



REPUBLIC OF MAURITIUS
DEPARTMENT OF CIVIL AVIATION

Sir Seewoosagur Ramgoolam International Airport, Plaine Magnien

**REMOTELY PILOTED
AIRCRAFT (DRONE)
RISK ASSESSMENT
and SPECIAL
PERMISSION
APPROVAL
GUIDANCE MATERIAL
& CHECKLIST**

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DEPARTMENT OF CIVIL AVIATION
RPA (DRONE) SPECIAL PERMISSION APPROVAL GUIDANCE & CHECKLIST

FOREWORD

This Guidance Material and Checklist (GM & CL) is issued by the Authority pursuant to the provisions of Regulations 135 of the Civil Aviation Regulations 2007 as amended and addresses the approval process for issuing Remotely Piloted Aircraft (RPA) special permission as stipulated in Regulations 91, 91A and 91C of the Civil Aviation (Amendment) Regulations 2016.

Remotely Piloted Aircraft (drone) is increasingly being used in Mauritius. Consequently, the demand for drone special permission for aerial work is increasing. Permission being sought includes operations in controlled zone, restricted, and danger areas.

As such, this requires a thorough assessment of the special permission application including a risk assessment of the area of operations and coordinating with the Air Traffic Management unit at the Department of Civil Aviation (DCA).

The DCA has issued this GM & CL to provide guidance and guidelines for the application for special permissions including submission of a risk assessment as well as any change of dates with regard to the operation of the special permission granted to the RPA operator.

This GM was drawn up on the Civil Aviation Regulations 2007 as amended, Civil Aviation (Amendment) Regulations 2016 and Mauritius Civil Airworthiness Requirement Chapter 24.

The Authority may amend this GM whenever it is determined that aviation safety requires such amendment.



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Director of Civil Aviation

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AMMENDMENT RECORD

Amendment No.	Date of issue	Date entered	Entered by
Issue 1	23 November 2021	23 November 2021	DCA

ABBREVIATIONS / DEFINITIONS

The following abbreviations are within this GM:

CL	Checklist
DCA	Department of Civil Aviation
GM	Guidance Material
RPA	Remotely Piloted Aircraft
Safety Case/Kit/Risk Assessment	Application detailing the whole RPA operations including risk assessment and aerial work request

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1. INTRODUCTION

In general, drone operations are regulated under Regulation 91 of the Civil Aviation (Amendment) Regulations 2016.

On a case to case basis, drone can be required to be operated in the following areas with the permission of the Authority -

- (a) in Class A airspace, Class C airspace, Class D airspace or Class E airspace;
- (b) within an aerodrome traffic zone during the notified hours of watch of the air traffic control unit at that aerodrome unless permission of the air traffic control unit is obtained; or
- (c) at a height of more than 400 feet above the surface unless it is flying in airspace specified in subparagraph (a) or (b) and in accordance with the requirements for that airspace;
- (d) over a congested area or within 150 metres of that area;
- (e) over an organised open-air assembly of people or within 150 metres of that assembly;
- (f) within 50 metres of any vessel, vehicle or structure which is not under the control of the person in charge of the aircraft; or
- (g) within 50 metres of any person not under the control of the person in charge of the aircraft;
- (h) restricted areas as per AIP [Enroute 5.1-1](#).

Under the above circumstances, Regulations 91 (5), 91A (6) and 91C (3) require that all drone operators should submit in their special permission application a risk assessment and appropriate mitigating measures in their application.

It has been noted that most of the risk assessment submitted by drone operators were incomplete or inadequate or does not fully meet the requirements of the DCA.

In this respect, the Authority is hereby issuing this guidance material and checklist (GM & CL) to enable drone operators intending to operate in any of the above listed scenarios or areas of operations to prepare a complete a detailed risk assessment which should normally comprise of the following:-

- (i) Identify all possible risks depending on the scenarios.
- (ii) Elaborate acceptable mitigating measures to ensure safe operations.

Note:

- (1) The RPA (Drone) operator is required to submit their own risk assessment form and/or matrix as defined in their Drone Operations Manual. A typical example of a Risk Assessment Form that a drone operator submits is illustrated in **Appendix 1** of this GM & CL.

- (2) Failure to provide the DCA with reasonable mitigating measures to bring the risks to an acceptable level would result in denial of the special permission.

2. GENERAL GUIDLINES FOR RISK ASSESSMENT

1. An operational risk assessment shall:
 - (a) describe the characteristics of the drone operation;
 - (b) propose adequate operational safety objectives;
 - (c) identify the risks of the operation on the ground and in the air considering all of the below:
 - i. the extent to which third parties or property on the ground could be endangered by the activity;
 - ii. the complexity, performance and operational characteristics of the drone involved;
 - iii. the purpose of the flight, the type of drone, the probability of collision with other aircraft and class of airspace used;
 - iv. the type, scale, and complexity of the drone operation or activity, including, where relevant, the size and type of the traffic handled by the responsible organisation or person;
 - v. the extent to which the persons affected by the risks involved in the drone operation are able to assess and exercise control over those risks.
 - (d) identify a range of possible risk mitigating measures;
 - (e) determine the necessary level of robustness of the selected mitigating measures in such a way that the operation can be conducted safely.
2. The description of the drone operation shall include at least the following:
 - (a) the nature of the activities performed;
 - (b) the operational environment and geographical area for the intended operation, in particular overflown population, orography, types of airspace, airspace volume where the operation will take place and which airspace volume is kept as necessary risk buffers, including the operational requirements for geographical zones;
 - (c) the complexity of the operation, in particular which planning and execution, personnel competencies, experience and composition, required technical means are planned to conduct the operation;
 - (d) the technical features of the drone, including its performance in view of the conditions of the planned operation and, where applicable, its registration number;
 - (e) the competence of the personnel for conducting the operation including their composition, role, responsibilities, training and recent experience.

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3. The assessment shall propose a target level of safety, which shall be equivalent to the safety level in manned aviation, in view of the specific characteristics of drone operation.
4. The identification of the risks shall include the determination of all of the below:
 - (a) the unmitigated ground risk of the operation taking into account the type of operation and the conditions under which the operation takes place, including at least the following criteria:
 - i. VLOS or BVLOS;
 - ii. population density of the overflowed areas;
 - iii. flying over an assembly of people;
 - iv. the dimension characteristics of the unmanned aircraft;
 - (b) the unmitigated air risk of the operation taking into account all of the below:
 - i. the exact airspace volume where the operation will take place, extended by a volume of airspace necessary for contingency procedures;
 - ii. the class of the airspace;
 - iii. the impact on other air traffic and air traffic management (ATM) and in particular:
 - the altitude of the operation;
 - controlled versus uncontrolled airspace;
 - aerodrome versus non-aerodrome environment;
 - airspace over urban versus rural environment;
 - separation from other traffic.
5. The identification of the possible mitigation measures necessary to meet the proposed target level of safety shall consider the following possibilities:
 - (a) containment measures for people on the ground;
 - (b) strategic operational limitations to the drone operation, in particular:
 - i. restricting the geographical volumes where the operation takes place;
 - ii. restricting the duration or schedule of the time slot in which the operation takes place;
 - (c) strategic mitigation by common flight rules or common airspace structure and services;
 - (d) capability to cope with possible adverse operating conditions;
 - (e) organisation factors such as operational and maintenance procedures elaborated by the drone operator and maintenance procedures compliant with the manufacturer's user manual;
 - (f) the level of competency and expertise of the personnel involved in the safety of the flight;
 - (g) the risk of human error in the application of the operational procedures;
 - (h) the design features and performance of the drone in particular:

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- i. the availability of means to mitigate risks of collision;
 - ii. the availability of systems limiting the energy at impact or the frangibility of the unmanned aircraft;
 - iii. the design of the drone to recognised standards and the fail-safe design.
6. The robustness of the proposed mitigating measures shall be assessed in order to determine whether they are commensurate with the safety objectives and risks of the intended operation, particularly to make sure that every stage of the operation is safe.

Over and above the risk assessment to be submitted for a special permission approval, the Authority wish to draw the attention of the drone operators on the following matters to ensure that their application submitted to the DCA is complete for timely processing.

3. CHECKLIST

The following documents are required to be submitted for special permission applications:

1. Illustration of the whole operation processes into your safety case/kit/risk assessment:

- (a) Flight plan (take-off/landing, hover/flight path, height, speed, how visual line of sight is maintained, number and position of pilots and observers, drone technical details etc);
- (b) A map or floor plan (e.g. Google satellite map at the appropriate scale) of the activity site with annotation of launch/recovery point(s) and any horizontal flight path of the unmanned aircraft;
- (c) Indicate if the activity is conducted for, or within proximity of an organised event where crowds are expected (marathon, festival, exhibition, parades, events, etc.).
- (d) Indicate proposed dates of activity. It is recommended that operator submits alternate dates of operation in case external factors prevent RPA operation on the scheduled date. For e.g. if an operation is scheduled for 01 March, it is recommended that operator proposes alternate dates such as 03, 26 March etc as deemed appropriate by the operator.
- (e) Consult the following [AIP documents](#) where appropriate to check whether you will fly within a controlled zone, restricted or danger areas:
 - (i) AIP [Enroute 3.4-9](#)
 - (ii) AIP [Enroute 5.1-1](#)
 - (iii) AIP [Enroute 5.1-5](#)
 - (iv) AIP [Enroute 5.1-6](#)
 - (v) AIP [Enroute 5.1-7](#)

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- (f) The RPA (Drone) operator should ensure that their application is complete against the DCA Drone Checklist as illustrated in **Appendix 2** of this GM & CL.

2. Aerial Work Request Letter

Applicants will also be required to submit request letter or email from the company contracting the RPA operator for aerial work. This statement should confirm that the RPA operator has been contracted to perform the aerial work for which the Special Permission is being applied for.

4. GUIDANCE NOTES

There are a number of issues that can cause your application to be put on hold or delayed. Ensuring that you abide the following will help us to process your application expediently:

1. Filming in towns and cities

The first thing to note is that in most cases this will not be possible without having at least a temporary permission from the DCA which will allow some types of flights within congested areas.

On its own, the temporary permission does not give the right to fly unhindered and you will still require permission from the owner, manager or authority for the land from which the RPA will be taking off and landing. The conditions of the permission will also require that you 'have control' over the area you intend to use the camera equipped drone, and this includes any people or vehicles in the area over which you intend to fly the aircraft. The minimum distances are stated on the permission.

Before filming you need to ensure that you have:

- a. Permission from the Department of Civil Aviation (DCA)
- b. Permission from the owner, manager or authority for the land from which the drone will be taking off and landing.

Note: Some examples of permission from the required authority have been illustrated below.

- c. Control over the area you intend to use the drone, including any persons, vessels or vehicles in the area over which you intend to operate the aircraft.

In order to exercise the necessary 'control' over a nearby public environment, it will often be necessary to contact the local authority to make suitable arrangements such as road-closures

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or other restrictions of access. This is a normal part of ground-based filming in urban areas and the same procedures should be followed in the case of camera equipped drone. Due to the lead times advisable for making such arrangements, Location Managers and production staff should start this process as early as possible.

2. Other permission, but not limited to, that operators should sought before seeking DCA approval:

1. State House

Approval from the Secretary of Homes Affairs and the office of the President.

2. Filming purposes

Authorisation from the Mauritius Film Development Corporation

3. Port or Harbor Area

Mauritius Ports Authority

4. Restricted Areas

Approval from the Secretary of Homes Affairs (Defence and Home Affairs Division)

- Applicants must submit all supporting documentation at time of application in support of this process. Failure to submit all required documentary evidence will delay the assessment process.

3. Change of date of operation

There are many external factors, which are not within the control of the operator which would disrupt scheduled operations. If an operation has not been performed within the scheduled date or the alternate dates, the operator has to notify the DCA of a change in date of operation. In order to ensure safe operation, all change of dates will be assessed as an initial application. Operators will be charged Rs 1000.00 as specified in the scheme of charge.

5. APPLICATION PROCESSING TIME

- The typical processing time for a drone special permission is 5 working days depending on the completeness of the submission of supporting documents and complexity of the drone operations. Operators are encouraged to submit their applications well in advance of their intended operations and factor permit processing time into their planning.
- It is important to understand that it is the RPA operator who must apply for an exemption or permission.
- Issuance for a permission, exemption or approval will require payment of the necessary fees.

6. ADDITIONAL RESPONSIBILITY OF THE RPA (DRONE) OPERATOR:

1. Drone pilot logbook, aircraft logbook and maintenance log book should be kept up-to-date and readily available for inspection by DCA Inspectors.
2. Checklists, site survey form, risk assessment form, risk mitigating form and any other forms as illustrated in your Operations Manual should be properly filled and accessible to DCA Inspectors for inspection.

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APPENDIX 1. A TYPICAL RISK ASSESSMENT FORM.

Completed by:	<i>To be filled</i>	Location:	
Date Completed:			
Client:		Job Reference:	

1. Hazard <small>(Something with the potential to cause harm, how will it be realised and what is the potential injury?)</small>	2. At Risk	3. Existing Control Measures	Risk			7. Further Control Measures	Risk		
			4. Likelihood	5. Severity	6. Risk		7. Likelihood	8. Severity	9. Risk
<i>To be filled</i>									

Risk Assessment Sign Off <small>(By Pilot other than person completing)</small>	Name:	Date:
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AT RISK <small>(Column 2)</small>	SEVERITY <small>(Column 5 and 9)</small>	LIKELIHOOD <small>(Column 4 and 8)</small>	RISK RATING <small>(Column 6 and 10)</small>							
			Severity x Probability – 1 to 5					LOW		
			May be acceptable, review to see if risk can be further reduced.							
C - Clients	2	Minor Injury	2	Remotely Possible	Severity x Probability – 6 to 12					MEDIUM

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V – Visitors	3	Reportable Injury	3	Will Possibly Occur	May be acceptable, only proceed with specialist personnel / safety team.	
P - Public	4	Major Injury / Single Fatality	4	Will Probably Occur	Severity x Probability – 12 to 25	HIGH
A - All	5	Multiple Fatalities	5	Almost Certain	Unacceptable risk, task should not proceed.	

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APPENDIX 2. DCA DRONE CHECKLIST

ASSESSMENT CHECKLIST FOR DRONE OPERATIONS	
SN	Item to be checked
1.	Coordinates of proposed flight
2.	Detailed Flight Path
3.	Probability of collision with other aircraft and class of airspace used
4.	Use of Observers
5.	Position of Observers
6.	Procedure of Avoiding collision
7.	Kinetic Energy (Impact Assessment < 95 kJ as per MCAR Requirement Section 10.2.1)
8.	Risk mitigating measures
9.	Transmission Capability (Applicable for EVLOS)
10.	Communication between Observers and RPA Pilot
11.	Coordination with ATC (if applicable)
12.	Validity of insurance
13.	GPS