



NSHMP

National Sheep Health Monitoring Project

ANNUAL REPORT

2018-19

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EXECUTIVE SUMMARY

The National Sheep Health Monitoring Project (NSHMP) operated throughout 2018-2019 in 11 abattoirs around the country. Meat inspectors inspected 8,682,967 sheep in over 39,000 lines for up to 20 animal health conditions.

This report contains a basic analysis of the data from the project, including 14 of the monitored conditions (six had insignificant levels of incidence), thus providing a snapshot of the health of a significant proportion of the Australian sheep flock.

OBJECTIVES OF THE NSHMP

- To monitor sheep for a range of significant animal health diseases and conditions which reduce productivity in the sheep value chain or can impact market access.
- To facilitate feedback to producers through state departments and the Livestock Data Link (LDL) about the diseases and conditions occurring in their flock.
- To explore options for a comprehensive and cost-effective animal disease monitoring/surveillance system and post-mortem inspection service.
- To provide accurate and timely animal health information as a driver for:
 - » further improvements in Australia's animal health status, and the management of human health risks
 - » maximising market access
 - » improving profitability
 - » informing future investment into research and development (R & D)
 - » enhancing productivity within the sheep value chain by improving the quality of product entering the chain and therefore reducing wastage.

LOCATION OF PARTICIPATING ABATTOIRS

A total of 11 abattoirs participated in data collection in 2018-2019 (some part-time) and provided national coverage of the significant sheep producing regions of Australia (Table 1).

STATE	ABATTOIR
New South Wales	Cowra, Dubbo, Gundagai, Tamworth
South Australia	Lobethal
Tasmania	Cressy
Victoria	Ararat, Cranbourne*, Geelong*, Swift Melbourne*
Western Australia	Narrikup

*Abattoirs participating part-time in the project.

Table 1. Abattoirs participating in the NSHMP July 2018 – June 2019

NUMBER OF SHEEP INSPECTED

The total number of sheep inspected in 2018-2019 was 8,682,967. This number has significantly increased from 2017-2018 by 1,947,982. The total number of lines inspected in 2018-2019 was 39,935. This number has significantly increased from 2017-2018 by 11,269.

The total number of sheep inspected in 2018-2019 was 8,682,967.

SOURCE OF SHEEP

Sheep were sourced from all states. The number of sheep and lambs inspected from each state (for most diseases and conditions) is provided in Table 2.

The total number of lines inspected in 2018-19 was 39,935.

STATE	NSW	QLD	SA	TAS	VIC	WA	TOTAL
No. of sheep inspected	3,799,548	178,190	2,010,848	528,343	954,903	1,211,135	8,682,967
No. of lines inspected	17,402	750	10,170	3,456	3,983	4,174	39,935
No. of PICs inspected	2,774	209	3,070	591	1,363	1,574	9,581

Table 2. Total number of sheep, properties (PICs) and lines inspected from each state over the 2018-2019 financial year.

NSHMP MEAT INSPECTION

Carcasses and viscera are examined grossly by certified meat inspectors. Laboratory confirmation of conditions is not utilised, except for ovine Johne's disease. The presence or absence of pathology consistent with diseases and conditions is recorded by meat

inspectors. Not all animals are examined for all conditions.

Responsibility for product disposition for market access and food safety rests with the on-plant veterinarian and company management.

NSHMP PRODUCER FEEDBACK

All producers now have online access to feedback via the Livestock Data Link (LDL), using their National Livestock Identification System (NLIS) account. Once producers log on they have access to information about lines of sheep they have consigned to participating abattoirs, as well as prevention methods and tools to help manage any conditions affecting

their flock. Feedback from the NSHMP is returned in some states directly to producers by the relevant Department of Primary Industries/Agriculture. This most notably happens in South Australia through the Enhanced Abattoir Surveillance Program.

www.ldl.mla.com.au

RESEARCH AND DEVELOPMENT ACTIVITIES UTILISING DATA

In 2018-2019 the data from the NSHMP was utilised by:

- Herd Health through the 'Health4Wealth' Rural R&D for Profit Project: 'Assessment of value from reporting findings from analysis of sheep health data collected at abattoirs to the sheep supply chain'.
- In an MLA project, Herd Health has developed cost benefit analysis tools for producers to make better decisions about their on-farm control programs for diseases monitored in the NSHMP.
- MINTRAC has developed voice recognition software for data recording in abattoirs.

ANIMAL HEALTH INFORMATION

- This report contains a 'snap shot' of the health of the Australian sheep flock for the financial year 2018-2019 using data collected through the NSHMP. Summary data sets from previous years has been utilised for some conditions to provide a comparison.
- The data collected by the NSHMP is stored in the Endemic Disease Information System, hosted by Animal Health Australia on behalf of the stakeholders.
- Each state Department of Primary Industries/Agriculture has access to its own state data which can be used for further detailed analysis.
- The NSHMP collects information on 20 conditions:
 - » Arthritis
 - » Bladder worm
 - » Caseous lymphadenitis (CLA, cheesy gland)
 - » Dog bites
 - » Grass seeds
 - » Hydatids
 - » Knotty gut
 - » Liver fluke
 - » Lung worm
 - » Pleurisy
 - » Pneumonia
 - » Sarcocytosis
 - » Sheep measles
 - » Vaccination lesions
 - » Rib fractures
 - » Bruising
 - » Cirrhosis
 - » Ovine Johne's disease (OJD on request by the producer)
 - » Nephritis
 - » Fever/Septicaemia
- Summary information on these diseases is found in this report except for rib fractures, bruising, cirrhosis, ovine Johne's disease, nephritis and fever/septicaemia as insignificant levels were recoded for both conditions.
- For the purpose of this analysis the information has been obtained from direct (vendor consigned) and indirect (saleyard or mixed in transportation) lines. Ages of sheep are recorded as less than two years of age, over two years of age or mixed.



ARTHRITIS

Arthritis in sheep is caused by a bacterial infection of the joints. It usually occurs in young sheep when bacteria localise in the joints after entering the body through the umbilical cord (navel ill) or any wound.

Arthritis causes lameness and a reduced growth rate. Carcasses affected with arthritis can undergo trimming of affected joints and possibly be condemned.



Figure 1. Percentages of inspected lines with at least one sheep over two years of age infected with arthritis for each state and each financial year from 2015 to 2019.

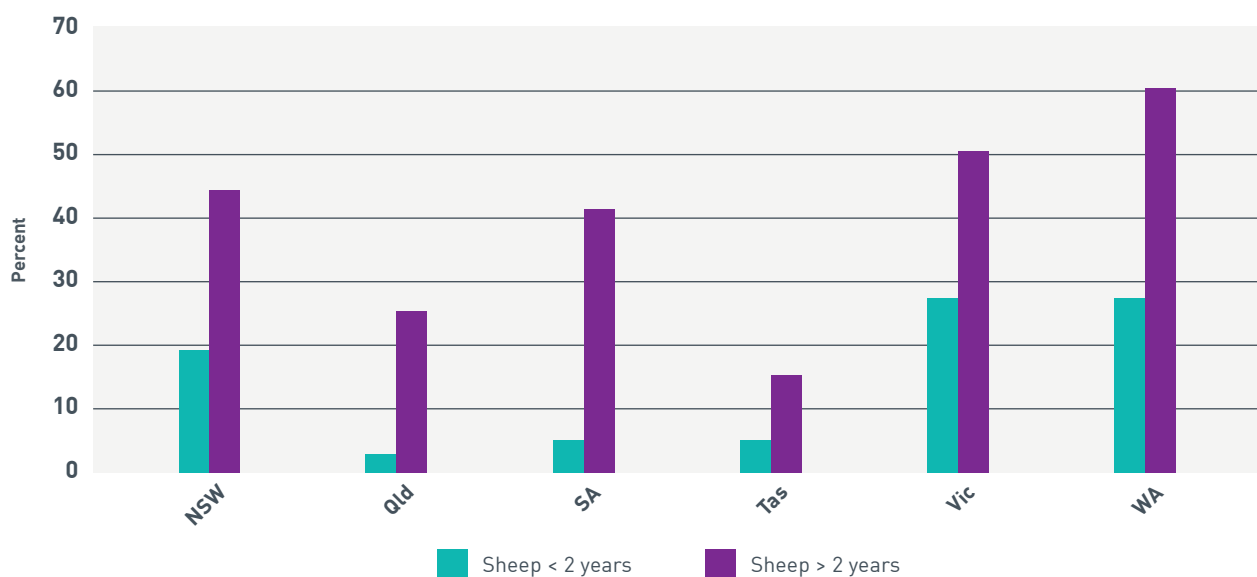


Figure 2. Percentages of inspected lines with at least one sheep infected with arthritis for each state over the 2018-2019 financial year.

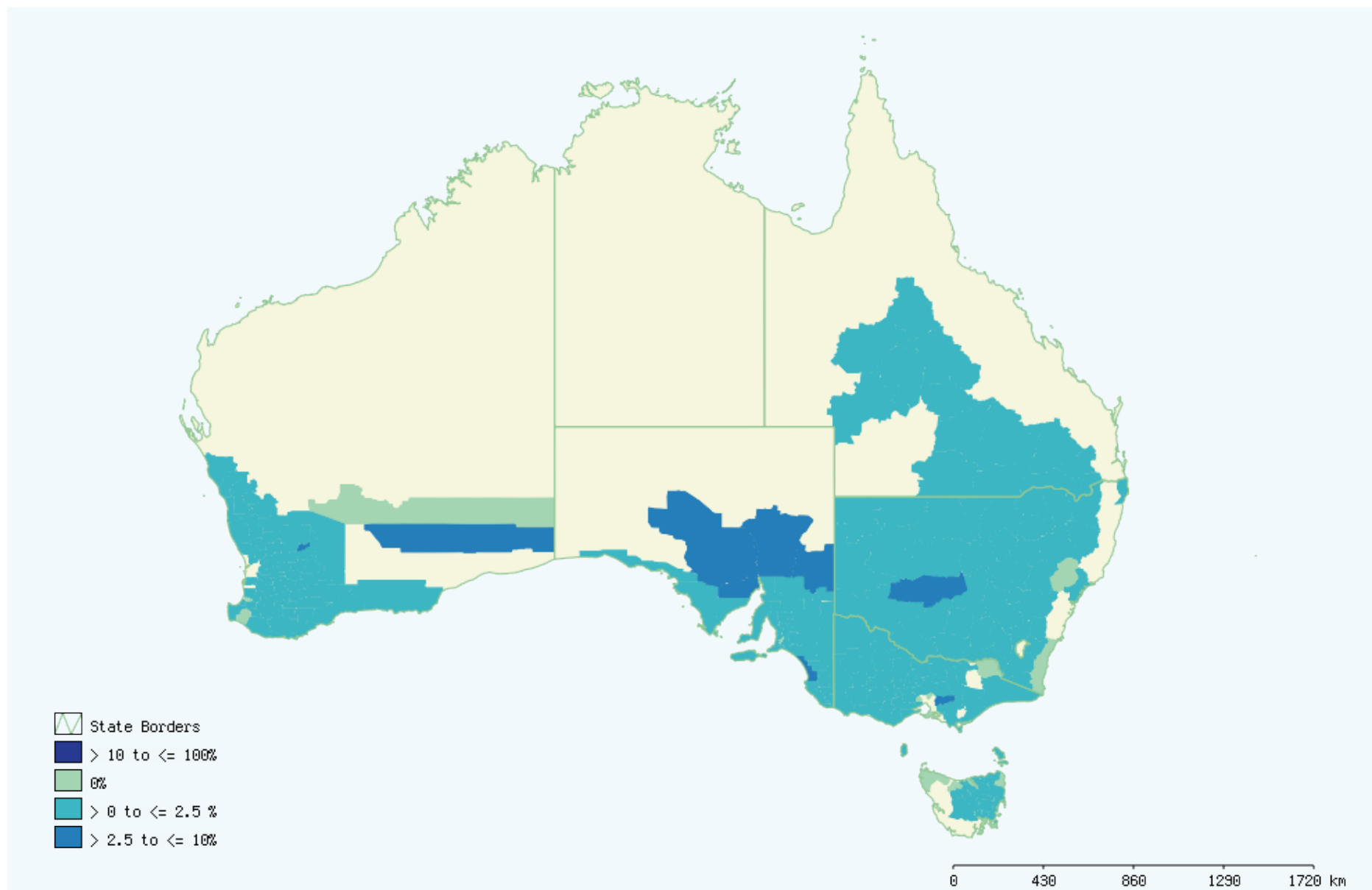


Figure 3. Arthritis – percentage of infected sheep by LGA over the 2018-2019 financial year.

BLADDER WORM

Bladder worms are infective cysts from the dog tapeworm *Taenia hydatigena* and are found in the liver and the abdominal cavities of sheep. Bladder worm has little or no effect on sheep health or on farm production, but occasionally heavy infections can predispose sheep to the fatal bacterial infection, Black disease. Infected

carcasses usually have livers trimmed or are condemned.

- Over the 2018 – 2019 financial year, South Australia recorded the highest percentage of infected sheep followed by Victoria (Figure 4).

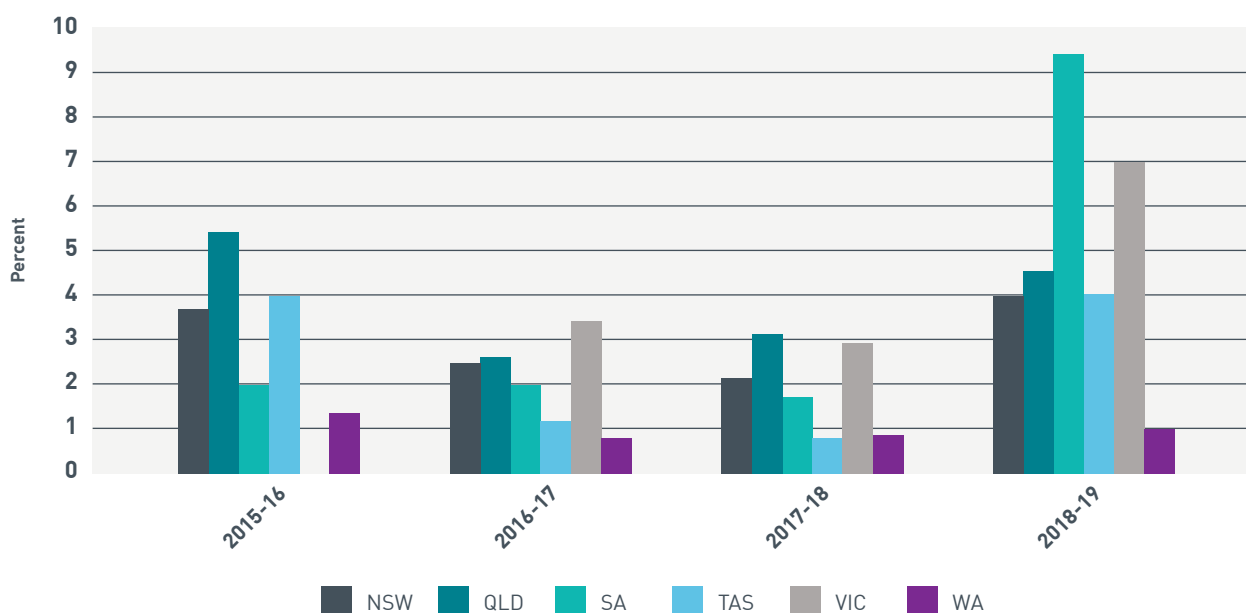


Figure 4. Overall percentage of inspected sheep infected with bladder worm for each state and each financial year from 2014 to 2019.

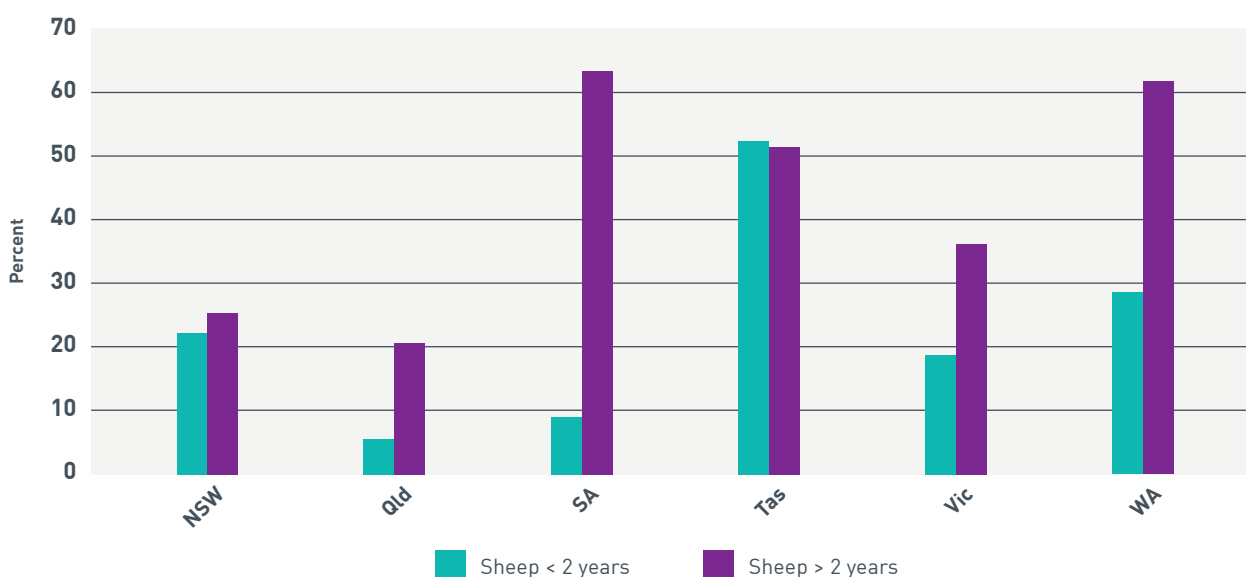


Figure 5. Percentages of inspected lines with at least one sheep infected with bladder worm for each state over the 2018-2019 financial year.

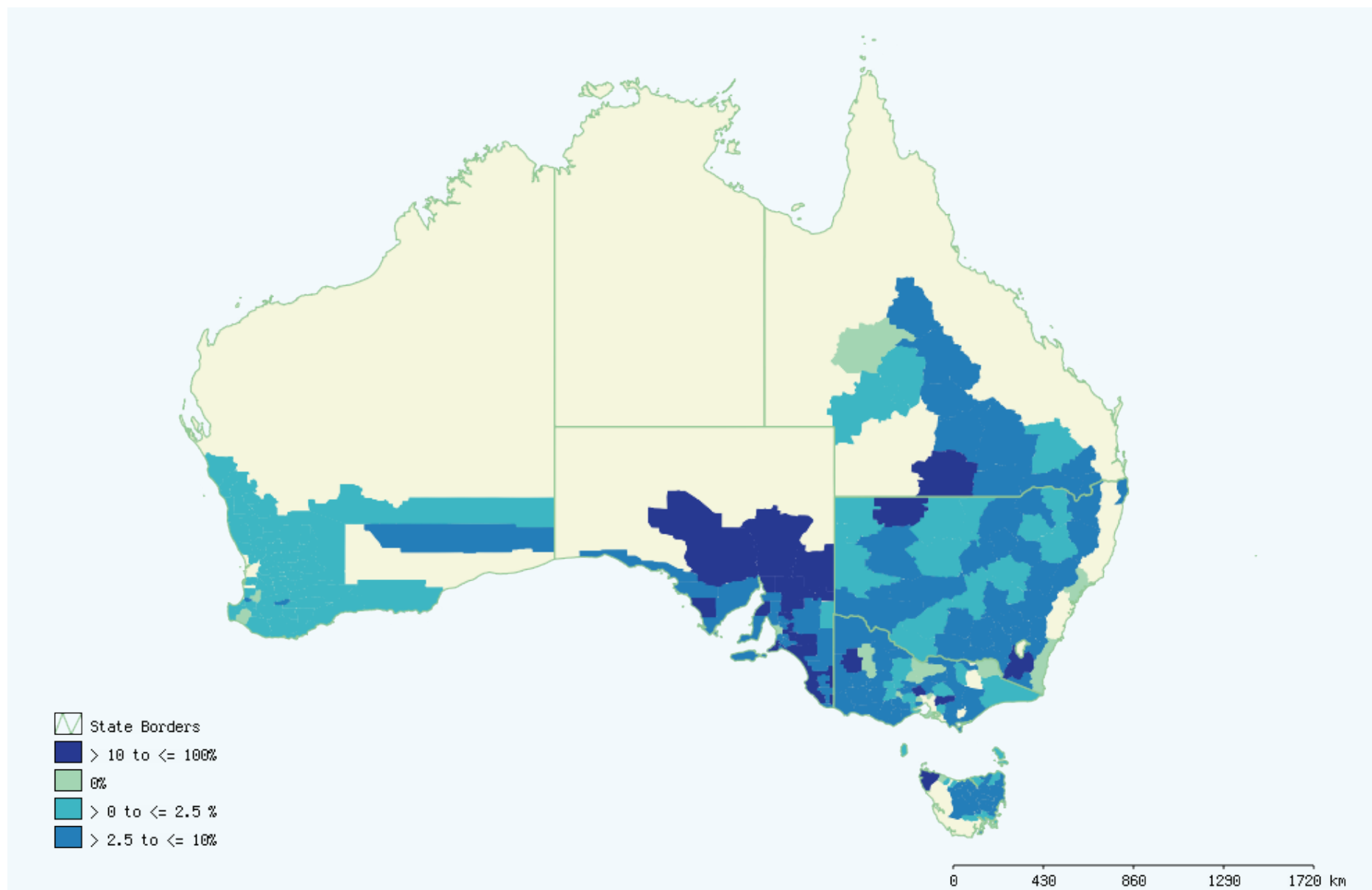


Figure 6. Bladder worm – percentage of infected sheep by LGA over the 2018-2019 financial year.

CHEESY GLAND

Cheesy gland (or caseous lymphadenitis – CLA) is a bacterial disease that results in the formation of lymph node abscesses throughout the body. Most commonly these abscesses are superficial but they can also be found in the lungs, liver, spleen and kidneys. The abscesses are initially puss filled, which over time dries and becomes ‘cheesy’ progressing to multi-layered capsules resembling ‘onion rings’.

CLA causes a decrease in wool production, wool contamination, chronic infection which causes ill thrift, emaciation and can affect reproductive performance. CLA can result in a decrease in carcase weight and increased carcase trimming at the abattoirs. CLA can result in a decrease in carcase weight and increased carcase trimming at the abattoirs.

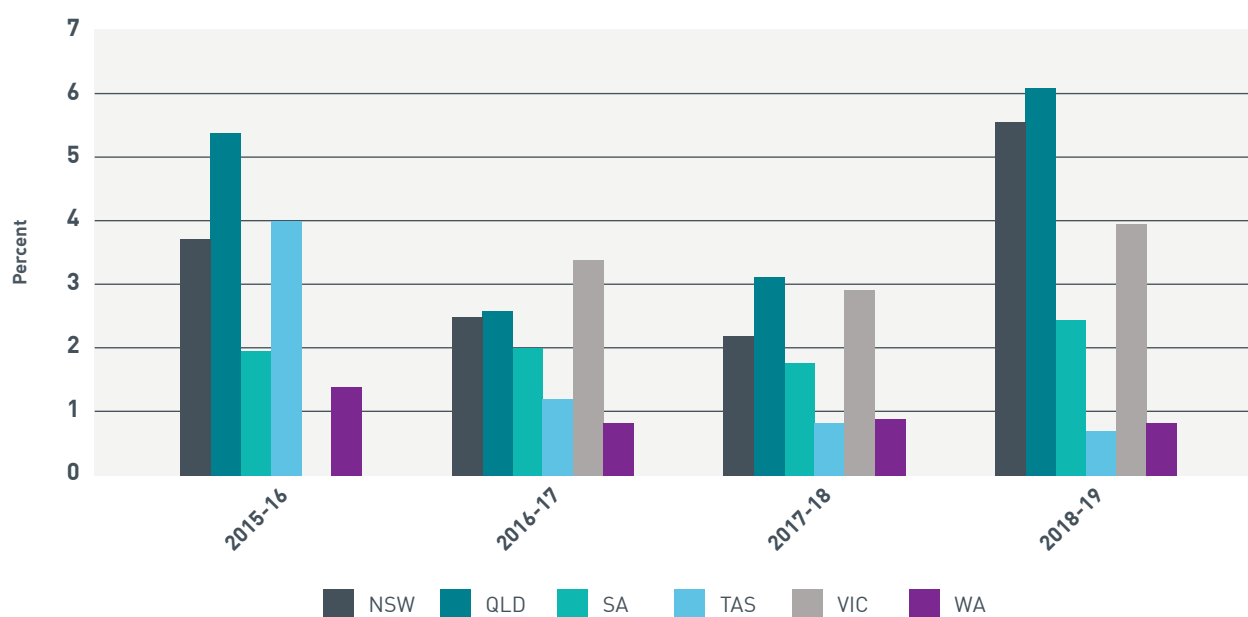


Figure 7. Overall percentages of inspected sheep infected with CLA for each state and each financial year from 2015 to 2019.

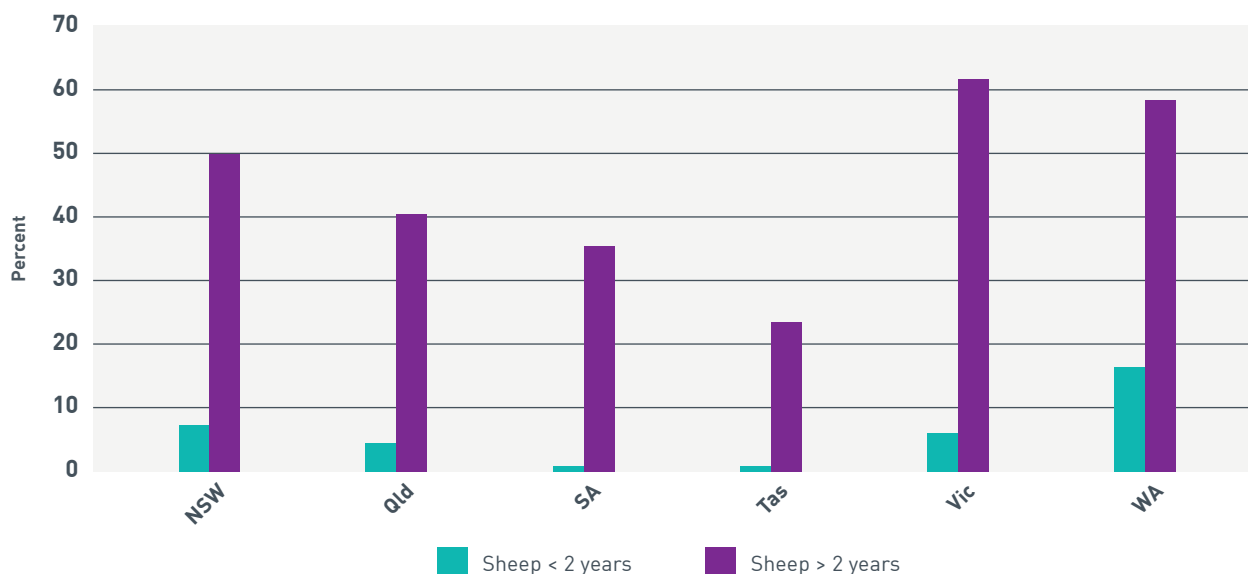


Figure 8. Percentages of inspected lines with at least one sheep infected with CLA for each state over the 2018-2019 financial year.

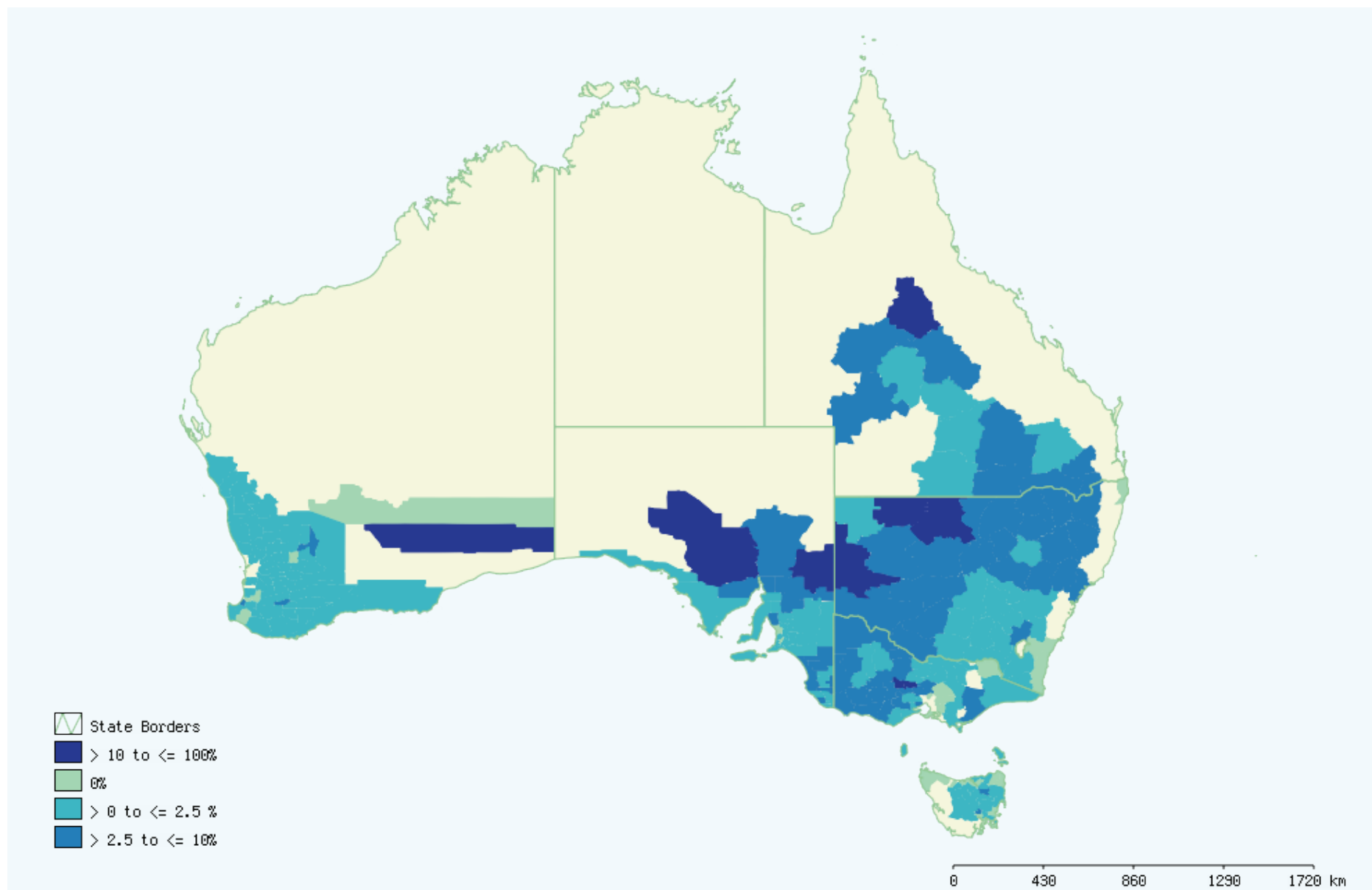


Figure 9. Cheesy Gland – percentage of infected sheep by LGA over the 2018-2019 financial year.

DOG BITES

Dog bites occur as a result of un-muzzled or incorrectly muzzled dogs with access to sheep, either in the paddock, yards or during transport. Abattoirs require dogs to be muzzled at all times. Dog bites usually occur in the hind quarters, but also can occur on the face or along the back. The Australian Animal Welfare Standards and Guidelines for Sheep states: “A person in charge of a dog that habitually bites sheep must ensure the

dog is muzzled while working sheep”.

Carcases of sheep with dog bites are usually trimmed to the nearest joint which may be the entire hind leg, resulting in a significant reduction in dressed weight. Occasionally whole carcasses are condemned when wounds are infected and the animal is showing evidence of septicaemia (blood poisoning).

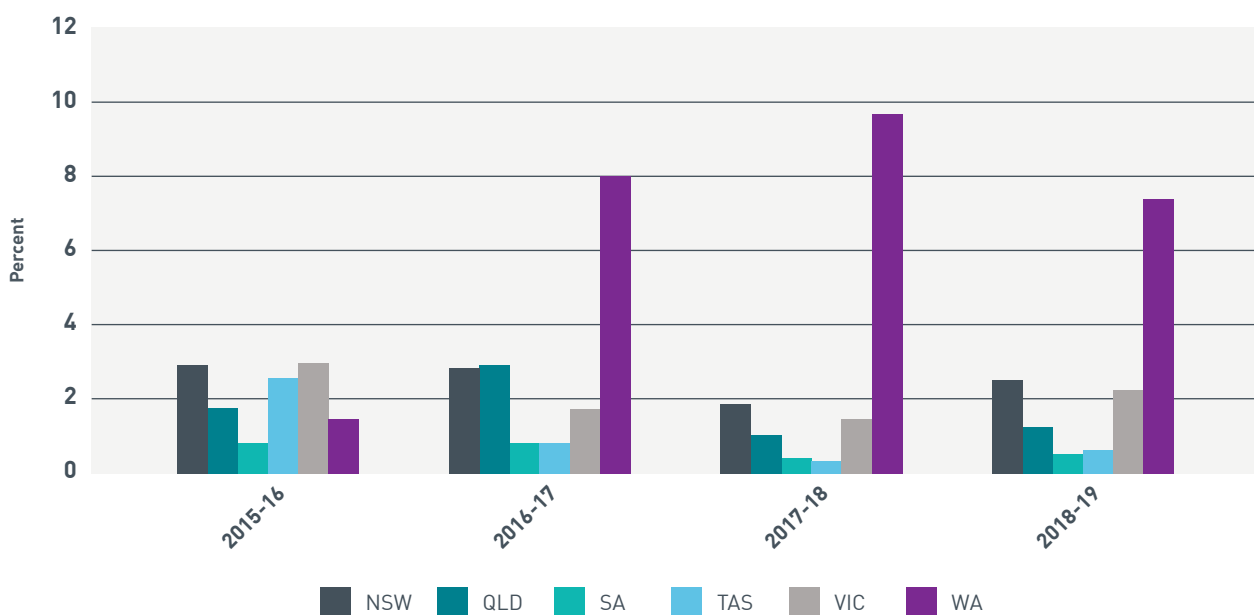


Figure 10. Overall percentages of inspected lines with at least one sheep affected by dog bites for each state and each financial year from 2015 to 2019.

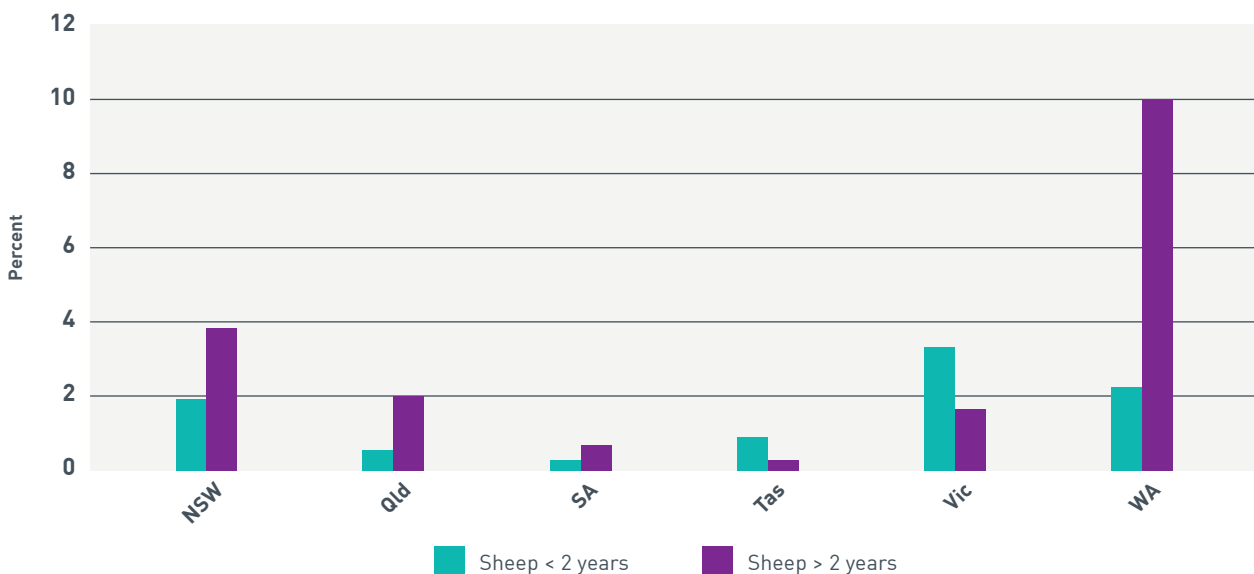


Figure 11. Percentages of inspected lines with at least one sheep affected by dog bites for each state over the 2018-2019 financial year.

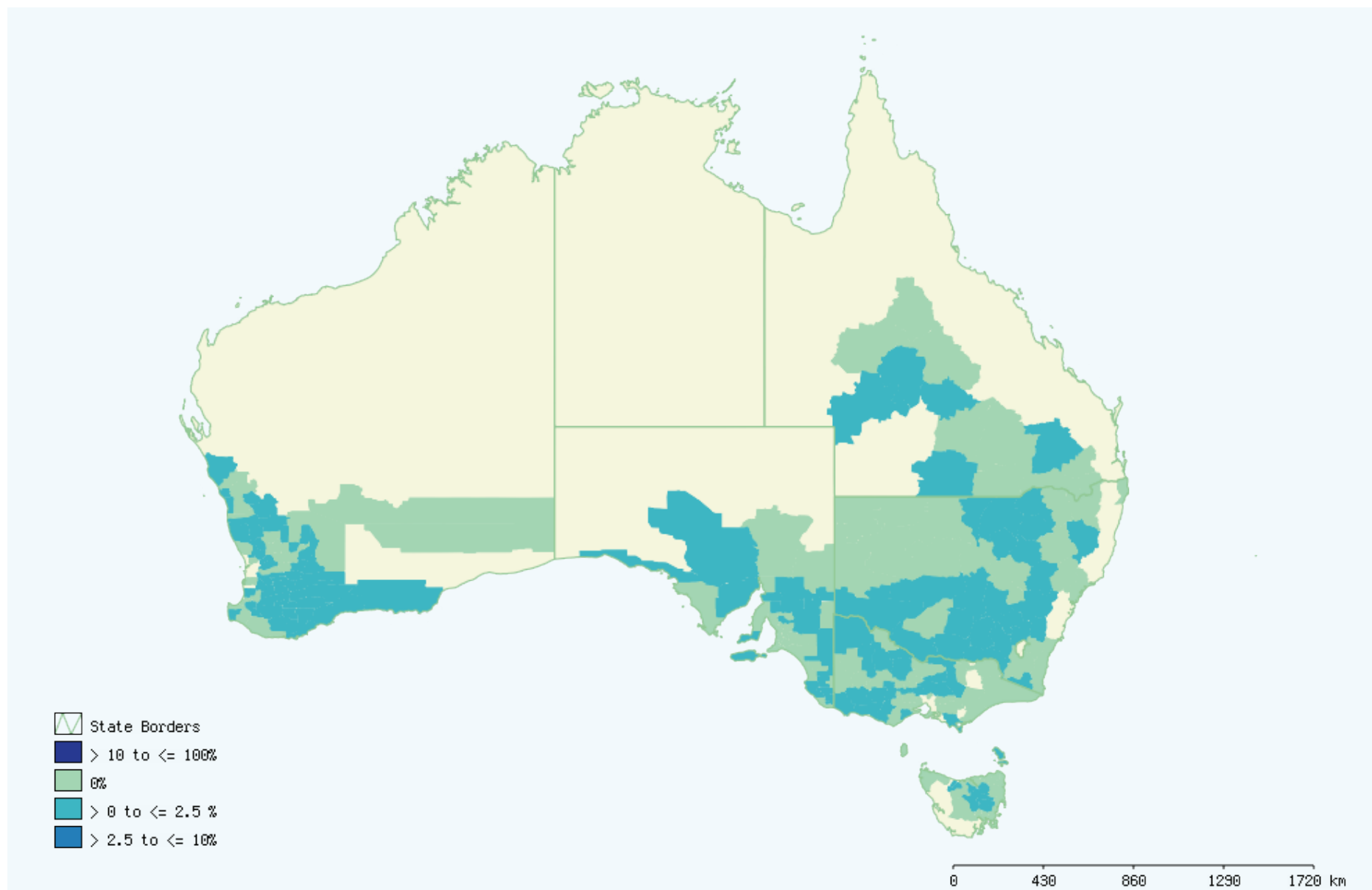


Figure 12. Dog bites – percentage of affected sheep by LGA over the 2018-2019 financial year.

GRASS SEEDS

Grass seeds embedded in the carcase due to spear, brome, barley, silver and Chilean needle grasses cause weaner ill thrift, infections and/or death, reduction in wool production and wool value. Grass seeds also cause trimming of the carcase and a decrease in meat and skin value.

- Over the 2018-2019 financial year the incidence of grass seeds detected in SA, Vic and WA has decreased from the 2017-2018 financial year.
- Overall the percentage of infected sheep is low for all states for 2018-2019 except WA.

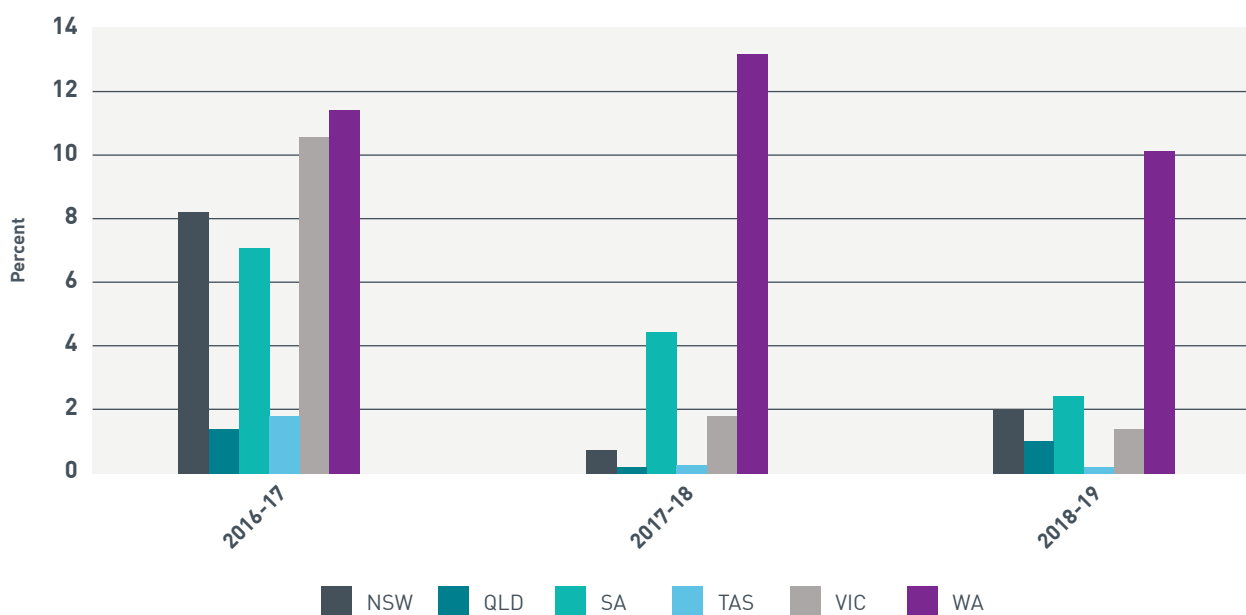


Figure 13. Percentages of inspected lines with at least one carcase affected by grass seeds for each state and each financial year from 2016 to 2019.

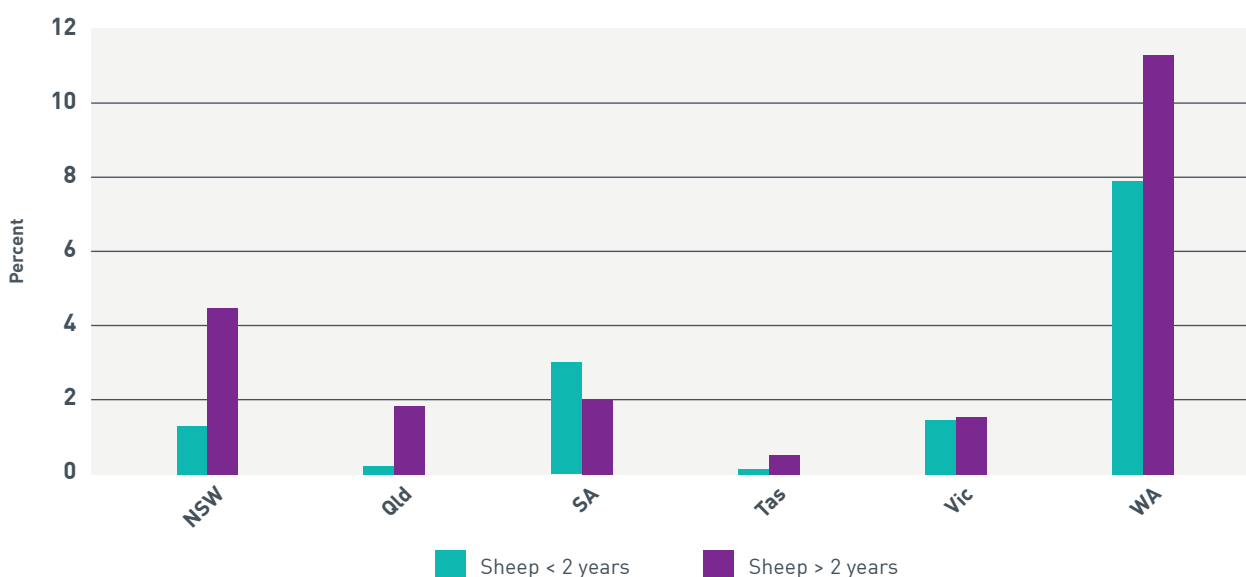


Figure 14. Percentage of inspected lines with at least one carcase affected by grass seeds over the 2018-2019 financial year.

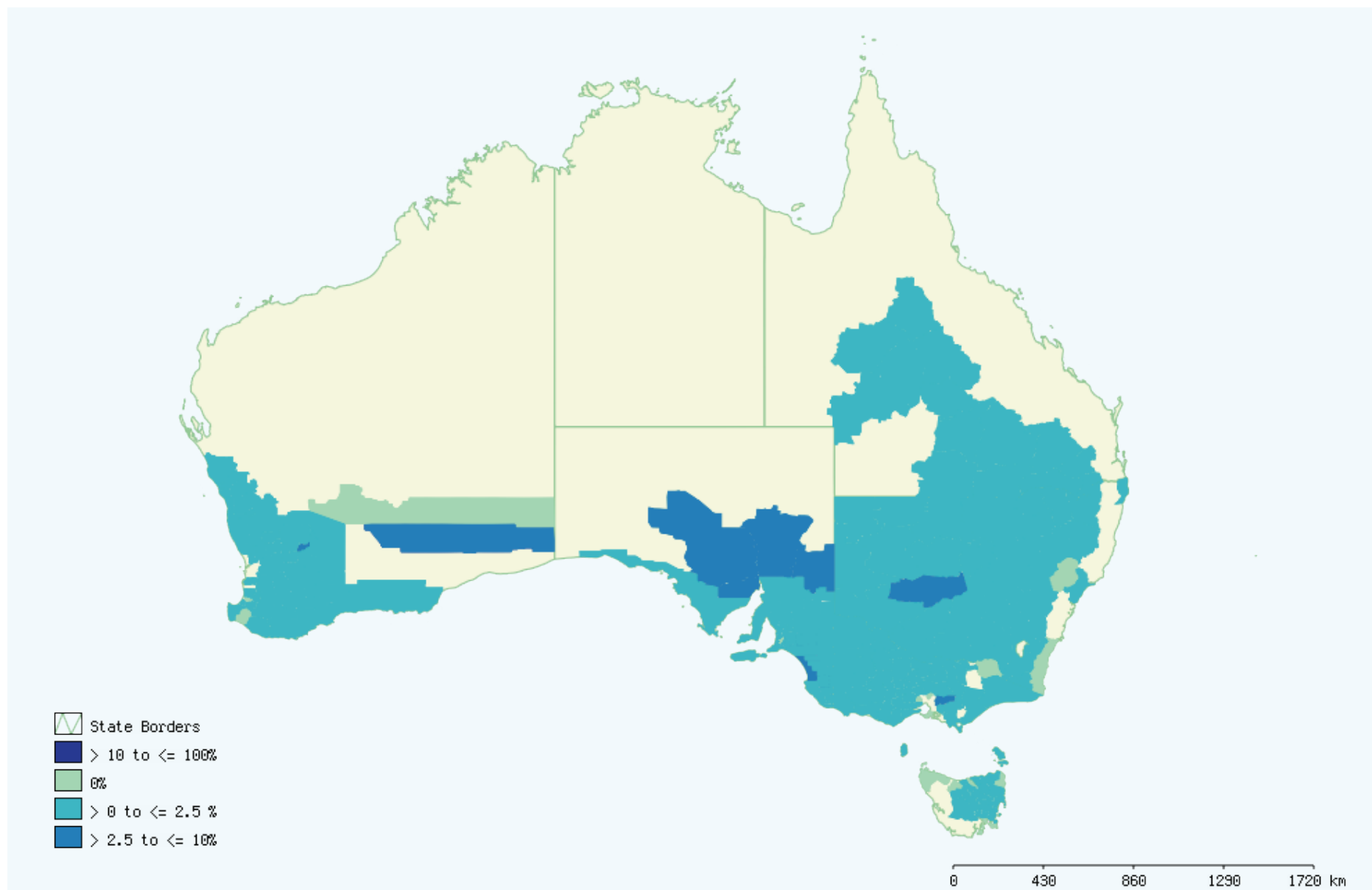


Figure 15. Grass seed lesions – percentage of affected sheep by LGA over the 2018-2019 financial year.

HYDATIDS

Hydatids are the large cysts from the dog hydatid tapeworm (*Echinococcus granulosus*) which develop mainly in the liver and/or lungs of infected sheep. If infected, sheep organs may be condemned at the abattoir.

- The percentage of sheep infected with hydatids decreased in all states except for QLD and Vic since the 2018 – 2019 financial year (Figure 16).

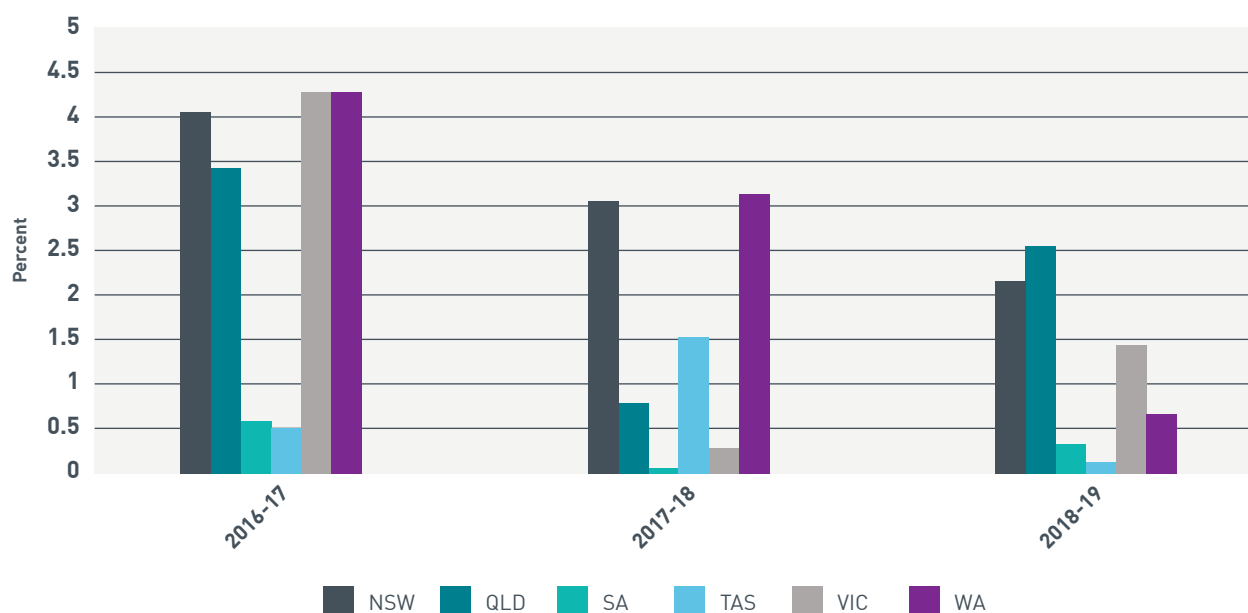


Figure 16. Percentages of inspected lines with at least one sheep infected with hydatids for each state and each financial year from 2016 to 2019.

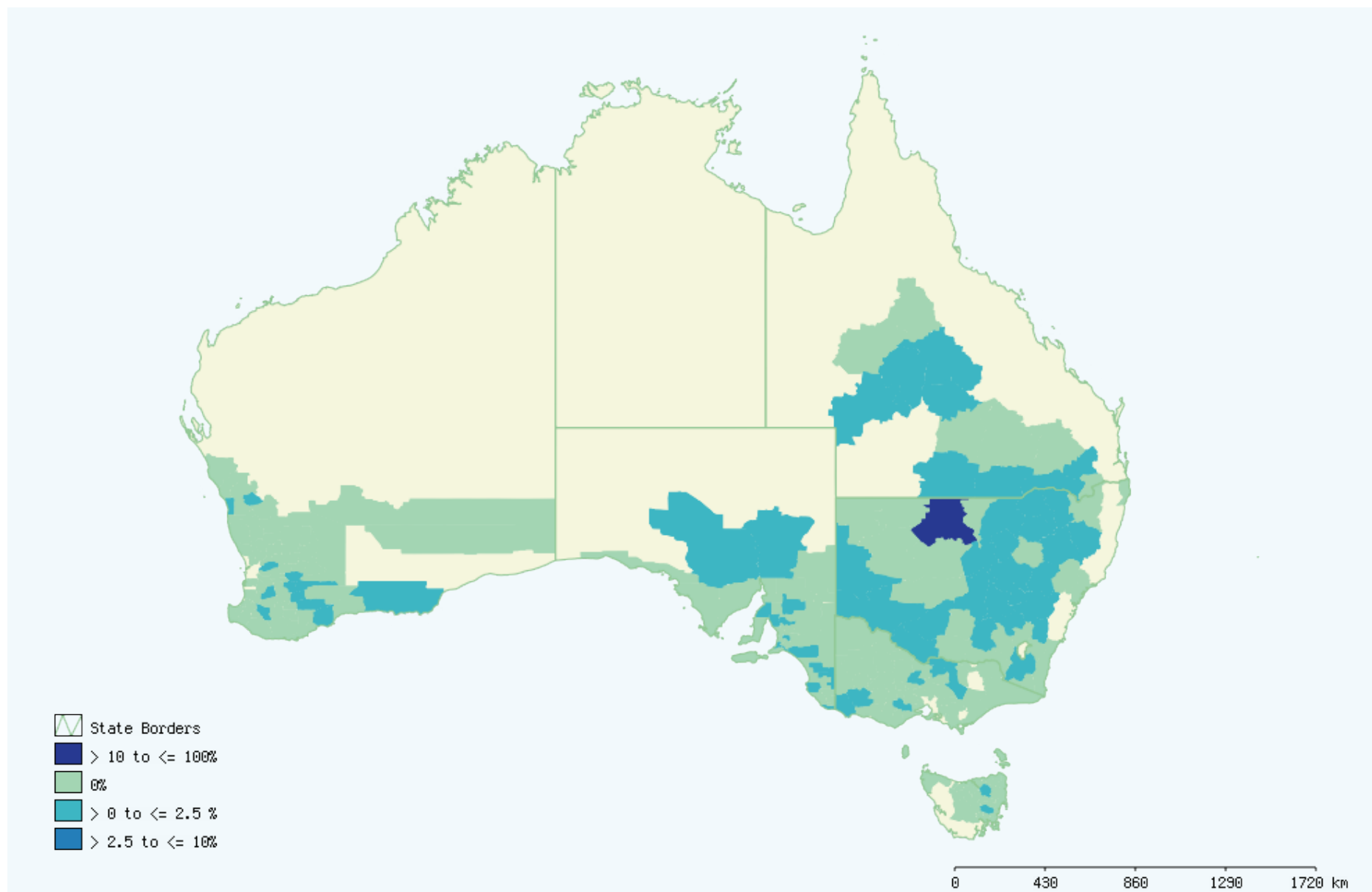


Figure 17. Hydatids – percentage of infected sheep by LGA over the 2018-2019 financial year.

KNOTTY GUT

Knotty gut (also called pimply gut) is a condition of the intestines caused by the larval stage of the nodule worm (*Oesphagostomum columbianum*). These lesions can range from small gritty lesions 2-3mm in diameter, to pea sized cysts, rendering the affected intestines unsuitable

for sausage casings. Nodule worm eggs and larvae are particularly sensitive to cold weather and drying out, so tend to only exist in areas with predominately summer rainfall.

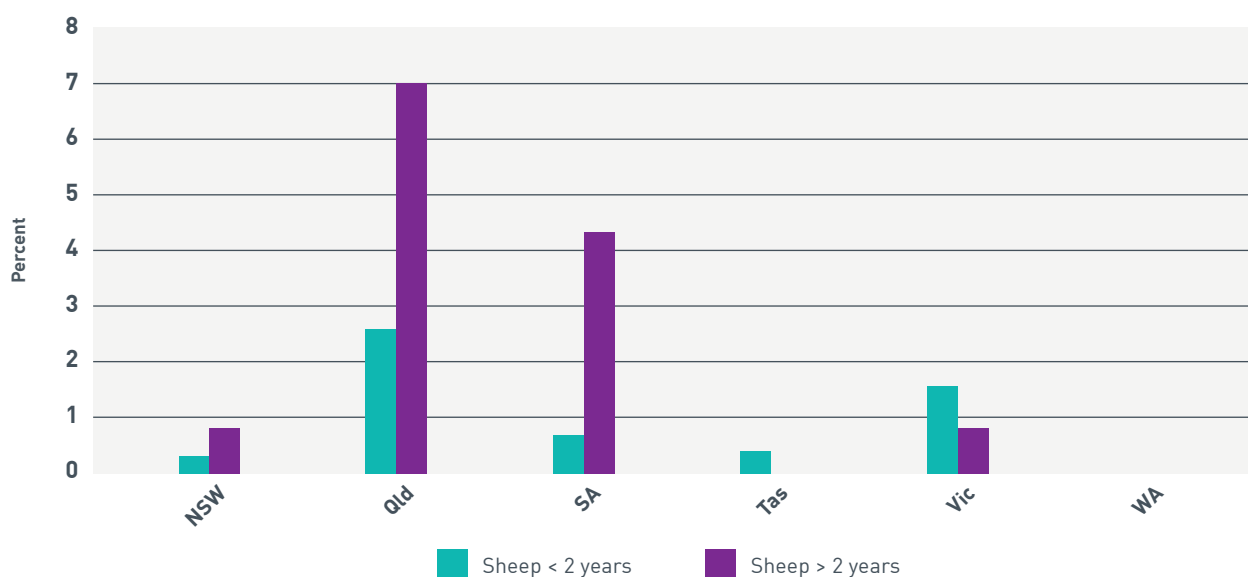


Figure 18. Percentages of inspected lines with at least one sheep infected with knotty gut for each state over the 2018-2019 financial year.

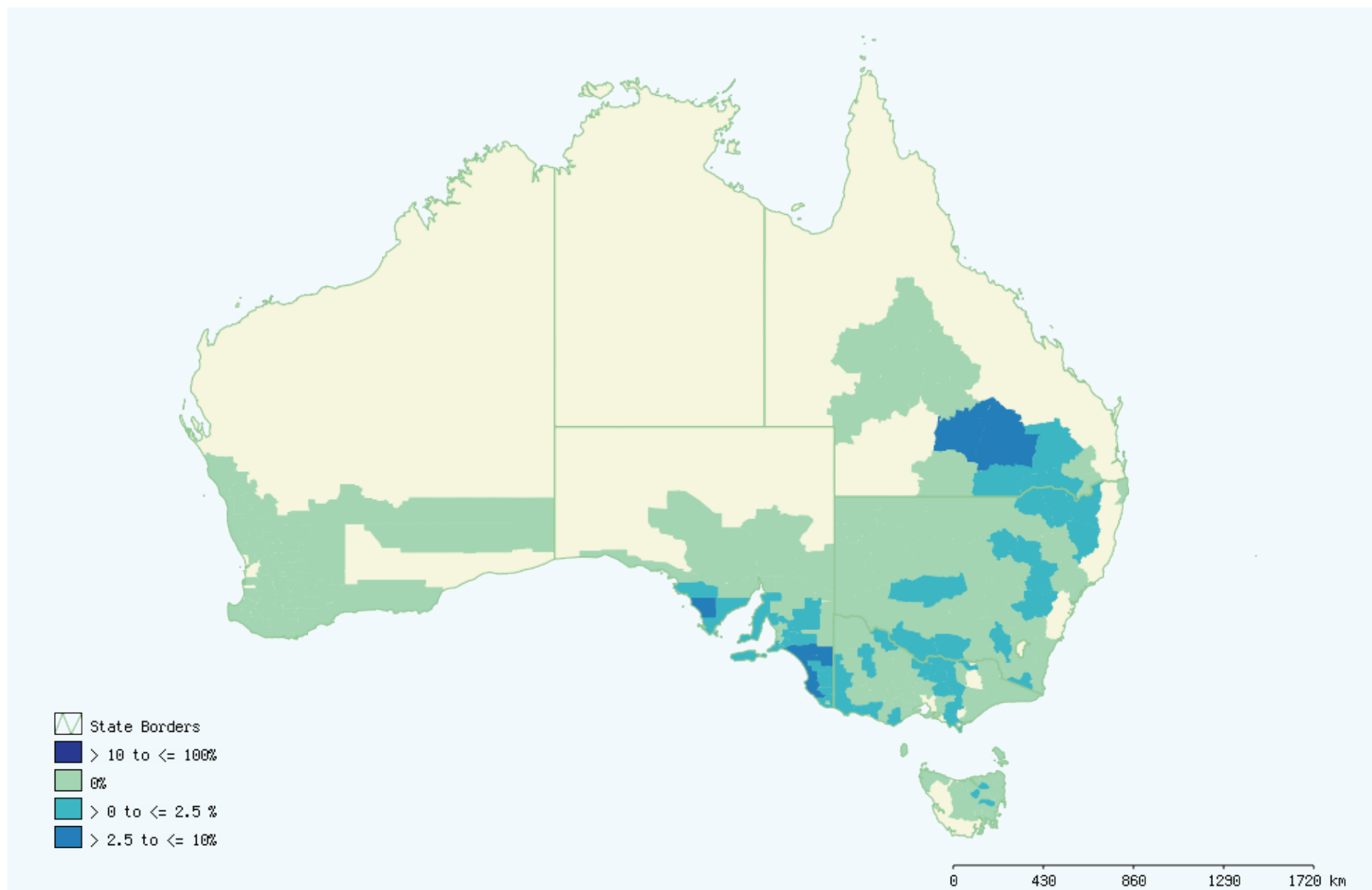


Figure 19. Knotty gut – percentage of infected sheep by LGA over the 2018-2019 financial year.

LIVER FLUKE

Liver fluke are large, flatworm parasites that infect sheep and cattle in high rainfall areas and irrigated areas of eastern Australia. A permanent water source and specific snails are required for the liver fluke life cycle to occur. Affected livers are condemned at abattoirs and in some cases, whole carcasses can be condemned.

- The percentage of infected lines with at least one infected sheep was highest in NSW followed by Tasmania for the 2018-2019 financial year (Figure 20).
- Consistent with reports from previous years, no liver fluke was reported from WA.

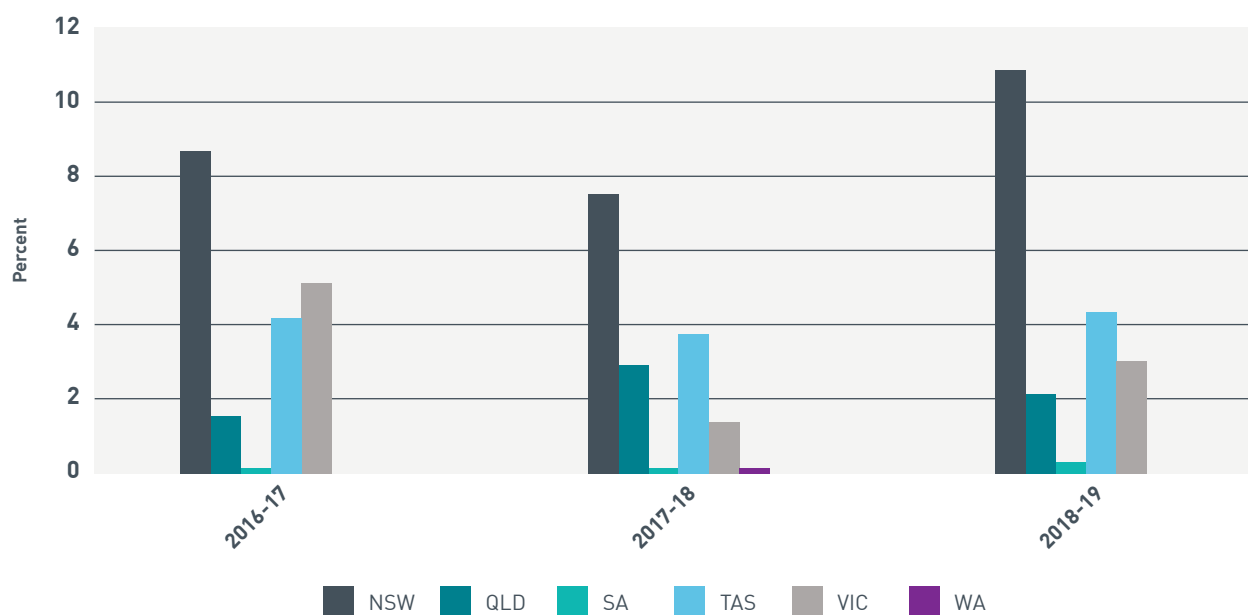


Figure 20. Percentage of inspected lines with at least one infected sheep for each financial year from 2016 to 2019.

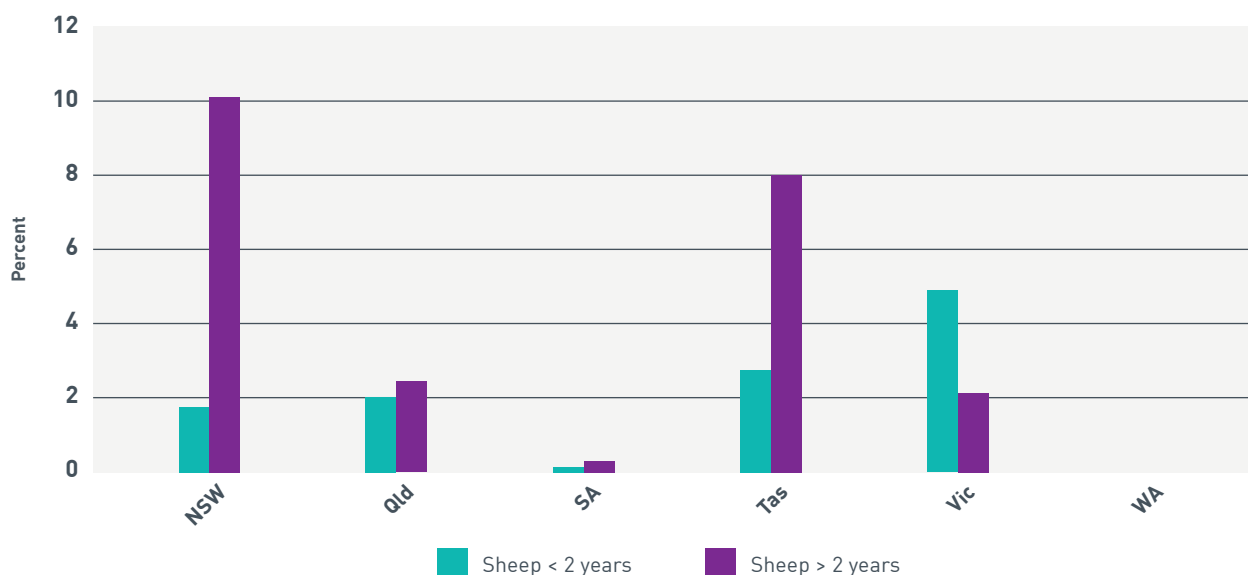


Figure 21. Percentage of inspected lines with at least one infected animal with liver fluke for each state over the 2018-2019 financial year.

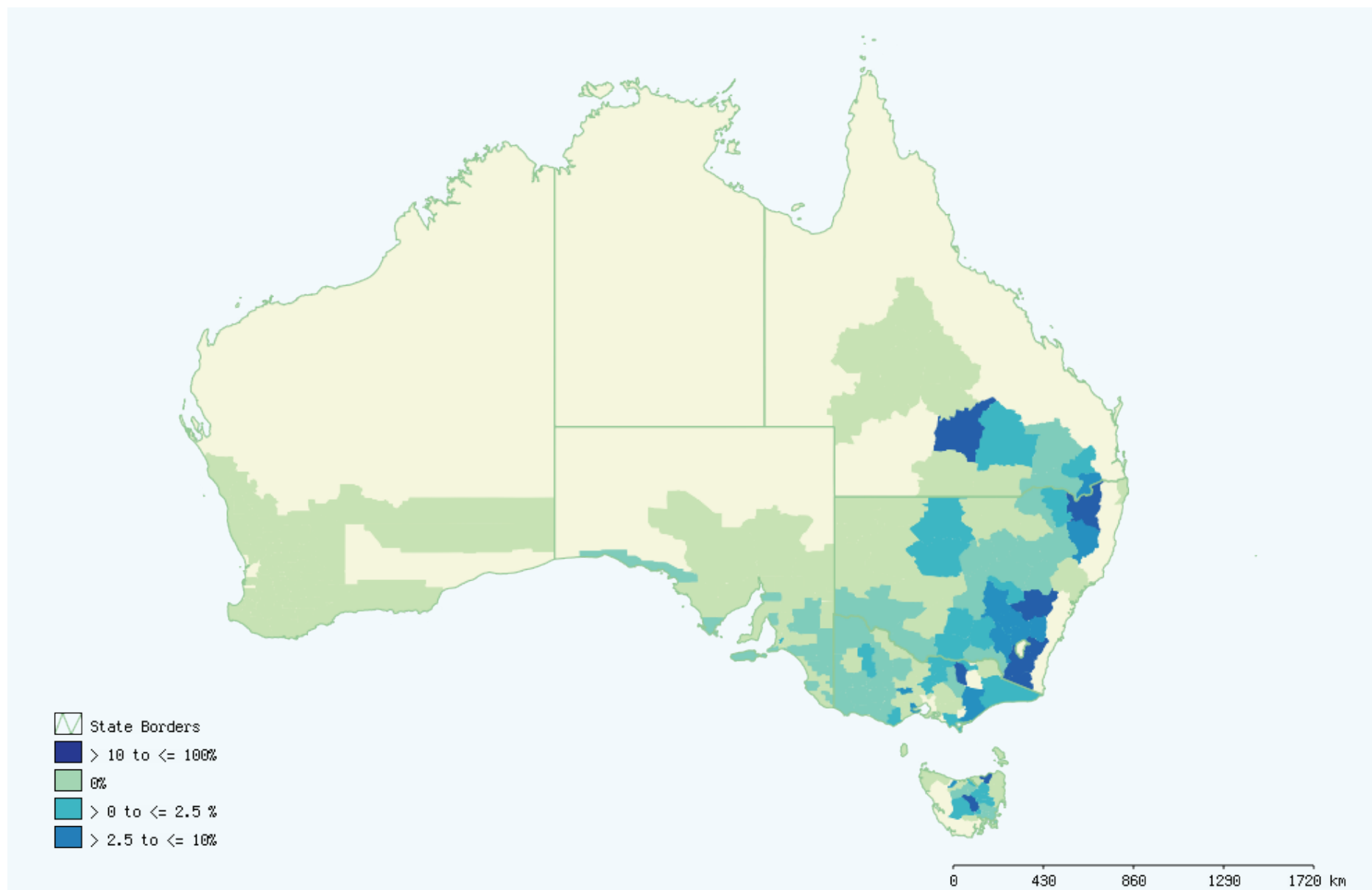


Figure 22. Liver Fluke – percentage of infected sheep by LGA over the 2018-2019 financial year.

LUNGWORM

Lungworm is a condition caused by the ingestion of the lungworm (*muellerius capillaris*) that develop in the tissue of the lungs. This species of lungworm has a lifecycle that includes snails, and is different from the one that inhabits the bronchi. Lungworm is thought to have no impact on

sheep health or productivity. At the abattoir, lungs of infected sheep are condemned.

- The percentage of infected PICs with at least one infected animal was highest in SA (Figure 23).

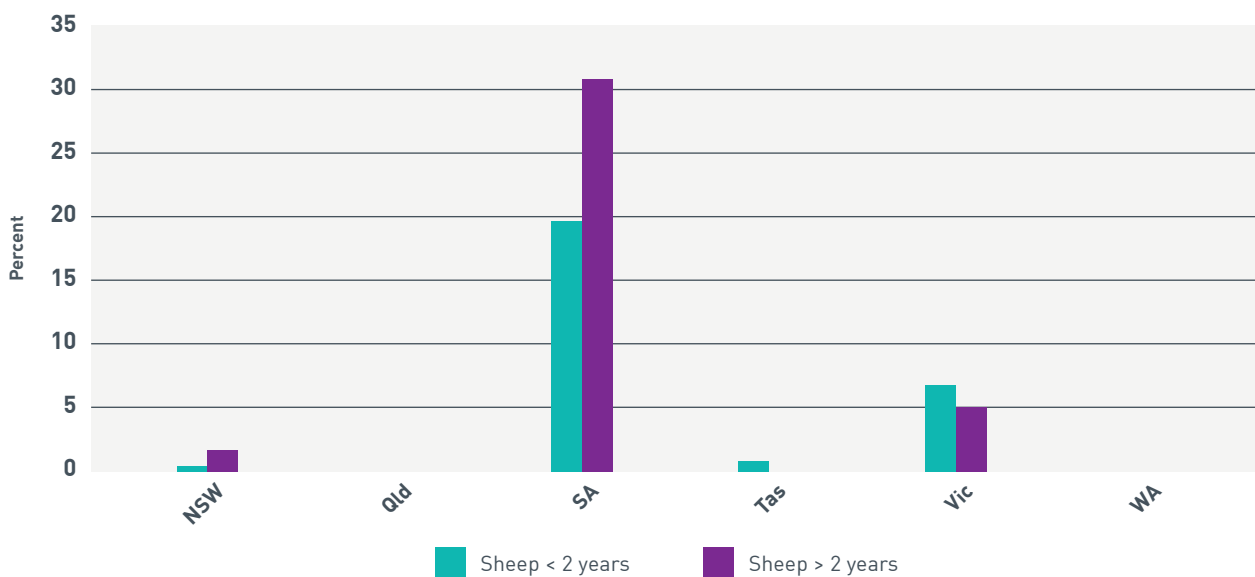


Figure 23. Percentage of inspected PICs with at least one infected animal with lungworm for each state over the 2018-2019 financial year.

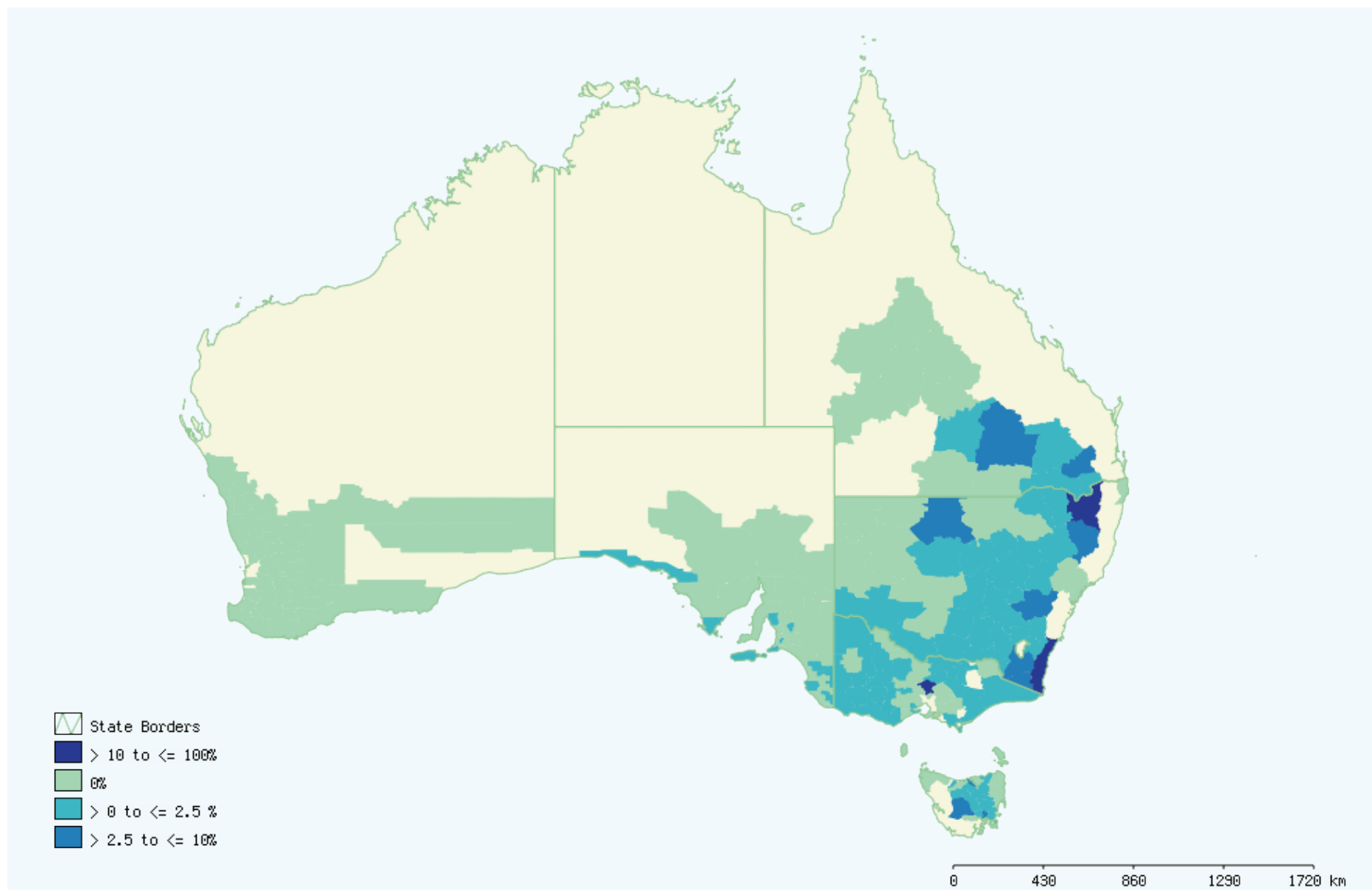


Figure 24. Lung worm – percentage of infected sheep by LGA over the 2018-2019 financial year.

PNEUMONIA AND PLEURISY

Pneumonia in sheep is the infection and inflammation of the lungs. In severe cases pneumonia can extend to the outer layer of the lung, the pleura, causing a disease called pleurisy. Pneumonia is initially caused by an infection with a bacterium (such as a mycoplasma) or virus, or sometimes lungworm, with secondary bacterial invasion of the damaged lungs. The disease can be limited to isolated cases or can result in outbreaks of disease typically in weaners over summer and is often called “summer pneumonia”. Production losses are seen on farm with affected lambs being on average 3 kg lighter.

- Victoria and Western Australia recorded the highest percentages of inspected PICs with sheep affected by pleurisy for the 2018-2019 financial year (figure 25).
- Victoria and South Australia recorded the highest percentage of inspected sheep with pneumonia for the 2018-2019 financial year (figure 26). Overall the percentage of infected sheep is very low.

Victoria and Western Australia recorded the highest percentages of inspected PICs affected by pleurisy for the 2018-2019 financial year (figure 25).

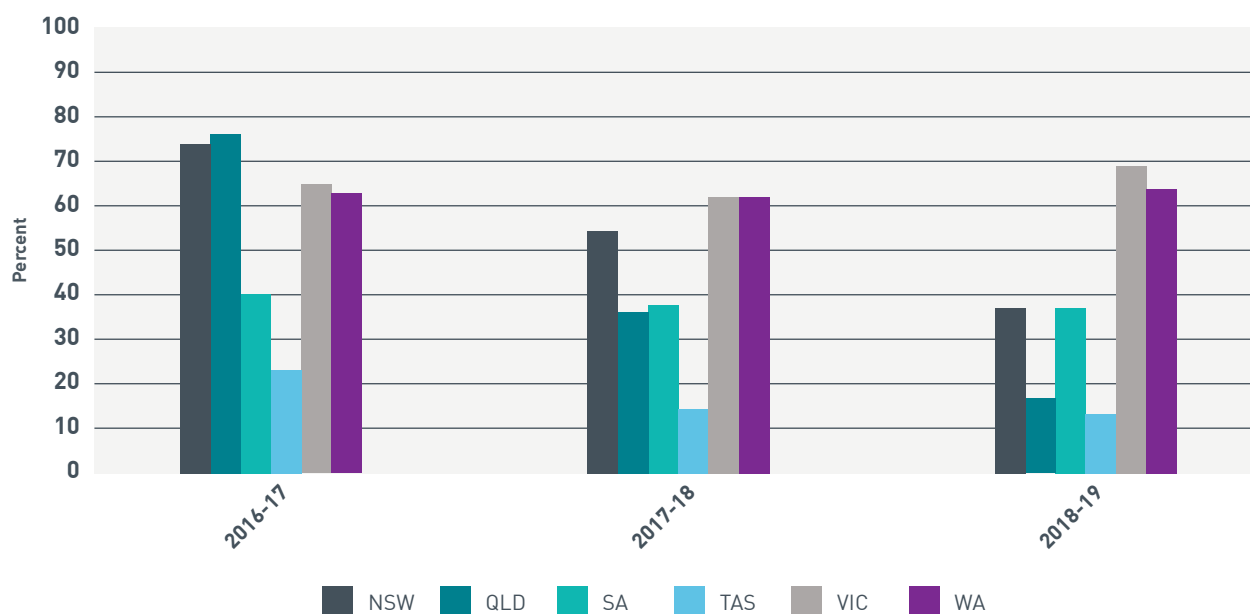


Figure 25. Percentage of inspected PICs with at least one affected animal with pleurisy for each financial year from 2016 to 2019.

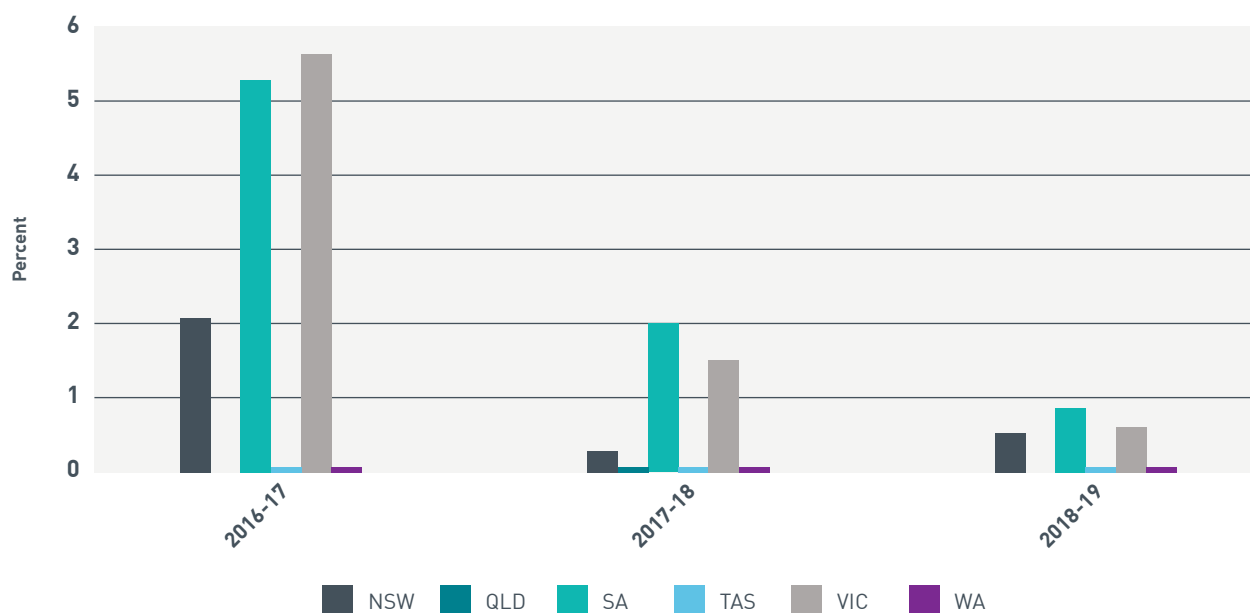


Figure 26. Overall percentages of inspected sheep infected with pneumonia for each financial year from 2016 to 2019.

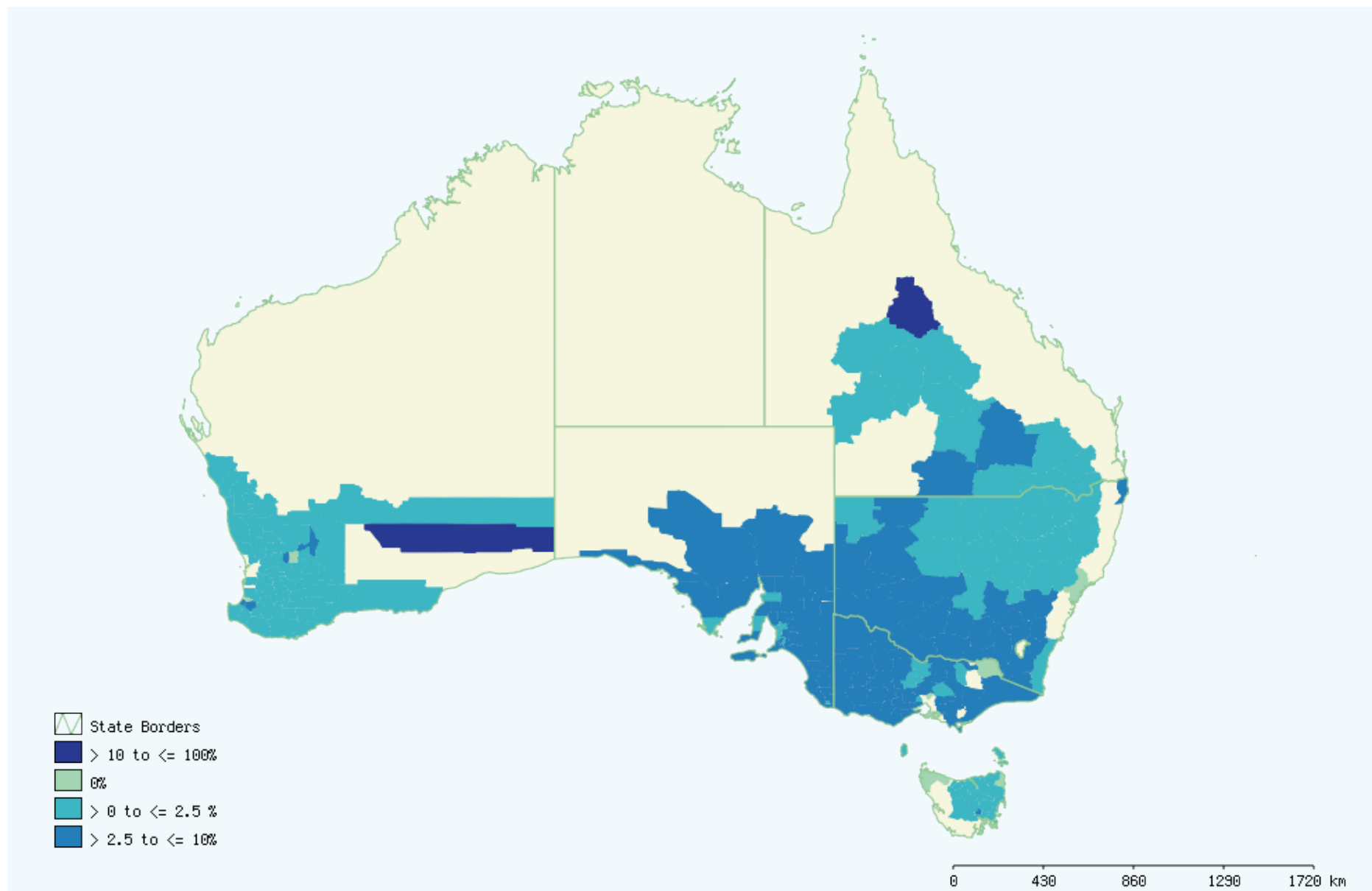


Figure 27. Pleurisy – percentage of infected sheep by LGA over the 2018-2019 financial year.

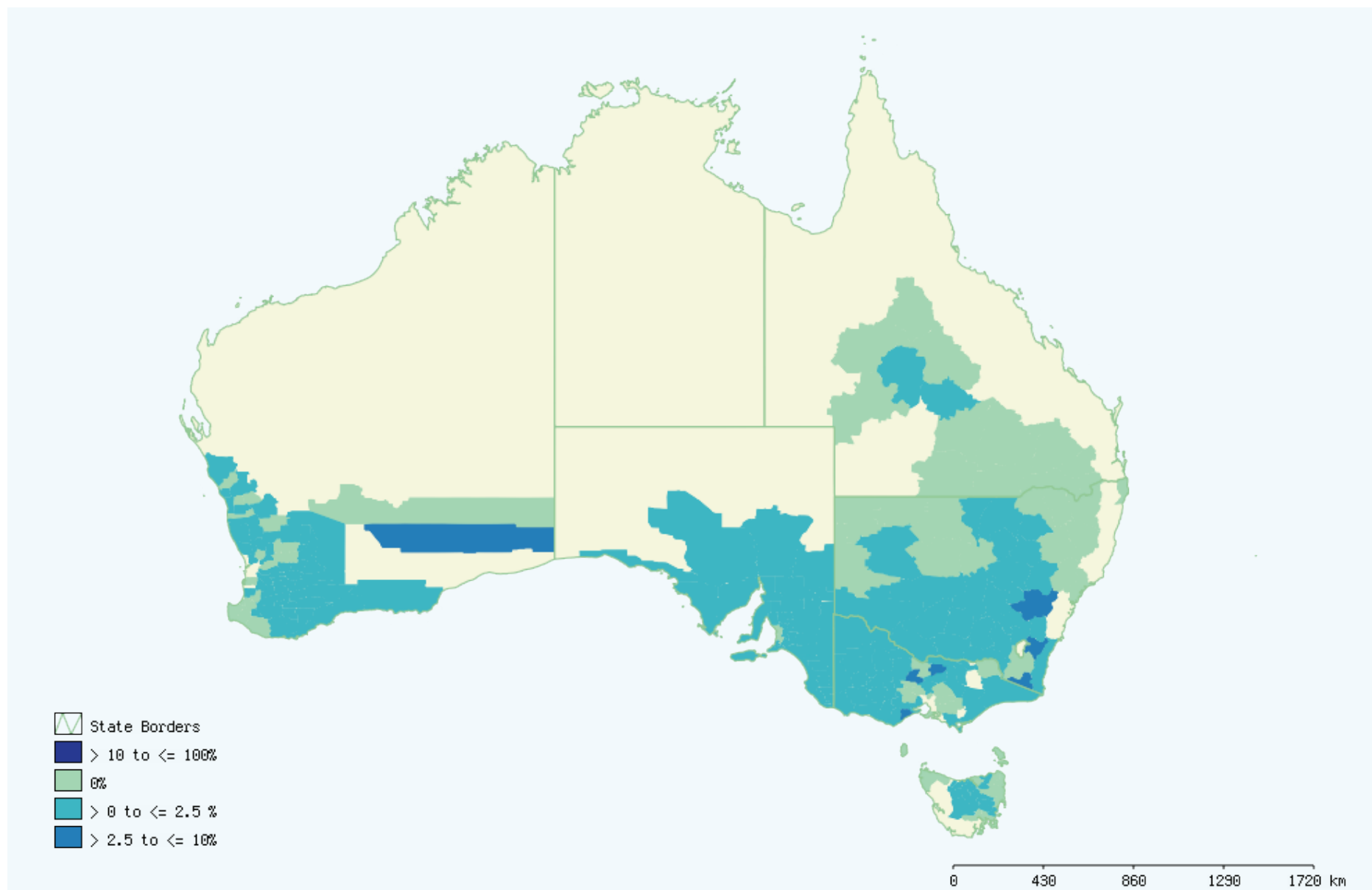


Figure 28. Pneumonia – percentage of infected sheep by LGA over the 2018-2019 financial year.

SARCOCYSTOSIS

Sarcocystis is a single cell parasite with a sheep-cat life cycle. Cats become infected when they eat infected sheep meat, often through scavenging carcasses. The parasite develops in the intestines of the cat and they produce large quantities of microscopic spores in their faeces. The life cycle continues when sheep ingest these spores

on pasture or feed, eventually localising and developing into cysts in the muscle. Sarcocystosis has no impact on sheep health or productivity. At the abattoirs, infected carcasses will undergo trimming while heavily infected carcasses will be condemned.

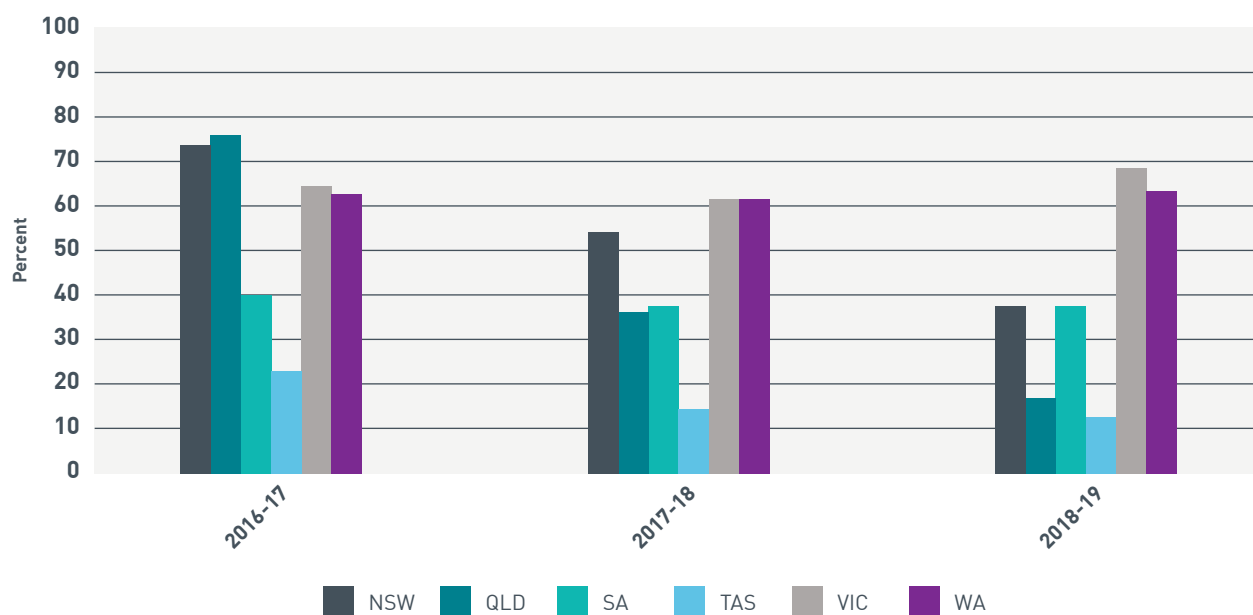


Figure 29. Percentages of inspected lines with at least one sheep infected by sarcocystosis for each financial year from 2016 to 2019.

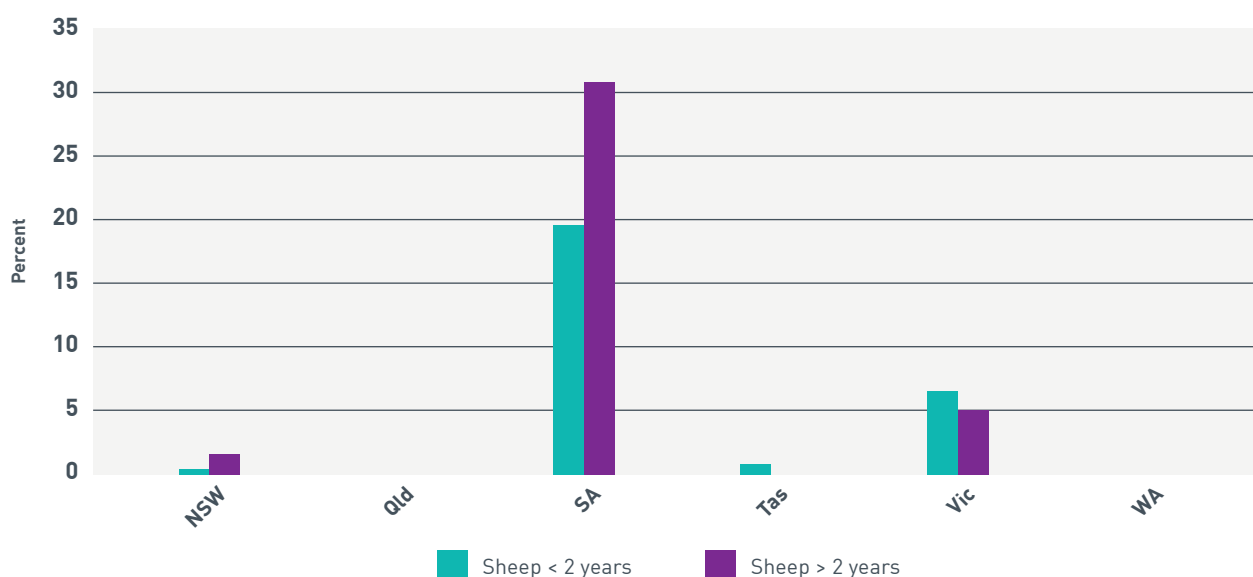


Figure 30. Overall percentages of inspected lines with at least one sheep infected with sarcocystosis for each state over the 2018-2019 financial year.

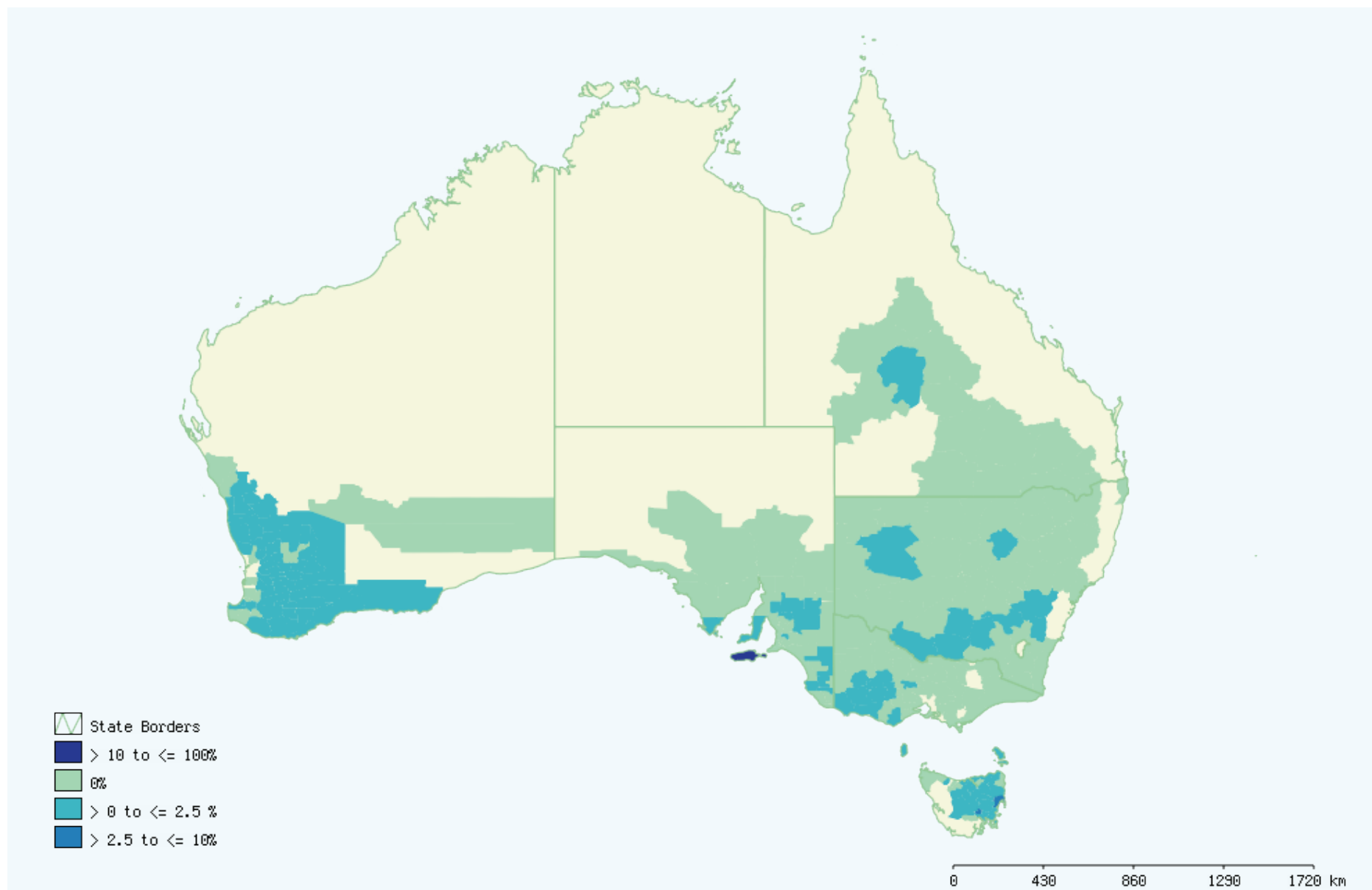


Figure 31. Sarcocytosis – percentage of infected sheep by LGA over the 2018-2019 financial year.

SHEEP MEASLES

Sheep measles (*Cysticercus ovis*) are infective cysts from the dog tapeworm *Taenia ovis*, found in the muscles of sheep and goats. Sheep measles causes trimming, downgrading and condemnation at abattoirs.

- All states recorded a large proportion of lines that had sheep infected with sheep measles on abattoir inspection. The overall percentages of inspected lines infected with sheep measles over the 2018-2019 financial year was lowest in QLD and SA (Figure 32).

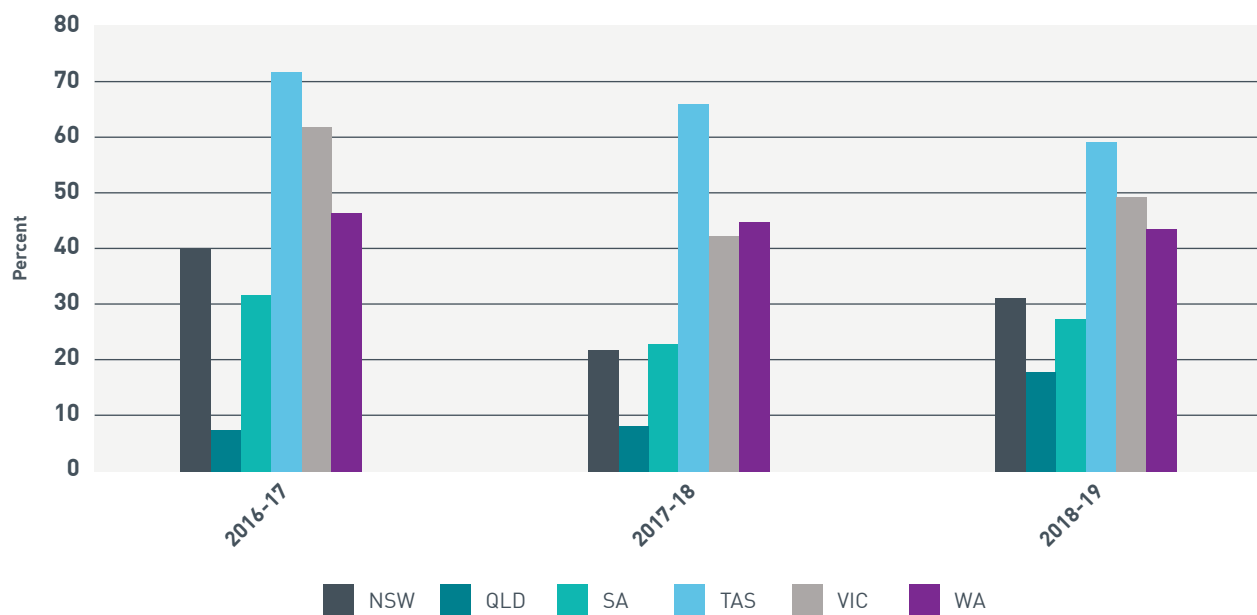


Figure 32. Percentages of inspected lines with at least one sheep infected by sheep measles for each financial year from 2016 – 2019.

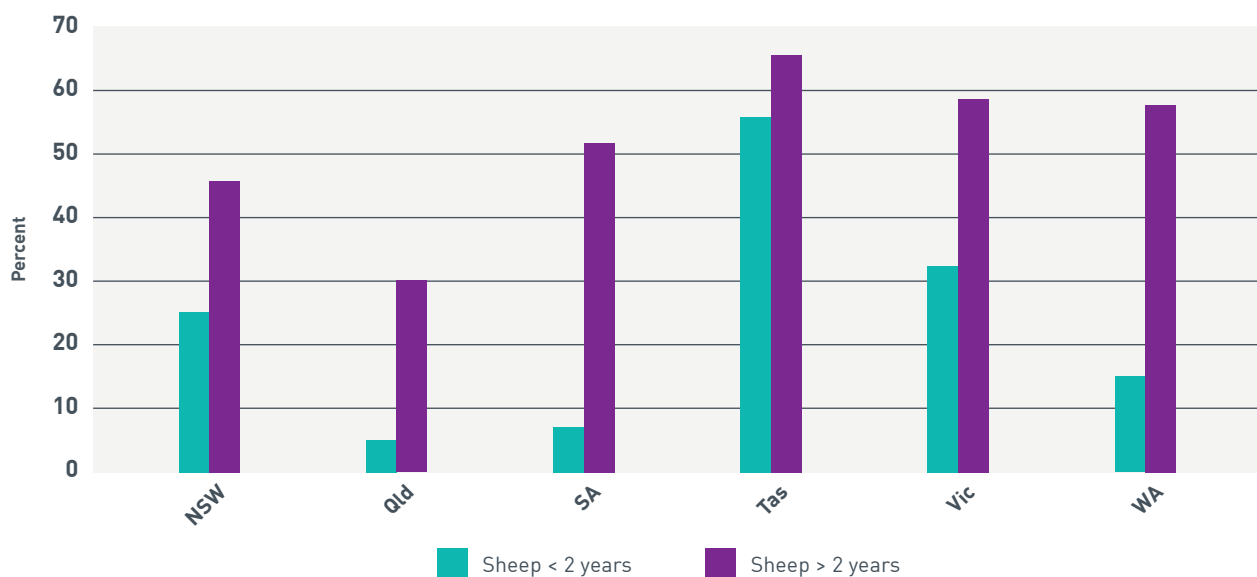


Figure 33. Percentages of inspected lines with at least one infected sheep affected by sheep measles for the 2018-2019 financial year.

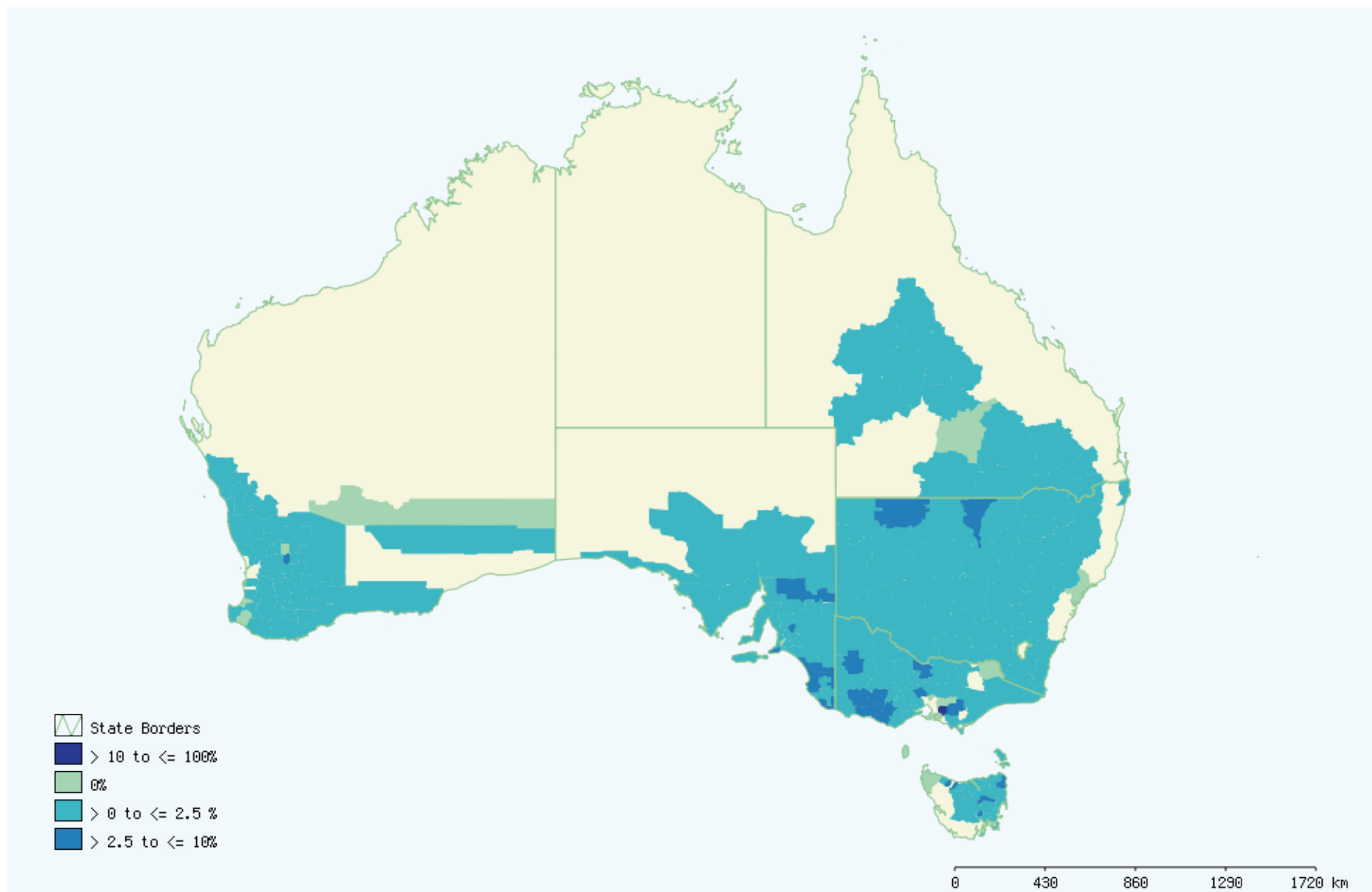


Figure 34. Sheep measles – percentage of infected sheep by LGA over the 2018-2019 financial year.

VACCINATION LESIONS

Vaccination lesions can be caused by improper technique, poor hygiene or using a contaminated vaccine. The accidental inoculation of bacteria or dirt with the vaccine results in infection which can lead to abscess formation. At the abattoir, vaccination lesions are trimmed from the carcase.

- In 2018-2019 Tasmania recorded the highest percentage of lines with sheep with vaccination lesions. However, numbers of affected sheep are low overall (Figure 35).

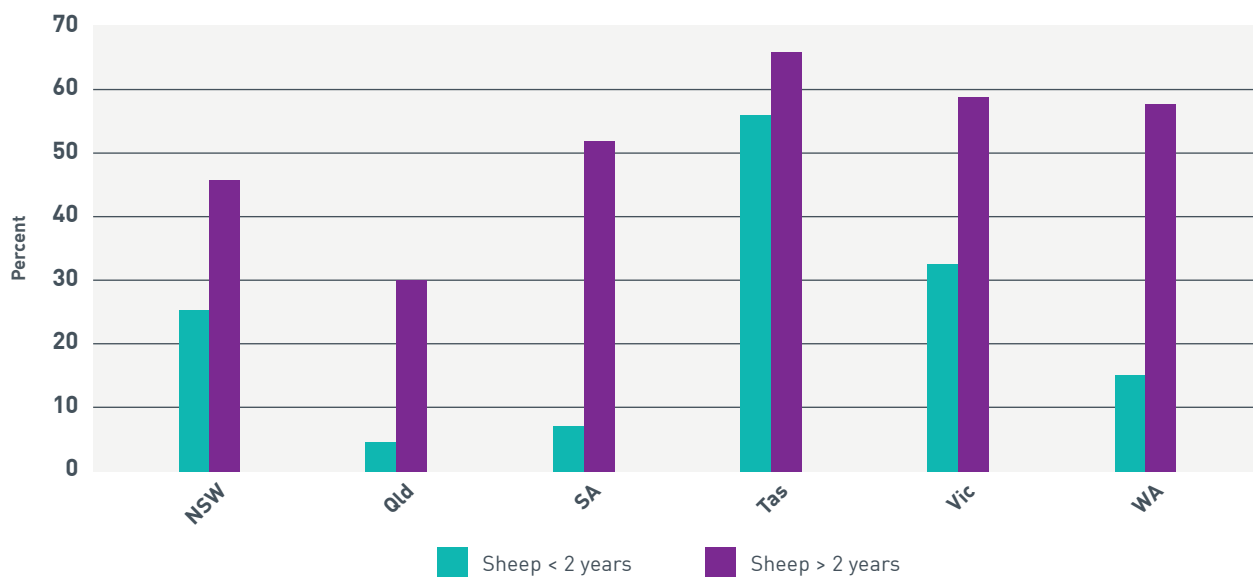


Figure 35. Percentages of inspected lines with at least one sheep affected by vaccination lesions for each state over the 2018-2019 financial year.

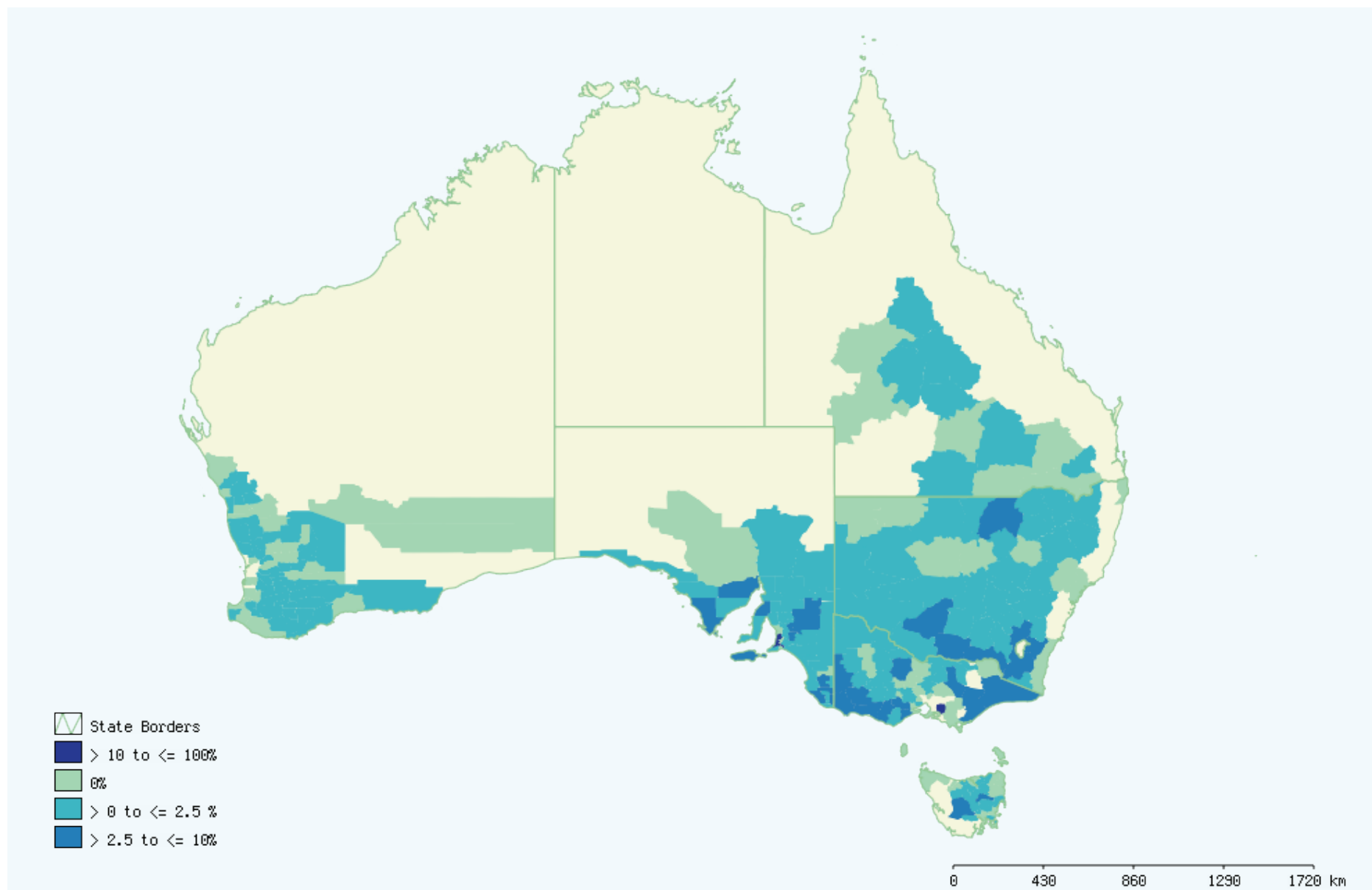


Figure 36. Vaccination lesions – percentage of affected sheep by LGA over the 2018-2019 financial year.

STATE CONTACTS

STATE	NAME	ORGANISATION	NUMBER
New South Wales	Dr Paul Freeman	NSW Department of Primary Industries	02 6626 1214
South Australia	Dr Nigel Baum	Department of Primary Industries and Regions, SA	08 8842 6222
Tasmania	Dr Mary Lou Conway	Department of Primary Industries, Parks, Water and Environment	03 6165 2105
Victoria	Dr Rob Suter	Department of Jobs, Precincts and Regions	03 9217 4109
Western Australia	Dr Anna Erickson	Department of Primary Industries and Regional Development	08 9881 0211
Queensland	Dr Louise Mullemeister	Department of Agriculture and Fisheries	07 4688 1470

INDUSTRY CONTACTS

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AHA would like to acknowledge the National Meat Industry Training Advisory Council Limited (MINTRAC) and participating plants for helping to deliver the NSHMP.

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