



Assessing and Managing Risk

1. Background

Newmarket Model Flying Club (NMFC) has operated from sites in the Newmarket area for many years. Members fly fixed-wing aircraft, helicopters and, more recently, multi-rotors (often referred to as 'drones'). Models may be i.c. or electric powered – gas turbine models may not be flown at any of the club's 3 sites:

West Row	An area of farmland leased from, and maintained by, a local landowner. The site is operated under restrictions imposed by the terms of a planning consent granted in July 2019. The site has a grass runway and any permitted model types may be flown here.
Snailwell	An area of private land used with permission of the landowner - Godolphin Management Company Ltd (GMCL). Use of the site is limited in order to ensure that there is no interaction with GMCL's use of the site (horse training and site maintenance). It has a grass runway and any permitted model types may be flown here.
Rowley Mile	An area of public space (part of Newmarket Heath) managed by the Jockey Club. Use of the site is limited and flying is prohibited on Newmarket Race Days (when the area may be used for light aircraft operations). Only electric models (or gliders) are permitted and use is restricted to those models which can operate without a runway (multi-rotors, helicopters or those which can be hand launched).

The club is affiliated with the model flying's UK governing body – the British Model Flying Association (BMFA). The BMFA provides clubs and members with Public Liability and Personal Accident insurance. For this reason, all NMFC members are required to be members of the BMFA. The BMFA also publishes a Members' Handbook which, amongst other things, contains site and model safety guidelines which all members are required to follow. The club has a set of Rules designed to ensure that all activities are carried out in a safe and controlled manner. There are also site-specific rules and procedures.

Model flying has always been subject to regulations set out by the Civil Aviation Authority (CAA). However, in 2019, partly in response to the rapid increase in the recreational use of 'drones' (much of it outside the confines of the traditional model flying community) UK and European legislation governing *all* model flying was introduced in the form of the Drone and Model Aircraft Registration and Education Scheme (DMARES). This imposes altitude and other safety-related limits on pilots of all

types of model aircraft, collectively referred to as Small Unmanned Aerial Vehicles (SUAVs) and it also requires pilots to register as 'Operators' and to demonstrate competence and knowledge of the legislation by taking an online test.

Broader, pan-European, measures came into effect on 31st December 2020. The measures are complex but by being part of the process the BMFA managed to secure agreement on a more flexible set of regulations (largely as they were before) for model flying carried out within the framework of the Association. This is referred to as the Article 16 Authorisation. In order to operate under the terms of the Authorisation, all BMFA members are required to confirm that they have read and understood the requirements by ticking a box (i.e. effectively signing a declaration) in their BMFA membership system record.

In reading the authorisation, it is clear that there is an emphasis on the assessment and management of the risks associated with model flying and the remainder of this document examines the club's facilities and activities in this light.

2. Assessing Risk

The NMFC committee's approach to assessing risk is as follows:

- a. Identify the hazards associated with the club's model flying activities.
- b. Identify the entities (people, objects etc) at risk from the activities.
- c. Score the likely severity of the each hazard / entity using the following scale:

Score	Severity
0	Not relevant / no impact
1	Low
2	Moderate
3	High

- d. Score the likely frequency of each hazard / entity using the following scale:

Score	Frequency
0	Not relevant / Never
1	Low
2	Moderate
3	High

- e. Calculate the Risk Factor for each hazard/entity :

$$\text{Risk Factor} = \text{Severity} \times \text{Frequency}$$

This yields a rating in the range 0 – 9, which is classified as follows:

Risk Factor	Risk Classification
0	Not relevant / None
1 - 2	Low
3 - 5	Moderate
6 - 7	High
8 - 9	Very High

- f. Identify appropriate mitigation actions to reduce the risk factors (by reducing the likely Severity or Frequency - or both).

3. Hazards

The hazards relating model flying are:

Hazard	Ref
Strike by model caused by loss of control – pilot error	H1
Strike by model caused by loss of control – radio interference / failure	H2
Strike by model caused by loss of control – structural failure	H3
Injury from propellers / rotor blades	H4
Injury from wreckage	H5
Fire (i.c. powered models)	H6
Fire (electric powered models)	H7

4. Entities at risk

The entities at risk from the club's activities are:

Entity	Notes	Ref
Club Members		E1
Non members	Spectators, members of the public. I.e. anyone (including members' family) not directly engaged in club activities	E2
Vehicles	Vehicles on site (typically belonging to members) and vehicles belonging to members of the public in the vicinity of a flying site	E3
Property	Buildings and structures in the vicinity of a flying site	E4
Animals	Farm animals and horses on, or in the vicinity of a flying site. Pets (typically dogs) in the company of members of the public	E5
Aircraft	Full-size aircraft (including gliders) operating in the vicinity of a site	E6

5. Severity Matrix

The number in each cell represents the severity of the potential outcome if the entity (column) is subject to the hazard (row)

Hazard	Entity					
	E1 Club Members	E2 Non Members	E3 Vehicles	E4 Property	E5 Animals	E6 Aircraft
H1 Strike by Model – pilot error	3	3	2	2	3	3
H2 Strike by model – radio interference / failure	3	3	2	2	3	3
H3 Strike by model – structural failure	3	3	2	2	3	3
H4 Injury from propellers / rotor blades	3	3	1	1	2	0
H5 Injury from wreckage	1	1	1	0	2	0
H6 Fire – i.c. models	2	2	1	0	2	0
H7 Fire – electric models	2	2	1	0	2	0

6. Frequency Matrix

The number in each cell represents the frequency ('likelihood') of the entity (column) being subjected to the hazard (row)

Hazard	Entity					
	E1 Club Members	E2 Non Members	E3 Vehicles	E4 Property	E5 Animals	E6 Aircraft
H1 Strike by Model – pilot error	2	2	2	1	1	1
H2 Strike by model – radio interference / failure	2	2	2	1	1	1
H3 Strike by model – structural failure	1	1	1	1	1	1
H4 Injury from propellers / rotor blades	2	1	0	0	1	0
H5 Injury from wreckage	1	1	0	0	1	0
H6 Fire – i.c. models	1	1	0	0	0	0
H7 Fire – electric models	1	1	1	0	0	0

7. Risk Factor Matrix

The number in each cell is calculated from the Severity and Frequency of the corresponding entity (column) and hazard (row).

Hazard	Entity					
	E1 Club Members	E2 Non Members	E3 Vehicles	E4 Property	E5 Animals	E6 Aircraft
H1 Strike by Model – pilot error	6	6	4	2	3	3
H2 Strike by model – radio interference / failure	6	6	4	2	3	3
H3 Strike by model – structural failure	3	3	2	2	3	3
H4 Injury from propellers / rotor blades	6	3	0	0	2	0
H5 Injury from wreckage	1	1	0	0	2	0
H6 Fire – i.c. models	2	2	0	0	0	0
H7 Fire – electric models	2	2	1	0	0	0

8. Mitigation Actions

The references in the table relate to the table of mitigation actions shown overleaf. The third column in the table references the relevant paragraph in the Club's field safety rules.

Hazard	Entity					
	E1 Club Members	E2 Non Members	E3 Vehicles	E4 Property	E5 Animals	E6 Aircraft
H1 Strike by Model – pilot error	M1 M2 M3 M17	M1 M2 M3 M17	M1 M2 M17	M1 M2 M17	M1 M2 M17	M1 M2 M15 M16 M17
H2 Strike by model – radio interference / failure	M4 M5 M6	M4 M5 M6	M4 M5 M6	M4 M5 M6	M4 M5 M6	M4 M5 M6
H3 Strike by model – structural failure	M7	M7	M7	M7	M7	M7
H4 Injury from propellers / rotor blades	M8	M8 M9			M8 M9 M10	
H5 Injury from wreckage	M11	M11			M11	
H6 Fire – i.c. models	M12 M13	M12 M13				
H7 Fire - electric models	M14	M14				

Table of Mitigation actions / Rules references

	Mitigation	Rule References
M1	Inexperienced pilots to be accompanied by an experienced club member / instructor, using a 'buddy lead' if appropriate.	
M2	Pilots must hold a BMFA Achievement Scheme Certificate (or be assessed as competent by an instructor/committee member pending the completion of a certification test) before being allowed to fly solo.	11
M3	Pilots on the flight line to stand close enough to be able to communicate and to announce takes-offs/launches, landings, irregular manoeuvres and/or emergencies.	12,13
M4	All pilots to carry out adequate pre- and post-flight checks and ensure fail-safes are set and tested.	7
M5	Frequency protocols for 35MHz radio systems ¹ to be adhered to by all members.	9, 20, 26, 32
M6	Range checks to be performed as part of pre-flight checks.	7
M7	Airframe integrity and control surface operation to be verified both pre- and post-flight.	7
M8	Models to be restrained when engines are started / tested	10
M9	Spectators to be kept away from areas where models are being prepared / tested.	7
M10	In shared spaces, ensure that spectators are clear of take-off / launch sites. Take-offs / launches and landings to be announced if people are in the vicinity.	32 ²
M11	In the event of a crash landing, ensure spectators remain clear of the crash site until all wreckage has been removed	5
M12	Observe standard safety precautions relating to the storage, transport, positioning and use of flammable fuels.	7
M13	No smoking in the area reserved for the preparation of models	7
M14	If Lipo flight batteries are to be charge on site, the process should be monitored and, if possible, carried out using a fire-proof container.	7
M15	All members on site to monitor the area for full-size aircraft / gliders and advise those flying as appropriate.	14 ³
M16	In the event of full-size aircraft activity in the vicinity all pilots to reduce altitude and land until the activity ceases.	
M17	'First Person View' (FPV) flights may only be made when the pilot is accompanied by a competent 'spotter'	39

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¹ Members are encouraged to move to 2.4GHz radio systems which are less susceptible to interference.

² Only relevant at the Rowley Mile Site

³ The West Row site is within the RAF Mildenhall FRZ. The club has permission to operate but ATC must be contacted at the start and end of each flying session. The club provides a dedicated mobile phone / solar charger for this purpose. The actions required are described in a Daily Procedure document

Revision History

The content of this document may be updated to reflect changes in the club's rules and/or the legislation covering model flying. It is also subject to annual review.

Version	Date	Notes
0.1	18/01/21	Draft for Committee discussion
1.0	25/1/21	Committee approval