

Risk Management Equivalence for *C. bovis* Inspection

Risk Management Equivalence Case for *C. bovis* post-mortem inspection changes

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Project Description

The project provides initial technical information that supports modernisation of post-mortem inspection of beef, prioritised in the *Meat Modernisation Program*.

Humans are the primary host of the tapeworm *Taenia saginata* whose eggs are passed in human faeces. Viable eggs can be ingested by cattle from contaminated feed sources and form *Cysticercus bovis* cysts in their muscles. Humans develop the tapeworm by eating viable *C. bovis* cysts in inadequately cooked beef.

Post-mortem inspection for *C. bovis* in beef carcasses is a trade-sensitive issue.

Alternative *C. bovis* post-mortem inspection (PMI) comprises routine incision of the heart but not masseters. It has been approved domestically since 1 March 2020 as a result of a risk-based review of Australia's meat inspection standard AS4696:2007.

The purpose of the project is to capitalise on alternative PMI by providing further evidence for export markets to accept the equivalence of alternative *C. bovis* inspection. This will be published in the pending AS4696:2022.

Implementation of alternative *C. bovis* PMI in export establishments depends on acceptance of "equivalence" by importing countries. This project provides extensive technical data that supports preparation of an equivalence proposal to beef export markets.

The provision of data from Department of Agriculture, Water and Environment (DAWE) on annual incidence *C. bovis* rates of total carcass condemnation from 2001 – 2018 provided key data for the project.

That data enabled a deeper interrogation of the mitigating effect of the implementation of the Australian Guidelines for Water Recycling, implemented nationally from 2006 (AGWR). The AGWR targets inactivation of human *T. saginata* tapeworm eggs in effluent (i.e. eggs causing *C. bovis* cysts in beef following ingestion of contaminated pasture/fodder).

The outputs provide a technical platform for consultation with a range of key stakeholders, development of a risk management framework and preparation of an equivalence submission needed for the pathway to adoption.

Those activities are recommended to be overseen by a Steering Group whose membership, scope and terms of reference reflect the opportunities arising from the novel information reported here.



C. bovis cysts in beef carcass muscle

Project Content

Results of analysis of total carcass condemnation for *C. bovis* from 2001-2018 include:

- ◆ A significant reduction of 80-90% in *C. bovis* incidence rate for Cow/Bull (C/B) and Heifer/Steer (H/S) since implementation of the Australian Guidelines for Water Recycling in 2006.
- ◆ The “observed” *C. bovis* C/B incidence rate for total carcass condemnation has remained consistently low since the AGWR became effective at one affected carcass condemned per million inspected.
- ◆ C/B are responsible for the bulk of total carcass condemnations, while H/S have a consistently negligible incidence rate. This reflects the extended exposure period of the older C/B population.
- ◆ However, the importance of vendor declarations for feed ingredients to ensure safety is aptly demonstrated by the “Cysticercosis storm” reported in lot-fed H/S in 2010 attributed to a contaminated feed ingredient.
- ◆ The volume of recycled water produced from centralised Waste-water Treatment Plants (WWTP) was highest for the agricultural sector -pasture and animal husbandry.
- ◆ The use of recycled water in pasture and animal husbandry has not changed significantly from 2000 to 2019 i.e. reduction of *C. bovis* is not associated with reduced use of recycled water for pasture irrigation.
- ◆ When taken together these data provide evidence of a durable and major mitigation of *C. bovis* nationally associated with AGWR.
- ◆ This provides a substantial public health benefit through prevention of *T. saginata* infection of beef consumers in domestic and export markets and verifies negligible risk of Australian beef reported in 2019.
- ◆ However, comparison of the documented risk management controls and audit requirements for helminth between states and territories indicated that the helminth risk may not be managed appropriately in the NT and SA, and that auditing could be improved in SA and Tasmania.
- ◆ There is also a data gap of individual recycled water scheme operations, listed nationally, that currently achieve adequate Log Reduction Value (LRV) for helminth eggs in waste-water released for pasture irrigation, and for potential use for fodder production in a drought.
- ◆ Such a register may be significant for the development of equivalence submissions to sensitive markets e.g. US, UK & EU.

Project Outcome

This report provides information on the effectiveness of public health mitigations via waste-water treatment, that better explain the incidence rate of *C. bovis* over the past 20 years.

This data provides a technical basis for development of a verifiable risk management system to support alternative *C. bovis* PMI in the pending AS4696:2022.

The report provides direction for the establishment of a Steering Group convened by AMPC in Stage 2 of the *C. bovis* program as the final pathway to delivery of benefits from alternative *C. bovis* post-mortem inspection.

The proposed scope of activities of the Steering Group is to build a verifiable risk management system, that includes:

- ◆ Communication of the results of this project to key stakeholders
- ◆ Overseeing the development of a Risk Management framework for *C. bovis*

- ◆ Engaging with key stakeholders to build a national system (Waste-Water utilities auditing, ISC, AHC)
- ◆ Advising on work to address gaps – WWTP performance i.e. LRV for helminth eggs in recycled water released for pasture irrigation
- ◆ Overseeing collaboration to develop an Equivalence Proposal for sensitive markets
- ◆ Advising and coordinating liaison with state and federal jurisdictions to enable legislative arrangements (AS4696:2022) and certification compliance
- ◆ Advising on supply chain verification pilots
- ◆ Identifying other issues related to establishing a verifiable risk management system for alternative *C. bovis* inspection.

Benefit for Industry

Technical support for sustaining market access under alternative *C. bovis* post-mortem inspection

This *C. bovis* information:

- ◆ demonstrates the public health benefits arising from the Australian Guideline for Water Recycling (2006), that is likely to deliver a major proportion of *C. bovis* mitigation across the beef supply chain
- ◆ provides additional risk-based data that supports alternative post-mortem inspection of beef carcasses for *C. bovis* in the pending AS4696:2022; comprised of routine incision of the heart but not masseters.
- ◆ provides evidence consistent with the negligible risk of *C. bovis* for consumers of Australian beef, both domestically and in overseas markets reported by MLA
- ◆ supports the development of equivalence proposals to export destinations for alternative post-mortem inspection of beef carcasses for *C. bovis*.

Economic benefits

The outcome of the alternative post-mortem inspection procedures for beef will result in a higher value product, with incised beef cheeks potentially contributing up to \$80 M in lost opportunity in the current market. This is particularly relevant in an industry where margins are tight, and where competitive pressure from emerging economies (Brazil and Argentina) in the cost of operating is increasing. These proposals will give Australian meat processors an economic advantage in marketing a superior product (un-incised cheeks) in an extremely competitive market.

Useful resources

Post-Mortem Meat Inspection – Australian Meat Regulators Group, Guideline 2020:1 for AS4696:2007. Department of Primary Industries, Sydney, New South Wales, Australia.

https://www.foodauthority.nsw.gov.au/sites/default/files/2020-02/AMRG%20Guideline%202020_1_Alternative%20techniques%20guideline.pdf

C. bovis:beef Fact Sheet 2.7 explaining the rationale, quantitative approach and data on which equivalence was assessed available via

https://www.mintrac.com.au/docs/pages/175/Sched%20_7.%20Fact%20Sheet_Cattle%20and%20Buffalo%20C.%20bovis%20inspection.pdf