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New Zealand self-declaration of country freedom from *Theileria equi*

Declaration sent to the OIE on 17 November 2020 by Dr Tony Zohrab, OIE Delegate for New Zealand and Chief Market Access Officer, Policy and Trade Branch, Ministry for Primary Industries.

1. Introduction

In accordance with the World Organisation for Animal Health (OIE) procedure for self-declaration of freedom from a disease, the New Zealand Ministry for Primary Industries (MPI) is submitting the following documentation for publication by the OIE, attesting that New Zealand is free from infection with *Theileria equi*. Declaration of freedom from *T. equi* is made for the country as a whole. This declaration is effective from 8th October 2020 and it reflects the regaining of New Zealand's animal health status that was lost following the detection of the organism in a single horse on the 22nd May 2020.

2. Susceptible animal populations in New Zealand

Domestic horses can be found throughout New Zealand, and are kept for Thoroughbred and standardbred racing, as equestrian and sport-horses, and for recreational use. Small numbers of donkeys and Zebra are kept primarily as pets or in zoological parks respectively. In 2019 there were approximately 102 000 horses on 18 732 premises in New Zealand.

There are no wild horses in New Zealand as defined by the *Terrestrial Code*. A feral population of horses (known as the Kaimanawa horses) are present in the central North Island. These horses occupy a geographically distinct area on the central plateau of the North Island, located a significant distance from the affected premises. The Kaimanawa horse population does not mix with the domestic horse population. Consequently, there was no risk of the Kaimanawa horses being exposed to infection.

3. Evidence that *Theileria equi* is a notifiable disease in New Zealand

MPI is the lead organisation for New Zealand's biosecurity system and is responsible for administering the provisions of the Biosecurity Act of 1993. The purpose of the Act is to exclude, eradicate and effectively manage pests and unwanted organisms from or within New Zealand, and protect against the possible adverse effects on human health, the New Zealand economy and the New Zealand environment that may be associated with risk organisms.

Under section 44 of this Act, all New Zealanders are under a duty to inform MPI of the presence of what appears to be an organism not normally seen or otherwise detected in New Zealand. In addition, [the Biosecurity \(Notifiable Organisms\) Order 2016](#) lists particular organisms that are required to be notified if suspected of being detected within New Zealand. *T. equi* is a notifiable organism under this Order. *Theileria equi* has been listed as notifiable in New Zealand at the species level since 2019 and at the genus level since 1994.

4. Eradication of *Theileria equi* from New Zealand

a. Background

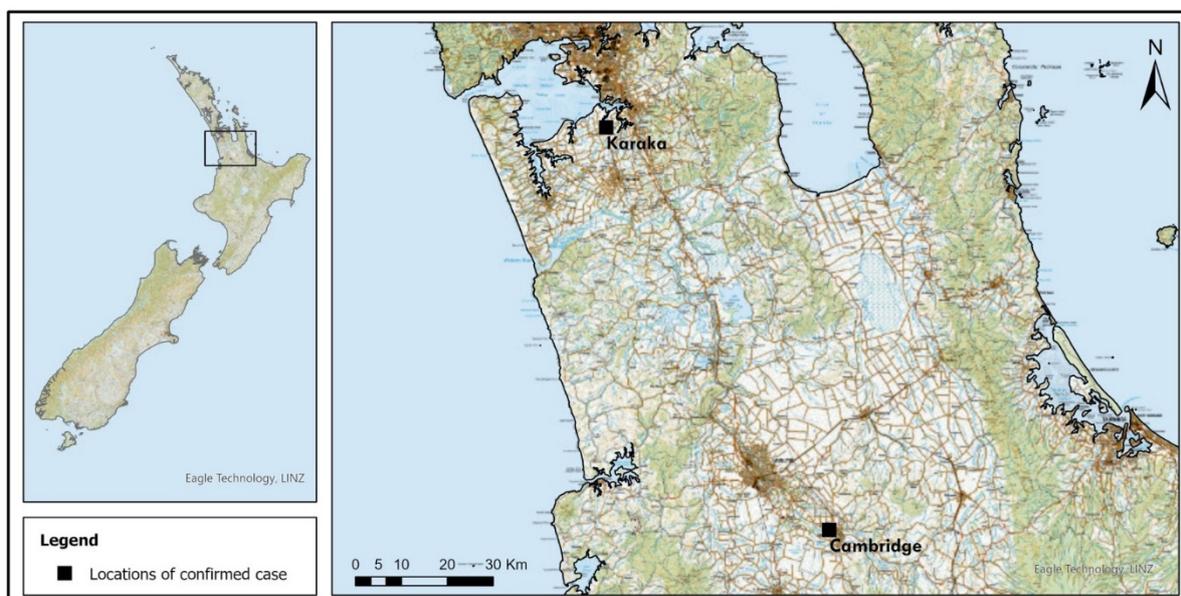
Up until May 2020, New Zealand had never had a case of *T. equi* and was historically free. However, in April 2020, as part of routine export testing, a four-year-old mare tested positive for antibodies to *T. equi* using a competitive enzyme-linked immunosorbent assay (cELISA) and indirect fluorescent antibody test (IFAT). Further testing in May 2020 with a generic semi-nested conventional piroplasma PCR test followed by gene sequencing confirmed the animal was infected with *T. equi* ([refer to New Zealand's Immediate Notification to the OIE. Report number 34414](#)).

The mare had previously been resident in France, before being imported into New Zealand on the 2nd February 2019, via the United Kingdom. The imported mare met the requirements in New Zealand's import health standard, which included a negative cELISA test for *T. equi* during the 21 days prior to importation. Although pre-import testing for *T. equi* had generated negative results, the MPI investigation, determined that the mare had tested positive to *T. equi* using an IFAT carried out prior to her pre-import testing. This result was not previously known to MPI. The investigation has concluded that the mare was a chronic carrier of *T. equi*, and was already infected at the time of importation into New Zealand. The mare was exported without treatment for *T. equi* from New Zealand on 26th June 2020. The importing country was aware of the mare's animal health status.

While in New Zealand, the mare was initially resident on a property at Karaka, South Auckland, arriving at the property from the transitional facility on the 16th February 2019. She was then transferred to a sister property at Cambridge, Waikato on the 8th August 2019, and then returned to the Karaka farm on the 7th November 2019 (Figure 1). The two farms were part of the same Thoroughbred breeding stud.

Following the mare's positive test results, she was moved from the Karaka farm to a separate isolation area on the 29th May 2020, from where she was subsequently exported on 26th June 2020. The mare remained clinically normal throughout her residence in New Zealand.

Figure 1: Map showing the locations of the premises where the infected mare was resident.



b. Pathogen Specific Surveillance

There is only one species of tick infesting livestock in New Zealand (*Haemaphysalis longicornis*)^{1 2}, this species is not a recognised competent vector for *T. equi*³. Despite this, a full epidemiological investigation was conducted. The following surveillance actions were implemented to detect any potential transmission of the organism:

- All horses (all ages) resident on both the Cambridge and Karaka properties at the time of the detection were tested for *T. equi*;
- Movements of any horses from both properties on which the mare had been resident were ceased during the investigation;
- All horses (all ages) that had been resident on the Cambridge and Karaka properties since the arrival of the infected mare, and that had subsequently moved off to other locations in New Zealand, were traced and tested;
- Data on all horses imported into New Zealand since January 2018 that originated from countries not considered free from *T. equi*, was collected to evaluate their test history. It was confirmed that all horses imported over that period (other than the infected mare) had been tested with both the cELISA and the IFAT prior to importation with negative results on both tests;
- Enhanced passive surveillance. The veterinary diagnostic laboratories were requested to enhance awareness of *T. equi* amongst their staff and ensure that all equine blood smears were thoroughly assessed for evidence of *T. equi*.

All surveillance and tests undertaken returned negative results for *T. equi* (See Table 1). The investigation confirmed the absence of any disease transmission from the infected mare and identified her as being the primary and only case.

¹ Heath ACG (2020) A history of the introduction, establishment, dispersal and management of *Haemaphysalis longicornis* Neumann, 1901 (Ixodida: Ixodidae) in New Zealand. *New Zealand Journal of Zoology*. 47:4, 241-271.

² Ministry for Primary Industries (2020). Animal Health Surveillance annual report. *Surveillance*. 47:3, 25-28. For further details on exotic tick investigations refer to New Zealand's quarterly reports of investigations of suspected exotic diseases published in *Surveillance*.

³ World Organisation for Animal Health (2018). *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals*. [Chapter 3.5.8. Equine Piroplasmosis](#).

Table 1: Surveillance test results

Location	Number of horses	Sampling period	Number tested	Diagnostic test	Results
Cambridge property	204	21/05/2020- 26/05/2020	5 [†]	cELISA and PCR	Negative
		21/05/2020-19/06/2020	199	cELISA	Negative
Karaka property	143	21/05/2020-26/05/2020	13 [†]	cELISA and PCR	Negative
		21/05/2020-19/06/2020	129	cELISA	Negative
		22/04/2020-11/05/2020	1 [#]	cELISA, PCR, IFAT, Gene sequencing	Positive
Movements traced from Cambridge and Karaka properties	180 [§]	22/05/2020-25/05/2020	7 [†]	cELISA and PCR	Negative
		25/06/2020-18/08/2020	11 [‡]	cELISA and IFAT	Negative
		25/05/2020-21/08/2020	162	cELISA	Negative
Total	527		527		

[†] Horses with a history of direct contact (shared the same paddock) or with potential for iatrogenic spread from the infected mare, were tested with both cELISA and PCR.

[#] The single infected mare

[§]An additional twenty-six horses had been exported from New Zealand prior to detection, and one horse died prior to the sampling period (euthanased due to severe laminitis).

[‡] Eleven horses had been tested to meet new Australian import requirements initiated after the detection of the infected mare.

5. Surveillance and early warning systems for *Theileria equi* in New Zealand

New Zealand has a well-established general surveillance system which provides ongoing passive surveillance for *T. equi* through a notification and investigation system, endemic disease monitoring, and export testing. This system provides further evidence that the single infected mare was the only case in New Zealand and that no transmission has occurred.

a. Notification and investigation system

As outlined above, there is a legal requirement to report suspected cases of *T. equi* to MPI. Rapid reporting of suspected exotic or notifiable organisms in domestic animals or wildlife is enabled through an Exotic Pest and Disease hotline which is advertised throughout New Zealand and is operational at all times. Every person in New Zealand is legally required to notify MPI of suspect exotic disease such as piroplasmiasis. In addition, MPI receives reports directly from veterinary diagnostic laboratories of pathology tissues or other animal samples for which *T. equi* cannot be excluded as a cause of disease. A team of MPI incursion investigators comprised of veterinary epidemiologists manage investigations to identify or exclude the presence of an exotic disease. Diagnostic testing to exclude exotic organisms is performed at New Zealand's reference laboratory, the National Animal Health Laboratory (AHL).

Table 2 shows the number of MPI investigations for *T. equi* as the result of suspected exotic disease 2013-2020. Descriptions of the investigation of suspected exotic animal diseases are published in [New Zealand's Surveillance magazine](#).

Table 2 Exotic disease investigation conducted by MPI for *Theileria equi* 2013-2020

Investigations for <i>Theileria equi</i> 2013-2020									
Year	2013	2014	2015	2016	2017	2018	2019	2020	total
<i>Theileria equi</i>	3	2	3	1	5	4	0	6*	24

*This includes the investigation into the single positive case. All other investigations conducted have been negative.

b. Endemic disease monitoring

MPI also monitors and analyses trends in disease occurrence that might indicate the presence of an exotic equine disease. There are three commercial veterinary diagnostic laboratory companies in New Zealand operating across a number of sites. MPI maintains contracts with these laboratories for the provision of services including (but not limited to), provision of diagnostic information for surveillance, screening of submission forms for key words that could indicate exotic disease, notifying within strict timeframes upon suspicion of an exotic or notifiable organism, and maintenance of minimum operational and technical quality assurance requirements. Audits are regularly conducted by MPI to ensure compliance with contractual requirements. These laboratories receive samples taken by veterinary practitioners for routine sick domestic animal and wildlife disease testing, and provide MPI with monthly reports. During the twenty-one-month period 1st January 2019 to 30th September 2020, a total of 10487 equine submissions were received, and diagnostics undertaken, by the commercial veterinary laboratories under the supervision of veterinary pathologists. Haematological examination was conducted on 4617 submissions over the period (table 3). *T.equi* was not detected in any of these submissions.

Table 3 Veterinary diagnostic laboratory equine syndromic surveillance 2019-2020 (to Sept 30th)

Veterinary Diagnostic Laboratory equine sick animal case submissions per year	Year		
	2019	2020 (to 30 th Sept 2020)	Total
Sick animal submissions	6222	4265	10487
Diagnostic Test – Haematology	2802	1815	4617

c. Export testing

Testing of horses in New Zealand for *T.equi* is also undertaken to meet importing countries' import certification requirements. With the exception of the single infected mare, all export testing conducted to date has returned negative results. Additionally, since the detection, all horses exported have been tested with both cELISA and IFAT. From the 1st June 2020-30th September 2020, 972 horses have been tested, all with negative results.⁴

6. Measures implemented to maintain freedom from *Theileria equi*

Import controls

New Zealand has *T.equi* related import measures for live horses based on country freedom or testing in accordance with the *Terrestrial Code*. Following the identification of the infected imported horse an amendment was made to the existing import health standard. Horses imported from countries that are not free of piroplasmiasis, must have both negative IFAT and cELISA results prior to import, whereas previously only one test was required. This measure reduces the risk of another positive carrier animal being imported, while allowing for a new risk assessment to be undertaken which will inform further review of the measures to be implemented in a new import health standard for equids.

7. Conclusion

Considering that:

- a. *Theileria equi* is a notifiable disease in New Zealand;
- b. An early warning system has been in place for all relevant species;

⁴ All horses exported from New Zealand during this period were either, destined for Australia or, due to disruptions to air freight as a consequence of COVID-19, were transiting Australia.

- c. Measures to prevent the introduction *T. equi* have been in place: in particular, the importations or movements of horses into the country have been carried out in accordance with Chapter 12.7 (Equine Piroplasmiasis) of the *Terrestrial Code*;
- d. Infection with *T. equi* is not known to be established in wildlife within the country.
- e. A pathogen-specific surveillance programme has been applied as described in Chapter 1.4 and has not detected any occurrence of infection with *T. equi*.

The OIE Delegate of New Zealand declares that the country has met the requirements for country freedom from infection with *Theileria equi* as of 8 October 2020, in accordance with Article 1.4.6. of the OIE *Terrestrial Animal Health Code* (2019 edition) and consistent with the information provided in WAHIS.

I, the undersigned, Tony Zohrab, Delegate of New Zealand to the OIE, take responsibility for the self-declaration of freedom from *Theileria equi*.

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Drawn up on 17th November 2020

Signature of the Delegate:

A handwritten signature in blue ink, appearing to be 'Tony Zohrab', is written over a faint, light blue circular stamp. The signature is fluid and cursive, extending from the left side of the stamp towards the right.