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Te Whare Māngai o Aotearoa

Petitions Committee

Komiti Whiriwhiri Take Petihana

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Petition of Rhodes Farming Partnership: Undertake a parliamentary inquiry into virtual fencing

Presented to the House of Representatives
by Greg O'Connor, Chairperson

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Petition of Rhodes Farming Partnership

Recommendation

The Petitions Committee has considered the petition of Rhodes Farming Partnership—Undertake a parliamentary inquiry into virtual fencing—and recommends to the Government that it include guidance on the use of virtual fencing technologies in the update of the Code of Welfare: Dairy Cattle.

Request for an inquiry into virtual fencing for cattle

The petition was presented to the House on 10 April 2024. It requests:

That the House of Representatives undertakes an inquiry into virtual fencing to review which components of the currently available virtual fencing technology for dairy cows are or are not acceptable to the public, milk consumers, and export markets for milk products.

We received written evidence from the petitioner and the following organisations. We heard from the petitioner and all but the last of the following organisations:

- the Ministry for Primary Industries | Manatū Ahu Matua
- the New Zealand Veterinary Association | Te Pae Kīrehe
- the Royal New Zealand Society for the Prevention of Cruelty to Animals
- Halter
- Federated Farmers of New Zealand.

The petitioner, Rhodes Farming Partnership, is a Fonterra dairy supplier and owns 120 cows in Golden Bay. It calls for greater regulation of the emerging technology of virtual cattle fencing to avoid negative effects on animal welfare. The petitioner sees some risks with virtual fencing and believes the claimed benefits may be “too good to be true”.

Our consideration focused on dairy cattle as that was the subject of the petition. We acknowledge that virtual fencing is also used for beef cattle and sheep, for which the implications may be different.

Current uses of virtual fencing in dairy cattle

Virtual fencing involves an animal wearing a collar that administers a stimulus to guide the animal to where the owner would like it to be. In dairy farming, collars use GPS coordinates to establish boundaries without the need for a traditional physical boundary.

Halter is a New Zealand technology company founded in the Waikato in 2016. It supplies smart collar systems for dairy and beef cows in New Zealand, Australia, and the United States. Halter collars use auditory, vibration, and electric shock cues to control cows’ movement. Cows must be trained to understand the cues. Then a farmer can use a mobile app to track the cows’ location and move the virtual boundaries of their enclosure. The collars also monitor each cow’s health, so the farmer can identify unwell cows and intervene at an early stage.

Monitoring

Several of the organisations we heard from spoke about the potential health benefits virtual fencing collars can bring. Cows can be monitored through the collars for grazing, rumination, resting, movement, and location. Halter mentioned that its system provides 24/7 monitoring, which can be accessed through an app on a farmer's phone. There is a comparison of real-time and past behaviour to flag any significant changes. Halter gave the example that, through its app, the farmer receives alerts for early signs of ill health and can take action. Lameness, oestrus, mastitis, and whether a cow is in calf can be identified through monitoring.

The petitioner acknowledged that there are some benefits from monitoring cows' movement and behaviour through their collars. However, it believes that traditional methods are often more effective for identifying health issues and that technology cannot be a replacement for traditional stockmanship skills. It sees the monitoring benefits as a way companies justify the use of movement control and containment functions in virtual fencing.

Pasture management

The petitioner explained that virtual fencing tends to be advertised as a way to improve grass production because it gives farmers greater control over where cows graze. In cattle farming, herds are routinely moved to provide optimal grass growth. Rumination monitoring can help calculate when cows need to be moved.

The petitioner told us it had heard of a farmer monitoring the location of their herd through a rainy night. On the app, the farmer could see their cows as GPS dots huddled together to keep warm in the night. To prevent damage to the pasture the farmer used the virtual collars to move the cows to a different part of the paddock several times in the night. Rhodes Farming Partnership noted that this would help to protect the soil from damage or pugging, but prevented the cows behaving naturally in the rain. Halter's view was that moving cows to fresh grass throughout a wet night provides a new food source and a better place for them to stand, as well as protecting pasture.

The Ministry for Primary Industries | Manatū Ahu Matua (MPI) indicated that the use of virtual fencing means that pasture reallocation can happen in real time and is a lot less labour intensive for farmers. Halter argued strongly that its virtual fencing solution improved rotational grazing—it said that its customers “increase pasture utilisation by 5–10 percent”. It added that more efficient grazing is better for the environment because there will be less need for nitrogen, fertilisers, or bought-in feed. Federated Farmers agreed that virtual fencing has the potential to improve profitability through less feed wastage and greater pasture utilisation.

We asked about whether electric collars were, or could be, used for moderating behaviour in milking sheds, such as to prevent kicking. Halter told us that its product automatically disables when the cow comes within 50 to 80 metres of the milking shed. It believes that it is not appropriate to use its product in situations where cows are in forced close proximity to each other, such as in milking sheds. We think virtual fencing products could be dangerous in environments like these. We are concerned that other virtual fencing providers may introduce collars which are not automatically disabled within milking sheds, which could be potentially harmful to cow welfare.

Marketing and contracts

The petitioner expressed its concerns about the way virtual fencing is being marketed. Rhodes Farming Partnership claims that the stories told by farmers used for marketing purposes are “too good to be true”. We therefore asked Halter how it markets its system to potential customers. Halter informed us it visits farmers and talks about their specific needs and whether virtual fencing might be an option for them. If the farmer decides to purchase the Halter solution, the standard contract tends to be for two years. Halter explained that farmers have the option to discuss ending their contract earlier.

Impacts on cow welfare

Welfare concerns

The petitioner is concerned that virtual fencing will not work for all animals and that cows which refuse to, or cannot, adapt to the cues could be harmed. MPI noted studies showing that there are large differences in the speed at which individual cows learn to respond to cues, so there could be a welfare impact on the slower learners. The Australian Government conducted research that found that all animals learnt to stay away from visible electric fencing, but not all cows learnt virtual fencing commands. Therefore, the study concluded, some cows should be herded using alternative methods.

Halter explained that its system used electric shocks mostly during training. The cows learn that by following cues they can avoid the electric shock. Halter also told us that the company offers increased support to farmers during the set-up and training period. Its system also has safeguards for non-adapting animals—if a cow is not responding to cues the system will automatically disable and only reactivate when safeguard criteria are met. Halter’s system has fixed cues that cannot be changed by the farmer.

Halter cows are trained to respond to auditory and vibration cues administered through their collars. Once a cow is trained electric shocks are not needed, and training typically takes one week. Halter said that the cues are not loud or confusing, and only loud enough for the individual cow to hear. The vibration is similar to that of a mobile phone. The electric shocks used in Halter collars are 100 times weaker than that of an electric fence.

The SPCA and the NZVA acknowledged that Halter had set up a system that was welfare conscious and had built-in safeguards. However, they both cautioned that not all companies selling this technology may be as ethical, and that potential welfare implications needed to be regulated for.

Submitters referred to studies of between three to five months in length that have found that virtual fencing had had no impact on cows’ activity or stress response following an electric pulse. In its written submission, MPI provided a list of ways farmers and virtual fencing manufacturers can minimise effects on animal welfare.

Potential welfare improvements

Halter, Federated Farmers, and the NZVA cited monitoring cows as a big potential improvement to cattle welfare. As we mentioned above, farmers may be able to notice

certain ailments and intervene sooner with collar monitoring. Halter noted that the average farmer looks after 200 or more cows so it can be difficult to spot illness.

Halter added that it has found that lameness has been less prevalent with the use of virtual fencing collars, as cows are not being pushed from behind using dogs or quadbikes. This also means that cows are exposed to fewer stressful situations. However, the SPCA cautioned that the effect of electric shocks on cows should also be considered as a stress response. Federated Farmers added that cows that are largely herded by virtual fencing no longer associate people and vehicles with food, meaning that farmers can walk more safely among their herd.

Comparison to electric fencing

We heard about the pros and cons of traditional electric fencing. The petitioner spoke about how cows benefit from visual cues. It told us that in its experience running a dairy farm, when cows first enter a new paddock they spend time exploring and establishing where the boundaries are, then they settle down. With virtual fencing, the petitioner argued that they are not able to do this. One of its farmers has noticed cows using their whiskers to sense the power on electric fences and thus know to stay away from them.

The NZVA spoke of welfare risks posed by electric fences. It is possible for cows to become tangled in a fence, which does not stop delivering shocks unless the current is broken. Remote monitoring of these wires is not possible so farmers might not know for a long time if the fence is broken or an animal is tangled up in it.

Relevant legislation

Legislation regarding animal welfare

MPI is the regulatory body for animal welfare. It is responsible for policy and legislation to uphold good standards of animal welfare in New Zealand. The Animal Welfare Act 1999 places a duty on people who are responsible for animals to ensure that the animal's physical health and behavioural needs are met. Codes of welfare set out how individuals can meet their obligations under the Act. The codes provide details of minimum standards and make recommendations for best practices. An individual charged with an offense under the Act can defend themselves if they can show they have met the minimum standards. There are also regulations, like the Animal Welfare (Care and Procedures) Regulations 2018, which are directly enforceable.

MPI and the SPCA are jointly responsible for enforcement of the Act. The portfolio is split so MPI primarily covers production animals and the SPCA is responsible for companion and wild animals. Both organisations investigate alleged animal neglect and cruelty.

Legislation relating to virtual fencing

MPI explained that there are no regulations specific to virtual fencing, but that any technology interacting with animals must meet the Animal Welfare Act 1999 requirements and the minimum standards set out in the relevant animal code of welfare.

Regulation 47 (Collars and Tethers) of the Animal Welfare (Care and Procedures) Regulations 2018 sets out what collars must not do. It states that an owner, or person in

charge, of an animal must ensure a collar does not cause a cut, skin abrasion, or swelling. A collar must also not prevent an animal from breathing normally, panting, or drinking.

Code of Welfare: Dairy Cattle

The current Code of Welfare: Dairy Cattle was published in 2018. It requires that cows are handled in a way to minimise risk of pain, injury, or distress, and for the minimum necessary force to be used in moving stock. Halter noted that while regulations were introduced in 2018, the last time the code was reviewed was in 2008.

MPI explained that the code is currently under review. The draft code was open for public consultation in 2022. It proposed adding new minimum standards regarding the use of new technologies, such as “dairy cattle that do not adapt to new technologies must be provided with alternative management”. The petitioner told us that it and other farmers were asked about virtual fencing in a questionnaire, although it viewed the questionnaire as biased. Halter also mentioned that it had contributed to the consultation process.

Arguments for greater regulation

The NZVA refers to the lack of secondary legislation related to virtual fencing as a “regulatory gap”. It is concerned that end users of virtual fencing technologies may not be able to determine the safety, efficacy, or welfare risks. It acknowledges that some companies may be very ethical and offer a great solution, but without minimum standards there is no guarantee that that is always the case. To reduce welfare risks, the NZVA strongly advocates for oversight of the industry to ensure all products meet minimum safety and manufacturing requirements.

Similarly, the SPCA would like to see more welfare safeguards in this area. It provided recommendations about how the Code of Welfare could specify requirements for virtual fencing for cattle. It would like to see the introduction of:

- maximum limits on shock intensity and duration
- third-party monitoring
- behaviour-based algorithms to enable associative learning
- methods to ensure that virtual boundaries include critical resources like water
- management requirements, such as a minimum age for operating virtual fencing and safeguards against misuse.

Adoption of virtual fencing internationally

MPI brought to our attention that countries have taken differing approaches to virtual fencing. In the United Kingdom, United States, and several European countries, the technology is commercially available. However, some EU-member countries, including Denmark and Sweden, have banned the use of virtual fencing. Other member states are considering restricting its use. Similarly, in Australia, some states have prohibited the commercial use of virtual fencing for livestock while others allow it. The New South Wales Parliament has undertaken an inquiry into a bill that proposes to permit virtual fencing devices.¹

¹ The inquiry report can be read on the [Parliament of New South Wales website](#).

Calls for further research

While there have been several studies into virtual fencing and its impacts on cattle behaviour, the petitioner believes they do not go far enough to understand implications for animal welfare. MPI noted that recent studies, lasting between three and five months, found no impact on the stress response in cattle following an electric pulse from a virtual fencing collar. We discussed the research of the Tasmanian Institute of Agriculture and how independent it could be while being funded by Halter. Halter assured us that it had no influence over the research, which found environmental, social, and economic benefits in virtual grazing solutions.

The petitioner is calling for an inquiry into the use of virtual fencing. As part of this it is asking for research into public opinion on the use of virtual fencing. MPI, the SPCA, and the NZVA also called for further research. They argued that there are no longitudinal studies, which are necessary to understand long-term welfare impacts. MPI would like to see long-term studies with larger group sizes to understand the association between the audio and electric stimuli. The SPCA and the NZVA see longitudinal research as vital for making informed decisions about the widespread adoption of the technology across New Zealand. The SPCA added that studies each use different kinds of virtual fencing collars, so their results cannot be extrapolated to all makes of collars. There is a wide range of products on the market, with variations in weight and design.

Our response to the petition

We would like to thank the petitioner for bringing this to our attention. The dairy industry is an important part of New Zealand's economy and culture. It is important that it is both ethical and perceived to be ethical in our export markets. We are sympathetic to arguments calling for further research into this developing technology. In particular, we think longitudinal studies on the impacts of virtual fencing on animal behaviour are important. We encourage the industry to pursue this.

The virtual fencing company we spoke to, Halter, was able to demonstrate its efforts to ensure its collars do not adversely affect cow welfare and wellbeing. However, we agree with submitters who expressed concerns that not all companies may put the same effort into ensuring their products have safeguards. We were concerned to hear that the NZVA believes there is a "regulatory gap" and would like to see greater guidance on technology, such as virtual fencing collars, that comes into direct contact with animals. We recommend that the Government include guidance on the use of virtual fencing technologies for the update to the Code of Welfare: Dairy Cattle. This should also address use of the technology in proximity to milking sheds.

Appendix

Committee procedure

The petition was referred to us on 10 April 2024. We met between 23 May 2024 and 10 April 2025 to consider it. We received written submissions from the following and heard oral evidence from all organisations except Federated Farmers New Zealand:

- the petitioner
- Ministry for Primary Industries
- New Zealand Veterinary Association
- Royal New Zealand Society for the Prevention of Cruelty to Animals
- Federated Farmers of New Zealand
- Halter.

Committee members

Greg O'Connor (Chairperson)

Carl Bates (to 29 January 2025)

Kahurangi Carter (to 8 May 2024 and from 29 January 2025)

Greg Fleming

Paulo Garcia (from 29 January 2025)

Francisco Hernandez (from 8 May 2024 to 29 January 2025)

Related resources

The documents we received as evidence in relation to this petition are available on the [Parliament website](#).

A recording of our hearing can be accessed online on the [Parliament website](#).