

**Submission  
No 42**

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

**Organisation:** Gallagher eShepherd Pty Ltd

**Date Received:** 16 May 2024

Attn: Mr Roy Butler, MP



Barwon Electorate office  
Suite 1 Ground Floor  
60 Maitland Street  
Narrabri NSW 2390

**Re: Committee into the inquiry on Prevention of Cruelty to Animals Amendment (Virtual Stock Fencing) Bill 2024**

Dear Mr Butler,

Thank you for the opportunity to offer a submission to the inquiry on Prevention of Cruelty to Animals Amendment (Virtual Stock Fencing) Bill 2024.

Gallagher eShepherd Pty Ltd is a Melbourne based company, now selling eShepherd™ on a global scale. We have identified an exceptional market in New South Wales and have received interest from many beef producers who reside there.

I hope the following submission assists in the committee's decision regarding the Bill. Should you require any further details, or should you wish to discuss how we ensure we offer the best possible virtual fencing solution, please do not hesitate to contact myself or the eShepherd team.

Regards,



Dr Jarrod Lees  
Head of Animal Research & Trials – eShepherd



## **Gallagher eShepherd submission to the Inquiry into the Virtual Fencing Bill – May 2024**

eShepherd™ is the virtual fencing product developed and distributed by Gallagher eShepherd Pty Ltd, Victoria, Australia (ABN 67 169 900 887), a subsidiary of Gallagher Group Ltd, Hamilton, New Zealand. To date, eShepherd™ has focussed on the application of virtual fencing of beef cattle, a technology initially developed and tested by the CSIRO.

This document aims to respond to the Terms of Reference outlined by the NSW Parliament, focussing on the animal welfare, biosecurity, and community safety of permitting virtual fencing; the benefits of the technology. Furthermore, it will briefly outline the work that eShepherd has done to ensure there are no unintended consequences of the technology on animal welfare and management. Last, it will identify how we believe virtual fencing will change the face of beef production. Our aim as a technology is to provide an aid to beef producers that will enable them to be better custodians of the land they farm and have improved optics on the animals under their care.

Any reference to virtual fencing pertains to eShepherd™, unless otherwise stated. Any reference to an animal refers to a beef animal (bovine).

eShepherd™ utilises GPS technology to identify each animals' location in relation to the virtual fence. It incorporates hardware that allows a high degree of accuracy ( $\pm 1$  m) which allows for precision grazing. Communication with the neckbands is achieved via the mobile cellular network or LoRaWAN (long range radio), allowing immediate and remote management of cattle and virtual fences. The neckbands currently talk to the network every 10 minutes, relaying information from the animal and receiving communications from the operator. If communication is lost for over 24 hours, the neckbands cease to virtually fence animals, ensuring they are not held in the same virtual paddock with a depleted feed source.

eShepherd™ utilises an audio cue to inform the animal that they have reached the virtual fence. The audio cue provides the animal with a consistent period of time to positively respond (i.e. move away from the virtual fence), at which point the audio cue ceases. Should the animal ignore the audio cue, an aversive pulse stimulus will be administered (0.2 Joules; solar fence energiser = 1 to 4 Joules, perimeter fence energiser (plugged into 240V) = 28 to 120 Joules). eShepherd™ has realised excellent animal containment (>99%) with a high degree of welfare through its consistency and predictability making it easy for cattle to navigate. This predictability also ensures that cattle are able to quickly learn how to negotiate virtual fencing. We instruct our customers in the best possible way to train cattle and find that training is more than complete after a two week period of consistent exposure to virtual fencing.

### **Animal welfare considerations**

The animal welfare considerations are well informed in the Animal Welfare Task Groups literature review conducted in 2022/23<sup>1</sup>, of which Gallagher eShepherd Pty Ltd contributed to. eShepherd™ ensures the welfare of animals is maintained through various operational safeguards. The safeguards in place ensure that an animal is unable to receive an electrical stimulus until after they have received an audio cue and failed to respond appropriately.

Should an animal enter a panicked state, such as when chased by a predator, the neckband suspends virtual fencing, allowing that animal to cross over the virtual fence without receiving stimuli. This ensures that the animal is not pulsed when unable to make a clear decision. When panic has subsided, the virtual fence is reinstated, and the animal returns to the virtual paddock alongside its herd mates.

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<sup>1</sup> Fisher, A., Cornish, A., 2023. Independent scientific literature review on animal welfare considerations for virtual fencing: Report to Department of Agriculture, Fisheries and Forestry – prepared December 2022, updated November 2023. Available at: <https://www.agriculture.gov.au/sites/default/files/documents/Independent%20scientific%20literature%20review%20on%20animal%20welfare%20considerations%20for%20virtual%20fencing.pdf>

Our extensive customer onboarding process includes phone and video conferencing to train them how to use the online system, how to build their virtual paddocks, and how to fit the neckbands. We are currently increasing the number of instructional videos that customers can utilise to learn and revisit, and our Customer Success team is always on hand to answer questions and field concerns or issues. Our aim is to ensure our customers are given the best possible chance of success, which in turn ensures animal welfare and productivity are success assured.

eShepherd™ also includes a number of safety features built into the web application. When drawing virtual paddocks, the operator is notified if the new virtual paddock does not include a water source, or the design is too complex for animals to easily navigate. There are a number of internal systems in place to notify customers of issues that may impact their animals, such as a base station going offline. Lastly, Gallagher eShepherd Pty Ltd have overall control of the system and have the capacity to disable virtual fencing where a customer cannot, due to unforeseen circumstances.

Animal health is another area where eShepherd™ is able to provide customers with valuable information about the state of their animals. With every animal wearing a neckband, there is the capacity to individually determine whether an animal is sick or injured, calving, or in heat (oestrous). At a herd level it is possible to determine when cattle are ready for more feed, under stress or pressure, or without water. Gallagher eShepherd Pty Ltd are working hard in this space to achieve a product that will aid farmers in offering the best possible care for their animals.

### **Benefits of virtual fencing**

The benefits of virtual fencing were well covered in the Member for Orange's address. However, we have compiled several benefits that have been evident across our markets in parts of Australia, New Zealand, the United States of America, and Europe.

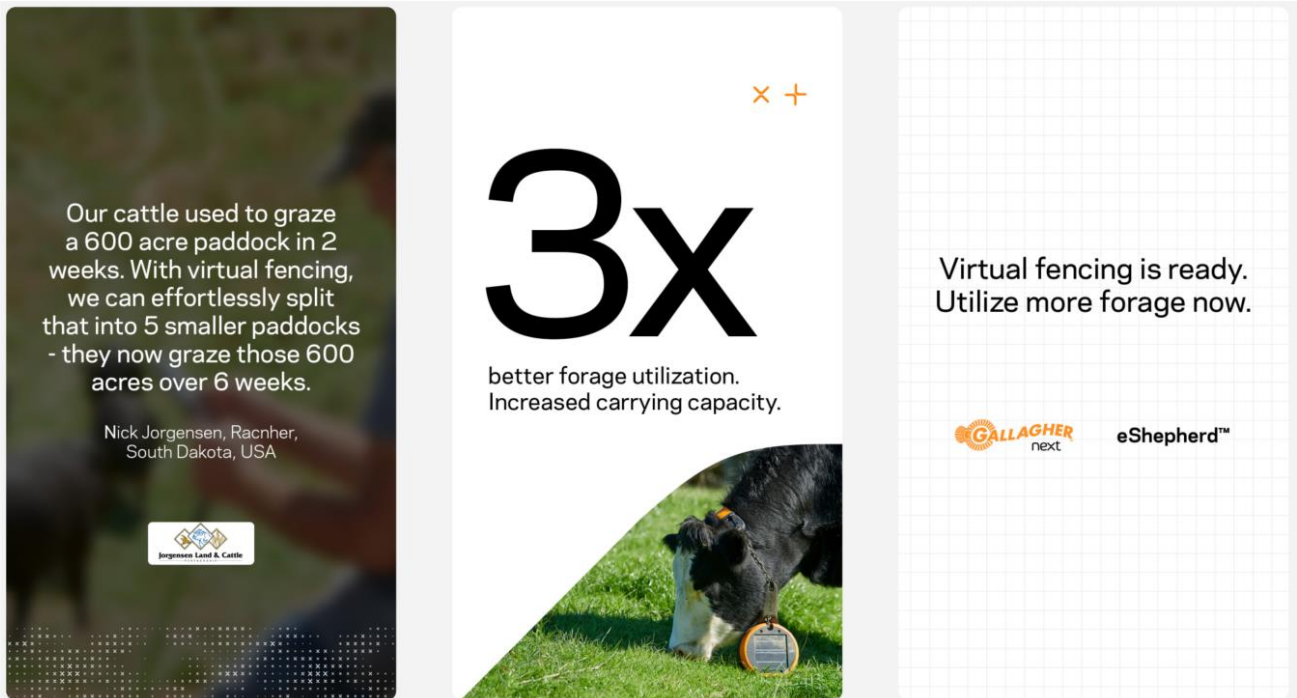
Firstly, the benefit of a vastly reduced cost of containment. Virtual fencing reduces the cost of production by providing an immediately adaptable fencing solution for rotational and strip grazing situations. By removing the need for additional internal physical fences (we still heavily promote the need for perimeter fencing), we are saving customers significant amounts of money in fence costs. For example, eShepherd™ has saved a customer in New Zealand approximately NZ\$9.8 million in fencing with the introduction of waterways regulations.

Where farmers are utilising mobile fencing solutions (i.e. electric fencing), there is the added benefit of a reduction in labour costs. We have noted in all our markets that labour is becoming increasingly difficult to secure, and skilled workers are exceedingly rare. Our customers that have a high labour input have been able to reduce their labour inputs considerably, thus improving their cost of production. Additionally, it is allowing beef producers to spend more time working on their business.

Feed utilisation is another area that virtual fencing is able to support. A customer in South Dakota, USA, has been able to vastly increase his feed utilisation through the use of eShepherd™ (Figure 1). His use of smaller paddocks means he grazes more intensely, but for less time, leaving his pastures with fewer grazing days per year. It also ensures the cattle eat all of the available species and not just selectively graze down what they want to eat. Another customer utilises eShepherd™ to graze crop stubble in Western Australia. The use of virtual fencing has meant that he is able to utilise all of the stubble in his paddocks, without having additional infrastructure that impedes the movement of machinery during subsequent planting. This also allows him to make the most of a resource that would otherwise be wasted and turn it into high quality beef destined for the domestic and international markets.

The individual management of extensively produced cattle has been a challenge only undertaken by seed stock producers to date. However, virtual fencing has the capacity to provide farmers of

commercial herds with an on-animal data collection device. eShepherd™ has sensors on board that have the capacity to determine how efficient each animal is at utilising pasture, and when coupled with data on weight gain, can tell them how efficiently that animal converts grass to beef. This additional knowledge leads to targeted breeding decisions that improve the efficiency of their herd, resulting in more kilograms of beef produced from the same amount of grass, providing positive outcomes for methane emissions.



**Figure 1. Marketing material outlining improvements to feed utilisation (May 2024)  
Commercialisation of virtual fencing**

The commercialisation of virtual fencing in New South Wales is a positive step forward for the NSW agricultural industries. However, we firmly believe that there needs to be sound legislation around its use and implementation to ensure it is not misused or lead to poor animal welfare outcomes. The benefits of eShepherd™ are immense, and we will continue to develop this technology into the future to become another tool that farmers can use to ensure they have happy, healthy and productive animals.

