

LOGISTICS OF DRONE PHOTOGRAPHY

Steve Ricketts

Sept 2022

Drone: “a smartphone with wings and a shutter that can be triggered from up to 12 km away”



..opens one's eye to a whole new world of photography

DJI MINI 3 PRO DRONE SPECS

- \$979 with basic controller, \$1179 with controller with built-in screen
- \$249 for Fly More Kit (more batteries, charging unit, spare props, case)
- Takeoff Weight <249 g
- Max Speed 16 m/s (58 km/h!)
- Max Ascent Speed 5 m/s
- Max Flight Time 34 mins (47 mins with Plus Battery)
- Max Wind Speed Resistance 10.7 m/s
- Built-in GPS



CAMERA SPECS

- Sensor: 1/1.3-inch CMOS. Effective Pixels: 48 MP, typically 12 MP (binning)
- Lens: FOV: 82.1°, Format Equivalent: 24 mm, Aperture: f/1.7, Focus Range: 1 m to ∞
- Single shot, both RAW and JPG formats
- Video (up to 4K/60fps)
- Auto or fully manual
- Bracketing and built-in HDR
- QuickShot Modes
- Landscape and portrait orientation
- Memory card: microSDXC (UHS-I Speed Class 3)



REMOTE CONTROL

- Controls the drone
- Max Communication Range 12 km
- Very stable: without any operator input, drone will hover in one spot, even in strong winds
- You direct the drone's movement, it looks after the details
- Operator can see what the drone's camera is seeing, in real-time



SAFETY FEATURES

- Obstacle avoidance forward, backward, up, down (not sideways)
- Auto RTH (return to home) in case communication is lost



CATEGORIES OF DRONE OPERATION: BASIC

1. In uncontrolled airspace
2. More than 30 metres (100 feet) horizontally from bystanders
3. Not over bystanders
4. More than 3 nautical miles from a certified airport or a military aerodrome
5. More than 1 nautical mile from a certified heliport



BASIC OPERATION REQUIREMENTS

- Register your drone with Transport Canada
- Mark your drone with its registration number
- Pass the Small Basic Exam
- Be able to show your Pilot Certificate – Basic Operations and proof of registration when you fly



CATEGORIES OF DRONE OPERATION: ADVANCED

1. Fly in controlled airspace
2. Over bystanders
3. Within 30 metres (100 feet) of bystanders (measured horizontally)
4. Less than 3 nautical miles from a certified airport or a military aerodrome
5. Less than 1 nautical mile from a certified heliport



ADVANCED OPERATION REQUIREMENTS

- Basic operation requirements, plus..
- Have a drone with the appropriate Safety declaration for the intended operation
- Pass a flight review with a flight reviewer
- Be able to show your Pilot Certificate – Advanced Operations and proof of registration when you fly your drone
- Fly within the operational limits of your drone



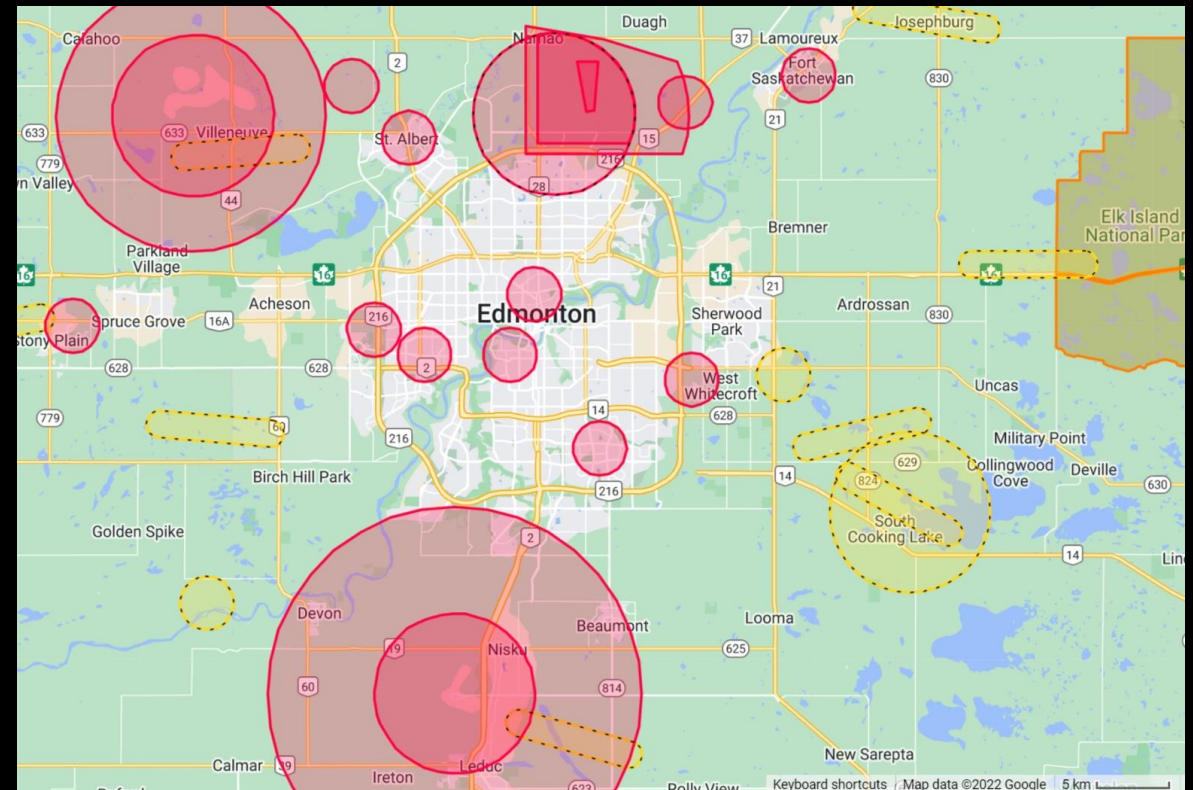
CATEGORIES OF DRONE OPERATION: MICRO-DRONE (UNDER 250 G)

- Not bound by the same requirements as other drones
- Don't need to register drone or get a drone pilot certificate
- 900.06 of the Canadian Aviation Regulations (CAR):
 - *“you must not operate your drone in a reckless or negligent manner as to endanger or be likely to endanger aviation safety or the safety of anyone”*
 - Basically... use your head and don't do something stupid



WHERE CAN I FLY A DRONE? BASIC OPERATION

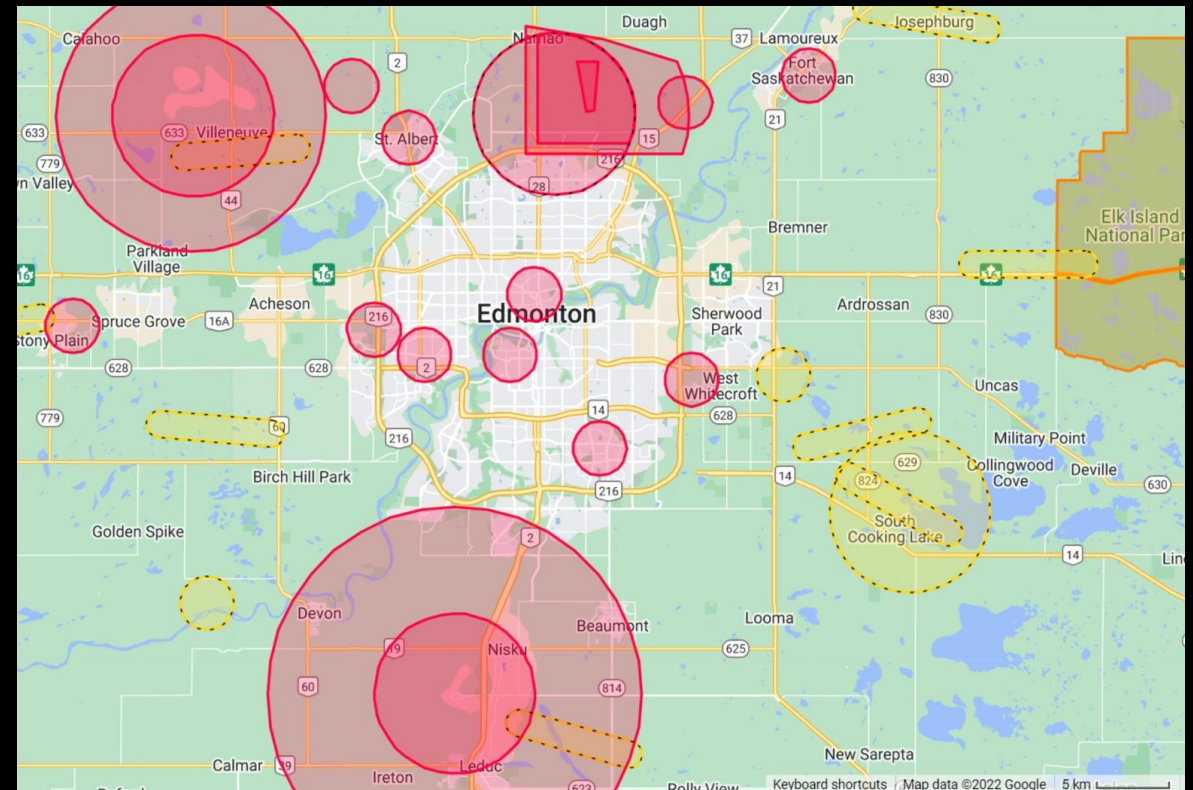
- Transport Canada regulations
- Basic RPAS (remotely piloted aircraft system) operations are permitted in uncontrolled airspace
- Not in Control Zone Airspace (red-shaded areas)
 - Airports, heliports, military facilities, prisons
- Database of restricted areas built into controller; it will not allow drone to enter them



NRCan's Drone site selection tool
<https://nrc.canada.ca/en/drone-tool/>

WHERE CAN I FLY A DRONE? BASIC OPERATION

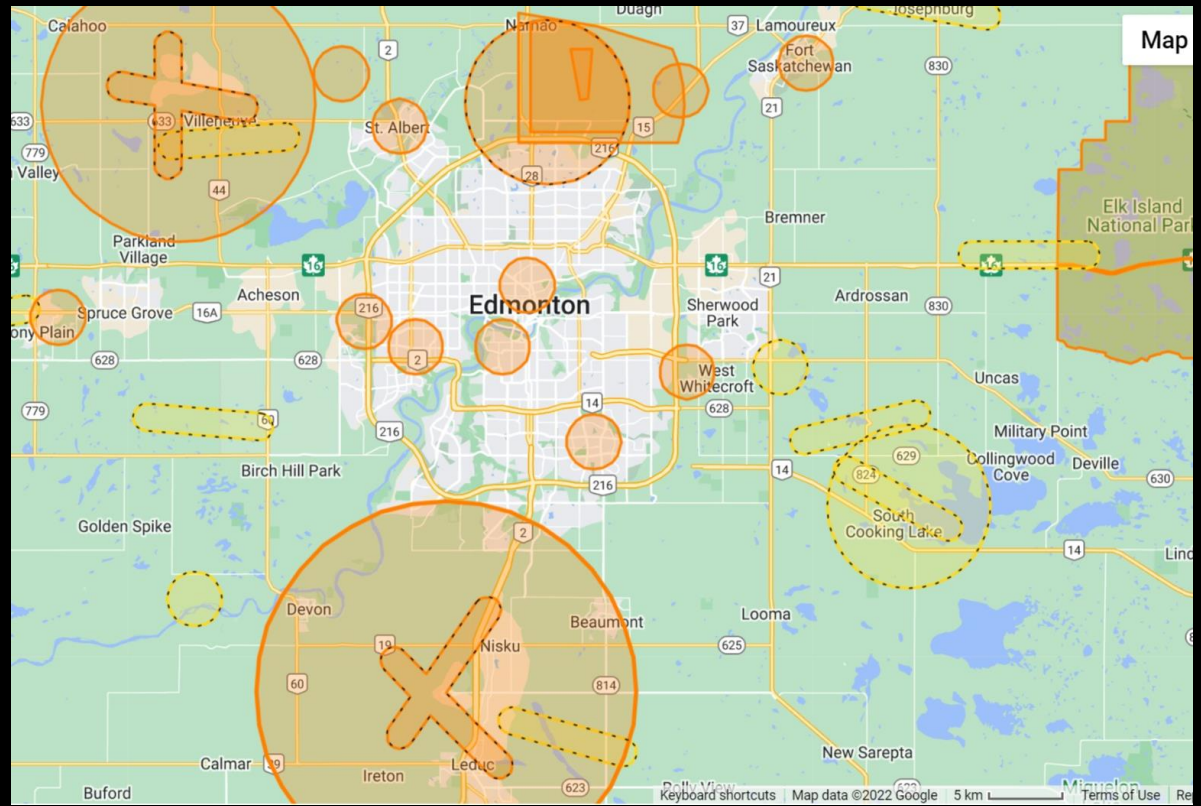
- Other federal regulations
 - Not in national parks
- Provincial regulations
 - Not in provincial parks
- Municipal regulations
 - Vary by municipality
 - Edmonton: *"All drones/Remotely Piloted Aircraft System (RPAS) flights on City of Edmonton property require a permit regardless if the use of the imagery is for commercial or personal use."* (okay to fly from private property, with permission)
- You can fly over private property, but need to respect privacy (e.g. not photograph nude sunbathing)



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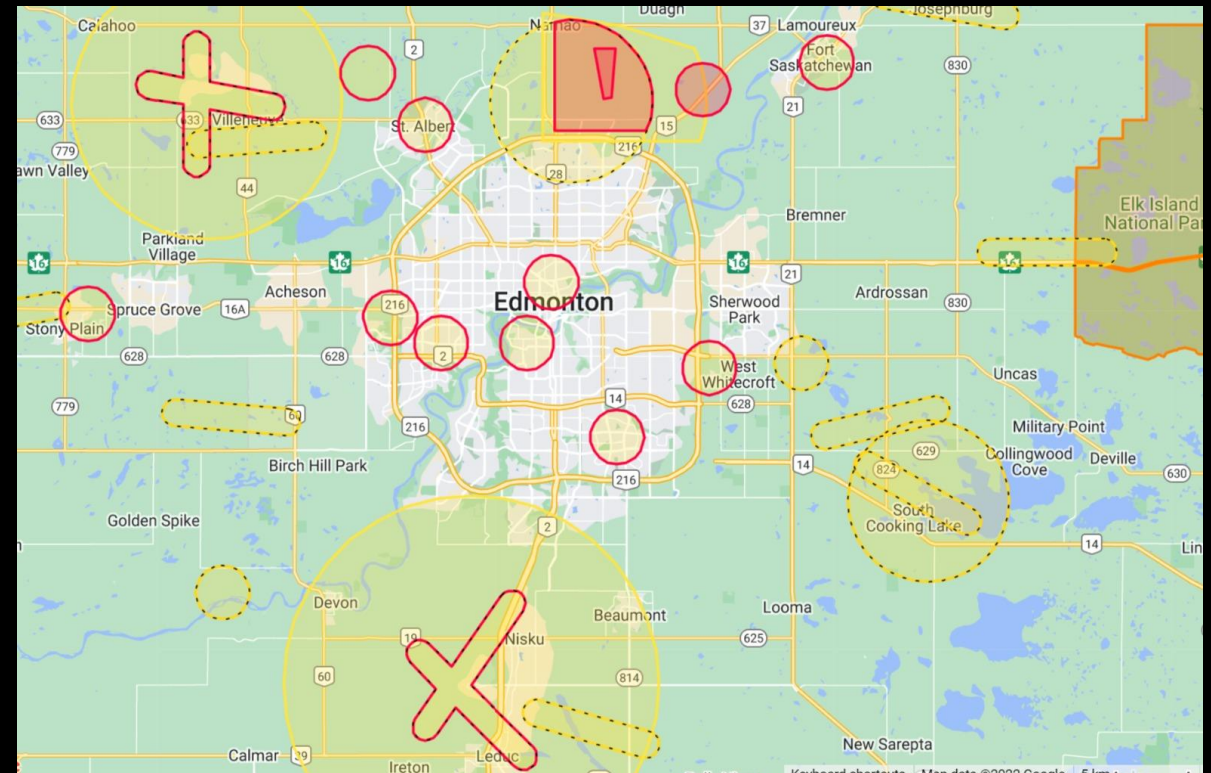
WHERE CAN I FLY A DRONE? ADVANCED OPERATION

- Seek permission from air traffic control (NAV CANADA or the Department of National Defence) to fly in controlled airspace (request an RPAS Flight Authorization from NAV CANADA)
- Provincial/municipal regulations still apply



WHERE CAN I FLY A MICRO-DRONE?

- Only areas off-limit to micro-drones: red-shaded areas Class F airspace (special use airspace, military facilities, prisons)
- Can request access to yellow-shaded areas, even “on the fly”
- Provincial/municipal regulations still apply



WHERE CAN I FLY A MICRO-DRONE?

- Resolving 12 km range with the need to stay within VLOS (visual line of sight)
 - Tricky, as drone can only be seen or heard within 100m or so
 - Use spotters
 - I maintain “situational awareness”



GOOD PRACTICES

- Maintain drone in direct line of sight
- Do not fly above 400 feet in the air
- Keep a safe lateral distance between your drone and any bystanders
- Stay far away from aerodromes, airport, heliport and waterdrome
- Avoid flying near critical infrastructure
- Stay clear of aircraft
- Keep the drone close enough to maintain the connection with the remote controller
- Avoid special aviation or advertised events



Illegal drones hamper helicopters fighting Chetamon wildfire: Parks Canada

"We are weeks, not days, out from rebuilding that transmission infrastructure," ATCO says of Jasper's connection to the Alberta power grid

Madeline Smith

Sep 07, 2022 • September 7, 2022 • 2 minute read • [Join the conversation](#)



The Chetamon wildfire, about 15 kilometres east of the Jasper townsite, is currently estimated to cover about 5,500 hectares, down from 6,150 hectares on Tuesday. PHOTO BY PHOTO COURTESY OF PARKS CANADA /00097453A

EXAMPLE OF “SOMETHING STUPID”

- Drone operators charged
- “Flying a drone in a park illegally can come with a fine of up to \$25,000”
- I suspect that continued stupid/reckless acts will lead to more regulations

INSURANCE

- Mainly for liability, a good idea for commercial work
- I pay \$563 for \$2M coverage

