# NEW SOUTH WALES ROCKETRY ASSOCIATION INC. (NSWRA)

## MPR ASSESSMENT PROCEDURE

July 2021

### INTRODUCTION

This document outlines the procedure for a member to be enabled to launch mid power rockets (MPR) with NSWRA. The assessment is a means to progress to higher powered and larger rockets through an approval process. The aim is to promote good modelling practices, safe operating procedures and reliable construction techniques. Accordingly, “Ready-to-fly” (“RTF”) rockets are ineligible for assessment flights. Members are expected to have gained sufficient experience in low power rocketry before progressing to larger rockets and motors.

This procedure does not replace local, state, and federal laws.

All NSWRA members are entitled to fly rockets with motors up to a total impulse of 20Ns (equivalent to black powder “D” motors), and black powder 24mm “E” motors. (Low Power Rocketry)
Members need to complete an MPR Assessment to fly rockets using larger black powder motors and composite motors in the range “E” to “G” (impulse greater than 20Ns, up to 160Ns)

Motors with a total impulse greater than 160Ns (ie “H” and above) are classed as “High Power Rocketry” and are outside the scope of this procedure.

### DUTIES OF INDIVIDUALS

**NSWRA committee member**
The NSWRA committee member ensures that this procedure is followed. Committee members can recommend a suitable approving member.

**Approving Member**
The approving member administers flight tests and mentors individuals applying for MPR Assessment.
Only current NSWRA members who have MPR experience are qualified to administer the flight test.
The approving member should not be a person acting as LCO (Launch Control Officer) or RSO (Range Safety Officer) at the time of launch, due to interference with range duties.

**Member applying for MPR Assessment**
A member applying for MPR Assessment must be a NSWRA member in good standing.
The member must be able to provide evidence of experience in low power rocketry and demonstrate that they are capable of successfully making, launching and recovering small model rockets.
The member must have launched a minimum of 3 low power rockets, at least one of these must be a rocket that the member has made, either from a kit or scratch-built.
Evidence could include rocketry log books and flight records.
The member should know the meaning of any terms used in this procedure.

**Procedure for applicant:**

1. Complete section 1 of the Application form (last page of this document).
2. Give the application form to the approving member (site officials will advise).
3. Assemble the motor (if a reload) under the supervision of the approving member.
4. Present your rocket with the flight card for Flight Safety Review. Ensure that you check the "MPR" box and highlight this during the review.
5. Launch and recover your rocket.
6. Present the rocket to the approving member for inspection.
   The approving member completes section 2 of the application form and gives it to a committee member. The decision as to whether the flight merits achievement is at the discretion of the approving member and the committee. If successful, the applicant's membership card will be re-issued showing "MPR".

**Details:**

**Airframe** – The rocket must be built by the flyer and must be of a 'conventional' rocket design. Odd rockets including flying pyramids, saucers and flying spools will not be allowed for an Assessment flight. The rocket may be either a kit or scratch-built, not a "Ready-to-Fly" (RTF) rocket. The applicant may be asked for construction details of the rocket, including materials and adhesives used; and how the stability has been determined, eg by design software (if not a kit).

**Recovery** - Standard parachute recovery is required. Non-parachute recovery methods (e.g. tumble, helicopter, gliding, etc) are not permitted for assessment flights. Note: If the rocket is a kit, and the kit specifies recovery by streamer, this may be allowed

**Motor** – The assessment flight must be with a single certified motor (total impulse between 20.01Ns and 160Ns). Black powder "E" motors, due to their low thrust, are not eligible. Staged and/or clustered rockets may not be used for assessment flights. The flyer shall be observed by the approving member during the assembly (if a reload or hybrid) and preparation of the motor.

**Assessment Flight** – The assessment flight may take place at any authorised launch. The approving member must witness the flight. The rocket must ascend in a stable manner and descend safely under parachute.

**Post-Flight Inspection** – If the rocket cannot be recovered, but can be inspected in place (power lines, tree, etc.) this is acceptable. The approving member shall inspect the rocket for excessive damage. Excessive damage shall be considered damage to the extent that the rocket cannot be launched again safely without a repair. Damage caused by wind dragging will not cause a disqualification.

**Assessment** – Any of the following will result in a negative assessment:

- Motor failure ("CATO")
- Excessive Damage
- Failure or partial failure of recovery system. (A slight twisting of cords may be accepted if rocket lands intact.)
- Rocket drifting outside the specified launch range
- Components coming down not attached to the recovery system.
- Any violation of safety codes associated with the flight.
- Any other legitimate reason the Approving Member deems merits a negative assessment. Examples – Abusive or unsafe behaviour, disregard for other people, property or rules.

* Check "Site Reference Book" for more information

**MPR Assessment Application Form**

**Section 1.** Applicant to complete

| | |
|---|---|
| Name of member | |
| Date | |
| Membership Number NSWRA / TRA | / |
| **LPR experience**<br>Number of successful LPR launches (3 minimum). Evidence provided: | |
| Details of kit or scratch-built low power rocket and motor used | |
| Name of Rocket for MPR assessment | |
| Motor & delay | |

---

**Section 2.** Approving Member to complete

| | |
|---|---|
| Motor assembly OK? | |
| Stable/safe flight? | |
| Recovery system deployed? | |
| Safe recovery? | |
| Rocket intact and no major damage evident? | |
| Motor retained in airframe? | |
| Assessment approved (Y/N) | |

Comments:

Name of Approving member: _____

Signature: _____

Date: _____/_____/_____