

**Submission
No 47**

**PREVENTION OF CRUELTY TO ANIMALS AMENDMENT (VIRTUAL STOCK
FENCING) BILL 2024**

Organisation: Halter

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Parliament of New South Wales
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Sydney
NSW 2000
AUSTRALIA

Via online submission

**HALTER SUBMISSION ON THE PREVENTION OF CRUELTY TO ANIMALS AMENDMENT
(VIRTUAL STOCK FENCING) BILL 2024**

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1. Introduction

Halter is the world's leading smart collar system for dairy and beef cows, used by over 200,000 animals in Australia, New Zealand, and the United States.

Halter operates in Australia across 17% of Tasmania's dairy cows and will begin commercial operations in Queensland later this year. Halter's interest in New South Wales stems from the strong interest we receive from farmers for our product despite not undertaking any marketing in the state thus far.

Halter encourages NSW to take a thoughtful regulatory position that protects animal welfare, improves community safety and allows farmers to increase productivity.

Halter supports the Virtual Stock Fencing Bill's intention to make high-quality **virtual fencing** and its benefits available to NSW farmers and their animals. Virtual fencing is becoming widely recognised

around the world for its superiority to physical electric fencing and the improvements to animal health of 24/7 individualised monitoring.

In addition, Halter strongly submits that the Bill's objectives should expand to include **virtual herding**, given its significant productivity, animal welfare, community safety, and environmental benefits.

Halter representatives are available to attend a public hearing day to assist the committee with its inquiry on this Bill.

2. Background

Halter is a New Zealand high-tech company founded in 2016, which is transforming pasture-based farming. Our origins are in dairy and so the vast majority of our customers are dairy farmers. We have also recently expanded into the beef market and so we are serving an increasing number of beef producers and graziers.

Halter is recognised as the leading agri-tech coming out of New Zealand, having won the "Most Innovative Hi-Tech Agritech Solution" award at last year's prestigious New Zealand Hi-Tech Awards.

Our core value proposition is that **Halter enables farmers to grow and harvest more grass**. We achieve this by virtually fencing animals and virtually herding them around the farm. However, Halter is more than just these two features; Halter is a system that unlocks an entirely new way of farming that is more productive, more efficient and more sustainable.

Uptake across New Zealand and Tasmania is strong, with hundreds of farmers using Halter to manage over 200,000 cows. In 2023 we doubled our customer base, and in 2024 we are on track to double again. Our team has grown to over 150 people, and we have raised and invested over NZD \$200 million in our technology to develop the system and build the world's largest dataset on cow behaviour.

Troy Ainslie, an exceptional dairy farmer in Tasmania with 500 cows and winner of the 2023 *Tasmanian Dairy Business of the Year* award, says that around the time he started with Halter he was ~2,000kg of milk solids behind budget. Eleven months later he is now 1,000kg of milk solids ahead of budget, a swing of ~\$28,500¹. Troy credits his success to Halter's health monitoring features which enabled him to identify poorly recovering cows post-calving and remedy the issue immediately. He says that with Halter it's easier to retain staff (given the improved workload), to deploy them on higher value activities and to develop their animal health and pasture knowledge.

We field sustained demand in Australia beyond Tasmania, including strong interest from farmers in NSW. Despite spending zero marketing dollars in NSW, over 50 farmers with 15,000 cattle have registered their interest for Halter.

3. Executive Summary

Halter supports the passage of the Prevention of Cruelty to Animals Amendment (Virtual Stock Fencing) Bill 2024 and its intent to allow virtual fencing in NSW.

As the category leader in this technology, Halter cares deeply about animal welfare and community safety. We recommend the NSW Parliament embeds high-standards into its regulatory framework and requires all virtual fencing and virtual herding products to have robust, built-in animal welfare safeguards to protect livestock. Halter has made publicly available on our website the 14 animal

¹ At \$9.50 per kg of milk solids

welfare safeguards in our system, as well as detailed information about how our system operates.² This protects not only the animals but the hard-earned reputation of farmers and products like Halter.

Halter supports the definition of a 'virtual stock fencing device' as a GPS-enabled sensor and collar. However, we strongly recommend adding **herding** to the definition of virtual fencing's purpose. Therefore, we submit that Section 16(1)(b) should read:

“used for the purposes of confining, tracking, herding and monitoring stock animals.”

Virtual fencing and virtual herding are safe and effective ways to manage dairy and beef stock and are superior to legal forms of animal management, including physical electric fencing and the use of quad bikes and dogs.

Currently, NSW farmers are missing out on the substantial benefits of high-quality virtual fencing and herding available through Halter collars, including:

- Improving their livestock's health and welfare using 24/7 health monitoring.
- Growing and harvesting more grass.
- Reducing nitrogen and fertiliser inputs.
- Saving significant labour time.
- Automatically identifying cows on heat with a higher accuracy than conventional methods.
- Virtual herding of livestock away from hazards such as floods and fires.
- Keeping stock out of waterways to enhance freshwater quality.
- Improved land management e.g. soil quality through reduced compaction.
- Providing a cross-industry platform to share information more easily.

4. How Halter works

Halter's system comprises a solar-powered collar per cow, a mobile app for the farmer and staff, and a communication network per farm to connect the collars and the app. Halter trains cows to respond to the collar's sound and vibration guidance cues, allowing farmers to virtually herd their cows, set up virtual fences and monitor their cows' health and reproductive status. This reduces the need for physical electric break fences, quad bikes or dogs pushing animals from behind.

To see Halter in action, please visit our website using this link to watch four short videos:
<https://www.halterhq.com/animal-welfare-charter>.

Halter has trained more cows with virtual fencing and virtual herding technology than any other wearable in the world. Feedback is highly positive, with farmers, academics, animal welfare experts and veterinarians saying it is the most fundamental improvement to pastoral farming in decades. Halter boosts milk production for dairy farmers, weight gain for beef farmers, saves farmers significant time, and monitors cow health and reproductive status.

² <https://www.halterhq.com/animal-welfare-charter/blog-post-title-three-b7zfw>



Image 1: Halter collar on a dairy cow.

5. How Halter's virtual fencing and virtual herding works

Dairy or beef cows wear a collar and are trained to follow the collar's guidance cues. Using the Halter app on their phones, farmers set up virtual fences for cows grazing in paddocks, and virtually herd their cows around the farm.

The collar guides a cow using two primary cues: sound and vibration.

- **Sound cues** give animals directional guidance if they cross a virtual boundary or to turn them towards a new break or exit point;
- **Vibration cues** are given as positive reinforcement when the animal is facing and/or walking in the correct direction.

The collar also uses a secondary cue - a low-energy electric pulse - that is used to reinforce the two primary cues if a cow ignores them. The low-energy pulse is mainly used during the training period as animals learn to associate the consistent development of the primary cues with escalation to a secondary cue (low-energy pulse) unless they change their direction. Once an animal is trained, the pulse is rarely used. A trained animal can choose to ignore the primary cues and can predict the reinforcement that follows.

The energy of this pulse is set individually to the lowest level that will dissuade each cow from ignoring the sound cues. If it is set any lower, it will no longer be aversive and they will simply ignore it. In other words, the low-energy pulse is the smallest possible stimulus to achieve the behavioural change. We refer to this secondary cue as a 'low-energy pulse' because it is significantly weaker in energy than the 'shock' from a standard electric fence. The maximum strength of Halter's collar pulse is 0.18 joules, delivered in 20 microseconds, which is significantly less energy than the shock received from a typical mains-powered electric fence (powered by energizer units ranging from 18 to 40 joules).

If a cow moves beyond a virtual fence, sound cues (an increasing frequency of beeps) are used to encourage the cow to move back within the break. Cows receive ample time to correct their direction and as long as they make progress to return to the break, they won't receive a low-energy pulse. The precise time frame depends on the individual cow and their behaviour at the time, and is informed by

our research into millions of days of cow behaviour to ensure cows have ample time to respond. The moment a cow moves her head in the correct direction, even only slightly, the system detects this instantly and the sound cues ease (beeping interval reduces); if she starts to walk back towards the break, the cues stop. Only if the cow chooses to ignore the primary cues and they have reached their maximum threshold, will a low-energy pulse be applied.

Because the low-energy pulse is predictable and controllable for cows, no trained cow receives a pulse she was not expecting. A cow will never receive a low-energy pulse without first receiving, and ignoring, the primary sound or vibration cues.

Halter's virtual fencing and herding system allows cows to express their normal behaviour. **Once trained, a typical cow is guided around farm every day using only sound and vibration.** Cows are intelligent, so they adapt quickly to the Halter system. Once they associate the sound cue with crossing a virtual boundary, they quickly learn to correct their direction and avoid a low-energy pulse. The typical cow receives primary cues (sound and vibration) for only 0.1% of the day (1.6 minutes per day), meaning that for over 99% of the day, they receive no guidance cues.³

Halter's virtual fencing

Virtual fencing allows farmers to easily set and adjust virtual fences in real time. Farmers select a mob and then draw a 'break' (an area of pasture allocation) with their finger in the Halter app in under ten seconds. Using Halter, farmers know the precise amount of feed they are allocating to their cows (measured as "kg of dry matter per cow" or "per hectare"), unlike conventional pasture allocation which is imprecise.

Halter's virtual herding

Every farmer has a detailed bird's eye view of their farm in the Halter app. Virtual herding allows farmers to select a destination for their mobs to walk to, via the Halter app, and the cows are then guided there using Halter's cues via the collar. Farmers can easily schedule multiple mob destinations hours and days in advance. For example, our dairy customers get the peace of mind of each evening scheduling their milking mob to meet them at the dairy shed at a specific time in the morning, thus benefiting from the extra sleep by not having to fetch their cows at 5:00am.

Unconstrained rotational grazing

Combined, Halter's virtual fencing and virtual herding features allow farmers to grow and harvest more grass, unlocking unconstrained rotational grazing. With Halter, farmers allocate feed extremely precisely, they hit their grazing residuals consistently, and they graze to the optimum leaf stage. They split their herd into more mobs to optimise for nutritional and health requirements with significantly less labour from running more mobs.

Halter frees farmers from the labour-intensive management and maintenance of physical fences and from the drudgery of pushing or walking behind cows. Depending on the farm size, our customers save on average 20-40 hours per week. Farmers repurpose this time to higher value jobs like cow nutrition, welfare and pasture management. Halter helps increase herd productivity while reducing the need for electric fences, dogs and motorbikes.

³ Tasmanian Institute of Agriculture - 'Managing dairy cows with Halter virtual fencing technology', Dr Megan Verdon.

Halter is unlike other forms of virtual fencing technology

It must be emphasised that Halter is totally unlike other forms of virtual fencing technology, such as:

- Dog shock collars are primarily used for training and behaviour correction in dogs. Some shock collars may do perimeter fencing and often rely simply on a GPS or an installed wire perimeter. These devices are very simple and do not take into account animal behaviour. They do not monitor the animal's health. These devices may also allow the user to shock the animal at their discretion, leading to misuse. By contrast, Halter is not used for behavioural correction, and the user cannot control the cues or deliberately give an animal a shock.
- Electronic roadside 'virtual fencing'⁴ is used to deter wild animals from crossing roads. These are often post-mounted devices that emit loud sound or light to alert wild animals of oncoming traffic. Some of the significant differences with that technology are that it does not offer individually tailored cues to each animal, is only located near hazards, and it does not monitor any aspect of the animal.

6. Animal Welfare

Research supports Halter's efficacy and effectiveness

The latest scientific research, academic literature, observations by veterinarians and animal welfare experts, and abundant evidence from Halter customers and cows support our contention that virtual fencing produces no adverse animal welfare outcomes compared to traditional fencing. Halter's training methods and virtual fencing and herding systems are designed around a cow's ability to predict and control the cues it receives through the established method of associative learning. Halter's many benefits are delivered with no adverse animal welfare impact compared to conventional farming and stock handling.

New Zealand's *AgResearch Animal Ethics Committee* independently reviewed and approved research projects associated with the development of the product. We are passionate about eliminating practices that negatively impact an animal's freedom and promoting positive outcomes for every animal with Halter.

To independently verify Halter's extensive internal virtual fencing research, Halter engaged the Tasmanian Institute of Agriculture (TIA) to undertake further research on Halter's management of lactating dairy cows. This research was designed and led by Dr Megan Verdon, a leading researcher in virtual fencing technology. These studies are the most comprehensive independent research ever conducted into virtual fencing technology with pastoral dairy cows. TIA have published their findings in a peer-reviewed article in *The Journal of Dairy Science*, titled 'The effectiveness of a virtual fencing technology to allocate pasture and herd cows to the milking shed.'⁵

This research demonstrates how quickly cows are trained to understand Halter virtual fencing and herding systems, and how, once trained, cows are guided around the farm daily using only the primary cues of sound and vibration:

"This is the first technology marketed for the dual functions of virtual fencing and virtual herding. With the additional herding function of the present technology, one might expect the number of cues delivered to be higher than other technologies with only a virtual fencing functionality, but this wasn't the case. As an average over the 4-week management period,

⁴ For example, the solution provided by wildlifesafetysolutions.com.au/what-is-virtual-fencing installed in Eurobodalla Shire Council, NSW.

⁵ Megan Verdon, Ian Hunt, Richard Rawnsley, "The effectiveness of a virtual fencing technology to allocate pasture and herd cows to the milking shed", *Journal of Dairy Science*, 18 April 2024, <https://doi.org/10.3168/jds.2023-24537>

the cows in this research received 15.7 sound cues and 0.67 pulse cues per day with a pulse:sound cue ratio of 0.026 (i.e., 2.6 pulses per 100 sound)."

Once training was completed, the frequency of low-energy pulses decreased even further.

"Indeed, during the fourth week of management, 50% of cows received zero pulses/week while in the paddock and 35% received zero pulses/week during transitions. Of cows that received any pulse in week 4 of the management period, 50% received less than one per day."

Further published results from the TIA are due soon, which will draw on Halter and TIA's compilation of the largest database in the world on cow welfare and virtual fencing.

Safeguards in the Halter system

To protect animal welfare and minimise the cow's stress response, Halter follows a framework guided by the cognitive activation theory of stress (CATS). Two major factors govern an animal's stress response: predictability and controllability. The Halter guidance cues are predictable and controllable for cows.

- Predictability means the cow knows when the consistent development of primary cues (sound or vibration) will escalate to a secondary aversive cue (pulse). A cow must understand the cues and the system must work reliably and consistently. We monitor each cow's data to ensure that each cow understands the cues. On the very rare occasion there is a system error the system is designed to disable and allow the farmer to take manual control.
- Controllability means the cow can choose to change its direction to avoid the aversive cue, or can ignore the primary cues knowing the consequence of doing so. No trained cow receives a pulse she wasn't expecting. A cow only receives a pulse after first receiving, and choosing to ignore, repeated primary sound or vibration cues.

Furthermore, the collar's cues are based on the location **and the behaviour** of the animal, unlike a physical fence that contains animals based only on their location. For example, if a cow is spooked, the system detects her unease and disables until she is calm. If a cow fails to respond to the guidance cues, the system automatically disables and the collar does not reactivate until the cow has demonstrated it is able to move freely. Guidance cues can be disabled for an entire mob if a subset of the mob fails to respond to the guidance cues, for example, if a mob is blocked from moving by a fallen tree or shut gate.

An independent report commissioned by the United Kingdom government into virtual fencing in 2022 concluded:⁶

"Virtual fencing systems for livestock have several potential welfare advantages over conventional electric fencing. With appropriate provider safeguards and operator use, these include livestock nutrition, health and welfare benefits, and benefits to the land being grazed."

Our customers tell us that with Halter their cows act more naturally around the farm; they are calmer and slower-moving compared to before using Halter. Jana Hocken, a customer from Manawatu, New Zealand, said that with Halter:

⁶ Farm Animal Welfare Committee, "Opinion on the welfare implications of using virtual fencing systems to contain, move and monitor livestock", 10 October 2022, <https://www.gov.uk/government/publications/awc-opinion-on-the-welfare-implications-of-using-virtual-fencing-for-livestock/opinion-on-the-welfare-implications-of-using-virtual-fencing-systems-to-contain-move-and-monitor-livestock>

“Our cows have never been more calm and content and healthy - and we thought we were pretty good already.”

Halter follows a set of 14 standards and safeguards to ensure that animal welfare is protected when training, containing and guiding animals with virtual fencing technology.⁷ Halter takes a science-led approach to animal welfare by integrating these safeguards into the Halter product.

The farmer never has control over the cues delivered to the cows. The collar runs self-testing to detect if there are system failures, and if it detects an issue, it will not attempt to guide a cow. If an animal is distressed and running, the system recognises this and disables until the cow has calmed down; if an animal is sick, then the system alerts the farmer through the app. Halter reviews and monitors issues to ensure we are operating a system that improves the lives of cows.

The use of GPS information coupled with Halter’s in-depth understanding of cow behaviour means that the Halter system is totally different from ‘shock collar’ products which simply define a hard boundary line and cannot differentiate which direction animals are travelling in, or the behaviour of that animal. By contrast, Halter’s guidance cues are calculated using a range of behavioural data, not simply its location.

The collar is designed to fit comfortably, lightly and safely on each cow. The latest generation of collars in use on all of our customers’ herds weighs only 1420 grams, including the counterweight. It also features a breakpoint of approximately 180 kg of force that ensures that if the collar snags on vegetation or some other item, it will release the cow.

As part of rolling out the Halter system to a new farm, we install a radio tower and communication network to ensure the farm has sufficient communication coverage. This means that a farmer has 24/7 visibility of the location of their cows. The radio towers have battery backup capability in case of power failure.

Additionally, the collars have built-in safeguards so that in the case of communications or other failures, they hold the cows in their current virtual fence for a set time period, usually two hours. An alarm is sent to the farmer so that they can make decisions about what to do next. In an emergency, a farmer can choose to bypass the radio tower, if required, and switch off the virtual fencing and virtual herding to manage the cows manually.

Collectively, these safeguards built-in to the Halter system demonstrate how mature and well thought through this type of technology can be to improve animal welfare, even above what is considered to be today’s ‘best practice’ farming techniques. Halter encourages the design of any regulatory system that accompanies this Bill to require all virtual fencing and virtual herding providers to demonstrate that they meet a high standard by incorporating many or all of the safeguards mentioned in this section. Halter has made publicly available on our website the 14 animal welfare safeguards in our system, as well as detailed information about how our system operates.⁸ This protects not only the animals, but the hard-earned reputation of farmers and products like Halter.

Supporting natural animal behaviours

Halter supports cows to have natural behavioural interactions with humans and other animals. The Halter system operates without causing cows additional anxiety, fear, pain or distress.

⁷ Halter, “Animal Welfare Charter”, <https://www.halterhq.com/animal-welfare-charter/blog-post-title-three-b7zfw>

⁸ <https://www.halterhq.com/animal-welfare-charter/blog-post-title-three-b7zfw>

Halter can reduce non-environmental lameness in a way not possible with most conventional methods of stock handling. Many of our customers have reported that Halter's virtual fencing and herding technology reduces non-environmental lameness.

The conventional method of shifting or mustering animals involves pressuring mobs from behind, typically with people, dogs, or motorbikes, to move a mob forward. Excess pressure may be required for cows at the back of the mob to move them into the middle of the mob to trigger movement at the front of the mob. This pressure disrupts their natural hierarchy and can cause bunching. Cows often lift their heads and can't see where they are placing their feet. Factors associated with the movement of cows to the dairy shed account for 40 per cent of the variation in lameness prevalence⁹, and every 1 km/h increase in the average speed of movement increases the risk of lameness by five per cent.¹⁰

With Halter and virtual herding, cows move at their own pace in their natural hierarchy for every shift. Each cow gets unique guidance cues based on their behaviour, location and heading. By walking slowly, cows can put their heads down to observe where they are placing their feet. Larger mobs move slower than smaller ones, so the Halter system adapts according to mob size and location. The larger the mob, the more time the system allows the mob to shift through a gate to a new location.

Jana Hocken, a customer from Manawatu, New Zealand, has had Halter for nearly a year and achieved a 69% reduction in lameness compared to their three-season average and she added: "We thought we were pretty good and would see very little improvement here".

7. Aversion

There is widespread confusion about the distinction between something that is aversive and something that is harmful. Aversion is a core feature of biological safety. Warnings are aversive because they are designed to stop something bad happening. Our cues are aversive because they warn cows that if they keep moving forward, they will get a pulse. Cues that are too loud or confusing can also cause distress. Our sound and vibration cues are not too loud or confusing. The sound cue is quiet enough so as to only guide the cow paired with that collar and not surrounding cows.

The electric pulses our system delivers are not designed to be aversive or to warn, but rather to deter. They use the least amount of energy that will dissuade each cow from ignoring the sound cues. If the pulse is set any lower, they will ignore it.

We have trained more than 200,000 animals, and we have not detected behavioural or physiological evidence of pain or distress caused by either our aversive cues or the energy of the electric pulse.

8. Health benefits of Halter

Halter's Health monitoring product

The Halter system provides 24/7 monitoring of core behavioural characteristics of each cow, specifically each cow's grazing, rumination, resting, movement, and location. The Halter app displays each cow's real-time and historical data across these behaviours. Halter compares each cow's actual behaviour against her historic or 'usual' behaviour and that of her mob. Every Halter farmer has access to this data in real-time, giving them deeper insight into the behaviour of each cow and mob.

⁹ Chesterton, "Environmental and behavioural factors affecting the prevalence of foot lameness in New Zealand dairy herds—A case-control study", *New Zealand Vet Journal*, 1989.

¹⁰ Bran, "Cow- and herd-level factors associated with lameness in small-scale grazing dairy herds in Brazil", *Preventative Veterinary Medicine*, 2018, <https://www.sciencedirect.com/science/article/abs/pii/S016758771730586X?via%3Dihub>

Farmers can also receive health alerts of cows showing early signs of poor health. This helps farmers be proactive in managing and maintaining animal health. Many Halter farmers create a 'resting' or 'sick' mob for close monitoring and treatment in response to a health alert.

The Halter collar is solar-powered, providing a continuous energy source for data measurement. This allows the Halter collar to monitor significantly more behavioural data, more often, than other wearables that use a battery energy source (as these devices must be energy-resourceful with measuring data).

Halter's Reproduction management product

The Halter system detects and compares each cow's key reproductive statistics. In our recent season, farmers using Halter had, on average, a 2.5% higher "6-week in-calf rate" than the industry average in New Zealand. The "six-week in-calf rate" (6WICR) measures the proportion of cows in a herd that have conceived within the first six weeks of the mating season.

Due to Halter having such vast historical data on cow reproduction, Halter also provides farmers with the optimal window to inseminate their cows, to increase the likelihood of cows getting inseminated. A higher 6WICR and optimal window means we help reduce the number of attempts to get cows pregnant - which can be an intrusive procedure. It also means less physical testing on the animals by a veterinarian to determine pregnancy. This combines for an improved animal welfare experience for the cows during the mating season.

9. Community safety benefits from virtual fencing and virtual herding

Benefits of virtual herding during a fire or flood

Virtual herding of cows can occur without the farmer being present, making it extremely valuable if farmers need to move animals in emergency situations such as fires or floods, when farmers might be physically prevented from reaching their animals, or doing so might place the farmer in harm's way.

The 2019/2020 Australian bushfires were unprecedented in terms of total area burned and impact on livestock and wildlife populations. In NSW, more than 5.3 million hectares were affected. Across NSW, Victoria and South Australia, tragically, an estimated 56,000 livestock were killed¹¹. And in 2022, the Lismore floods swept away hundreds of cattle.

Moving livestock before and during floods and bushfires can be very risky for a farmer, especially if a farmer does not know exactly where their animals are located or if their animals' exit path is blocked by physical fencing. Physical fences can sometimes trap animals caught in fires or floods. Halter's virtual herding provides a superior tool for farmers to do the best for their animals' safety during emergencies.

Many Halter customers talk about the mental health benefits for them from knowing that if a situation occurs in the middle of the night (e.g. unexpected heavy rain rolls in), they can immediately virtually herd their cows to higher ground, from their bed, and get back to sleep.

¹¹ Auplish, A., Ingram, L., Green, A., Plain, K., Cowled, B., & Smith, M. (2023). Impact of bushfires on Australian livestock health, welfare and carcass quality. *Preventive Veterinary Medicine*, 221, 106054. <https://doi.org/10.1016/j.prevetmed.2023.106054>

Benefits of visibility of animal locations during a fire or flood

The Halter system frequently updates the location of each animal, providing critical location data every 3 to 5 minutes. This almost real-time tracking is especially vital during rapidly evolving natural disasters. It equips farmers with the knowledge of their animals' precise locations so that a farmer can identify those animals at risk, and virtually herd animals instantly, remotely, and safely even when farmers are unable to get to the animals themselves. In some instances, farmers may virtually herd animals away from danger before the event, or virtually fence animals in a safe location.

Paul Lambert, a dairy farmer in Tasmania, former winner of the *Tasmanian Dairy Business of the Year*, and Halter customer for 1.5 years, said:

“One of the significant reasons we put Halter on our farm was for the safety of our animals and our people. From a farm that hadn't experienced a flood in over 40 years to experiencing two catastrophic floods in ten years, Halter can remotely move our animals to safety at any time of day without risking injury to people. Having lost animals to drowning, we know with Halter that the outcome [to recent flooding] could have been very different for our animals.”

Allowing animal freedom

During a fire or flood, animals will naturally run to safety. Unfortunately, with physical fences, animals may be obstructed from getting to safety and may be trapped within a high-risk area. Virtual fencing with the Halter system allows animals to run through virtual fencing to safety or allows farmers to 'drop' the virtual fences within minutes so that animals can move to safety. This allows animals to move away from dangers like fire or flooding. Once animals have calmed down, the farmer can either virtually herd the animals to safety or virtually fence them elsewhere.

Reestablishment of fencing and grazing post-disaster

Natural disasters burn physical fences in fires, or sweep them away in floods. Too often farmers then face significant cost, time and delays to replace damaged physical fencing after natural disasters.

With virtual fencing, farmers and communities in post-disaster recovery mode can get back to operating faster by being less constrained by physical fencing. They can reestablish virtual boundaries for animals quickly, and then keep animals away from dangerous or sensitive areas. By facilitating managed grazing, virtual fencing can contribute to better soil and water quality, which is useful for animal recovery. For example keeping animals out of standing water, or away from regenerating vegetation. This leads to healthier animals and farm environments.

Preventing fire spread by targeted grazing

Virtual fencing could be used to manage animals grazing on rangelands, which has the potential to create fuel breaks. These breaks are strategic gaps in vegetation that can slow or stop the spread of wildfires. Additionally, by controlling where animals graze using virtual fencing, it's possible to reduce the amount of dry vegetation that serves as fuel for fires. This targeted grazing can be particularly effective in areas that are difficult to reach or that are cost-prohibitive with traditional fencing methods or fire prevention techniques.

Health and safety benefits of virtual herding

Quad-bikes are one of the major causes of injuries on farms in NSW. Since 2001, there have been more than 56 deaths in NSW from quad-bike incidents.¹² Many of these accidents occur when farmers need to carry out routine duties in adverse weather or ground conditions, such as in poor visibility or at night time.

Virtual fencing and herding significantly reduces the usage of quad bikes, in turn leading to less stress, fewer on-farm injuries and lower fuel costs. Troy Ainslie, a dairy farmer and customer in Tasmania said that with Halter his fuel usage is 85 percent lower because he is not driving to fetch and move cows around the farm or set up temporary fencing. Improving farmer health and safety and reducing injuries is a major benefit of Halter, especially for our corporate farming groups who manage dozens of farms with hundreds of staff.

10. Environmental benefits from virtual fencing and virtual herding

Reducing greenhouse gas emissions for dairy and beef farmers is challenging. Halter enables farmers to grow and harvest more grass, unlocking more pasture-based systems and enabling more efficient, sustainable, lower-input operations.

Environmental benefits from efficiency and productivity improvements

Halter unlocks more dynamic, unconstrained rotational grazing with virtual fencing, virtual herding and our comprehensive pasture management capability. Our customers increase pasture utilisation by 5-10 percent.

More efficient, pasture-based operations are fundamentally better for the environment. This gives farmers optionality around reducing inputs like nitrogen, fertilisers, and bought-in feed that have a higher carbon footprint than pasture. Additionally, some farmers have the option of retiring some marginal land to bush regeneration without loss of income due to the increased output of their remaining land.

For many customers, especially beef farmers, Halter is enabling a shift from traditional set stocking to rotational grazing. These farms had previously been constrained by the cost and hassle of physical fencing and manually shifting cattle. With Halter, they are increasing pasture utilisation while also significantly mitigating the risks of overgrazing and soil degradation. As a result, there is improved soil health, pasture quality, and increased carbon sequestration, all contributing to more sustainable agricultural ecosystems.

With Halter's heat detection, farmers increase their rate of conception, lower their empty rates and can carry fewer replacement stock (which have a high carbon footprint) for the same or increased level of production.

Farmers are significantly reducing their fuel consumption for quad-bikes and motorbikes by using virtual fencing and herding.

Furthermore, one way to reduce emissions is through strictly controlling cattle diets. Research is showing that specific feedstocks, including methane and nitrification inhibitors, could reduce a farm's emissions. Halter's ability to guide cows at a granular level could unlock some of these methods in the

¹² AFDJ, 'ATV farm vehicle fatalities come under scrutiny of SafeWork NSW', 14 March 2024, <https://afdj.com.au/atv-farm-vehicle-fatalities-come-under-scrutiny-of-safework-nsw/>

future by allowing cows to feed on specific feedstocks for the required amount of time before moving them on.

Land management benefits

Virtual fencing and herding enable farmers to precisely control grazing behaviour, allowing them to limit the time livestock spend on slopes and in sensitive areas. This helps to decrease erosion and maintain soil structure and fertility, which reduces the need for tilling, reseeding, and fertiliser. Farmers can quickly adapt to changes in weather conditions to decrease the risk of pugging and soil damage when the soil is wet. Farmers can reduce overgrazing by accurately allocating pasture to meet feed demand. All of these practices promote healthier pastures which support more resilient ecosystems with healthier subterranean biomes.

Freshwater quality benefits

Halter's virtual fencing is vastly superior to physical fencing for improving freshwater quality. It allows cows closer to the waterways when they are dry and flat and keeps them further away when they are wet and sloping. There's no additional cost and labour required to set or adjust a virtual fence - farmers can simply set it in a matter of seconds and then adjust it immediately as weather conditions change.

Halter also has the ability to produce data-rich audit reports (at the authorisation of that customer) to satisfy both the government and auditors that farmers are compliant with keeping stock out of waterways by providing accurate reporting based on 24/7 data, which is superior and less costly than manual spot checks. This is all achieved while reducing the administrative burden on farmers with reports that are available at the touch of a button.

Ecological benefits

Removing some physical fences reduces fence-induced injury while lowering a farm's environmental impact. There are ecological benefits with greater protection of riparian zones, preservation of wildlife habitat, and avoidance of wildlife injury. Unlike traditional fences, virtual fences do not pose a barrier for wildlife. By allowing wild animals to move freely, virtual fencing reduces the risk of injury or blocking migratory paths for local species.

11. Conclusion

Halter supports the Virtual Stock Fencing Bill's intention to make high-quality virtual fencing and its benefits available to NSW farmers and their animals. Halter strongly recommends the Bill's definition of virtual fencing should expand to include virtual herding, given the resulting significant productivity, animal welfare, community safety and environmental benefits.

Halter is positioned to help farmers in NSW grow and harvest more grass, leading to increased milk production for dairy farmers and increased live weight gain for beef producers and graziers. Halter will unlock these productivity benefits while also allowing farmers to run more efficient operations with less manual labour from erecting temporary fences and shifting stock.

Importantly, Halter will enable farmers to protect the welfare of their animals through continuous monitoring of their location and behaviour. The Halter system also delivers significant environmental benefits for the industry.

As the category leader in this technology, Halter deeply cares about animal welfare and seeks to ensure virtual fencing and virtual herding products operate safely. With the introduction of this Bill, NSW has an opportunity to ensure that only virtual fencing and virtual herding systems incorporating robust animal welfare safeguards are introduced.

People who see a mob of cows virtually herded with Halter for the first time without dogs or quad bikes say it looks like magic. We invite you to visit a customer farm in Tasmania and see our technology in action, and will gladly arrange this. It is vastly easier to understand how Halter works by seeing it in person and meeting a customer to learn about how Halter is transforming how they farm. If you are unable to visit in-person, we can introduce you to a customer to speak about their experience using Halter.

Furthermore, Halter representatives are available to attend a public hearing day to answer MPs' questions and provide any additional information that is useful when considering the Bill.

Thank you for reading our submission.

Yours sincerely,

Craig Piggott
Chief Executive