>5. Elimination of protruding edges on buildings</li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Fencing to keep visitors in visitor areas</li> </ol>	1	3	4

Risk No 5: Member Safety	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 5:</b>  Member injured by own model while starting/handling prior to flight			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Injury to Members</li> <li>2. Damage to property</li> </ol>	3	4	7
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Models required to be positively restrained (MAAA MOP) either by mechanical device or another member while starting</li> <li>2. Encourage use of electric starters or “chicken finger” devices</li> <li>3. If carrying model from puts to flight line ensure both hands free to hold model (help with TX)</li> <li>4. All members generally undertake surveillance during flying days.</li> <li>5. Safety officer appointed</li> <li>6. Ensure first aid kit available at site</li> </ol>	<u>LIKELYHOOD</u> (L)  1	<u>CONSEQUENCE</u> (C)  2	<u>REESULTANT</u> (R) (L+C=R)  3
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Taxiways installed from runup areas to the runway strip. Markings show where models must shut down engines</li> <li>2. Documented procedures</li> </ol>			

Risk No 6: Member Safety	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
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<b>Hazard 6:</b> Member injured by own model during flying operations			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>1. Injury to Members</li> <li>2. Damage to property</li> </ol>	4	4	8
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>1. Enforcement of documented flying procedures, including:             <ol style="list-style-type: none"> <li>a. No standing on the strip while flying</li> <li>b. No hovering models within 9 meters from self or any other pilot</li> <li>c. No fast, low passes closer than the centerline of the runway (9m)</li> <li>d. Emphasis of safe circuit and landing training for new pilots</li> </ol> </li> </ol>	<u>LIKELIHOOD</u> <u>(L)</u>  1	<u>CONSEQUENCE</u> <u>(C)</u>  3 (protection by barrier)	<u>REESULTANT</u> <u>(R) (L+C=R)</u>  4
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>1. Model proof (crouch) barriers installed between pilots and runway (about 1.4m tall)</li> <li>2. Low passes are called within the flight box</li> </ol>			

<b>Risk No 7: Member Safety</b>	<u>LIKELIHOOD</u> <u>(L)</u>	<u>CONSEQUENCE</u> <u>(C)</u>	<u>REESULTANT</u> <u>(R) (L+C=R)</u>
<b>Hazard 7:</b> Member injured by another model during in the pits area			

<p><b>The Consequence:</b></p> <ol style="list-style-type: none"> <li>Injury to Members</li> <li>Damage to property</li> </ol>	2	4	8
<p><b>Existing Controls/measures:</b></p> <ol style="list-style-type: none"> <li>As for Hazard 2,</li> <li>Maintain linear pits area with starting boxes outside of pits separated by fence</li> <li>Ensure 30m rule is enforced, ensuring greater separation between pilots and flight line</li> <li>Ensure good line of sight from pits area to flightline to aid in situational awareness.</li> </ol>	<u>LIKELIHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Additional Control Measures:</b></p> <ol style="list-style-type: none"> <li>Model proof barriers installed between the runway and pits area.</li> </ol>	1	3 (protection by barrier)	4

<b>Risk No 8: Member Safety</b>	<u>LIKELIHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Hazard 8:</b></p> <p>Member injured by another model in the airside area</p>			
<p><b>The Consequence:</b></p> <ol style="list-style-type: none"> <li>Injury to Members</li> <li>Damage to property</li> </ol>	2	3	5

	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>As for Hazard 2,</li> <li>Strip access permitted only after all pilots are aware of intentions and acknowledge.</li> <li>Strip access limited to model retrieval when other models are operating.</li> </ol>	1	3	4
<b>Additional Control Measures:</b> <ol style="list-style-type: none"> <li>CMAC culture dictates that models are operated away from the area when a person is retrieving a model.</li> </ol>			

<b>Risk No 9: Security of Tenure of Flying Field</b>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 9:</b> Loss of permission to develop due to environmental concerns			
<b>The Consequence:</b> <ol style="list-style-type: none"> <li>Loss of flying field location</li> </ol>	3	3	6
<b>Existing Controls/measures:</b> <ol style="list-style-type: none"> <li>Include environmental consideration's in all DAs</li> <li>Demonstrate respect for the environment in dealing with authorities.</li> <li>Include environmental considerations in RA</li> </ol>	0	3	3
<b>Additional Control Measures:</b>			



<b>Risk No 10: Security of Tenure of Flying Field</b>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 10:</b> Loss of tenure due to environmental concerns			
<b>The Consequence:</b> 1. Loss of flying field location	3	3	6
<b>Existing Controls/measures:</b> 1. As for Hazard 1, and 2. Provide fire extinguishers for gas turbine operations 3. Ensure operations are completed in accordance with MAAA MOPS.	1	3	4
<b>Additional Control Measures:</b> 1. Due to ACT government restrictions, all operations are banned on Total fire ban days			

<b>Risk No 11: Security of Tenure of Flying Field</b>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<b>Hazard 11:</b> Loss of tenure due to operations outside of approved regulations			

<p><b>The Consequence:</b></p> <ol style="list-style-type: none"> <li>1. Loss of flying field location</li> <li>2. Non compliance with regulation</li> </ol>	3	2	5
<p><b>Existing Controls/measures:</b></p> <ol style="list-style-type: none"> <li>1. Comply with MAAA MOPs</li> <li>2. Only MAAA members permitted to fly at this location under the MAAA relevant MOP's, unless approved otherwise. Ensure operations are completed in accordance with MAAA MOPS.</li> <li>3. All operations shall be conducted in accordance with: <ol style="list-style-type: none"> <li>a) CASR 1998 Part 101 Subparts A, B, C and G;</li> <li>b) CASA Advisory Circular AC 101-03v1.1 and Direction 96/17</li> <li>c) The MAAA Manual of Procedures.</li> </ol> </li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Additional Control Measures:</b></p> <ol style="list-style-type: none"> <li>1. Relationship maintained with Canberra Tower manager Binh Huynh.</li> <li>2. Club has been in existence for over 50 years, and is well known in the area.</li> </ol>	2	2	4

<p><b>Risk No 12: Manned Aircraft Operations in Proximity to YSCB</b></p>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Hazard 12:</b></p> <p>Model aircraft collides with full size aircraft as a direct result of the CMAC proximity to Canberra Airport</p>			



<p><b>The Consequence:</b></p> <ol style="list-style-type: none"> <li>1. Loss of all RPAS/Model aircraft elements</li> <li>2. Potential for significant damage to manned aircraft in the area</li> <li>3. Delays to manned aircraft operations</li> </ol>	3	4 (Airspace)  (4) (Equitable use of airspace)	7  (7)
<p><b>Existing Controls/measures:</b></p> <ol style="list-style-type: none"> <li>1. As per <i>Hazard 1</i> and;</li> <li>2. Members and visitors made aware of how to deal with flyaway scenarios (documented procedure) <ol style="list-style-type: none"> <li>a. Members must contact Canberra tower for any flyaway deemed to impact the safety of manned aircraft in the area (towards the airport), or,</li> <li>b. Any model aircraft whose position can no longer be determined. <i>This will ensure Canberra Tower can separate/delay/maneuver any manned aircraft away</i></li> </ol> </li> <li>3. Canberra Tower phone number prominently displayed on all notice boards within the club.</li> <li>4. Senior members to ensure new members are fully aware of their obligations in relation to manned aircraft operations</li> <li>5. Members to ensure models are not operated outside of prescribed areas.</li> <li>6. Pilots to follow flyaway aircraft (where safe and possible) to ensure unrelated persons can be alerted to the situation.</li> <li>7. Failsafe to be set appropriate to the model type.</li> </ol>	<u>LIKELYHOOD</u> (L)  2	<u>CONSEQUENCE</u> (C)  4  (4) (Equitable use of (airspace)	<u>REESULTANT</u> (R) (L+C=R)  6  (6) ALARP
<p><b>Additional Control Measures:</b></p> <ol style="list-style-type: none"> <li>1. As per Hazard 1.</li> <li>2. CMAC members culture is such that they support each other when threatening situation arise.</li> </ol>			

<p><b>Risk No 14: Self Guided Model Aircraft Operations (SGMA)</b></p>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Hazard 14:</b></p> <p>SGMA Operations create increased risk of operations.</p>			



<p><b>The Consequence:</b></p> <ol style="list-style-type: none"> <li>1. Increased risk of aircraft disorientation</li> <li>2. Increased risk of member injury from tripping (etc)</li> </ol> <p><b>Manned aircraft risks have been considered, however are captured by Risk 4;</b></p> <ol style="list-style-type: none"> <li>a) <b>The CMAC area of operations is below the MORA/LSALT/MSA for manned aircraft</b></li> <li>b) <b>Manned aircraft must comply with instrument approach procedures or visual approach criteria by night</b> <ol style="list-style-type: none"> <li>a. <b>CMAC does not impact these areas</b></li> </ol> </li> </ol>	2	4	6
<p><b>Existing Controls/measures:</b></p> <ol style="list-style-type: none"> <li>1. As per <i>Risk 4</i></li> <li>2. Compliance with MAAA MOP 18 including; <ol style="list-style-type: none"> <li>a. Adequate lighting on the aircraft</li> </ol> </li> <li>3. Clubhouse lights are to be left on at all times</li> </ol>	<u>LIKELYHOOD</u> (L)	<u>CONSEQUENCE</u> (C)	<u>REESULTANT</u> (R) (L+C=R)
<p><b>Additional Control Measures</b></p> <ol style="list-style-type: none"> <li>1. Torches can be carried by pilots</li> </ol>	1	4	5

## RISK ASSESSMENT MATRIX - LEVEL OF RISK

Table 1 - Consequence Values

		Consequence					
		0	1	2	3	4	5
People	No injury	Minor injury that does not require medical treatment	Minor injury that requires first aid treatment	Serious injury causing hospitalisation or multiple medical treatment cases	Permanent injury or disability (including blinding) that may result in hospitalisation of at least one person	One or more deaths, multiple severe injuries or permanent total disability	
RPAS	Any element of the RPAS is degraded but task unaffected	A failure not serious enough to cause RPAS damage but which will result in unscheduled maintenance or repair or incomplete task	Minor RPAS damage resulting in damage to components, incomplete task and future unserviceability of RPAS	Significant RPAS damage but repairable	Complete loss of or destruction of a RPAS component (RPA, camera transmitter, sensor, etc.)	Loss of all RPAS elements	
Reputation	Small delay, internal inconvenience only	May threaten an element of the service resulting in the task or objective being delayed	Risk does not violate any law and can be easily remedied. It has some effect on reputation and/or external stakeholders	Risk does not violate any law and can be easily remedied. It has some residual effect on reputation and/or external stakeholders and while reputation is damaged it is recoverable	Risk violates a law but can be remedied. It has a residual effect on reputation and/or external stakeholders and may result in damage to reputation	Risk violates a law and is unable to be remedied. It has a significant impact on reputation and/or external stakeholders and will result in loss of reputation	
Cost/Property Damage	Negligible	Less than \$1,000	More than \$1,000 less than \$10,000	More than \$10,000 less than \$100,000	More than \$100,000 less than \$1,000,000	Loss or damage exceeding \$M1	
Airspace	No aviation airspace safety implication	Minor breach of aviation safety regulations or RPA Area Approval	Serious issues of compliance with aviation safety regulations, RPA Area Approval or operations resulting in potential avoiding action by a manned aircraft but no collision	Serious issue of compliance with aviation safety regulations or operations or the loss of separation resulting in the potential for a collision with a manned aircraft but the manned aircraft is able to land with no serious injuries or fatalities	Potential for aviation safety incident/s involving multiple life threatening injuries, or fatalities, to less than 10 people	Potential for multiple fatal aviation safety incidents causing multiple fatalities, to 10 or more people	
Equitable access of airspace	No effect on access to airspace users	Some users of the airspace may perceive or experience airspace inequality resulting in between 5 to 10 minute delay or minor detour	Some users of the airspace may perceive or experience airspace inequality resulting in more than 10 minute delay or major detours	Most users of the airspace will experience airspace inequality resulting in long delay (>30 minutes) or major detours	All users of the airspace will experience airspace inequality resulting in long delay (>30 minutes) or major detours	Airspace users are prohibited from operating in the airspace causing significant disruptions to operations and financial cost	

Table 2 - Likelihood

<b>Likelihood</b>	Almost Certain	5	>1 in 10	Is expected to occur in most circumstances
	Likely	4	1 in 10 – 100	Will probably occur
	Possible	3	1 in 100 – 1000	Might occur at some time in the future
	Unlikely	2	1 in 1000 – 10000	Could occur but considered unlikely or doubtful
	Rare	1	1 in 10000 - 100000	May occur in exceptional circumstances
	Extremely Rare	0	< 1 in 100000	Could only occur under specific conditions and extraordinary circumstances

Table 3 – Risk Rating

		<b>Consequence</b>						
		0	1	2	3	4	5	
<b>Likelihood</b>	Almost Certain	5	5	6	7	8	9	10
	Likely	4	4	5	6	7	8	9
	Possible	3	3	4	5	6	7	8
	Unlikely	2	2	3	4	5	6	7
	Rare	1	1	2	3	4	5	6
	Extremely Rare	0	0	1	2	3	4	5
<p><b>Untreated Risk Scores</b></p> <p>8,9,10 (Extreme risk) - Task is not permitted. Risk controls are required to ensure residual risk is acceptable.</p> <p>6,7 (High risk) - Task is not permitted. Risk controls are required to ensure residual risk is acceptable.</p> <p>4,5 (Medium risk) - Task may proceed, however, risk must be reduced to 'as low as reasonably practicable' (ALARP).</p> <p>1,2,3 (Low risk) - Task may proceed.</p>								