



~ELECTRONIC DESIGN & MANUFACTURE ~

Submission No. 27

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Attention: Parliamentary Committee Regarding Inquiry into Barrier Fences in
Queensland

Electric Fence Monitoring for the Application of Barrier Fences

The enclosed submission has been prepared by Pakton Technologies and written in response to the request for submissions in regards the Agriculture and Environment Committee's inquiry into barrier fences in Queensland.

This submission provides a complementary method for the management of Queensland barrier fences, proposing that electric fencing combined with monitoring technologies offers a more viable method of managing barrier fences designed to control species movement.

Please find further information on the proposal enclosed. Should you have any questions in regards to the content of this submission, please do not hesitate to contact me.

Yours sincerely,

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Electric Fence Monitoring for the Application of Barrier Fences

Submission to Parliamentary Committee

1. Overview:

This submission has been prepared by Pakton Technologies and written in response to the Agriculture and Environment Committee's inquiry into barrier fences in Queensland which are maintained by the Queensland Government. Pakton understands that Queensland has two such barrier fences:

- The Wild Dog Barrier Fence (WDBF), managed by the Department of Agriculture and Fisheries (DAF), and
- The Darling Downs-Moreton Rabbit Fence, managed by the Darling Downs-Moreton Rabbit Board (DDMRB).

This submission proposes that electric fencing combined with monitoring technologies offers a more viable (efficient/cost effective) method of managing barrier fences designed to control species movement.

This proposal operates on the assumption that, if maintained, fencing is the most viable solution for the control of wild dogs and other pests (including rabbits). Fencing has demonstrated quantified benefits in past studies conducted by the Queensland Government. Fencing mitigates the economic impact of pests and other animal species by restricting their movement into areas dedicated for rural business and enterprise.

The main objectives of an electric fencing monitoring solution for Queensland's barrier fences are to reduce long term costs and increase the effectiveness of existing and future fence structures.

2. Background of submitting body (Pakton Technologies)

This submission has been prepared and submitted by Pakton Technologies (also referred to as 'Pakton'). Pakton has been a leading researcher and developer in the industry of electric fence electronics in Australia for more than twenty years. Founder and chief engineer of Pakton Technologies, Paul Thompson, has studied and practiced in the field of electric fence electronics for many years prior to the establishment of Pakton Technologies in 1995. Pakton has been responsible for the early development of monitoring equipment used on electric fences wires for the protection of animals in various conservations and reserves around the world. The monitoring equipment can sound on-site alarms or provide flashing lights, or remote (off-site) computerised alarms to alert fence managers when a breach of the fence has occurred.

3. Experience in electric barriers and fence monitoring technology

Pakton Technologies has developed monitoring equipment that has been utilised for a variety of purposes, including the conservation of protected species. Software for remote monitoring of the bilby enclosure at Currawinya National Park was developed specifically for this site in 2002. This software is still in use at the park today. Rangers are able to check the status of the fence from a computer at their desk in the rangers' office and only attend to physical checks of the fence if they are alerted to a breach or damage to the fence. The location of the breach can be isolated through the segmentation of the fence into identified 'zones', and through the use of Pakton's fault finder, the Electric Fence Power Probe®.

Pakton's more recent research and development in fence monitoring electronics has been for security applications of electric fences, especially in the South African markets of home and commercial security and game park security. Pakton's technology in energisers and monitoring electronics are responsible for protecting threatened species from poachers, often in remote areas. Many kilometres of fencing along borders are monitored from computers in ranger base stations where fence status information is received associated radio transmission equipment. Today's electric fence monitors, with appropriate fence construction, can provide accurate location of the breaches for prompt and targeted responses by rangers.

4. Recommendations for implementation of electric fence monitoring for Queensland barrier fencing

This submission recommends the use of electrified wires and/or electric fences and electric fence monitors in addition to, or instead of, existing fence structures. These electric wires, with the addition of monitoring equipment, can relay information to dedicated stakeholders. Relevant stakeholders can be notified of various 'events' which occur along fence sections, informing them of breaches in the fence – e.g. where the fence may be damaged/compromised, when animals are caught in the fence, where the fence has been cut. By isolating fence sections into 'zones', relevant stakeholders and management groups can easily identify sites of breaches or events, and take appropriate action swiftly and effectively. An example to illustrate this: a barrier fence bordering a number of farms may be divided into 'zones'; each farm may include multiple zones such as 'farm 1 west', 'farm 1 mid-west', 'farm 1 middle', 'farm 1 mid-east', 'farm 1 east'; damage to a section of fence occurs; Farmer 1 and Dog Fence manager 1 are alerted via SMS that there is a breach at 'farm 1 west'.

Computer software can also be employed for more detailed reporting, monitoring and fence parameter control. Depending on the software utilised, the information can be relayed to stakeholders in a variety of formats, including notifications on computers by alarm. Recent technology developed by Pakton also means that information can be

relayed via SMS. Nominated persons can be sent a text message with information on an incident exactly when it occurs. Nominated persons are also able to manually request updates on the fence status via SMS or a smart phone application (APP) style interface.

Another benefit of the proposal of electric fence monitoring is that it can be installed on existing barrier fence infrastructure, increasing the effectiveness of these fences as barriers, as well as improving the ways in which they can be managed. The life of aging fences can also be extended through the addition of electrified offset wires.

Pakton is able to work with stakeholders in the Queensland barrier fences to help identify specific problems associated with the current system that may benefit from Pakton technology.

5. Benefits of electric fence monitoring for the application of Queensland barrier fencing

The Queensland Government's 'Wild Dog Management Strategy 2012-16' outlines several points which pose significant challenges for the management of wild dog populations in Queensland. Some of these have been summarised in Appendix A: *The benefits of electric fence monitoring technologies for the application of Queensland barrier fencing*. Though some of these challenges identified in this strategy may not be relevant today and for all types of barrier fencing in Queensland, barrier fencing is inherently a costly resource-dependent infrastructure.

Pakton recognises that, though economically beneficial, the implementation and maintenance of barrier fencing in Queensland is an extremely expensive and ongoing exercise. One of the greatest challenges associated with barrier fencing in Queensland is the associated management, and maintenance costs, along with the limitations and coordination of resources between various interest groups and stakeholders.

Implementing electric fence monitoring technologies helps in mitigating the associated costs with barrier fence management. Its ability to generate data on the state of zoned sections of fence, as well as notify nominated persons of breaches or events, makes it the ideal tool to assist with the management of fence infrastructure.

Electric fencing with monitoring technologies can also offer a better alternative to other animal control methods, such as baiting. Baiting and traps do not always offer targeted pest management, often catching and poisoning other native species. As outlined in the 'Wild Dog Management Strategy 2012-16', there are also ecological and public concerns over the use of baits and poisons (for example, the use of 1080 and pesticides) – concerns which are avoided through electric fencing as a non-lethal animal control method. Electric fencing monitoring also adheres to animal welfare obligations, being a non-lethal deterrent, and also allowing stakeholders to be notified if animals become tangled in the fence – preventing animal death through shock and dehydration.

An extensive list of other benefits associated with electric fence monitoring systems for the application of barrier fencing in Queensland can be found in Appendix A.

6. Conclusion

Electric fence monitoring systems have the potential to increase the economic viability and effectiveness of the Queensland Government's existing barrier fences. The ability to monitor designated segments of fence remotely means that the coordination of management and maintenance efforts can be more easily controlled, and reduces the need for patrol of the fences. Instead, monitoring allows for resources to be targeted where they are required and in a more timely manner.

Bibliography:

Queensland Government, 'Wild Dog Management Strategy 2011-16', 2011, Department of Agriculture and Fisheries.

Queensland Government, 'Enquiry into barrier fences in Queensland', *Paper No. 2 55th Parliament November*, 2015, Agriculture and Environment Committee.

Appendix A:

The benefits of electric fence monitoring technologies for the application of Queensland barrier fencing

Possible Challenges Associated with Barrier Fencing in Queensland	Benefits of Recommendations
<ul style="list-style-type: none"> • Availability of funding and resources • Competing stakeholder priorities and resources • Perceived reluctance of/impracticality for local governments to enforce barrier monitoring and dog control • Absentee landholders • Animal welfare obligations • Ineffective management of fencing has lead to breaches of the fence, decreasing its overall effectiveness as a barrier 	<ul style="list-style-type: none"> • Electric fencing creates a psychological barrier preventing animals being motivated to cross • Monitoring equipment reduces maintenance costs, reducing the cost and need for physical fence inspection patrols • Monitoring allows stakeholders to be notified immediately when breaches of the fence occur, allowing efforts to be targeted • Notification of breaches allows for the collection of data which can be used to gather information which could be used to help evaluate and monitor the effectiveness of barrier systems • Collected data can be integrated into existing management systems, contributing to further research • Electric fence energisers and electric fence structures are designed within regulatory safety standards • Increases the ease of effective management of the barrier and decreases costs, making it more practical and feasible – local governments and other stakeholders therefore may be more willing and committed to support efforts to manage the fence • Notifications can be sent remotely to a number of stakeholders – where landholders are absent, breaches in the fence can still be addressed • Reduces overall investment of resources over time