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Emerging Risks | Automated drones in the construction sector

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Navigating the regulatory framework

- South African legal framework:
  - RPAS are governed by the Civil Aviation Regulations, Part 101 – Remotely Piloted Aircraft Systems
  - Part 101 applies to the operation of RPAS for all commercial, corporate, non-profit and private uses
  - Private use:
    - RPAS may only be used for an individual's personal and private purposes where there is no commercial outcome
  - **RPAS must be registered and may only be operated in compliance with Part 101**

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Ministry of Transportation and Civil Aviation Authority (CAA)

- A new chapter on RPAS including technical standards and aeronautical requirements
- Technical and operational requirements
- The CAA as the Regulator:
  - the authority to enact aviation regulations, set safety and security standards, issue all required licenses and permits, and develop enforcement mechanisms to ensure compliance with all relevant laws and standards

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National Legal Framework

- The South African Constitution
- RPAS under the exclusive jurisdiction of the national government
- The use of a public area as an RPA take-off and landing strip may require compliance with local laws
- Civil Aviation Act 13 of 2009
  - Regulations governing RPAS were issued by the Minister of Transportation
  - The South Africa Civil Aviation Technical Standards

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Application of the Regulations

- Class-1 and Class-2 RPA and to owners, operators, pilots and those who maintain such RPA.
- Class-1 and Class-2 RPAs are further divided into subclasses:
  - Class-1A (less than 1.5 kilograms/3.3 pounds),
  - Class-1B (less than 7 kilograms/15.4 pounds), and
  - Class-1C and Class 2A (less than 20 kilograms/44 pounds)
- The application of the Regulations does not extend to:
  - autonomous unmanned aircraft, unmanned free balloons and their operations
  - aircraft operated in terms of Part 94 of the Civil Aviation Regulations
  - model aircraft
  - toy aircraft

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Private use

- A private operation is "the use of an RPA for an individual's personal and private purpose where there is no commercial outcome, interest or gain."
- Private operations are subject to specific restrictions
- RPA may only be operated over property owned by the operator
- The Regulations also impose restrictions on certain uses of RPA.
  - An RPA may not tow another aircraft, perform aerial or aerobatic displays, or be flown in formation or swarm.
  - It may not be flown within a 10 kilometer (about 6.2 mile) radius of an airfield, within restricted or prohibited airspace, or above or near a sensitive area, including a nuclear power plant, correctional institution, police station, crime scene, or court.
  - An RPA may not be operated directly overhead of any person or within a lateral distance of 50 meters (164 feet) from any person

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Commercial Use

- An RPA cannot be operated for non-private purposes in South Africa unless the CAA Director has issued the operator an RPA **letter of approval (RLA)**
- In order for the Director to issue an RLA, the applicant must submit:
  - documentation regarding the standard to which the RPAS was **designed**; or
  - equivalent documentation that demonstrates a level of **safety** acceptable to the Director
  - documentation demonstrating a system of safety operating the RPAS as prescribed in Document SA-CATS 101

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Application for initial approval of an RPA

- An application for an initial approval of an RPA requires the submission of the **RPA manufacturer's operating manual** and, for Class-1 and Class-2 operations, submission of the following information about the RPA:
  - RPAS type
  - RPA structure
  - 1RPA composition
  - flight envelope capability
  - RPA dimensions/measurements and mass together with drawings
  - mass and balance
  - payloads (specific or generic)
  - use of frequencies
  - remote pilot station
  - ground support equipment
  - flight recovery system

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Application for initial approval of an RPA

- The submission must also include the following information regarding **performance characteristics** of the RPA:
  - maximum altitude
  - maximum endurance
  - maximum range
  - Airspeed (take-off, cruise, landing, stall, maximum)
  - maximum rate of climb
  - maximum rate of descent
  - maximum bank angle
  - turn rate limits
  - propulsion system (such as engine/motor, fuel, electrical, hydraulic, pneumatic, gas, solar)

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Pilot Licence

- A **valid remote pilot license** (RPL) is required for commercial, corporate, and nonprofit operations of an RPA.
- There are three categories of an RPL:
  - Remote Pilot License (Aeroplane) (RPL(A)),
  - Remote Pilot License (Helicopter) (RPL(H)), and
  - Remote Pilot License (Multi-rotor) (RPL(MR)).
- There are also three different ratings of an RPL:
  - visual line-of-sight (VLOS) operations;
  - extended visual line-of-sight (E-VLOS) operations; and
  - beyond visual line-of-sight (B-VLOS) operations.

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Pilot Licence

- There are a number of requirements for obtaining an RPL, including the following:
  - An applicant should not be less than **18 years of age**.
  - Applicants must hold current **medical assessments**.
  - An ATO [**aviation training organization**] for training must be identified.
  - Foreign theoretical training will be approved and validated (ASK).
  - Only successful completion will be accepted.
  - Applicants must **pass the RPL practical assessment**.
  - Applicants must also **pass Radiotelephony Examination**.
  - Achieved **English Language Proficiency** (ELP) level 4 or higher.
  - All applications must be submitted to the CAA.
- An RPL is issued for a **two-year period** at the end of which the holder must submit to a "revalidation check" before the RPL can be renewed

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RPAS Operator Certificate

- An RPAS operator certificate (ROC) is also required for commercial, corporate and nonprofit operations of an RPA.
- For a commercial operator, obtaining an air service license under the relevant law is one of the conditions to getting an ROC
- The ROC application process is said to follow the International Civil Aviation Organization (ICAO) five-step process:
  - pre-application, formal application, document evaluation, demonstration and inspection, and certification.
- An ROC is issued for a one-year period at the end of which the holder of the certificate must apply for a renewal.
- An ROC holder has various responsibilities. The ROC holder is required to develop an operations manual to be approved by the Director.

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Operations Manual

- The manual must include the "*type and scope of operations, including the manner in which each type of RPAS and operation will be safely conducted*," and any change to the type or scope of operations requires the prior approval of the Director.
- The holder must also "*establish a safety management system commensurate with the size of the organisation or entity and the complexity of its operations.*"
- This must include: "*a process to identify* ***actual and potential safety hazards*** *and* ***assess the associated risks****, . . . a process to develop and implement* ***remedial action*** *necessary to maintain an acceptable level of safety . . . [and] . . . provision for* ***continuous and regular assessment*** *of the appropriateness and effectiveness of safety management activities.*"
- The ROC holder is required to take various security measures
- The holder must always carry adequate third-party liability insurance

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Restrictions

- Public Roads
  - Use of public roads as a takeoff and landing ground is not permitted unless the operator is an ROC holder and such use has been approved by the Director and the relevant local authority
- Controlled Airspace
  - RPAS may be operated in controlled airspace only by an ROC holder and upon the approval of the Director.
  - The Director may issue such approval only in a visual meteorological condition (VMC) in an airfield traffic zone (ATZ) and control zone (CTR) below 400 ft.
- Prohibition:
  - The Civil Aviation Regulations prohibit the use of an RPA for releasing, dispensing, dropping, delivering, or deploying any object or substance unless it is operated by an ROC holder and with the Director's approval

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Restrictions

- Unless done by an ROC holder and with the Directors approval, an RPAS operator is prohibited from flying an RPAS:
  - above 400 feet above ground
  - within a 10 kilometers radius of an airfield
  - within restricted or prohibited airspace
  - near or above sensitive areas, including a nuclear power plant, prison, police station, crime scene, or court
- Operating an RPA directly overhead or a lateral distance of 50 meters from any person is permitted only by an ROC holder and with the approval of the Director.
- The same rule applies to the operation of an RPAS in the vicinity of structures or buildings; however, in this instance it is also possible to operate an RPA by simply obtaining the permission of the owner of the structure or building in question.
- Operating an RPA along the length of a public road or at a distance of less than 50 m from a public road in use is permitted only for an ROC holder upon obtaining the Director's approval.

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Accidence or Incident reporting duty

- The purpose of investigation of an accident or incident is, subject to section 12 of the Act, to determine, in terms of the provisions of this part, **the facts of an accident or incident in the interest of the promotion of aviation safety** and the reduction of the risk of aviation accidents or incidents, and not to establish legal liability.
- Once accident investigations are concluded a report is compiled in the interest of promoting aviation safety.
- What has to be reported:
  - All accidents and incidents involving an RPA shall be reported as prescribed in Part section 12, where there is:
    - any injury or death to a person
    - damage to property
    - destruction of the RPA beyond economical repair
  - All incidents involving an RPA where loss of control occurred shall be reported to the holder of the RPAS Operators Certificate (ROC)

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Potential legal issues

- A lack of case law and established principles to provide legal clarity
- Registration, regulations and statutes
- Privacy and data protection
- Trespassing
  - Liken to over sailings of crane jibs
- Injuries and damage to property
- Insurance
- Contractual liability

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Mitigating risks

- Knowledge
  - Under your statutory and contractual duties and rights
- Understand the risks
  - Claims to property damage, personal injury, data protection and privacy
- Risk management
  - Risk allocation
  - Obtain consents
- Insurance

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Practical measures

- Carry out an on-site survey, to ascertain any issues or environmental factors that may impact the intended flight path
- Check for air traffic-controlled zones and other flights in progress with the CAA
- Ensure sufficient risk assessment and planning is carried out
- Comply with regulatory restrictions
- Inform employees/ subcontractors/ visitors that they may be recorded
- Notify third parties
- Follow the manufacture's instructions
- Clear contractual terms

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Checklist: what contractual terms and requirements should be included for use of drones in projects

1. Has evidence of permissions, insurance, registration and training been provided by the drone operator
2. Is risk allocation clear? Who is responsible for drone accidents?
3. Who is responsible for drone data, if it is corrupted, hacked or lost (loss, expense, delays, additional/ wasted work), given the likely wide exclusions in software contracts?
4. What data should be collected and when, and in what format?
5. What is the intended scope of use of the drones?
6. Is there a responsibility to highlight defects?
7. Does the contractor certify that their drone operator is lawful, insured, and is there an indemnity against loss, damage or injury?
8. Is drone usage incorporated into your claims notice?

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What next for the sector?

- If, since the implementation of the drone regulations in 2015, only 24 companies have been licensed, it is concerning to think how long it will take to process the current 340 applicants
- In South Africa all commercial drones are viewed in the same light and this is one of the reasons why there are only 24 licensed drone operators. There should rather be a distinction between low-risk drone operators and larger, more high-risk operators.
- The authority needs to understand that more resources need to be invested into speeding up the application process, such as digitising the process
- As the skies become crowded – a more comprehensive regulatory regime is required.
- Legal certainty must prevail.
- In the mean time, practical measures should be taken to mitigate risks associate with drone usage in large scale projects

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Thank you for the
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