Final Report

Livestock mustering with drones and pathways to adoption

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Abstract

Mustering has traditionally been undertaken using ground-based vehicles and horses, as well as piloted helicopters, gyrocopters and fixed-wing aircraft. Given the scale of properties and the challenges of rugged terrain, mustering is often an expensive and hazardous activity. The integration of drones for livestock mustering beyond visual line of sight, enhanced by advanced digital mustering aids, enables a safer and more cost-effective approach for the red meat industry.

This project supported the adoption of drone mustering across the Australian grazing industry—the country's largest agricultural sector. It achieved this by:

- Developing case studies to help establish pathways for overcoming barriers currently limiting drone innovation and adoption.
- Providing a low-risk pathway for industry training and skills development.

Resolving operational range limits of standard drones that previously restricted their effectiveness. Thermal-equipped multi-rotor drones proved the most reliable and cost-effective today, while hydrogen and Vertical Take-off and Landing (VTOL) platforms showed promise but faced payload, logistics, cost and complexity constraints

- Ensuring drone mustering opportunities were accessible to producers across the industry. The project facilitated 63 on-farm adoptions with producers reporting time and labour savings, improved safety and better animal wellbeing; many achieved first-year ROI.

This project demonstrates that drone mustering is commercially viable now for many enterprises and provides clearer guidance, conservative ROI benchmarks, and practical training and compliance resources to support scaling across the red-meat sector.

Executive summary

Background

This research aimed to modernise Australia's livestock mustering practices by supporting industry-wide adoption of drone mustering across the grazier sector, the nation's largest agricultural industry. The main question addressed was how drone technology could be safely, compliantly and commercially integrated into livestock operations to reduce rising operational costs, labour shortages, insurance pressures and persistent safety risks.

The target audience included Australian graziers (from small landholders to large pastoral companies), drone operators and Ag Tech providers.

The results are intended to guide producer adoption decisions, strengthen training frameworks and support broader industry transformation towards safer, more efficient and animal wellbeing conscious mustering systems.

Objectives

The project aimed to:

- Develop case studies and industry-standard Extended Visual Line of Sight (EVLOS) and Beyond Extended Visual Line of Sight (BEVLOS) scenarios to support future pathways under CASA'S Landholder Rule.
- Deliver practical training and capability-building initiatives, including the SkyKelpie Aerial Stockmanship Course, workshops and demonstrations.
- Evaluate emerging long-range and long-endurance drone technologies for suitability in large-scale pastoral environments.
- Demonstrate commercial, safety and animal wellbeing outcomes to facilitate adoption.

Methodology

The project adopted a mixed-methods, industry-embedded design based on descriptive statistics and qualitative synthesis, combining:

- Field trials and live mustering demonstrations across various grazing enterprises.
- Comparative technology assessments of hydrogen, multi-rotor and VTOL platforms against predefined operational criteria.
- Delivery and evaluation of training interventions (online courses, workshops, simulations).

Data sources included adoption logs, ROI modelling, interviews, workshop surveys, operational observations and regulatory documentation.

Results/key findings

The project facilitated 63 on-farm drone adoptions, with producers consistently reporting time savings, reduced labour reliance, improved safety and enhanced animal wellbeing. Many enterprises achieved ROI within the first year.

Thermal-equipped multi-rotor drones proved the most commercially viable and operationally reliable platforms for current pastoral needs. Though hydrogen and VTOL systems demonstrated

potential, constraints related to payload, logistics, cost and operational complexity were found to limit immediate widespread deployment.

Training initiatives showed high satisfaction among participants and strong intent to apply learning on-farm, while field trials coincided with constructive movement towards streamlined BVLOS training pathways.

Benefits to industry

The project demonstrates that drone mustering is commercially viable today under BVLOS and EVLOS settings, delivering measurable productivity, safety and animal wellbeing gains.

Industry now has clearer adoption guidance, documented case studies, conservative ROI benchmarks and practical training pathways that reduce barriers to entry. This positions drone mustering as a scalable, complementary tool within modern livestock management systems.

Future research and recommendations

Future research should prioritise the development of a nationally aligned Ag Tech education program integrating drone and aerial stockmanship training into secondary curricula to strengthen workforce readiness and sector attraction. Continued investigation is needed into range-extension technologies compatible with mainstream drone platforms. Workshops and live demonstrations should continue to further support confident, compliant adoption, particularly in underexposed areas. Overall, sustained collaboration between producers, technology providers, educators and regulators will be essential to ensure safe scaling of drone mustering across Australia’s grazing industry.

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1. Background

This project sought to deliver a significant step forward in modernising Australia's livestock mustering practices by supporting adoption of the proven use case of drone mustering across the grazing industry, Australia's largest agricultural sector. The intent was to provide a safer and more cost-effective approach to mustering by complementing, enhancing and, at times, replacing existing methods.

To achieve this, the project set out to:

1. Develop case studies to help establish pathways for overcoming barriers currently limiting drone innovation and adoption in Australia.
2. Provide low-risk training and skills development opportunities for graziers and drone operators, embedding best practice in both aviation safety and livestock handling.
3. Address the operational range limitations of standard drones, extending their capacity to meet the demands of large-scale cattle properties.
4. Broaden access to drone mustering so that opportunities could be realised across the entire industry, from small landholders to large pastoral companies.
5. Build on the outcomes of previous trials and extending knowledge through a national community of practice.

The project was designed to respond directly to critical challenges facing the industry—rising operational costs, insurance pressures, persistent safety issues and labour shortages—by demonstrating how drones, paired with advanced digital mustering aids and training, could reduce risks and improve efficiency.

Recognising that mustering is the cornerstone operational activity of the red meat industry, the project aimed to create standardised scenarios for EVLOS (Extended Visual Line of Sight) and BVLOS (Beyond Visual Line of Sight) operations under the current Civil Aviation Safety Authority's (CASA's) Landholder Rule (see Appendix 6). This would provide graziers with a potential pathway towards safe, compliant and efficient drone mustering practices.

Supported by a multi-disciplinary reference panel, the project brought together drone trainers, agtech innovators, graziers and animal behaviour specialists with the aim of delivering training solutions, extending learnings and showcasing best practice. Ultimately, it sought to lay the foundations for a modernised aerial mustering industry that embeds a strong safety culture, embraces innovation and positions drones as a practical and essential tool for the future of livestock management.

2. Objectives

2.1 Building on previous work

This project built on the momentum of a previous SkyKelpie/MLA drone mustering project, P.PSH.1374 - Livestock mustering with drones, which identified four essential objectives for industry adoption. The focus was on technologies that are easy to access and use, while providing a clear value proposition for producers. By engaging a range of industry professionals, the project sought to ground-truth research, improve the on-farm development and application of drone mustering, and create opportunities for co-innovation that would drive adoption across the sector.

2.2 Data collection and regulatory reform

A key challenge for graziers looking to adopt drone technology for mustering is navigating the complex regulations surrounding EVLOS (Extended Visual Line of Sight) and BVLOS (Beyond Visual Line of Sight) operations. The project sought to address this by collecting data and case studies demonstrating the safe and effective use of drones in real-world conditions. This work included the co-design of solutions through workshops and the development of industry-standard scenarios for EVLOS and BVLOS operations for consideration under the Landholder Rule.

In addition, the project developed documented policies and procedures, alongside plain-English guides and checklists, to support landholders in considering compliance requirements. Collectively, these activities aimed to make regulatory processes more transparent and practical for producers, creating a pathway towards a safer, legally robust and scalable framework for drone mustering.

2.3 Training and skills development plus industry engagement and adoption pathways

The project developed and released the SkyKelpie Aerial Stockmanship Course, progressing from a validated Minimum Viable Product (MVP) to a full online program to reach producers anywhere, including rural and remote regions. Participant feedback shaped the final curriculum, keeping it practical, clear and grounded in real-world stockmanship and safe drone operations.

Skills and awareness were further built through live demonstrations, simulator sessions, workshops and presentations across industry and regional settings. School and community engagements broadened the pipeline of future operators, and an inclusive partnership with Ability Agriculture led to a scholarship that showcases accessible pathways into aerial stockmanship.

Adoption was substantive. During the project, 63 deployments of drone technology for mustering and on-farm tasks were facilitated nationwide, with momentum continuing beyond the project window. Trials and case studies with producers and pastoral companies demonstrated safety, animal-welfare and efficiency benefits, while helping participants navigate practical regulatory pathways.

2.4 Investigation of long-range and long-duration drones

The project set out to investigate emerging drone technologies with the potential to extend range and endurance to meet the demands of large-scale cattle stations. Objectives included trialling hydrogen-powered platforms capable of multi-hour flight times, evaluating long-endurance electric and VTOL systems, and exploring advanced communications solutions such as relay networks and docking stations.

A key focus was to define the technical requirements for drones to operate as viable alternatives to helicopters in extensive mustering. This encompassed endurance, connectivity, payload integration and resilience in remote environments. By pursuing these objectives, the project aimed to assess how next-generation technologies could underpin safe, scalable and efficient drone operations in challenging pastoral settings.

3. Methodology

3.1 Study design and approach

The project adopted a mixed-methods, industry-embedded design to evaluate the adoption and practical performance of drone technologies for livestock management, and to inform pathways for regulatory reform. The work combined:

- **Field trials and demonstrations** (action-research style) with producers and corporates in varied terrains and livestock systems.
- **Comparative technology assessments** of selected platforms (e.g., hydrogen, multi-rotor, Vertical Take-Off and Landing – VTOL), focusing on operational suitability for mustering and property tasks.
- **Education and capability building** through workshops, industry engagement and an online course (MVP → full release), used both as interventions and as data-collection opportunities.
- **Engagement** with CASA via workshops, panels and technical working groups to discuss findings in consideration against current and emerging policy settings.

3.2 Sites, participants and sampling

Activities were conducted across multiple Australian regions, including large pastoral companies and SMEs. Producers were engaged through expressions of interest, prior relationships and event participation to ensure diversity in stock class**,** enterprise scale**,** terrain and operator experience. Corporate trials (e.g., NAPCo, Stanbroke, ACC) provided larger scale test environments. Education settings (schools and public events) were included to assess awareness and pipeline outcomes.

3.3 Interventions and experimental activities

Field trials & live musters: Standardised trial days typically comprised (i) pre-brief and risk assessment, (ii) morning muster or task demonstration, (iii) post-task debrief and (iv) afternoon hands-on flights and simulation.

Technology evaluations: Platforms (e.g., Doosan DS30W hydrogen, ARACE Angel quad, ARACE Griffin Pro VTOL, DJI Matrice series) were assessed against predefined criteria: endurance, payloads (thermal/zoom/siren), link range, deployment time, wind performance, noise/stock response, maintainability and cost-to-value for graziers.

Training interventions: Aerial Stockmanship Course (MVP then full release) and regional workshops were delivered to test learning efficacy and support adoption.

Stakeholder engagement: Participation in CASA SSRP, ASAP/TWG processes and national conferences was used to iteratively test feasibility.

3.4 Measurements and data sources

Adoption metrics:

- **Counts of deployments** facilitated by SkyKelpie during the project (n=63) and additional adoptions outside scope, recorded in internal logs and illustrated via maps (pins anchored to nearest town/PO for confidentiality; single pins may represent multiple deployments).

Operational performance:

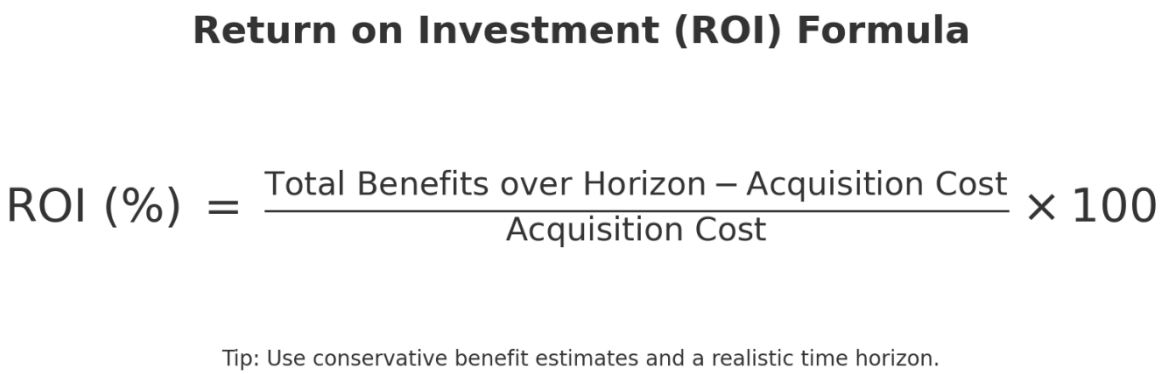
- **Time and labour saved per muster or task** (self-reported by producers and observed during trials).

- **Task outcomes** (e.g., success in locating/identifying stock, muster completion, infrastructure checks completed).
- **Platform usability and reliability markers** (setup time, weather tolerance, link stability, payload effectiveness).

Economic measures:

- **Annual cost savings** reported by producers (labour, fuel, contractor/helicopter hours avoided).
- **Return on Investment (ROI)** modelled from producer inputs using a conservative five-year lifespan of the hardware. The calculation for ROI is shown in Fig. 1.

Figure 1. ROI Formula



- **Learning outcomes**: Workshop and course feedback via short surveys (e.g., satisfaction, knowledge gained, intent to apply on-farm, likelihood to recommend).
- **Qualitative insights**: Structured interviews and case-study narratives with producers; facilitator observations; open-text feedback from events, schools and media engagements.
- **Regulatory signals**: Meeting minutes/notes and public announcements used to track alignment between industry evidence and evolving CASA pathways.

Quality assurance and limitations

- **Triangulation** across logs, interviews, demonstrations and survey data to reduce single-source bias.
- **Conservative assumptions** in ROI horizons and savings to avoid overstating benefits.

- **Limitations**: Reliance on self-reported operational/economic data; heterogeneity of properties and operators; absence of randomised controls; evolving firmware/regulatory contexts; and constrained external validity for hydrogen/VTOL platforms due to supply chain and payload constraints.
- **Ethics & privacy**: Informed consent for case studies; non-identifiable mapping; safety and regulatory compliance prioritised in all field activities.

Statistical tools

Given the industry-embedded nature and heterogeneous contexts, analysis primarily used descriptive statistics and simple ROI modelling. Percentages and means were reported for workshop/course surveys; no inferential statistics were applied. Where data were incomplete, qualitative evidence was used to contextualise quantitative estimates.

4. Results

4.1 Regulatory environment

The project explored providing an evidence base in relation to the feasibility for a BVLOS (Beyond Visual Line of Sight) exemption that could provide landowners with a simpler pathway to operate drones over their own properties. Hover UAV was engaged to develop a pathway that could simplify requirements while still managing risk. The strategy focused on creating a structured but accessible system that would allow landowners to gain limited BVLOS permissions under appropriate oversight, and in the long term, potentially secure regulatory recognition similar to existing landholder exemptions.

4.1.1 Continued CASA engagement

On 15 October 2024, SkyKelpie was invited to engage with the Civil Aviation Safety Authority (CASA) at the Remotely Piloted Aircraft Systems (RPAS) Sector Safety Risk Profile (SSRP) workshop in Brisbane (Fig. 2). The workshop was highly constructive, allowing SkyKelpie to present the challenges and opportunities involved in unlocking BVLOS operations in regional and remote Australia. Meeting minutes can be found in *Appendix 2*.

Figure 2. CASA RPAS SSRP. Source: Author

SkyKelpie was informed at this workshop that CASA was closely monitoring the regulatory reform being undertaken by Transport Canada, particularly in relation to BVLOS operations. CASA noted that these reforms could serve as a reference point for how Australia might consider easing pathways for rural and regional operators while maintaining appropriate levels of oversight. Since then, Transport Canada formally announced the regulatory changes, which came into effect on 4 November 2025. This marks a major step forward internationally, as it provides a structured progression for operators to move into BVLOS activities without the need for the historically burdensome Special Flight Operations Certificate (SFOC-RPAS).

The Canadian reforms (Transport Canada 2025) placed BVLOS at the centre of their regulatory evolution, introducing a new “Level 1 Complex Operations” framework that creates a defined and lower-barrier entry point for operators. This certification allows lower-risk BVLOS flights in uncontrolled airspace below 400 feet, provided they are at safe distances from people and population centres. Importantly, the reforms also establish requirements for both pilots and organisations: pilots must complete advanced exams, ground school and flight reviews, while businesses must hold an RPAS Operator Certificate (RPOC) with procedures appropriate to the scale and complexity of their operations. From April 2025, operators could begin the certification process, but full BVLOS privileges did not commence until November 2025. This phased approach ensured the industry had time to prepare while avoiding disruption during Canada’s peak flying season. Collectively, these reforms demonstrate a clear progression path from today’s restrictions towards a future where BVLOS is treated as a routine operation under structured risk-based categories—an evolution that offers strong lessons for Australia’s regulatory landscape.

4.1.2 Admission to CASA Technical Working Group

An adjunct to the research design, SkyKelpie was subsequently approached by CASA and members of the wider aviation sector to formally apply for membership of the Technical Working Group (TWG) established under the Aviation Safety Advisory Panel (ASAP). This group has been tasked with considering the biannual RPAS/AAM (Advanced Air Mobility) strategic roadmap implementation, reflecting the increasing importance of aligning industry capability with evolving regulatory frameworks.

The ASAP's Terms of Reference outline that the Panel is CASA's primary mechanism for structured industry engagement, providing high-level, risk-informed advice on regulatory and policy issues (Civil Aviation Safety Authority 2025). TWGs are designed to bring together subject matter experts and operators to provide detailed input on specific regulatory and operational challenges, with outputs feeding directly into the ASAP's recommendations to the Director of Aviation Safety. SkyKelpie's involvement positions it to ensure that the unique needs of agricultural and pastoral industries—where drones are already widely used for mustering and land management—are represented in the national policy dialogue, strengthening SkyKelpie's role as both a technical innovator and an industry voice.

4.1.3 AAUS National Conference

The *RPAS in Australian Skies 2026* conference (Fig. 3), hosted by the Australian Association for Uncrewed Systems in Canberra, brought together government, industry and academia to discuss the future of drone policy and operations. Central themes included regulatory reform, UAS Traffic Management, low-level airspace integration and emerging applications in agriculture, mining and infrastructure. Luke Chaplain, founder of SkyKelpie, was invited to present to the national drone community on the need for more streamlined regulations for rural and remote operations. With the most senior CASA delegates in attendance, his contribution ensured that the practical challenges faced by graziers and regional operators were directly conveyed to policymakers. Again, noting this engagement was outside the research design , it highlights both the momentum and opportunity for regulatory reform, underscoring the importance of continued industry involvement in shaping frameworks that enable safe, efficient and commercially viable drone use across remote Australia.

Figure 3. RPAS in Australian Skies 2026

4.1.4 Streamline BVLOS pathways announced by CASA

On 19 September 2025, CASA announced the introduction of new trial pathways to make BVLOS (Beyond Visual Line of Sight) approvals easier. Under this 12-month trial, commencing mid-October 2025, eligible ReOC holders operating drones up to 25 kg were able to apply for broad-area BVLOS authorisations rather than submitting applications for small, discrete operating sites. The trial, delivered under Temporary Management Instruction (TMI 2025-03, *Appendix 3*), establishes four distinct pathways based on aircraft size, speed and population density. It also requires operators to nominate a "Responsible Person" capable of conducting a CASA-defined feasibility assessment for each BVLOS operating area, ensuring risks are addressed through documented procedures, geofencing, recovery systems and aeronautical coordination. These trial approvals are valid for 12 months, with CASA using operational data and industry feedback to inform longer-term regulatory reforms.

This announcement reflects a tangible progression towards the more streamlined regulatory settings for which the company and wider industry have been advocating. The approach demonstrates that CASA has listened to the voices of rural and remote Australians who rely on drones for tasks such as mustering, bore runs and property management, where visual line-of-sight limitations are impractical. While not a complete solution, this trial represents a stepped and pragmatic path towards more scalable BVLOS permissions. By lowering the administrative burden and aligning

approvals more closely with real-world operating environments, CASA has taken an important step that acknowledges industry needs while preserving safety oversight. For SkyKelpie, this signals that the broader regulatory landscape is moving in the right direction.

4.1.5 Current requirements (resources for industry)

As part of the project scope, resources have been developed to support industry in better understanding the regulatory requirements for drone operations in rural and remote contexts. This includes defining the training and assessment requirements necessary for operators to achieve (as at Feb 2026) accreditation under the Landholder Rule, as well as for conducting BVLOS and EVLOS operations. In addition, a suite of plain-English guides has been prepared to assist landowners in navigating the application processes and meeting relevant industry and regulatory requirements. These resources are designed to make complex regulatory frameworks more accessible and practical for producers.

Disclaimer

SkyKelpie, Meat & Livestock Australia and the authors of this report accept no responsibility or liability for any outcomes associated with the use of these resources. They are provided as general guidance only, and have been included as an extension to the initial research design. Drone operations are regulated activities, and compliance with CASA and other relevant authorities remains the responsibility of the operator. These resources have been developed in line with current regulations, which are highly likely to change over time. It is therefore essential for operators to stay up to date with the latest CASA requirements. Professional training and advice should always be sought when conducting complex operations, particularly those involving BVLOS, EVLOS or commercial activities.

BVLOS Process

Refer to *Appendix 4*

EVLOS Process

Refer to *Appendix 5*

Landholder Rule – Policy and Procedures

Refer to *Appendix 6*

4.2 Advanced technology testing

4.2.1 Doosan DS30W Hydrogen Drone

The trial of the Doosan DS30W hydrogen drone (Fig. 4) was an ambitious undertaking, designed to test its potential in advancing livestock mustering and other on-farm applications. With the promise of extended flight times powered by a sustainable energy source, the drone generated significant initial excitement. However, the trial results ultimately fell short of expectations.

Figure 4 Doosan DS30W drone

Pros

- **Capacity to remain airborne** far longer than most comparable multi-rotor drones, a particularly appealing characteristic for large-scale mustering operations, where extended flight endurance has the potential to transform efficiency.
- **Use of hydrogen** aligns strongly with the agricultural sector's commitment to environmental sustainability.

Cons / challenges

- **Manufacturer collaboration:** Difficulties emerged, particularly with firmware and software updates that were critical for mission success.
- **Hydrogen sourcing:** Procuring hydrogen presented a major challenge, especially for rural and remote Australia, the target environment for this technology.

These logistical constraints proved to be a substantial barrier to practical deployment.

Trial execution and results

After several delays caused by technical setbacks, the Doosan DS30W was launched. The drone demonstrated impressive agility for its size and produced a loud noise that was effective in moving cattle. However, the critical issue of payload limitations restricted its viability:

- The inability to attach essential payloads such as cameras was a significant disadvantage.
- This limitation restricted operations to VLOS, undermining the extended flight-time advantage for mustering across larger paddocks.

SkyKelpie entered the trial with high expectations that the Doosan DS30W could revolutionise livestock mustering by combining longer flight endurance with a sustainable power source. Yet, the trial highlighted serious obstacles, including limited manufacturer support, difficulties in hydrogen supply and critical payload restrictions. These issues ultimately prevented the drone from achieving the anticipated success.

Video of Doosan in action during initial flight-testing trials.

4.2.2 ARACE Angel

ARACE (Fig. 5, Table 1) is a European-based manufacturer of long-endurance electric unmanned aerial systems, established in 2016 and headquartered in Hungary. The company handles all design and production in-house, crafting its UAVs from the ground up using custom-selected, high-quality components. As an independent entity unaffiliated with external investors, ARACE channels its resources into research and development, enabling continuous technological innovation. The organisation emphasises close collaboration with its regional distributors, who serve as integral partners in customer support, demonstration, training and maintenance across global markets.

Figure 5. Arace Angel

Table 1. Specifications: ARACE Angel

Parameter	Value / capability
Maximum flight time (with 1.3kg payload)	82 mins
Bidirectional telemetry/video range	Up to 30 km
Power system	100% electric
Maximum payload	1.9 kg (ISR, mapping, LiDAR)
Maximum Take-off Weight (MTOW)	6 kg
Diagonal size (propellers folded)	82 cm
Maximum speed	22 m/s
Maximum altitude	5,000 m AMSL
Wind resistance (at ground level)	17 m/s
Deployment / launch	"Ready to fly" in under one minute; minimal set-up, no assembly required
Navigation / autonomy	Dual compass; dual GNSS/GPS (multi-constellation); full autonomous capabilities
Operating conditions	All-weather capable, composite frame, supports modular swappable payloads
Take-off / landing footprint	Approximately 1 × 1 m clear, flat area

ARACE also incorporates an Intelligent Endurance Management System (IEMS) to optimise flight performance, alongside robust fail-safe systems and modular architecture to support payload swaps.

SkyKelpie's trial and observations (July 2024, near Moss Vale, NSW)

• The trials were successful, with the Angel performing reliably under field conditions.
• The Angel is priced at approximately four times the cost of a comparable DJI solution, presenting a challenge in adoption, as cost is a key factor for graziers assessing return on investment.
• A notable limitation is that the Angel does not arrive stock-equipped with features such as sirens, thermal imaging or zoom cameras; these must be tailored or retrofitted, in contrast to many DJI platforms that support such payloads more readily.
• SkyKelpie maintains a close relationship with the Australian distributor and will recommend the Angel where it offers a suitable value proposition.

4.2.3 ARACE Griffin Pro

Figure 6. Arace Griffin Pro

To explore whether a VTOL platform might offer advantages over quadcopters for livestock mustering, SkyKelpie trialled the ARACE Griffin Pro (Fig. 6, Table 2). The goal was to evaluate whether the lift-to-cruise transition, extended range and flexibility of vertical take-off/landing could better serve mustering over expansive and uneven terrain where fixed-wing endurance and agility could complement or exceed multi-rotor platforms.

Table 2. Specifications: ARACE Griffin Pro

Parameter	**Value / capability**
Maximum flight time	Up to 150 mins (2.5 hrs)
Wingspan	2.13 m (213 cm)
Maximum payload (recommended)	1.9 kg (ISR / mapping)
Maximum Take-off Weight (MTOW)	8.5 kg
Maximum speed / cruise speed	Max ~115 km/h; Cruise ~54 km/h
Wind resistance	Take-off/landing in >45 km/h; cruise >80 km/h

Operational altitude	Up to 5,000 m AMSL
Take-off / landing (VTOL)	Vertical take-off and landing from ~5 × 5 m surface
Telemetry / datalink range	Up to 40 km (bidirectional telemetry / HD video)
Autonomy & redundancy	Fully autonomous with dual compass, dual GNSS, multiple fail safes, tilt-rotor design
Deployment / setup time	Tool-less assembly; claimed <30 seconds
Noise / covert operation	Very quiet in cruise; nearly inaudible above ~120 m

Additional notes: The Griffin Pro is constructed from composite materials, reinforced with carbon/Kevlar components for durability. It transitions from vertical to forward flight to combine vertical flexibility with efficient forward flight, and it is highly customisable with a variety of payload options.

Pros

- **Flight time & distance:** 2.5-hour endurance and telemetry link of up to ~40 km allows large area coverage.
- **Ideal for spotting over large areas:** Forward flight plus VTOL flexibility improves efficiency.
- **Wind resilience:** Strong wind tolerance reduces weather-limited days.
- **Autonomy & redundancy:** Dual systems and autonomous features reduce risk.
- **Deployment flexibility:** VTOL requires no runway, suitable for rugged paddocks.

Cons / challenges

- **High price:** Cost is a barrier compared to mainstream drones.
- **Operational complexity:** VTOL requires more skill and understanding of transitions.
- **Longer setup / deployment time:** More checks required than quadcopters.
- **Size & portability:** Larger wingspan makes it less compact to transport.
- **Low acoustic signature:** Quiet operation means animals may not respond; sirens needed.

  Dual-payload difficulty: Weight balance and integration challenges with two sensors.

Overall, the Griffin Pro VTOL offers excellent range and other benefits, however it does require more operator skills and involves a longer setup time compared to other options.

4.2.4 DJI closed event – Matrice 4 and Dock 3 Workshop

As part of SkyKelpie's continued engagement with advanced technology, the company was invited to attend a closed DJI event in Queensland. The DJI Dock 3 and Matrice 4 Workshop was held on 13 May 2025 at Minnippi Golf and Range, Cannon Hill, QLD, running from 10:00 am to 2:00 pm.

The event provided an opportunity to exchange insights on using the Matrice 4 series in a range of operational scenarios. Attendees were introduced to DJI's new flagship intelligent multi-sensor compact drone, the Matrice 4 series, together with DJI's first dock adaptable for vehicle mounting, the Dock 3. The workshop also included an overview of DJI's high-precision positioning and relay system, the D-RTK 3, with use cases demonstrated across different industries. The day featured both a static display and live flight demonstrations of the Matrice 4 and Dock 3, along with opportunities for direct discussions with DJI specialists on custom drone solutions.

DJI's D-RTK 3 system was highlighted for its potential to extend operational range and enhance connectivity in challenging environments. In addition to providing centimetre-level GNSS corrections for precision flight, the system can function in Relay Station Mode, bridging gaps caused by terrain or vegetation where direct communication may falter. On large pastoral properties, this allows drones to operate further from the base station while maintaining a stable link. A correctly positioned D-RTK 3 relay can increase effective coverage to approximately 15 kilometres, while the Dock 3 relay system has been demonstrated to extend operations up to 25 kilometres. Although not a mesh network in the strict sense, multiple relays may be strategically deployed to overcome blind spots and improve practical reach across broadacre landscapes.

Another key innovation presented was the DJI Cellular Dongle 2. This device allows DJI drones to connect to 4G networks and incorporates Antenna Switch Diversity (ASDIV) technology to provide high-speed, stable connectivity. It enhances video transmission by reducing signal loss and intelligently balances transmission quality with 4G data consumption, automatically selecting the optimal link between the 4G network and the drone's transmission system.

The event reaffirmed DJI's position as a leader in the development of affordable, sophisticated and user-friendly drone technology. These qualities are essential in agricultural and pastoral contexts, where solutions must deliver advanced capability while remaining accessible and practical for widespread adoption. DJI's emphasis on reliability, cost efficiency and ease of use continues to align with the needs of SkyKelpie's customers and the broader grazing industry.

4.2.5 Summary: Advanced technology testing

The drone manufacturing sector is a crowded and rapidly evolving industry, with companies around the world continually releasing new products to serve both broad and highly specialised markets. This flow of innovation is a positive force, expanding the boundaries of what is possible. However, it is equally important for producers and industry stakeholders to consider which technologies and manufacturers demonstrate genuine market traction, proven reliability, and positive user experiences.

Trialling new technologies is an essential step before adoption. For agriculture, this is particularly critical as poor first experiences with equipment can lead to reluctance or scepticism towards future innovations. When evaluating potential solutions, users should prioritise equipment that has been rigorously tested and reviewed, ensuring it is robust enough for practical use in rural and remote conditions.

The adoption of new technology should always be guided by a focus on quality, as the right solutions can materially enhance efficiency, productivity and sustainability. Producers are encouraged to take a cautious yet forward-looking approach: endorse and adopt only those technologies that demonstrate reliability and a positive record in comparable environments. This approach helps create confidence in the adoption process and ensures a smoother integration of innovation into agricultural operations.

It should also be recognised that a single, uniform adoption strategy is not appropriate. Replacing crewed aviation with drones for livestock mustering, for example, depends on factors unique to each enterprise, such as livestock type, terrain, budget, operator skill and available resources. These variables highlight the importance of tailoring decisions to the specific needs of each business rather than pursuing a one-size-fits-all model. Nevertheless, it is evident that drones are increasingly being adopted as an alternative to helicopters, with many graziers recognising their value as both a complementary and, in some cases, substitute technology.

Looking ahead, industry stakeholders should remain open to technological progress while also applying due diligence when selecting equipment. Careful evaluation of manufacturers, product support and adaptability to local conditions will remain essential as the technology landscape continues to develop.

Disclaimer: Technology develops rapidly. The information contained in this report is relevant to the date of publication only. Producers and stakeholders are advised to conduct their own research to

ensure they have access to the most current information before making decisions regarding adoption.

4.3 SkyKelpie Aerial Stockmanship Course

Figure 7. Cover artwork for the SkyKelpie Aerial Stockmanship Course

4.3.1 The Power of Online Learning

In today's digital age, online courses have emerged as powerful tools for skills development and knowledge dissemination. They offer unparalleled flexibility, allowing learners to access high-quality education from anywhere in the world, at their own pace. This is particularly beneficial for individuals in rural and remote locations who might otherwise face significant barriers to accessing traditional educational resources. Our online course is designed with this in mind, ensuring graziers can gain valuable skills and insights without leaving their home or farm. The SkyKelpie Aerial Stockmanship Course (Fig. 7) provides a tangible and practical outcome of this project, equipping industry participants with the knowledge, skills and confidence to support adoption while enhancing the solution and delivering broad, positive benefits for the sector.

4.3.2 Why this course?

Livestock management is a critical aspect of agriculture, requiring a deep understanding of animal behaviour, effective handling techniques and the ability to adapt to various situations. The integration of drone technology into this field opens new possibilities for monitoring, herding and managing livestock with greater precision and less stress on the animals. This course will guide students through every aspect of this integration, from understanding the basics of stockmanship to mastering the technology and skills needed for drone mustering.

4.3.3 Minimal Viable Product

Creating a Minimum Viable Product (MVP) for the online course was a crucial step in the project. The MVP provided an opportunity to introduce SkyKelpie, highlight the innovative drone technology and demonstrate its potential benefits for livestock management. Beginning with a comprehensive overview of SkyKelpie helped capture the interest and trust of the target audience.

Incorporating the Landholder Rule (see Appendix 6) was essential to address legal and ethical considerations, ensuring landholders were informed about their rights and responsibilities when adopting drone technology. This focus on compliance and responsibility helped establish a foundation of trust, which is vital for broader industry adoption.

The introduction to aerial stockmanship offered a practical and engaging insight into the skills and techniques required for effective livestock management using drones. By emphasising practical applications at an early stage, the course demonstrated immediate value and relevance, paving the way for more advanced modules.

Overall, the MVP validated the course concept, enabled valuable feedback from participants and informed refinements to better align the course with industry needs.

The MVP of the Aerial Stockmanship Masterclass can be viewed below:

G’day from SkyKelpie

The Landholder Rule

Intro to Aerial Stockmanship

4.3.4 Market feedback

Gathering feedback is a critical component in the development of any product or service, particularly for an innovative initiative such as the online course on aerial stockmanship. Feedback offers

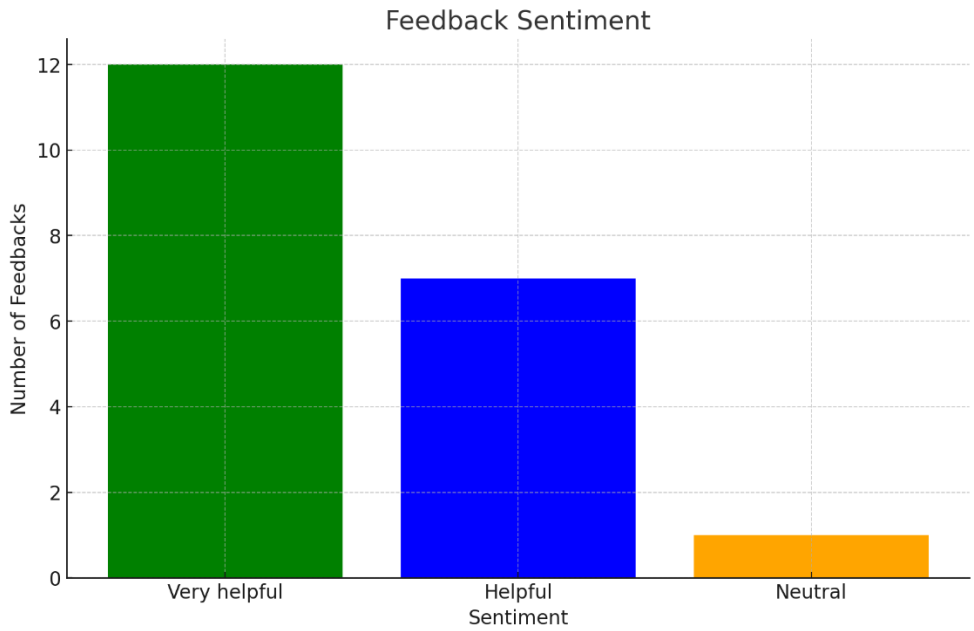
valuable insights from stakeholders, highlighting strengths, weaknesses and opportunities for improvement. It ensures the final product remains user-centred, aligning with the needs and expectations of the target audience. By actively seeking and incorporating feedback, the course can be refined for greater relevance, effectiveness and overall quality—ultimately maximising the value delivered to participants.

Feedback received during the development of the Minimum Viable Product (MVP) was overwhelmingly positive, with the majority of respondents finding the content either very helpful or helpful (Fig. 8 and 9).

Figure 8. MVP participant survey results

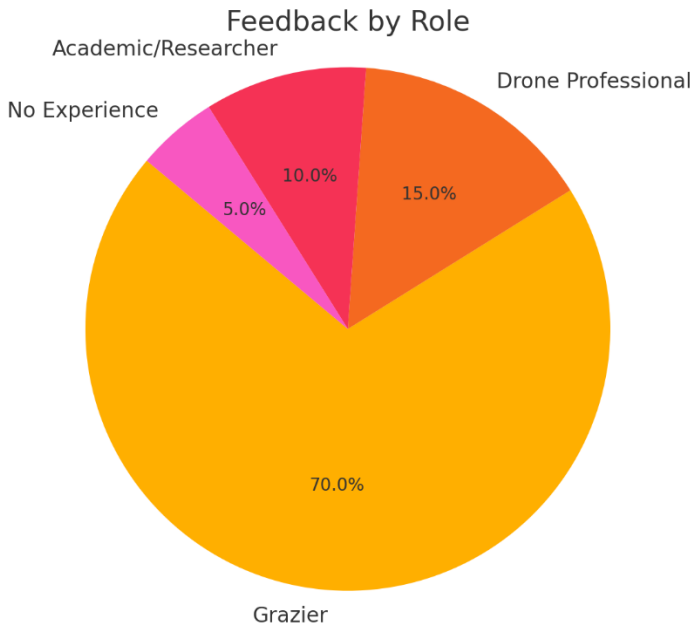
Role	Feedback	Sentiment
Grazier	Very informative introduction to SkyKelpie	Very helpful
Grazier	Clear explanation of the Landholder Rule	Very helpful
Grazier	Practical insights on aerial stockmanship	Very helpful
Grazier	Would like more detailed technical modules	Neutral
Grazier	Great overview, looking forward to more content	Very helpful
Grazier	Valuable information on legal aspects	Helpful
Grazier	Practical skills segment was very helpful	Very helpful
Grazier	Excellent start, can't wait for the full course	Very helpful
Grazier	Intro to SkyKelpie was eye-opening	Very helpful
Grazier	Loved the real-world applications	Helpful
Grazier	Clear and concise, easy to understand	Very helpful
Grazier	Appreciated the ethical considerations covered	Helpful
Grazier	Great intro, eager for advanced topics	Very helpful
Grazier	Solid foundation, useful for beginners	Helpful
Drone Professional	Interesting perspective for non-livestock professionals	Helpful
Drone Professional	Helpful legal guidelines, well explained	Very helpful
Drone Professional	Would like more on drone technology specifics	Helpful
Academic/Researcher	Good balance of theory and practice	Very helpful
Academic/Researcher	Informative and engaging	Very helpful
No Experience	Useful intro, but more depth needed	Helpful

Figure 9. Feedback sentiment



In terms of feedback by role (Fig. 10) graziers, who comprised 70% of the feedback pool, particularly valued the practical insights into aerial stockmanship and the clear explanations of legal considerations such as the Landholder Rule. Drone professionals without livestock experience described the introduction to SkyKelpie as informative and eye-opening, while academics and researchers highlighted the strong balance between theory and practice. Participants with no prior experience in drones or livestock management also found the content accessible and engaging.

Figure 10. Feedback by role



This feedback shaped the development of the full course, reinforcing the importance of maintaining a focus on practical, real-world applications delivered in a clear and concise manner. It also identified the need for deeper technical exploration and the inclusion of advanced modules for those seeking further expertise. By addressing these points, the final course has been refined into a comprehensive, user-friendly program that is both robust and effective in promoting the adoption of drone technology within livestock management.

4.3.5 Full release

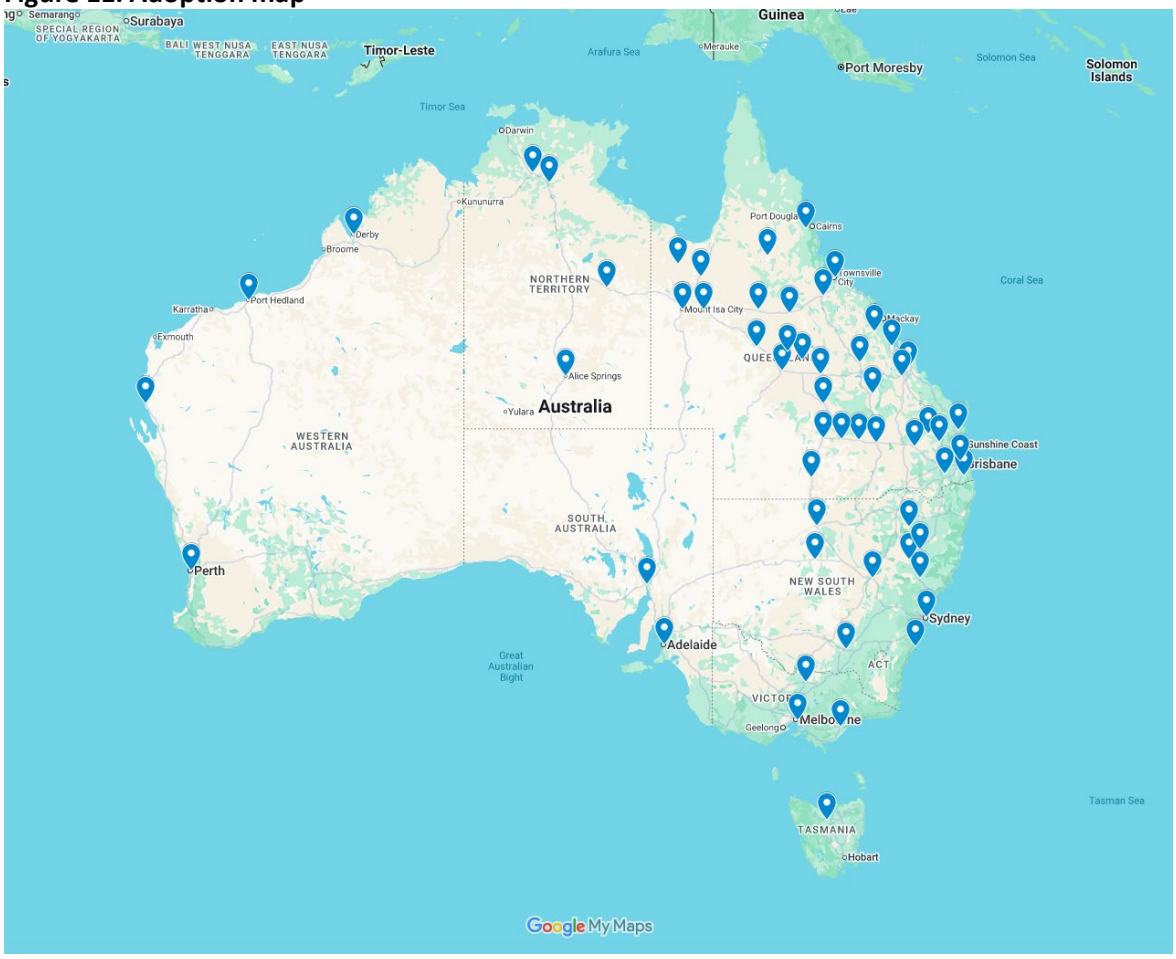
The initial full release of the SkyKelpie Aerial Stockmanship Course was launched in March 2026. Early feedback from the full release has been overwhelmingly positive, confirming that SkyKelpie's engagement with industry through training workshops and extensive real-world experience in drone mustering has positioned the company to create a meaningful and practical resource for the sector. The prior work undertaken in testing and refining the MVP was invaluable in shaping the final product.

Disclaimer: Following the publication of this report, SkyKelpie reserves the right to update, modify or alter the contents of the course as required to ensure continued relevance and benefit to the industry.

Access to the SkyKelpie Aerial Stockmanship Course is available through the SkyKelpie website: www.skykelpie.com

4.4 Adoption

Figure 11. Adoption map



During this project, SkyKelpie facilitated 63 successful adoptions of drone technology for mustering across Australia. These deployments are illustrated on the above reference map (Fig. 11), where pins mark the approximate locations of adoption. To ensure privacy, the pins are not exact property coordinates but are instead linked to the nearest towns, urban areas or post offices. In some cases, a single pin represents multiple deployments where several producers share the same regional reference point.

This encouraging rate of adoption can be attributed to many components of the project, including training, demonstrations and ongoing engagement with producers. Importantly, SkyKelpie continues to see growth in uptake beyond the scope of this project. When accounting for adoption outside of project activities, the company has now supported hundreds of drone deployments nationwide. These outcomes demonstrate a clear and growing appetite within the livestock industry to incorporate drones into existing practices.

4.4.1 Case studies

Barry Mayne, Central West Queensland

Barry Mayne runs a cattle & sheep enterprise operation at Tambo, QLD. He adopted a DJI Matrice 4 Enterprise Thermal drone and now integrates it into daily operations.

The drone is used extensively for mustering, locating livestock using thermal and visual sensors, water runs and bore checks, fence and infrastructure inspections, pest animal monitoring and moving cattle in a cell grazing systems. Barry operates the drone more than 10 hours per week, embedding it into routine management tasks.

Barry reports that the drone has delivered significant improvements in time efficiency, animal wellbeing and safety across the property. He notes that the safety benefits of shifting cattle with the drone are considerable and that thermal imaging (Fig. 12) provides a highly accurate means of locating and moving stock during the cooler hours of the day.

In terms of challenges, Barry highlights the importance of educating stock to respond to the drone for mustering success, as well as external factors such as wedge-tailed eagles. He acknowledges that when the drone is out of service, the workload increases considerably, underlining how integral the technology has become.

Figure 12. Thermal vision of livestock in paddock

Cost savings

Barry estimates that the drone provides annual savings of around $80,000 in labour, fuel and contractor costs. This equates to saving at least one extra labour unit each year. With his initial outlay of $12,000, Barry achieved a 567% ROI in the first year alone. Over a conservative five-year lifespan, the drone is projected to deliver a 3,233% ROI, returning the equivalent of $32 in value for every $1 invested.

Barry summarises: “Time saving using the drone is significant. The safety benefits are significant. Thermal imaging is very accurate for scanning paddocks in the mornings.”

Sam Fryer

Sam Fryer of Ellington Park, Hughenden (Fig. 13), utilises a DJI Matrice 4 Enterprise Thermal for both livestock mustering and on-farm inspections. He reports an average time saving of three to four hours per muster, with a significant improvement in efficiency—noting he has not missed a single cow since introducing the drone, compared with previously missing 5–10 head per muster.

Figure 13. Sam Fryer of Ellington Park

The labour savings are also considerable. A paddock that once required two people working for five hours can now be mustered by a single operator in just two hours, freeing up labour for other essential tasks. Sam describes the impact as “huge” in terms of both efficiency and cost-effectiveness.

Cost savings

Sam has experienced a 110% return on investment in the first year of adopting the drone, equating to annual savings of approximately $21,000. This strong return was achieved on an operation that previously used a helicopter for approx. five hours per year, demonstrating that drones deliver considerable ROI without frequent helicopter use as a baseline comparison.

With a conservative lifespan of five years, the drone is projected to deliver a 950% ROI — returning the equivalent of $9.50 in value for every $1 invested.

Beyond mustering, Sam reports the drone has become an invaluable multi-purpose tool for day-to-day management and safety. He now uses it to check floodgates without risking damage to vehicles, to locate and monitor livestock at night—including quickly confirming the safety of fresh weaners when dingoes were nearby—and even to track dingo movements around the property.

Looking ahead, he anticipates drones will be a major asset in fencing operations, helping to map and plan new fence lines with greater efficiency.

Michael McKellar, Augathella, Western Queensland

Michael McKellar operates a mixed livestock enterprise at Augathella, running cattle, sheep and goats. He has incorporated a DJI drone into his property management and uses it regularly for livestock-related activities.

The drone is applied to a wide range of tasks, including mustering, locating livestock using thermal and visual sensors, water runs and bore checks, fence and infrastructure inspections, pest animal monitoring and training young stock. It has become part of routine operations, with Michael operating the drone for several hours each week.

Michael highlights the benefits of the technology across efficiency, animal wellbeing and safety, all of which he rates as significant. He emphasises that the support provided by SkyKelpie has been a strong feature, noting the “great backup with no time limit on support and access.”

Cost savings

While Michael did not provide a specific dollar figure, he acknowledges the significant time and labour savings achieved through drone use, especially in reducing the reliance on manual checking and streamlining repetitive tasks. The consistent gains in efficiency and safety demonstrate the

broader value of drone adoption in mixed enterprise operations, particularly in remote and challenging environments.

Blair Ogg, Hughenden, QLD

Blair Ogg (Fig. 14) manages a sheep & cattle enterprise at Eldorado near Hughenden and has incorporated a drone into his daily operations. Initially purchased for pest control, the drone is now used extensively for mustering, water runs and other property checks.

Blair highlights several key benefits. He often uses the drone for mustering in the early mornings before contractors arrive, saving substantial time and reducing the stress placed on livestock by working in cooler conditions. The drone is also valuable for straggler mustering, ensuring paddocks are cleared efficiently and reducing the hours spent on foot. These applications not only improve animal wellbeing but also make day-to-day operations more efficient.

He estimates that the drone saves around $20,000 per year across labour, fuel, and contractor costs. The return on investment is considerable, with the technology delivering a 100% ROI in the first year and projected to achieve a 900% ROI over a five-year lifespan.

Blair summarises: “The main benefits are mustering early mornings before contractors turn up, saving hours walking small mobs and reducing heat stress. It’s also great for straggler mustering and making sure paddocks are clear. SkyKelpie has been great to deal with.

Figure 14. Blair Ogg with his sister Ginny and Celeste

Kale Robinson, Muttaburra

Kale Robinson operates a mixed enterprise with cattle and goats at Muttaburra and has adopted a DJI Mavic 3 Enterprise Thermal drone to support daily farm management. The drone is used regularly for mustering, livestock location, water runs, infrastructure checks, pest monitoring and training young stock.

Kale values the flexibility the drone provides, noting that it is “always available with no need to work around helicopters or contractors.” This availability allows him to muster when needed, saving considerable time and ensuring livestock handling can be done in cooler parts of the day, reducing stress on animals. He estimates the drone saves around $15,000 per year in labour, fuel, and contractor costs, equating to approximately 10 labour units annually.

He acknowledges that longer flight times and faster cruise speeds would further improve operations but highlights the broader benefit of having technology that fits seamlessly into his enterprise. Kale also praised SkyKelpie’s support, saying: “Luke is not just a technician; he understands the livestock industry and its needs. He has been extremely helpful whenever I have a problem.”

Cost savings

Kale’s use of the drone delivers an estimated 58% return on investment in the first year. Over a conservative five-year lifespan, this equates to a 689% ROI, returning nearly seven times the original investment.

Doris Baylis, Mataranka Station, Northern Territory

Doris Baylis manages Mataranka Station in the Northern Territory and has found drone technology invaluable in supporting both livestock management and broader station safety. While the drone is used for mustering, livestock location, water runs, infrastructure checks, pest monitoring and training young stock, its greatest value has been in responding to extreme environmental conditions.

Doris explains that during fire and flood season, the drone provides capabilities that are impossible to put a dollar figure on. For example, it has been used to correctly identify a single fire front where other technology indicated two, saving labour, time and equipment from being sent into hazardous bushland conditions. In flood events, the drone has allowed the family to determine whether cattle are safe without risking personal safety, vehicles, horses or dogs. She describes situations where the

floodwater can span up to two kilometres wide, and the zooming capacity of the drone has been critical in confirming stock safety.

For mustering, the drone has proven effective in locating rogue stock, often worth more than $1,000 per head, that evade dogs, horses and motorbikes but are not worth the cost of calling in a helicopter. Doris notes that while they may only use the drone for an hour in some months, in times of fire or flood it can save days of work.

Looking ahead, Doris sees enormous potential in further developing drone capabilities, particularly in extending licensing and flight ranges to 20 kilometres, which she views as critical for Northern Territory cattle stations.

She summarises: “It is impossible to put a dollar value on the usefulness of this technology. It has proven itself time and again in fire, flood, and mustering. We are continually finding more ways to use the drone as we become more confident. SkyKelpie has been readily available to assist, and it is great having someone on board who understands livestock and harsh conditions.”

The following figures (Fig. 15–19) present the survey results from the case studies above.

Figure 15. Average weekly drone operation hours

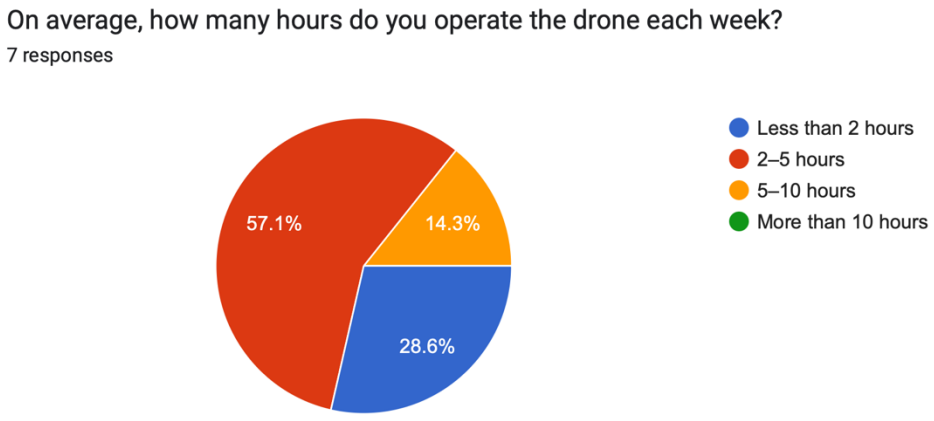


Figure 16. Drone impact on time efficiency

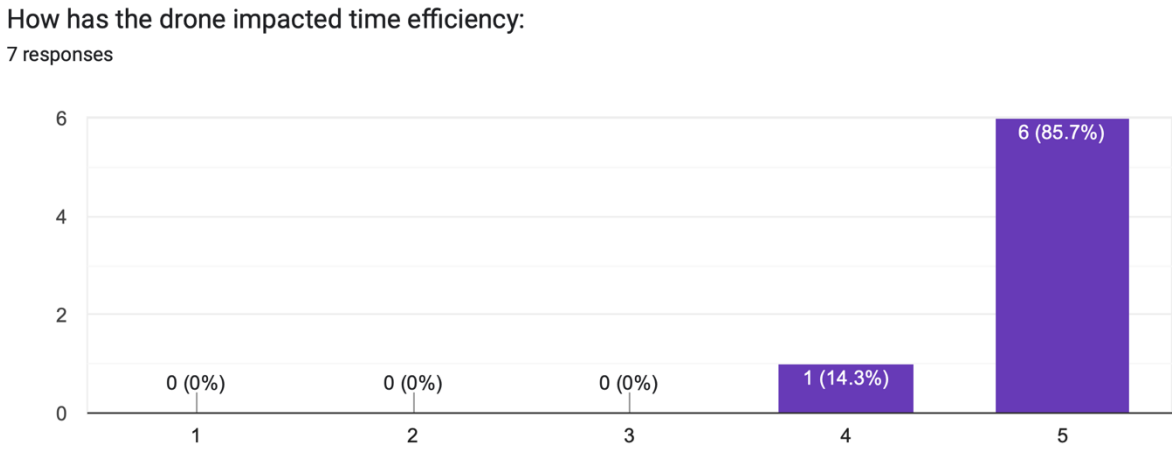


Figure 17. Drone impact on animal wellbeing

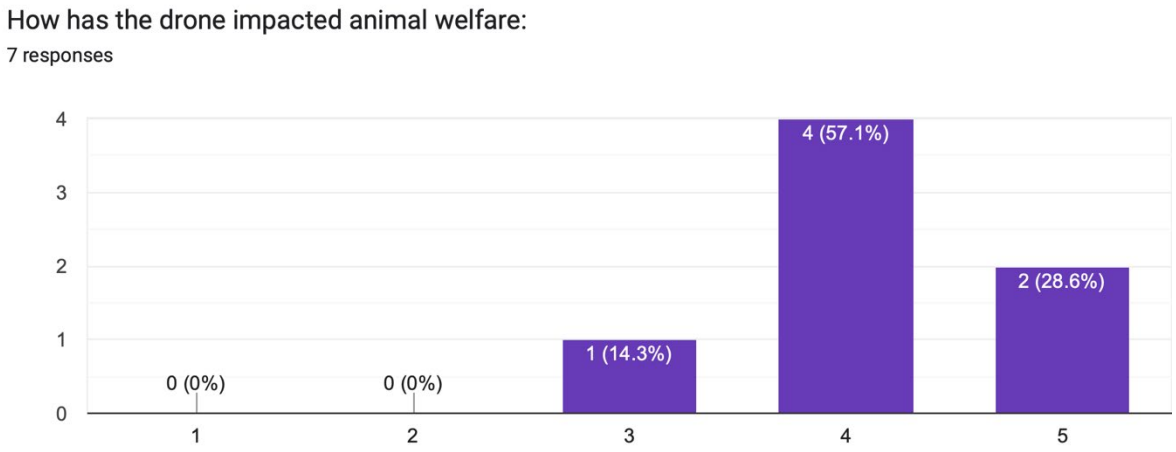


Figure 18. Drone impact on on-farm safety

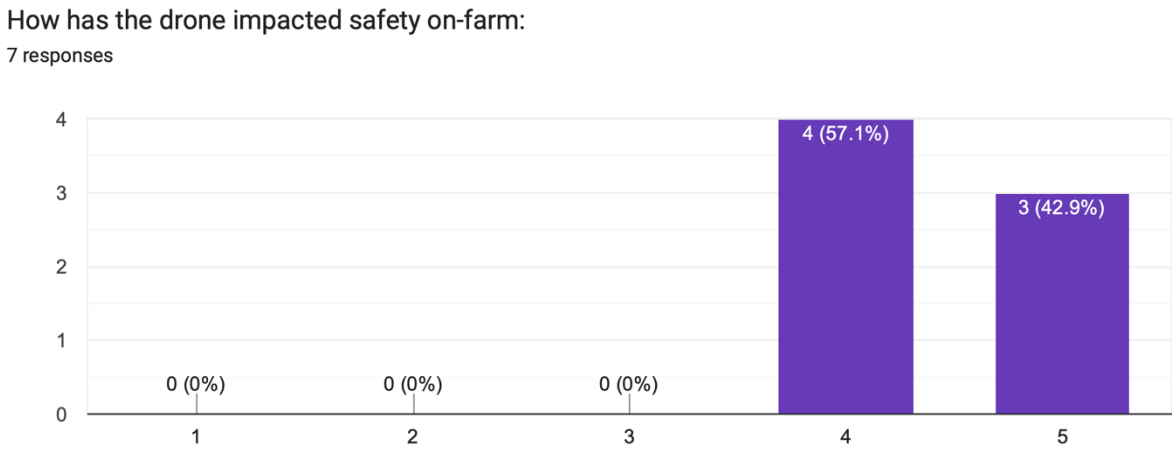
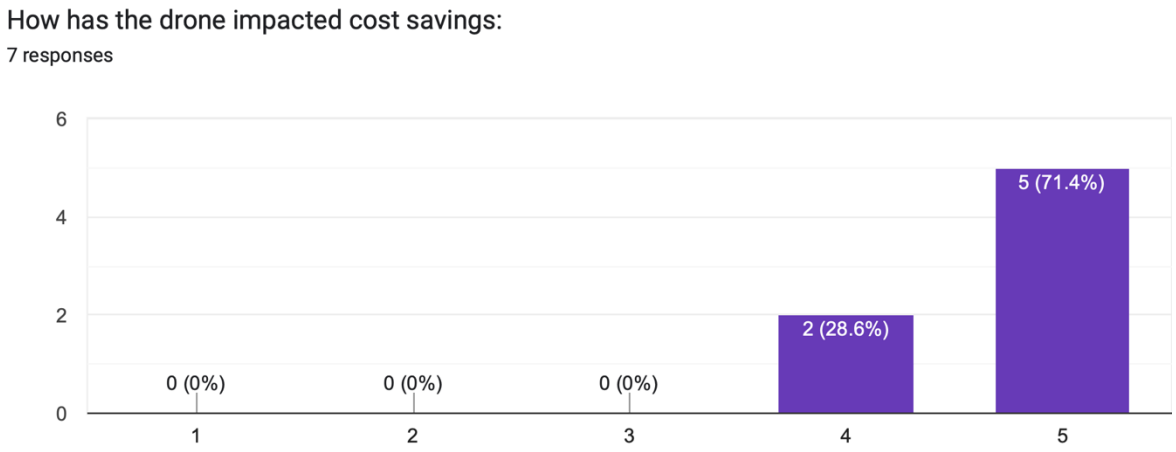


Figure 19. Drone impact on cost savings



4.4.2 Corporates

NAPCo

SkyKelpie conducted drone mustering trials at Alexandria Station in close collaboration with Stud Coordinator Lauren Kelly (Fig. 20) and Manager Rob Bailey. These trials clearly demonstrated the capacity of drones to enhance safety and efficiency in livestock management by providing aerial perspectives, streamlining calf identification, monitoring infrastructure and improving navigation across challenging terrain. The trials successfully utilised drones for locating and guiding cattle, with thermal cameras and skilled piloting proving particularly effective. Recommendations arising from the demonstrations included adopting a staged approach to integration, involving expanded pilot

programs, comprehensive staff training, careful technology selection, aviation compliance and the establishment of structured feedback systems.

Figure 20. Laura Kelly of Alexandria Station

A key focus of the trial was on the management of stud cattle. Drones were able to identify tagged and untagged calves within minutes, eliminating the need for stud officers to traverse rough terrain with a buggy. In one notable instance, a drone successfully guided a cow and untagged calf to a watering point for processing. Zoom cameras also enabled accurate tag reading, reducing reliance on manual checks. Furthermore, paddock monitoring was made more efficient by scanning sections from different road positions, while additional tasks such as inspecting fences, lick tubs, tanks and troughs further highlighted the versatility of drones.

The mustering component of the trials further reinforced the potential of drones. A trial conducted at 5:00 am utilising the thermal camera, successfully located and applied pressure on bulls, guiding them to a watering point. Following that, two drones demonstrated the ability to move approximately 600 bulls from the wider mob into the house yards, approximately five kilometres away, for processing. These outcomes were achieved through a combination of skilled piloting, stockmanship knowledge and effective communication, confirming drones as a legitimate tool for mustering.

Highlights video

Following the success of these trials, NAPCo has progressed to adopting drone technology within its operations, purchasing two DJI Matrice 4Ts from SkyKelpie. This step reflects the company's confidence in the demonstrated capabilities of drones for calf identification, infrastructure

monitoring and mustering in difficult conditions. Importantly, it also highlights NAPCo's commitment to enhancing safety and efficiency while reducing the physical demands placed on staff.

SkyKelpie continues to provide ongoing engagement with NAPCo, offering after-sales support that includes technical guidance, troubleshooting and optimisation of drones for specific property conditions. In parallel, NAPCo is actively investigating licensing and approvals pathways, signalling a proactive approach to ensuring regulatory compliance beyond standard operating conditions. This readiness to align with aviation requirements, coupled with SkyKelpie's expertise and continued support, underscores NAPCo's forward-looking approach to technology adoption and positions the company to realise long-term benefits from integrating drones into pastoral practice.

Stanbroke

On 13 June 2024, SkyKelpie, in collaboration with Stanbroke, conducted a comprehensive drone mustering trial and workshop at their Fort Constantine property. The purpose of the event was to demonstrate the capabilities of drone technology in livestock management and to provide participants with practical training and hands-on experience. A total of 15 participants attended.

The day commenced at 6:00 am with a live mustering demonstration (Fig. 21 and 22) led by Luke from SkyKelpie. The objective was to muster a 973-hectare paddock containing approximately 500 Brahman heifers, each around 18 months of age. As this was the first time the cattle had been mustered by a drone, their initial reaction was flighty. Despite challenges where the mob gained momentum and became difficult to control, Luke's expertise ensured they were successfully directed to the dam, the intended destination. Participants noted the effectiveness of the drone's manoeuvrability and were particularly impressed by its thermal capabilities, which enhanced the ability to manage and guide the cattle.

Figure 21. Early morning at Fort Constantine

Figure 22. Drone view during trials at Fort Constantine

Following the demonstration, participants returned to the homestead for lunch before engaging in a workshop session. This included hands-on interaction with SkySim, SkyKelpie's simulation program designed to replicate drone mustering, giving participants the opportunity to experience virtual scenarios. Luke then delivered a two-hour presentation covering the fundamentals of drone technology and its applications in mustering, regulatory guidelines, aerial stockmanship techniques

and case studies highlighting the practical benefits of drones in livestock operations. An interactive Q&A session provided further opportunity for participants to discuss specific aspects of drone use in the pastoral industry.

In the afternoon, participants were given the chance to fly a SkyKelpie drone themselves (Fig. 23). All flights were carried out in accordance with strict safety procedures to ensure a secure and professional training environment. The combination of the live mustering trial, practical workshop content and hands-on flying practice was highly effective in showcasing the potential of drones in livestock management. Feedback from participants highlighted the value of the thermal imaging system, as well as the broader operational benefits observed during the mustering trial.

Figure 23. Trial participants

Following the success of the Fort Constantine trial, Stanbroke has since adopted drone mustering across two of its North West Queensland properties. In collaboration with SkyKelpie, the company integrated both the DJI Matrice 30T and Matrice 4T into its livestock management operations. Engagement between Stanbroke and SkyKelpie has remained strong, with ongoing support including the purchase of accessories, facilitation of repairs and troubleshooting assistance provided remotely.

In addition, Stanbroke has engaged a third-party provider to manage licensing and approvals, demonstrating the company's commitment to compliance with CASA regulations.

This combination of technology adoption, regulatory compliance and continued support underscores a successful partnership between Stanbroke and SkyKelpie. It further demonstrates how large pastoral enterprises can effectively integrate drone technology into their operations, enhancing both efficiency and safety in livestock management.

4.4.3 Australian Country Choice

Australian Country Choice (ACC) engaged with SkyKelpie to explore how drone technology could be integrated into their operations. Initial discussions highlighted ACC's interest in using drones to conduct aerial surveys of paddocks to obtain accurate stock counts, particularly to address issues such as missed mustering. The company also expressed interest in trialling drone mustering as a potential future application. SkyKelpie advised that a practical way forward would be to begin with a mustering trial.

A workshop and trial (Fig. 24) were subsequently organised at Gladys Downs, Augathella. The day commenced with a presentation covering drone technology, regulatory requirements and case studies demonstrating applications across different terrains and livestock systems. Participants were also able to engage with SkySim, providing a hands-on virtual introduction to drone mustering.

Figure 24. Trial participants

In the afternoon, a live drone mustering trial was conducted in collaboration with ground staff on motorbikes. This integrated approach showcased how drones could complement traditional methods, supporting safe and efficient stock movement while adding value to existing practices.

Following the trial, ACC proceeded with the adoption of four DJI Air 3 drones into their operations. This step reflects the company's confidence in the technology and its commitment to testing and scaling innovative tools that enhance livestock management.

4.4.4 Industry engagement

A core component of this project has been proactive industry engagement to raise awareness, foster education and accelerate adoption of drone mustering technologies. Recognising that meaningful change within the livestock sector requires both demonstration and dialogue, SkyKelpie has invested significant time in attending and contributing to industry events across Australia. These events provided a platform to share insights from trials, highlight the benefits of aerial stockmanship and engage directly with producers, technology partners, regulators and the broader agricultural community.

Through workshops, presentations, panel discussions and field demonstrations, these engagements not only showcased the potential of drones as a practical mustering solution but also created valuable opportunities for two-way learning. Producers were able to see the technology in action and provide feedback from the ground, while SkyKelpie was able to better understand regional challenges, adoption drivers and areas where training or regulatory clarity was most needed. Collectively, this approach has ensured that industry awareness is not just built around the concept of drone mustering but also grounded in practical application and pathways for compliance and adoption.

MLA updates

At MLA's flagship "MLA Updates" event in Bendigo (Fig. 25) , SkyKelpie played an active role in industry engagement by establishing a presence on the show floor and connecting directly with key stakeholders. Positioned in an indoor booth, the team engaged with producers, agribusiness representatives, extension agents, regulators and researchers throughout the day, sharing project learnings, answering questions and gathering feedback from attendees. This face-to-face interaction allowed SkyKelpie to introduce drone mustering as an emerging tool, break down technical barriers and spark interest among audiences who may have limited prior exposure.

In addition, SkyKelpie executed three live demonstration flights using the DJI Matrice 30T—one of the drones that played a central role in their ground-breaking 2022 trials in collaboration with MLA. These hands-on demos enabled observers to see the drone in action, visualise its operational capabilities and appreciate its real-world potential in livestock mustering contexts. Seeing the technology at work helped to demystify it and build confidence in its viability for pastoral settings.

Further extending the reach of the message, founder Luke Chaplain took advantage of media engagement by speaking to ABC radio about the collaboration between SkyKelpie and MLA, and the broader prospects for drone adoption in the industry. This coverage helped amplify awareness beyond the immediate event audience, reinforcing the innovation narrative and positioning the technology in public discourse.

Figure 25. MLA Updates in Bendigo

Beef Australia 2024

Beef Australia 2024 in Rockhampton (Fig. 26) provided a global stage to showcase the outcomes of SkyKelpie's collaboration with MLA. Inside the MLA marquee, founder Luke Chaplain presented alongside MLA's Project Manager for Digital Agriculture, John McGuren. Together they outlined the pioneering work undertaken through joint trials and the measurable outcomes now emerging for the beef industry. This session highlighted the tangible productivity, safety and animal wellbeing benefits of drone mustering, reinforcing MLA's leadership in advancing innovative on-farm technologies.

SkyKelpie's presence extended across multiple platforms during the event. Positioned in *Start-Up Alley*, the company engaged directly with producers, investors and technology providers. SkyKelpie was also recognised as a finalist in the prestigious *Pitch in the Paddock* competition, underlining its credibility and potential for growth. Beyond the trade floor, the Beef Australia Next Gen Committee invited Luke to speak at the *Next Gen Forum*, where he inspired emerging industry leaders about the role of aerial stockmanship in the future of agriculture. He also delivered a keynote at Nudgee College's Beef Week Dinner at the Great Western Hotel, extending the conversation to the education and youth sectors.

To demonstrate the practical capability of drones, SkyKelpie performed a world-first live remote muster at Beef2024, piloting cattle into the yards via drone technology. The demonstration attracted wide media coverage, including ABC News, amplifying the message beyond event attendees and into the national conversation. This mix of technical demonstration, industry recognition and thought leadership positioned SkyKelpie not only as a technology provider but also as a key driver of cultural change in the beef sector.

Figure 26. Beef Week in Rockhampton

GroWQ

Figure 27. GroWQ Innovation Expo in Longreach

At the GroWQ Innovation Expo (Fig. 27), SkyKelpie again took centre stage, bringing emerging technology directly into a livestock context. The team held a booth on the trade floor and presented to audiences about the role and results of drone mustering. Perhaps most compellingly, SkyKelpie performed a live sheep mustering demonstration on the oval, putting drone and low-stress stockmanship practices on display in real time. At one point, electric bikes and the drone were used in tandem with sheep, highlighting how multiple emerging technologies can complement one another in livestock operations.

This live demonstration served as a powerful tool for audience engagement—letting producers see, hear and question how aerial stockmanship is applied in a real setting. It helped break down abstract concepts into tangible, observable operations, showing the potential synergies between drone systems and other tools like electric bikes. By connecting the trade booth, technical presentation and live field demo in one compact event, SkyKelpie maximised its outreach in a regional innovation setting.

Through this multifaceted presence—presentation, booth and live demo—SkyKelpie strengthened its reputation as a practical innovation leader, grounded in hands-on demonstrations rather than just theoretical propositions. The Expo provided yet another platform to engage conversationally with producers, regulators and rural technology adopters, enhancing both awareness and credibility of drone mustering in the Queensland sheep/beef context.

South Australia workshops

In collaboration with the Department of Primary Industries and Regions, Government of South Australia, SkyKelpie delivered a series of one-day drone mustering workshops across the state in April–May 2025 (Fig. 28). The program was designed to blend classroom-style education with hands-on experience, giving participants both the theoretical framework and the opportunity to interact directly with drones and supporting technology.

Figure 28. Drone mustering workshops in association with PIRSA

The structure of each workshop followed a proven format. Mornings began in the classroom with introductions, an overview of drone technology and a briefing on regulations relevant to agricultural operations. After smoko, participants trialled the SkyKelpie simulation training game and were introduced to aerial stockmanship methodologies and use cases. Following lunch, SkyKelpie instructors conducted live drone mustering demonstrations—showcasing livestock handling where possible or otherwise highlighting enabling drone technology. Participants were also given the chance to fly a drone themselves. The day concluded with a recap session, questions and guidance on how to get started.

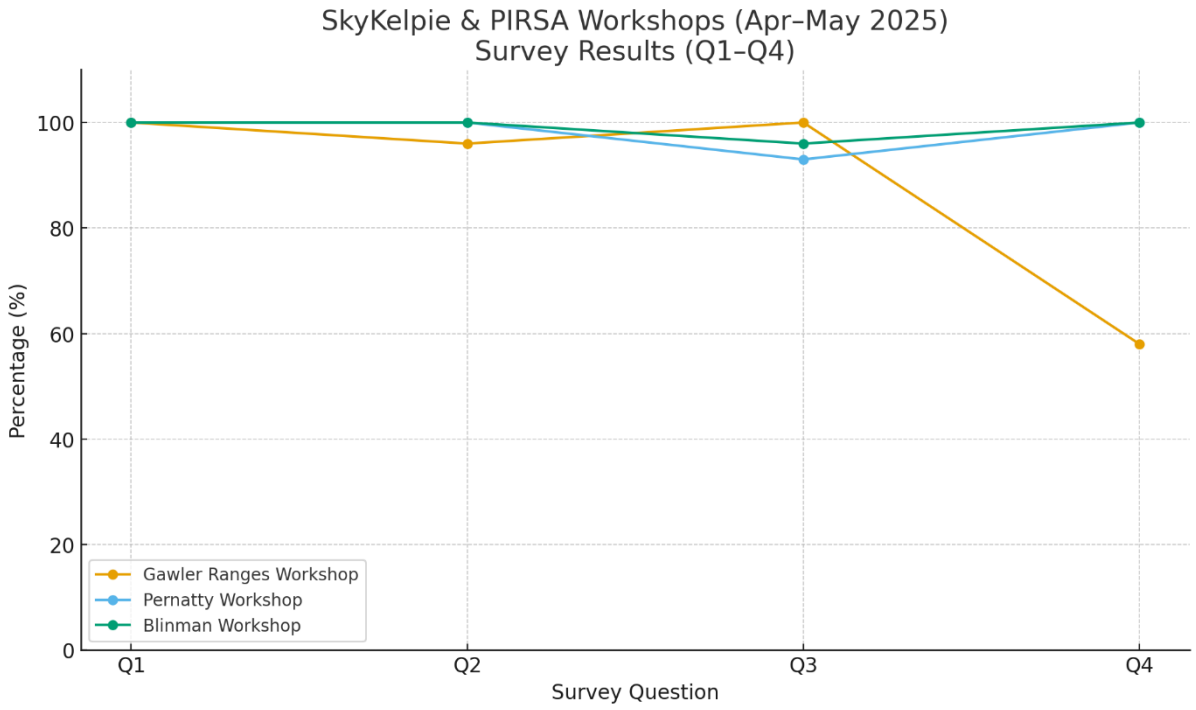
Three regional workshops were conducted on 28 April in the Gawler Ranges**,** 29 April at Pernatty and 1 May in the Flinders Ranges. Across the three days, engagement was high, with strong participation and encouraging survey feedback from attendees.

Survey results (Fig. 29) show consistently high satisfaction across all four questions measured. At every location, participants reported 100% satisfaction with the workshop overall (Q1). There was also a unanimous indication that attendees acquired new skills or information (Q2), with scores of 96–100%. Questions about the applicability of knowledge on-farm (Q3) scored 93–100%, while willingness to recommend the workshop to a friend (Q4) ranged from 58% to 100%. The relatively lower score at the Gawler Ranges workshop suggests further tailoring of delivery to local conditions may be beneficial, but the overall picture indicates clear value delivered across the program.

This partnership with PIRSA demonstrates the effectiveness of targeted regional workshops in building awareness, knowledge and confidence among producers. The combination of classroom learning, simulation, live demonstrations and practical drone flying ensures a balanced approach that resonates across different learning styles. Importantly, the overwhelmingly positive feedback shows that participants not only enjoyed the experience but intend to apply drone mustering principles and practices in their own operations.

Figure 29. Workshop survey results

Note: Survey questions. Q1 How satisfied are you with today's workshop?; Q2 Have you acquired new skills or information today?; Q3 Do you intend to apply anything you've learnt today on your property?; Q4 Would you recommend todays workshop and information to a friend?



Video

evokeAG

At evokeAG 2025, SkyKelpie again leveraged a prime showcase opportunity by taking up a position in *Start-Up Alley*. From this platform, the team demonstrated its leadership in agritech, engaging visitors, media and peers in conversations around aerial stockmanship. The standout moment came with a world-first remote drone mustering demonstration (Fig. 30), where Luke Chaplain orchestrated a cattle muster from a remote operations centre located within the Brisbane Convention & Exhibition Centre—no horses, no vehicles, purely drone and low-stress techniques.

Figure 30. Luke Chaplain performs at evokeAG

This demonstration was not only striking from a technical perspective, but also groundbreaking from a regulatory lens. SkyKelpie secured CASA (Civil Aviation Safety Authority) approval for a mobile remote operations centre—enabling the EVLOS (Extended Visual Line of Sight) muster to be conducted transparently before an audience. Observers in the crowd were even invited to listen in on the communications between the pilot and the onsite observer, highlighting safety discussions around wind, terrain and low-altitude airspace.

By combining the exhibition presence (Fig. 31), in-person engagements and high-stakes live demo, SkyKelpie positioned itself as a bold innovator pushing the boundaries of what is possible in livestock

mustering. The evokeAG appearance reinforced the narrative that drone mustering is not merely a speculative concept, but an actively evolving practice, subject to real-world constraints and regulatory advances.

Figure 31. SkyKelpie's presence at evokeAG

TasFarmers

SkyKelpie's founder Luke Chaplain was selected as a keynote speaker for **FarmX 2025** in Tasmania (Fig. 32), placing the company squarely in the spotlight of a regional forum focused on shaping the future of farming. Through his presentation, Luke articulated how drone mustering bridges traditional stockmanship with cutting-edge innovation, positioning SkyKelpie as a compelling voice in the intersection of rural practice and emerging agtech.

This speaking engagement allowed SkyKelpie to reach a more geographically diverse audience and further embed the concept of aerial stockmanship into the broader conversation about agricultural

transformation. Being included in the FarmX program also reinforced credibility among farmers and stakeholders less exposed to drone technologies, helping translate awareness into buy-in across Tasmania's farming community.

Figure 32. Luke Chaplain speaks at FarmX

Queensland Museum

As part of the World Science Festival Queensland regional tour, SkyKelpie delivered engaging live demonstrations (Fig. 33) and immersive experiences in Chinchilla. On the oval at Chinchilla State School, the team conducted multiple sheep mustering demonstrations at 10:30 am, 11:30 am and 1:30 pm, showcasing how drone and low-stress stockmanship techniques can operate in real time. Concurrently, SkyKelpie set up a "SkySim" simulation platform inside the school hall, allowing attendees to practice drone mustering skills virtually and providing a hands-on bridge between concept and application.

Figure 33. Live demo of DJI Matrice 4T

By participating in this high-visibility science festival, SkyKelpie bridged the gap between agritech and STEM education. The demonstrations helped contextualise drone mustering not just as an agricultural tool, but as a product of scientific innovation and technological advancement. The festival's family and school audience—ranging from students to curious community members—offered a unique opportunity to embed awareness of aerial stockmanship in minds less familiar with livestock operations.

This engagement also reinforced SkyKelpie's image as a forward-thinking innovator. By appearing alongside more traditional science exhibits, the company positioned its work not only in agricultural circles but within the broader technological landscape. The crossover of audiences means future industry uptake could rest as much on public curiosity and science literacy as on producer interest.

Figure 34. World Science Festival

Video

Charleville

On Saturday 28 September at the *Wings on the Warrego* aviation showcase at the Showgrounds in Charleville, SkyKelpie delivered a live drone mustering demonstration. The demo, held at 5:00 pm before a large community audience, showcased how drones can be used to muster livestock safely and efficiently, directly connecting aviation innovation with regional agricultural practice.

In addition to the demonstration, SkyKelpie exhibited at the Charleville Airport as part of the event's industry showcase, engaging families, producers and aviation enthusiasts alike. This setting provided an ideal platform to explain the benefits of drone mustering—including cost reductions, improved safety and enhanced efficiency—while situating the technology within a broader aviation and STEM context.

By participating in *Wings on the Warrego*, SkyKelpie not only reached producers but also inspired a new generation of regional Queenslanders, positioning drone mustering as part of the future of both aviation and agriculture.

AGTECH24

Figure 35. Agtech24

At AgTech24, hosted by the Central Highlands Development Corporation, SkyKelpie participated as an exhibitor and featured on stage during the evening proceedings (Fig. 35). During the day, the team engaged with attendees from across Central Queensland's agricultural and innovation ecosystems, showcasing drone mustering technology and sharing real-world results from trials and deployments.

In the evening programme, Luke Chaplain delivered a short address that positioned SkyKelpie's work within the broader agtech narrative. He emphasised how aerial stockmanship can be applied in grazing and mixed-farming contexts, and also pointed to future possibilities for integration with data

systems, robotics and farm automation. Presenting in this setting positioned SkyKelpie firmly within the agtech innovation dialogue, alongside complementary technologies being displayed at AgTech24.

This engagement was particularly strategic: by combining exhibition (trade display) with a speaking presence, SkyKelpie reinforced both visibility and authority in the sector. It enabled the team to reach grassroots producers as well as innovation stakeholders in a regional hub, helping to translate curiosity into enquiry and adoption pathways.

4.4.5 Schools

St Joesph's Nudgee College

At St Joesph's Nudgee College, SkyKelpie presented to aviation students (Fig. 36), with the audience including both urban learners and boarding students from rural and remote backgrounds. For those from agricultural families, the discussion resonated strongly, connecting their lived experience with a technology that could directly benefit operations at home.

For urban students, the session provided fresh insights into the role of drones in agriculture and introduced potential career pathways they had not previously considered. The presentation helped bridge two worlds—highlighting how aviation and agriculture are increasingly interconnected through innovation.

The engagement and enthusiasm demonstrated across the group underscored how drone mustering appeals not only to those with an agricultural background but also to young people seeking technology-driven careers in sectors they might not have imagined entering.

Figure 36. Nudgee College

Stuartholme

At the Stuartholme School, SkyKelpie was invited to present to the school's drone programme (Fig. 37 and 38), engaging students with a practical session on how drones are transforming agricultural operations. The presentation highlighted both current applications in livestock management and the emerging opportunities created by technology such as thermal sensors and onboard communication systems.

Figure 37. Live demonstration to Stuartholme students

The session generated a strong response from students and staff alike. *"The students were so engaged in the session and curious about the different applications of drones in agriculture. After the session, a group of day students were telling me about mustering they had done in the past—I had no idea! They're pretty much all keen to get drones with thermal sensors now. A couple of students from the programme also did a drone demo with our PNF group later in the evening and made a*

point of telling parents how great your session was. A very good sign!" (Tomas Lillyman, Careers Counsellor – Stuartholme School).

Students themselves also reflected positively on the experience. One commented: *"I really enjoyed Luke from SkyKelpie—how he went into all the different ways to use drones out on properties. I also liked how he brought the drone with him and how we interacted with it, like using the heat setting and the sound system."* Another added: *"Drones can be used for such a wide variety of things, and they are building future technology, allowing for so much more to happen—particularly SkyKelpie."*

The overwhelmingly positive feedback demonstrated not only the level of student engagement but also the ability of the session to inspire both curiosity and ambition. For many, it brought agricultural applications of drone technology into sharper focus, bridging the gap between classroom learning and real-world innovation.

Figure 38. Stuartholme students involved in the schools drone program

SCOTS PGC College

At SCOTS PGC College, SkyKelpie delivered a double lesson with the Year 9 AgTech class (Fig. 39), which was described by staff as *"an absolute highlight of the term."* The session introduced students

to cutting-edge drone technology and its role in transforming agriculture. Combining technical knowledge with practical demonstration, the presentation was praised for being both highly educational and deeply engaging, with students captivated throughout.

Grace Buchholz, Director of Equestrian, noted: *"Luke has a unique ability to explain complex concepts in a way that makes sense to young learners, while also inspiring them to think about the future of farming and technology."* The hands-on demonstrations proved particularly valuable, giving students a tangible sense of how drone mustering can be applied in real-world agricultural settings.

Figure 39. Scots PGC College

Importantly, SCOTS PGC signalled a strong interest in extending the partnership, with Buchholz commenting: *"We are very keen to continue our engagement with SkyKelpie and to explore the development of curriculum and modules for students, particularly around drones, stock handling and broader practical agricultural skills."* This endorsement underscores not only the impact of the visit but also the longer-term opportunities for embedding drone technology into agricultural education pathways.

SkyKelpie's visit to SCOTS PGC highlighted how innovative technologies can inspire students, bridge classroom learning with on-farm realities and contribute to the future design of agricultural curricula that align with industry needs.

4.4.6 Ability Agriculture workshop

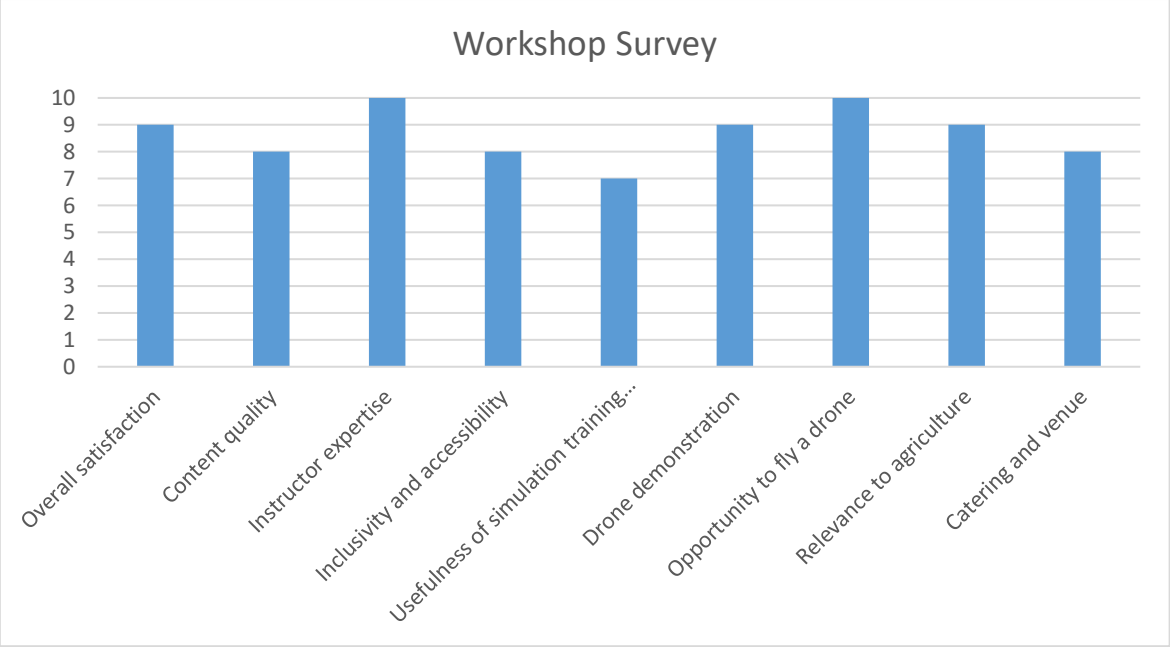
On 11 October, SkyKelpie, in collaboration with Ability Agriculture, hosted an inclusive drone mustering workshop in Kempsey, NSW, which highlighted the opportunities for people living with disabilities to actively participate in agriculture (Fig. 40). With 27 enthusiastic participants, the workshop began at 8:30 am, introducing instructors and attendees before transitioning to a comprehensive classroom session.

Figure 40. Ability Agriculture workshop

This session covered drone technology, regulations and aerial stockmanship methodology, with a special focus on accessibility features such as Apple Switch Control, which were demonstrated and discussed as tools to assist with operating drones. Participants enjoyed a smoko break before

exploring SkyKelpie's innovative simulation training game, showcasing real-world applications of drone mustering. Following an outdoor lunch, the afternoon featured a live drone mustering demonstration with livestock, led by a SkyKelpie instructor, where most attendees had the opportunity to pilot a drone. Concluding at 4:00 pm, the workshop was the result of a collaborative decision with Ability Agriculture to centralise efforts into one well-resourced event instead of three smaller workshops. This focused approach created an immersive and inclusive experience, emphasising how technology can empower individuals of all abilities to thrive in agricultural roles. Fig. 41 displays the results of the workshop survey completed by all workshop participants.

Figure 41. Workshop survey results



Highlights video

SkyKelpie scholarship

Following the success of a workshop delivered in collaboration with Ability Agriculture as part of this project, SkyKelpie and Ability Agriculture deepened their partnership by launching the SkyKelpie Scholarship. The aim is to support and empower individuals interested in agriculture, technology and innovation, particularly those facing barriers or seeking new pathways in the field.

The inaugural scholarship was awarded to Luke O'Sullivan, a 20-year-old based on his family's 57,000-acre cattle station near Collinsville, Queensland. After suffering a spinal cord injury two years ago that left him quadriplegic, Luke has shown determination to remain actively involved in the family enterprise and explore new ways to contribute.

As part of the scholarship, Luke receives:

- CASA-accredited Remote Pilot Licence (RePL)
- Access to the SkyKelpie Aerial Stockmanship Course and Simulator
- A ticket to AgriFutures evokeAG 2025
- 12 months' mentorship with the SkyKelpie team

Luke shared:

"I believe I can still reach the same target of being productive and contributing to the agricultural industry despite my injury—it will just take a different form. This scholarship will help me gain a new skill set to further contribute to the family business and explore innovative methods to perform tasks on the property."

SkyKelpie founder Luke Chaplain, inspired by his own experience turning a $3,000 Minister's Emerging Leader Award into an inclusive, agriculture-focused initiative, said: *"Luke [O'Sullivan]'s hard work and determination will undoubtedly inspire many others in similar positions."*

Luke's journey is a powerful example of how resilience, adaptation and technological support can turn challenges into opportunity and foster innovation in agriculture.

5. Key findings

SkyKelpie's work to date demonstrates clear commercial impact and growing industry confidence. Across the project period, 63 on-farm adoptions were facilitated, adding to hundreds of deployments nationwide. Producers consistently report material time and labour savings, improved safety and better animal wellbeing outcomes. In many cases, benefits were realised within the first year of adoption, with strong returns achieved even where helicopter use was historically limited.

Operationally, thermal-equipped multi-rotor platforms proved the most reliable and cost-effective for mustering, bore runs, infrastructure checks and rapid decision-making in fire and flood scenarios. Early-morning thermal searches, straggler clean-ups and targeted tasking delivered repeatable value without dependence on crewed aviation. Corporate trials with NAPCo, Stanbroke and ACC validated these workflows at scale, leading to procurement, integration and structured compliance planning.

Technology evaluations underscored both promise and limits. Hydrogen endurance presented attractive flight times but was constrained by payload restrictions, manufacturer support and

hydrogen logistics. The ARACE Angel delivered robust performance yet faced adoption barriers due to cost and the need for tailored payloads, while the Griffin Pro VTOL offered excellent range and other benefits, but required greater operator skill and more setup. These comparisons reinforce the current advantage of capable multi-rotors in pastoral contexts.

Education and capability building were central to accelerating adoption. The Aerial Stockmanship Course progressed from MVP to a full release in 2026 on Kajabi, complemented by regional workshops, simulations and live demonstrations. Participant feedback showed very high satisfaction, clear knowledge gains and strong intent to apply learning on farm, indicating that practical, stockmanship-led training is an effective catalyst for safe and confident use.

Adjacent to completing this research, it is noted that the regulatory environment is moving in a constructive direction. Ongoing participation in CASA forums and technical working groups coincided with the announcement of trial BVLOS pathways for ReOC holders—an important step towards broader, area-based permissions that better reflect rural operating realities. While not a complete solution, these developments signal momentum towards proportionate, risk-based regulation.

Key learnings point to a small set of priorities. There is value in standardised metrics for welfare, muster efficiency and cost savings to enable benchmarking across enterprises. Connectivity remains a practical constraint in some landscapes; relay infrastructure and cellular failover are enabling resources that warrant planned investment. Continuing demand exists for plain-English guides, hands-on training and assessment frameworks spanning the Landholder Rule, EVLOS and emerging BVLOS settings. Further comparative evidence on VTOL versus multi-rotor trade-offs, payload integration for non-DJI systems and mitigation of eagle interactions would strengthen procurement and operating guidance. Finally, manufacturer responsiveness, local service and parts availability are decisive adoption factors and should be weighed alongside specifications.

Overall, the project finds drone mustering to be commercially viable today for many producers under VLOS/EVLOS, delivering strong productivity, safety and welfare gains. With targeted training, appropriate communications infrastructure and the emerging streamlined BVLOS pathways, the sector is well positioned to scale responsibly while maintaining high standards of safety and animal care.

6. Conclusion and recommendations

6.1 Conclusion

This project has demonstrated that drone mustering is no longer an emerging concept, but a proven and commercially viable tool within the Australian grazing industry. Through structured trials, regulatory engagement, technology assessment, training development and national industry outreach, the project has supported meaningful adoption and strengthened the foundations for long-term integration of drones into livestock operations.

Across 63 documented adoptions during the project period, alongside additional uptake beyond scope, producers consistently reported improvements in operational efficiency, safety and animal wellbeing. In many cases, return on investment was achieved within the first year of deployment, with strong five-year projections under conservative assumptions. The evidence indicates that drones are most effective when deployed as complementary tools—enhancing, and in some circumstances replacing, traditional mustering methods depending on terrain, enterprise scale and operator capability.

Technology trials confirmed that while long-endurance and hydrogen platforms present future potential, thermal-equipped multi-rotor systems currently offer the strongest balance of cost, reliability, payload flexibility and practical usability for most grazing enterprises. Adoption decisions must remain enterprise-specific, guided by terrain, livestock behaviour, workforce structure and regulatory settings.

Importantly, the project also demonstrated that adoption is accelerated through education and confidence building. The SkyKelpie Aerial Stockmanship Course, workshops, simulation tools and school engagements have strengthened capability pathways for both current producers and the next generation of operators. Industry momentum suggests that aerial stockmanship will form an increasingly embedded component of modern grazing systems.

6.2 Recommendations

6.2.1 Develop a National AgTech Education Program Aligned to Curriculum Standards

To support long-term industry capability, it is recommended that a structured AgTech education program be developed in alignment with national curriculum standards, in collaboration with schools, educators and industry stakeholders.

This program should integrate practical drone applications, aerial stockmanship principles, and foundational agtech literacy into secondary education settings. Co-design with teachers will ensure

alignment with Australian Curriculum priorities in STEM, digital technologies, sustainability and agricultural studies, while maintaining pedagogical integrity and classroom relevance.

There are two primary benefits to this approach:

1. **Workforce readiness:**
   Students would graduate with a foundational understanding of agricultural technologies, including drone operations, data interpretation, safety frameworks and practical livestock applications. This would equip young people with baseline agtech literacy, strengthening workforce preparedness in a sector increasingly shaped by digital tools and automation.

2. **Sector attraction and perception shift:**
   By widening students' understanding of the breadth of careers available in modern agriculture—including drone operations, data analysis, robotics, compliance and technology development—the program would help attract more young people to the industry. Exposure to innovation reshapes perceptions of agriculture from purely manual labour to a technology-enabled, future-focused career pathway.

SkyKelpie is well positioned to contribute to this initiative. The existing SkyKelpie Aerial Stockmanship Course and simulation training platform provide a strong foundation that could be adapted to suit high school standards and learning outcomes. By tailoring content complexity, assessment methods and delivery formats, these tools could become structured educational modules suitable for classroom integration, remote learning and vocational pathways.

Such a program would strengthen the pipeline of future operators, technologists and innovators, ensuring the sector's continued competitiveness and sustainability.

6.2.2 Continue Investigation into Range Extension Technologies for Commercial Drones

While adoption of drone mustering is increasing, operational range remains a limiting factor for some enterprises, particularly across large pastoral properties. It is recommended that further investigation be undertaken into practical range-extension solutions for commercially available, off-the-shelf drone platforms.

Emerging technologies—including direct-to-cellular connectivity, relay systems, dock-based deployment and enhanced Global Navigation Satellite System (GNSS) correction networks—may provide scalable pathways to extend operational coverage without requiring entirely new aircraft platforms. Direct-to-cell connectivity in particular warrants close evaluation, as it has the potential to reduce reliance on traditional line-of-sight radio links and improve operational flexibility in remote environments.

Future investigation should assess:

- Reliability of cellular-based command and control in low-coverage regions
- Integration with existing CASA regulatory frameworks
- Cost-to-value proposition for producers
- Redundancy and safety implications.

Ensuring that range-extension technology remains accessible and compatible with mainstream drone systems will be critical to widespread adoption.

6.2.3 Support further regional workshops and demonstration pathways

Although adoption is strong and market momentum continues to build, segments of the industry still require in-person engagement before committing to the upfront capital investment associated with drone technology.

Many producers report that confidence increases significantly after physically handling the equipment, observing a live mustering demonstration or trialling simulation tools. In regions with limited exposure to emerging technologies, this initial tactile and face-to-face interaction remains a decisive factor in adoption.

It is therefore recommended that support be provided for additional regional workshops and live demonstration programs, particularly in areas with limited access to agtech trials. These workshops should combine:

- Classroom-style regulatory and safety education
- Simulation-based skill development
- Live livestock demonstrations where feasible
- Supervised hands-on flying opportunities.

Such engagement not only accelerates adoption but ensures it occurs responsibly, with appropriate training and compliance understanding embedded from the outset.

7. References

Civil Aviation Safety Authority (CASA), 2025, *RPAS and AAM roadmap biannual review technical working group*, CASA, last updated 3 April 2025, viewed 27 February 2026, https://www.casa.gov.au/about-us/who-we-work/aviation-safety-advisory-panel/technical-working-groups/rpas-and-aam-roadmap-biannual-review-technical-working-group

Transport Canada, 2025, '2025 Summary of changes to Canada's drone regulations', Government of Canada, date modified 5 November 2025, viewed 27 February 2026, https://tc.canada.ca/en/aviation/drone-safety/2025-summary-changes-canada-drone-regulations

8. Appendix

8.1 Appendix 1 – Temporary Management Instruction: Broad Area BVLOS Operations - 2025-03 (submitted to MLA)

8.2 Appendix 2 – BVLOS Process (submitted to MLA)

8.3 Appendix 3– EVLOS Process (submitted to MLA)

8.4 Appendix 4 – Policy & Procedures The Landholder Rule – TEMPLATE (submitted to MLA)