FENIXUAS
Drone training and consulting

Policy Brief

Enabling Drone-in-a-Box Operations in New Zealand

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Overview

Drone-in-a-box (DiaB) systems could transform routine inspections, security monitoring and emergency response in New Zealand. Permanently installed drones can undertake repeatable missions without personnel travelling to each site, improving responsiveness and reducing operating costs. The technology is available, and New Zealand firms are developing the supporting infrastructure. However, site-specific Civil Aviation Authority (CAA) approval processes can take longer than the commercial opportunity they are intended to enable. A more scalable, risk-based approval system is needed—not a relaxation of safety obligations.

Problem Statement

The principal barrier to wider DiaB deployment is the time and administrative effort required to approve individual operations. Fenix UAS can prepare a Specific Operations Risk Assessment (SORA) for a site in two or three days, while subsequent CAA review currently takes three to six months. For time-limited uses, such as monitoring an active construction site, an approval delivered after the project ends has little value.

Requiring extensive site-by-site review even where an operational model has already been demonstrated to be safe absorbs scarce regulatory resources, delays investment and discourages adoption. New Zealand needs an approval pathway that distinguishes genuinely novel or high-risk operations from repeatable operations conducted within established safety parameters.

Technology and Applications

A DiaB system houses a drone in a weatherproof dock that recharges the aircraft, monitors local conditions and supports pre-programmed missions within a mapped, geofenced area. Remote operation can allow a pilot to oversee flights from an office many kilometres away.

Solar farms and other infrastructure sites can use repeated visual and thermal inspections to identify anomalies and track changes. Security teams can use aircraft equipped with thermal cameras, spotlights and loudspeakers to assess alerts across large properties. Emergency services can gain earlier

situational awareness. Each application remains subject to the necessary aviation approvals and operating arrangements.

Safety and Remote Pilot Oversight

DiaB does not mean the absence of a pilot. Missions may be automated, but a pilot in command retains responsibility for the flight. Automation changes the pilot's role from direct manipulation of controls to supervision, situational assessment and intervention when required.

A credible safety case may require resilient communications, local weather monitoring, aircraft traffic information, cameras covering the dock and operating area, backup power and tested procedures for loss of power or connectivity. These systems must provide the remote pilot with timely, coherent information and a safe means of recovering or terminating a flight when conditions deteriorate.

New Zealand Capability

Incredible Group, an Auckland-based aviation and drone business, has installed an off-grid DiaB system in the Mackenzie District using solar panels, battery storage and a communications and monitoring mast. Its New Zealand-developed PERCEPTA solution combines information including battery state of charge, ADS-B aircraft information, VHF airband radio, cameras, weather feeds and operational alerts to support remote pilot decision-making.

These examples demonstrate that the regulatory challenge is not simply a lack of equipment or technical capability. Local suppliers can integrate the systems needed to support a defensible safety case, but commercial deployment remains dependent on timely approvals.

Regulatory Bottlenecks

The current approach places substantial demands on both operators and CAA. Incredible Group reports turning away prospective security and construction-surveying work because approval timelines do not match clients' needs. Overseas regulatory approaches, including those in Australia and Europe, provide useful models for delegated assessment of low-risk operations and standardised scenarios for advanced operations.

Efficiency and safety should not be treated as competing objectives. A system that applies a proportionate level of scrutiny to routine operations can free regulator capacity for complex or unfamiliar proposals while providing clearer expectations for operators.

About Fenix UAS:

Fenix UAS is New Zealand's leading drone training and consultancy provider. Our expert team includes professionals from commercial aviation, military, and regulatory backgrounds.

As a CAA Part 141-certified organisation, we deliver nationally recognised courses across New Zealand and the Pacific. We offer Advanced Remote Pilot Certificates, Night and Agricultural Ratings, SMS courses, and tailored corporate training.

Beyond training, we specialise in complex operations – supporting high-risk missions, preparing Part 102 expositions, and assisting with standard operating procedures.

Trusted by individuals, companies, and government agencies, Fenix UAS sets the standard for professionalism, compliance, and excellence in unmanned aviation across the region.

About the Author:

Dr Andrew Shelley specialises in UAV regulation, certification, and training, with expertise in operational risk, privacy, and national security.

With over two decades' experience as a Regulatory Economist, Andrew combines analytical depth with practical insight in his approach to complex policy and technical issues. Andrew holds a PhD in the law and economics of drones and counter-drone systems, along with multiple postgraduate degrees.

Recommendations

1. **Delegate assessment of suitable routine applications**. Establish a framework under which suitably qualified, accountable third parties can assess and, where legally authorised, approve defined low-risk or repeatable Part 102 applications on the CAA's behalf. The CAA should retain oversight, audit powers and responsibility for setting standards.
2. **Publish standardised operational scenarios**. Following the lead of Australia and Europe, once an operational model has been demonstrated to be safe across multiple sites, publish structured scenarios setting out the operating envelope, required mitigations, pilot responsibilities and evidence needed for approval. Applications meeting those conditions should receive a simplified, expedited assessment.
3. **Strengthen pilot competence and accountability**. Define appropriate training and assessment requirements for pilots supervising advanced remote operations, including abnormal situations, communications failures and operational decision-making. Australia's more formal remote pilot licensing pathway provides a potential point of comparison, but New Zealand requirements should be proportionate to the operations authorised.
4. **Set transparent service expectations**. Publish clear application requirements, decision criteria and target processing times for routine DiaB proposals. Monitor turnaround times and allocate specialist CAA resources to higher-risk cases.

Conclusion

Drone-in-a-box systems offer practical productivity and service-delivery benefits for New Zealand industry, utilities and government agencies. The central obstacle is not the feasibility of the technology but a regulatory approval process that does not scale readily to repeated, well-understood operations.

Delegated assessment, standardised scenarios, stronger pilot competency and predictable processing would reduce unnecessary delay while preserving the safeguards needed for aviation safety. With these reforms, New Zealand can enable responsible deployment of DiaB technology rather than allowing approval timelines to determine whether valuable projects proceed.