animalhealth AUSTRALIA

NSHMP
National Sheep Health Monitoring Project

ANNUAL REPORT 2023-24

CONTENTS

EXECUTIVE SUMMARY

The National Sheep Health Monitoring Project (NSHMP) operated throughout 2023-2024 in 10 abattoirs around the country. Meat inspectors inspected 11,950,208 sheep in 52,530 lines from 11,524 property identification codes (PICs) for 19 animal health conditions. The 2023-2024 period saw the total number of inspected sheep increase by over 2 million animals once again, compared to the previous financial year.

This report contains an analysis of the data from the project, including summaries of the monitored conditions, thus providing a snapshot of the health of a significant proportion of the Australian sheep flock. Of the conditions monitored in the 2023-2024 financial year (FY), bladder worm and pleurisy had the highest levels of incidence in inspected sheep throughout Australia at 2.6% and 1.8% of total inspected sheep, respectively (Table 1).

Table 1: The percentage of inspected sheep that were affected by sixteen conditions in the 2021-24 FYs

	PERCENTAGE OF ANIMALS AFFECTED		
CONDITION	**21/22**	**22/23**	**23/24**
Arthritis	0.8	0.8	0.7
Bladder worm	2.5	2.9	2.6
Bruising	0.4	0.4	0.4
Cheesy gland	1.3	1.0	0.8
Dog bite	0.05	0.04	0.04
Grass seed	0.5	1.1	1.0
Hydatids	<0.01	<0.01	<0.01
Knotty gut	0.1	0.3	0.4
Liver fluke	0.6	0.9	1.0
Lungworm	0.2	0.9	1.2
Nephritis	2.2	1.3	1.4
Pleurisy	1.7	1.8	1.8
Pneumonia	0.5	0.5	0.6
Sarcocystosis	0.2	0.2	0.2
Sheep measles	1.6	1.4	1.4
Vaccination lesions	1.4	1.2	1.1

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 MLA's myFeedback 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 sheep health status
  - » 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 10 abattoirs participated in data collection in 2023-2024 (some part-time) and provided national coverage of the significant sheep producing regions of Australia (Table 2).

Table 2: Location of abattoirs participating in the NSHMP July 2023 – June 2024

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

*Abattoirs participating part-time in the project.

NUMBER OF SHEEP INSPECTED

The total numbers of sheep, lines and PICs inspected in 2023-24 have all risen compared to the previous two years, especially the total number of sheep. An increasing Australian flock size over the last few years and resultant increased lamb turn off is likely to have led to an increase in the number of animals processed this year. There was also additional data received from one abattoir, that had temporarily stopped collecting data in the previous reporting period.

Table 3: Total number of sheep, properties (PICs) and lines inspected in Australia over the past three FYs

INSPECTED NUMBERS	2021-2022	2022-2023	2023-2024
Sheep	7,758,372	9,822,174	11,950,208
PICs	8,536	10,255	11,524
Lines	34,320	42,756	52,530

SOURCE OF SHEEP

Sheep were sourced from all Australian states. Of the 11.95 million sheep inspected during 2023-2024, 9.22 million were from direct lines and 2.73 million were from saleyards. For the state-specific data described in this report, only vendor consigned (direct lines) sheep are included. This is due to sheep from saleyards (indirect lines) possibly originating from states that differ from the one where the saleyard is located. This report employs the same analysis method as the 2022-23 annual report, using direct line data to improve the accuracy of the state figures. In contrast, previous reports combined both indirect and direct data. This may be changed in future reporting with the mandatory use of electronic identification (eID) in all states commencing in 2025, which will allow sheep to be more easily traced back to their PIC of origin.

Of the direct lines of sheep, 37.7% were from New South Wales, 24.5% from South Australia, 15.7% from Western Australia, 10% from Victoria, 7.3 from Tasmania and 4.9% from Queensland. The total number of sheep inspected from each state (for most diseases and conditions) as well as those from direct lines only are provided in Table 4.

Table 4: Total number of sheep, properties (PICs) and lines inspected from each state over the 2023-2024 FY

STATE	NO. OF SHEEP INSPECTED (DIRECT LINES ONLY)	NO. OF LAMBS INSPECTED (DIRECT LINES ONLY)	NO. OF LINES INSPECTED	NO. OF PICS INSPECTED
NSW	3,473,080	2,620,373	23,544	3,480
Qld	449,731	221,545	1,549	368
SA	2,258,022	1,404,886	12,351	3,189
Tas	671,627	543,427	4,510	833
Vic	919,835	348,469	5,344	1,729
WA	1,448,200	515,553	5,232	1,925
Total	**9,220,495**	**5,654,253**	**52,530**	**11,524**

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 inspectors.

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

NSHMP FEEDBACK AND REPORTING

All producers now have online access to feedback via MLA's myFeedback. Once producers log in, they have access to information about lines of sheep they have consigned to participating abattoirs, as well as information on prevention methods to help manage any conditions affecting their flock.

Regional quarterly reports providing a summary of the main sheep health conditions identified in a region and if the conditions have changed over time are provided to District Veterinarians and others on request.

RESEARCH AND DEVELOPMENT ACTIVITIES UTILISING DATA

In 2023-24 the data from the NSHMP was not utilised for R&D. Further work on the cause of nephritis/nephropathy was pushed back to the 2024-25 year after the pilot study in 2022-23.

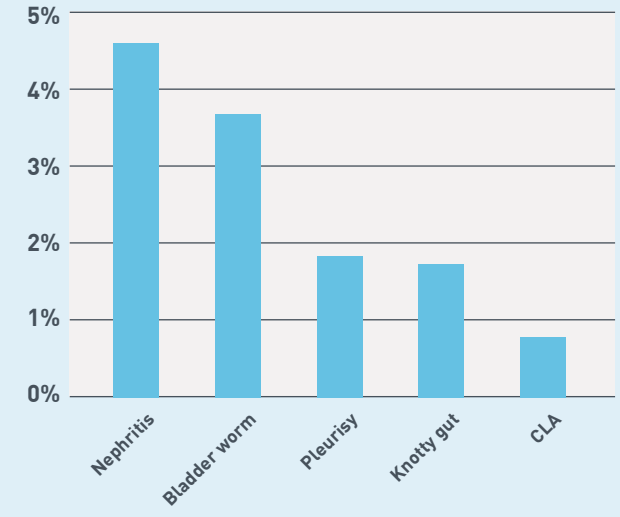
ANIMAL HEALTH INFORMATION

- This report contains a 'snapshot' of the health of the Australian sheep flock for the 2023-24 FY 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 securely in the Endemic Disease Information System (EDIS), hosted by Animal Health Australia.
- The NSHMP collects information on 20 conditions:
  - Arthritis
  - Bladder worm
  - Caseous lymphadenitis (CLA, cheesy gland)
  - Dog bites
  - Grass seeds
  - Hydatids
  - Knotty gut
  - Liver fluke
  - Pleurisy
  - Pneumonia
  - Sarcocystosis
  - Sheep measles
  - Vaccination lesions
  - Lung worm
  - Rib fractures
  - Bruising
  - Cirrhosis
  - Nephritis
  - Fever/septicaemia
  - Ovine Johne's disease (only on request by the producer)
- Ovine Johne's disease is not included in this report, as numbers of sheep inspected for it have been significantly lower than for the other conditions.
- For the purpose of state-level analysis the information has been obtained from direct (vendor consigned) only. Ages of sheep are recorded in this report as all inspected animals are greater than two years (which includes some mixed age lines), and less than two years of age (mostly lamb). Analysis is at the animal and PIC level.

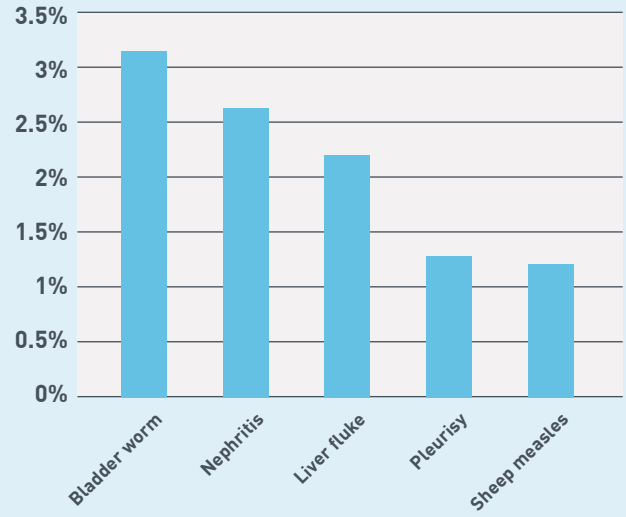
TOP FIVE CONDITIONS FOR EACH STATE DURING 23/24

(DIRECT LINES ONLY)

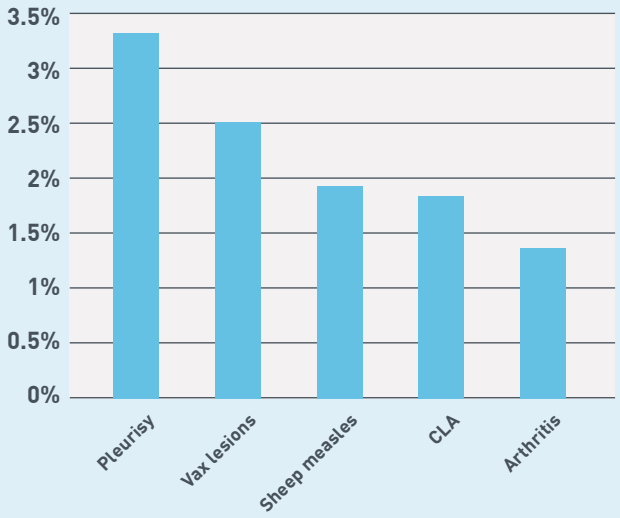
QUEENSLAND



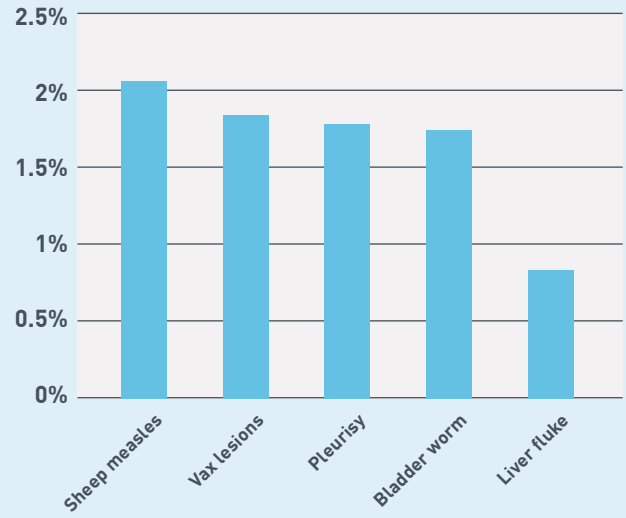
NEW SOUTH WALES



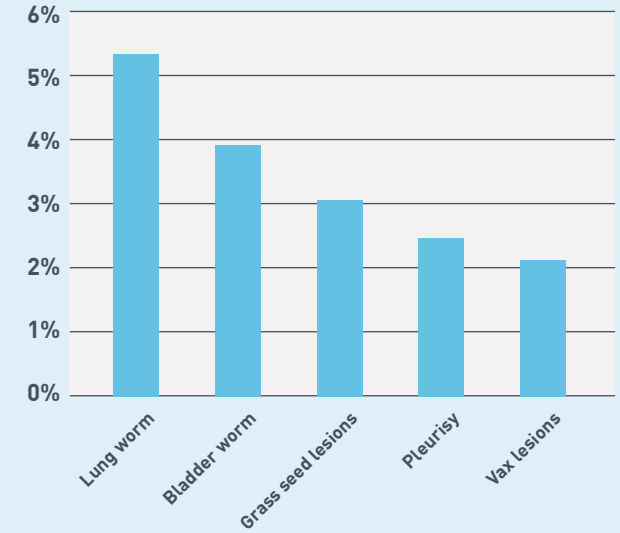
VICTORIA



TASMANIA



SOUTH AUSTRALIA



WESTERN AUSTRALIA

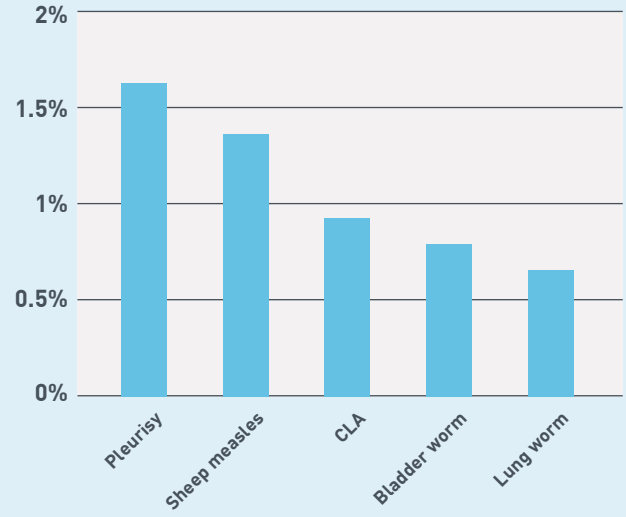


Figure 1: The five most common conditions recorded in each state during 2023-24 based on the percentage of inspected sheep (from direct lines) affected by them

ARTHRITIS

Arthritis in sheep is usually 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 (e.g. at lamb marking). Arthritis causes lameness and a reduced growth rate.

Carcases affected with arthritis undergo trimming of affected joints and may possibly be condemned.

The percentage of total animals reported to have arthritis has reduced slightly by 0.1% compared to last FY (Table 5). The number of animals <2 years affected by arthritis has remained the same compared to last FY. The percentage of PICs with at least one affected sheep has decreased in all states for the 2023-24 period compared to the previous year (Figure 2).

Victoria and South Australia recorded the highest percentages of affected animals at 1.4% and 0.9%, respectively (Figure 3). These two states also showed the highest incidence of arthritis in the previous FY.

Table 5: The number of sheep inspected and affected by arthritis during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	64,041 = 0.8%	77,900 = 0.8%	84,027 = 0.7%
Total <2yr animals affected	18,602 = 0.2%	25,085 = 0.4%	25,858 = 0.4%

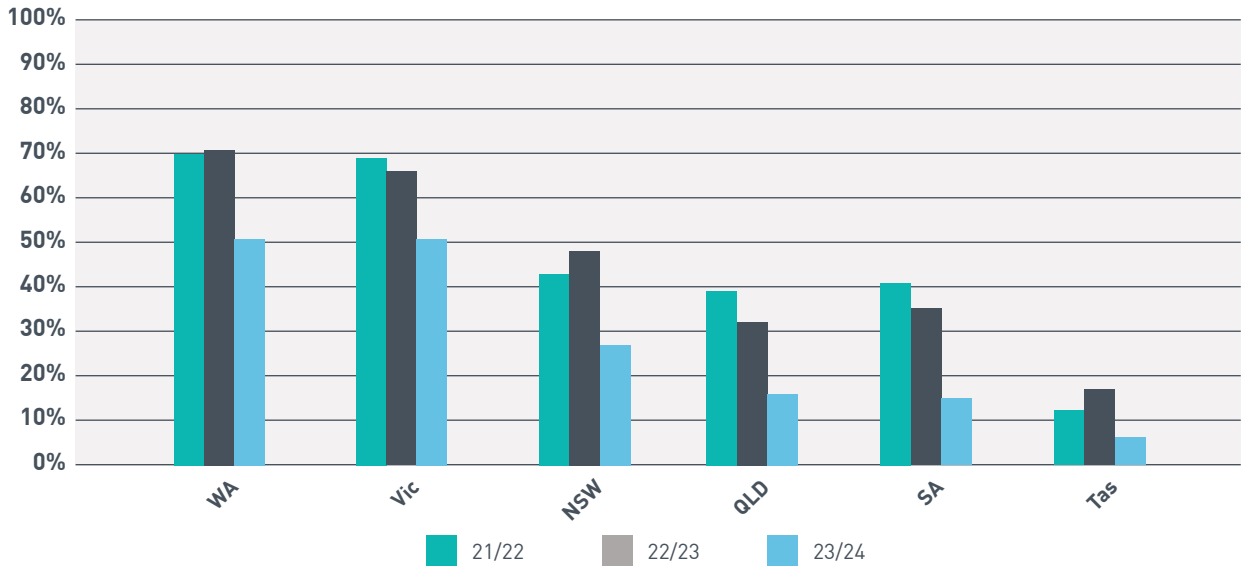


Figure 2: The percentage of PICs inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

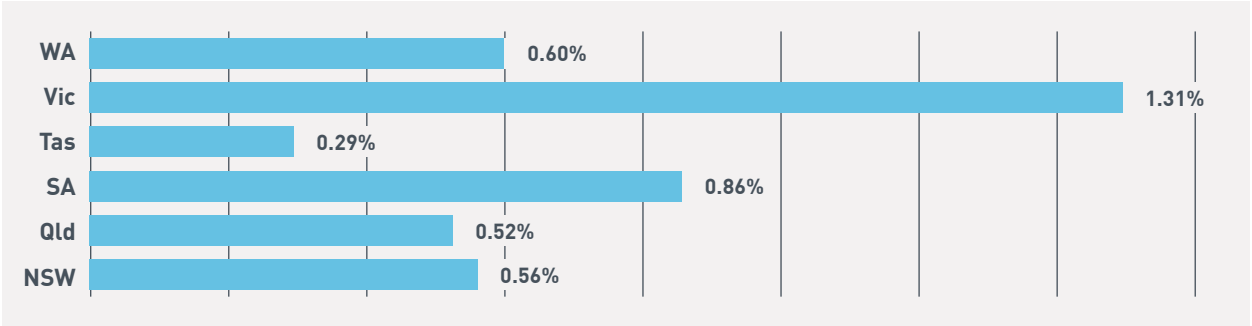


Figure 3: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

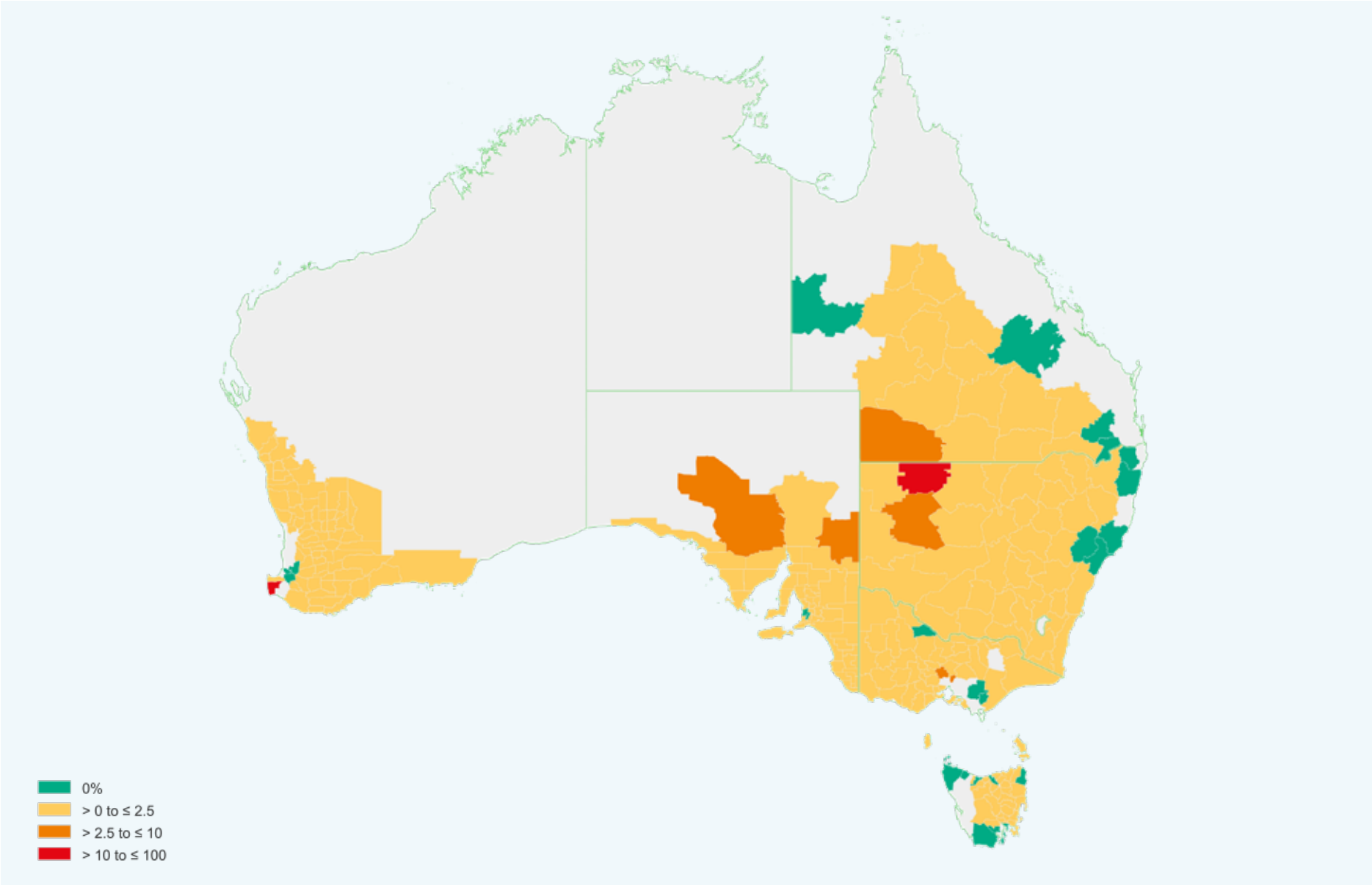


Figure 4: Percentage of sheep affected by arthritis in each LGA in 2023-24

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 production, but occasionally heavy infestations can predispose sheep to the fatal bacterial infection, Black disease.

Affected carcases usually have livers trimmed or condemned.

Bladder worm has been the most commonly reported condition over the last three years. Compared to the previous year, the percentage of total sheep affected by bladder worm for the 2023-24 FY decreased by 0.3%, and the percentage of affected lambs remained the same at 2.2% of the total lambs inspected (Table 7). Bladder worm was most widely observed in Tasmania, with 32% of participating PICs reporting at least one case of the condition (Figure 5). South Australia had the highest percentage of inspected sheep affected by bladder worm at 3.9%, closely followed by Queensland at 3.7% (Figure 6).

Table 6: The number of sheep inspected and affected by bladder worm during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	194,063 = 2.5%	281,370 = 2.9%	310,954 = 2.6%
Total <2yr animals affected	102,011 = 1.3%	126,406 = 2.2%	148,219 = 2.2%

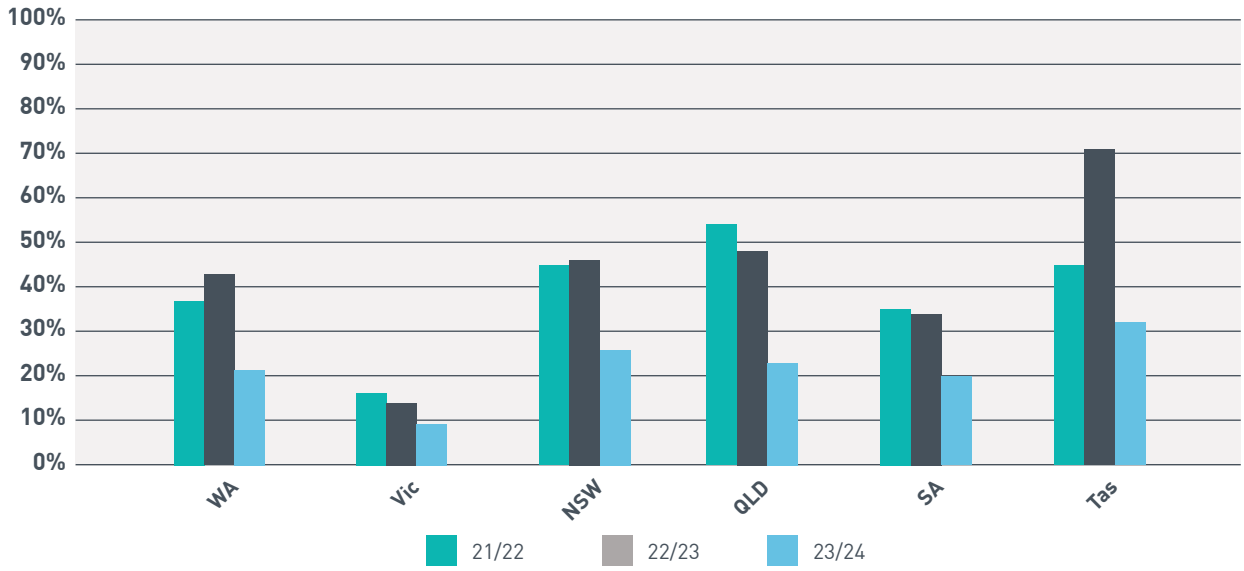


Figure 5: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

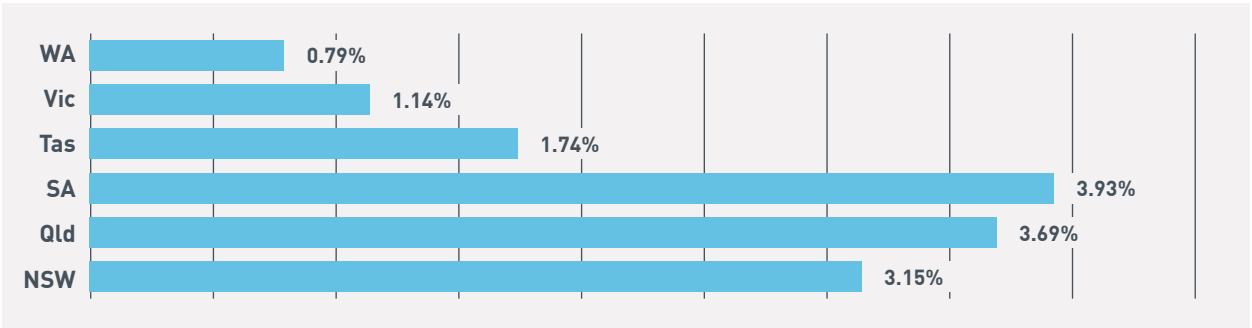


Figure 6: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

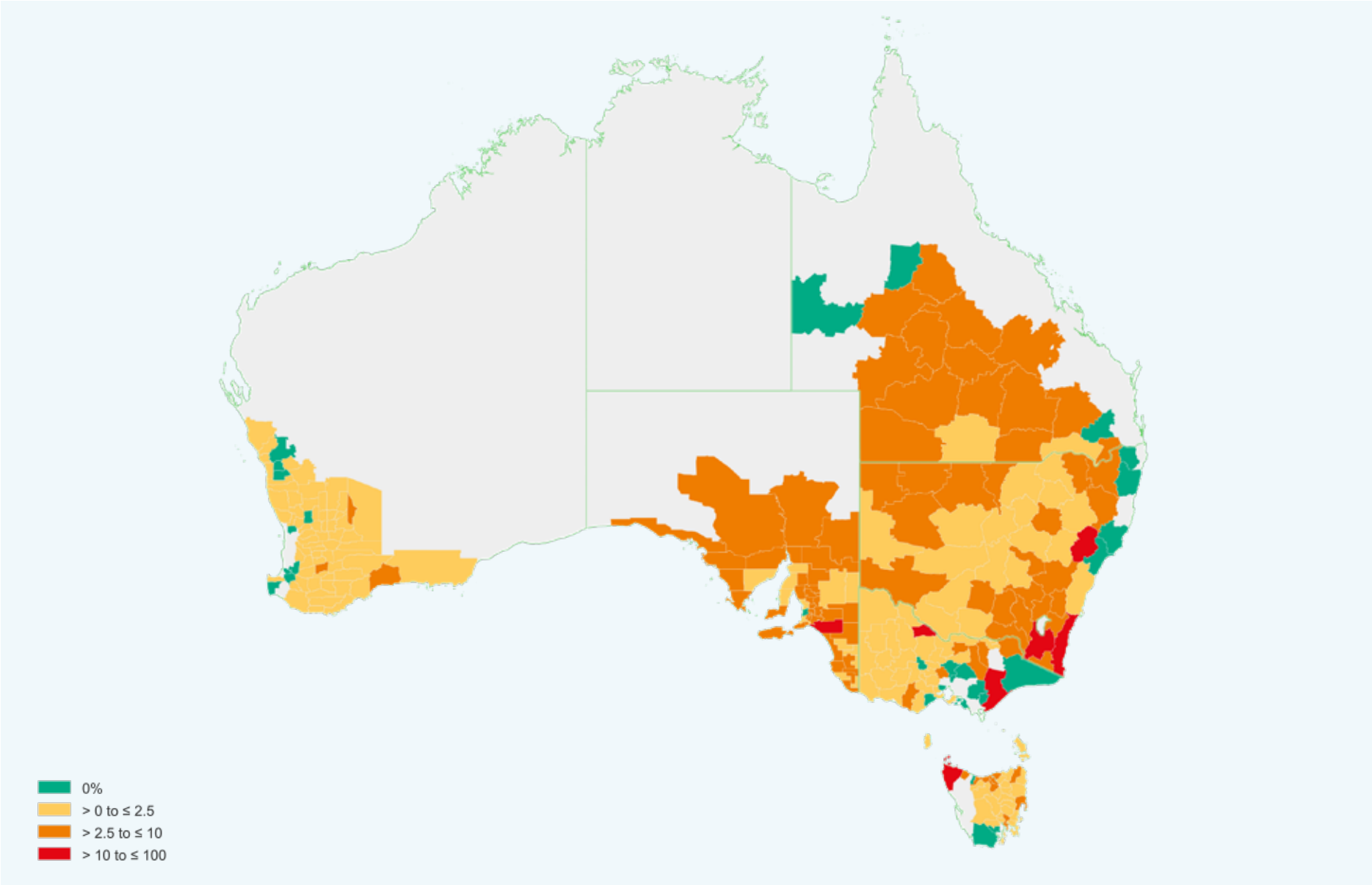


Figure 7: Percentage of sheep affected by bladder worm in in each LGA in 2023-24

BRUISING

Bruising of the muscle in sheep is caused by physical trauma, such as knocks and bumps from other sheep, during handling or during transportation. Significant levels of bruising can be an indication of poor handling techniques and impaired sheep welfare. Bruising can be avoided by practicing calm and safe handling techniques, having well designed sheep yards and not overcrowding sheep during transport.

Bruising is caused by damage to blood vessels in the muscle, discolouring the meat. Affected muscles are trimmed from the carcass, reducing yield and downgrading the carcass.

The percentage of total sheep and PICs affected by bruising has been consistent over the last three years and remains at 0.4%. South Australia saw the largest percentage of inspected sheep affected, with approx. 11% of sheep from this state having the condition (Figure 9). Bruising is generally seen in a relatively low number of animals and from a relatively small number of properties, with the highest state percentages of PICs with at least one case reported from Western Australia and Victoria at 29% and 20%, respectively. All states have seen a decline in the number of affected PICs compared to the previous FY, with New South Wales experiencing the largest decrease, down by 18% (Figure 8).

Table 7: The number of sheep inspected and affected by bruising during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	33,020 = 0.4%	38,060 = 0.4%	52,657 = 0.4%
Total <2yr animals affected	12,777 = 0.2%	17,824 = 0.3%	20,743 = 0.3%

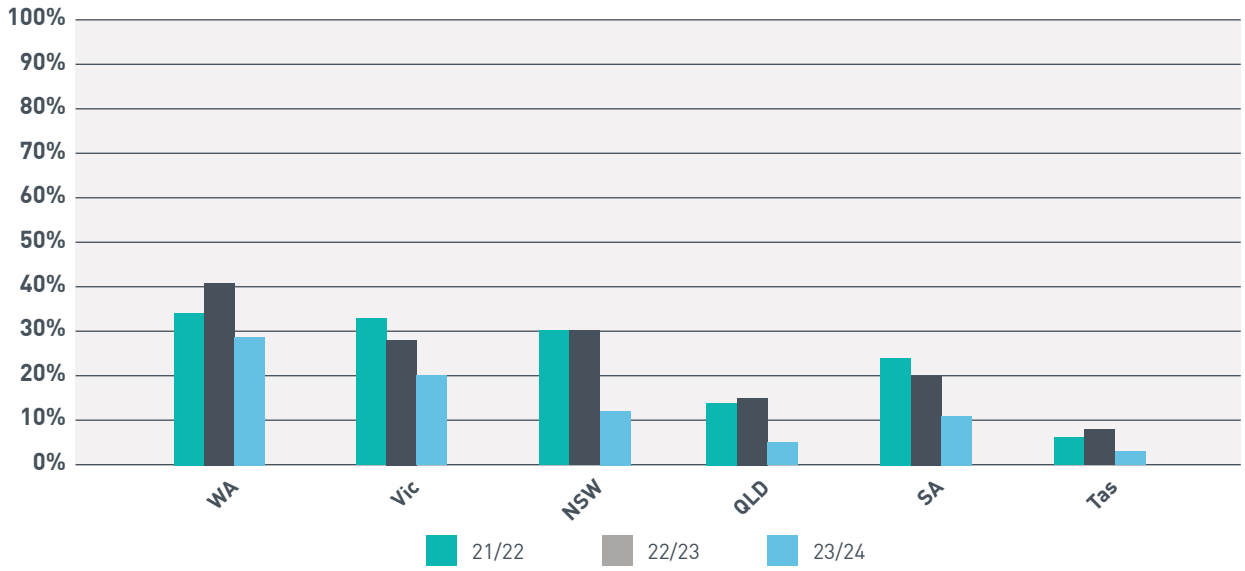


Figure 8: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

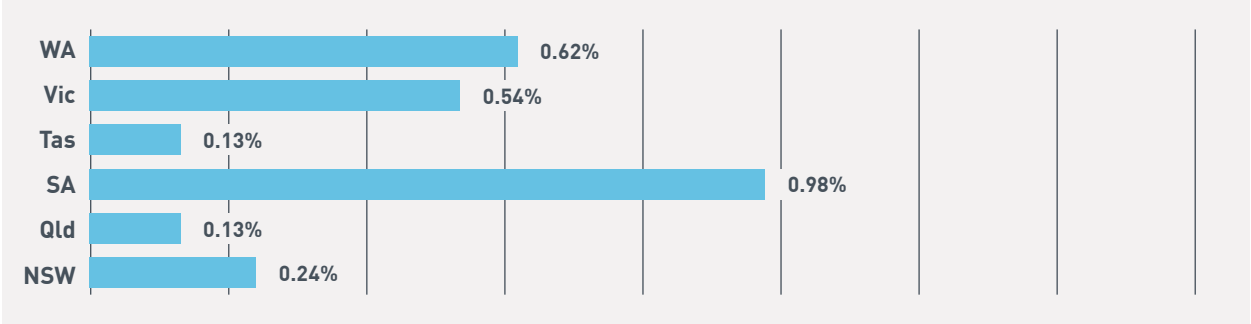


Figure 9: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

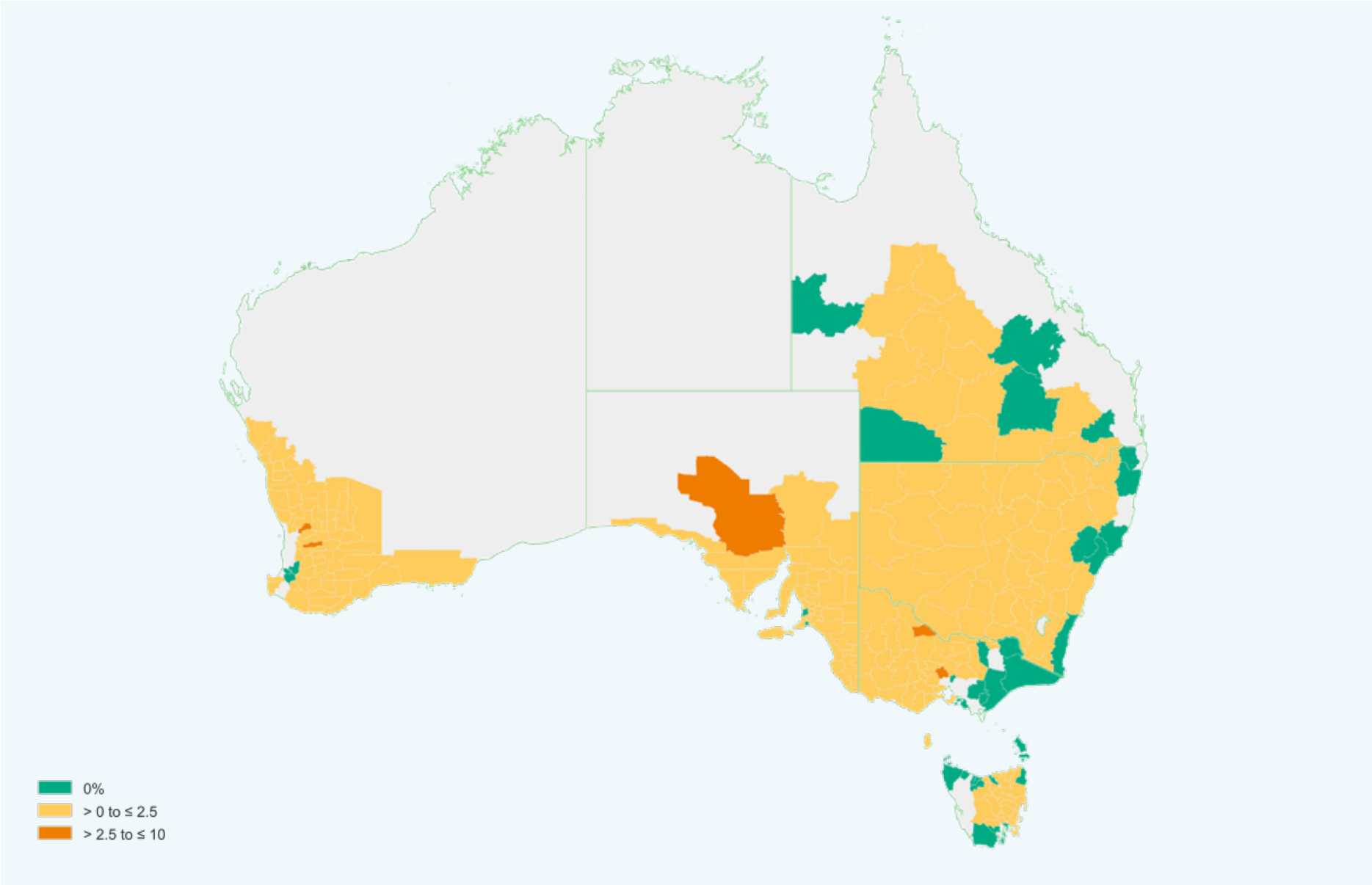


Figure 10: Percentage of sheep affected by bruising in in each LGA in 2023-24

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".

Cheesy gland causes a decrease in wool production, wool contamination, chronic infection which causes ill thrift, emaciation and can affect reproductive performance.

Cheesy gland can result in a decrease in carcase weight and increased carcase trimming at the abattoir.

The proportion of total inspected sheep affected by cheesy gland for the 2023-24 FY has decreased from 1.0% to 0.8% compared to the previous year (Table 8). However, this remained unchanged for sheep younger than two years of age over the three FY period.

The percentage of participating PICs with at least one reported case of cheesy gland was highest for Western Australia and Victoria at 40% and 39%, respectively (Figure 11). This has decreased in all states for the 2023-24 FY. Victoria saw the largest proportion of inspected sheep with cheesy gland at 1.8%, followed by South Australia at 1.2% (Figure 12).

Table 8: The number of sheep inspected and affected by cheesy gland during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	100,670 = 1.3%	100,630 = 1%	96,560 = 0.8%
Total <2yr animals affected	9,834 = 0.1%	7,947 = 0.1%	8,669 = 0.1%

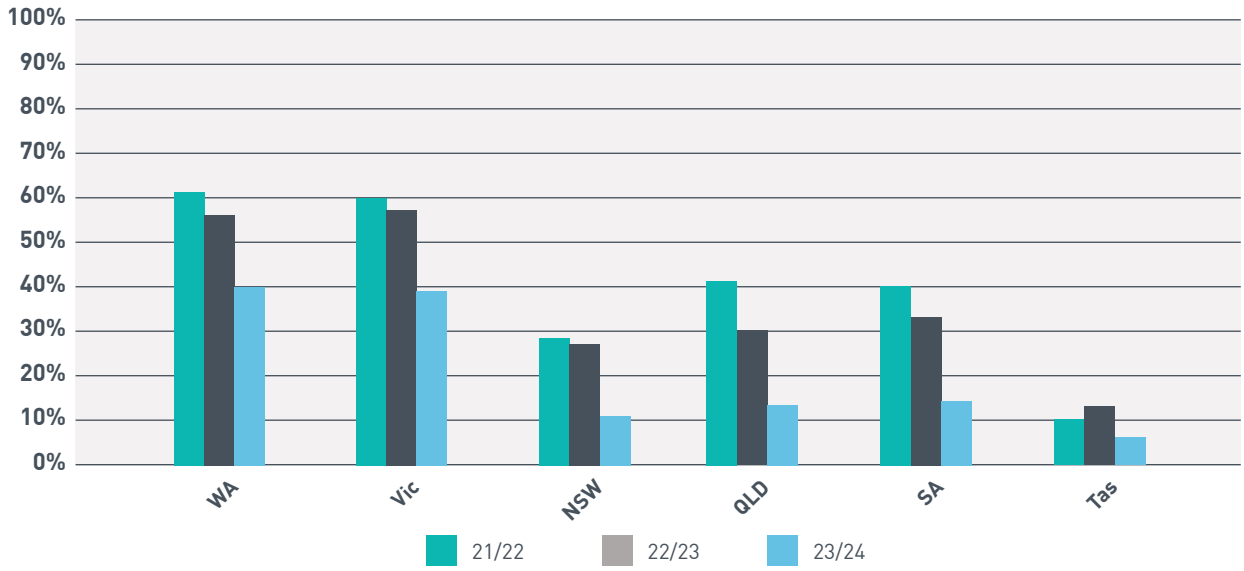


Figure 11: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

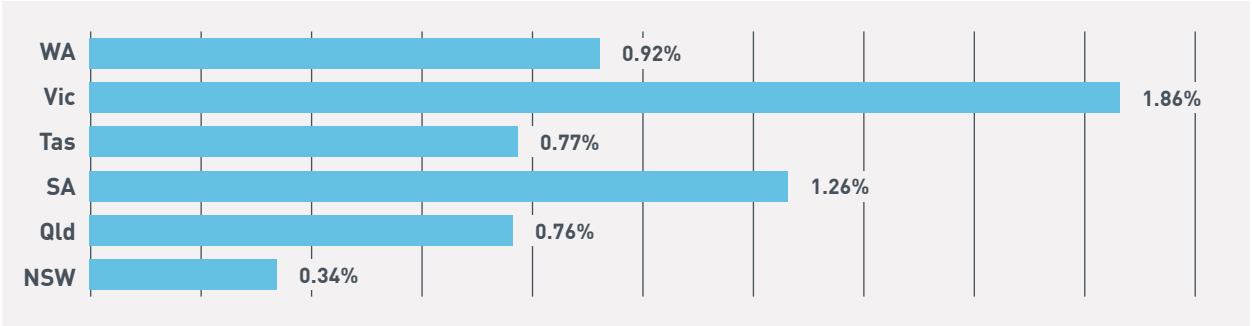


Figure 12: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

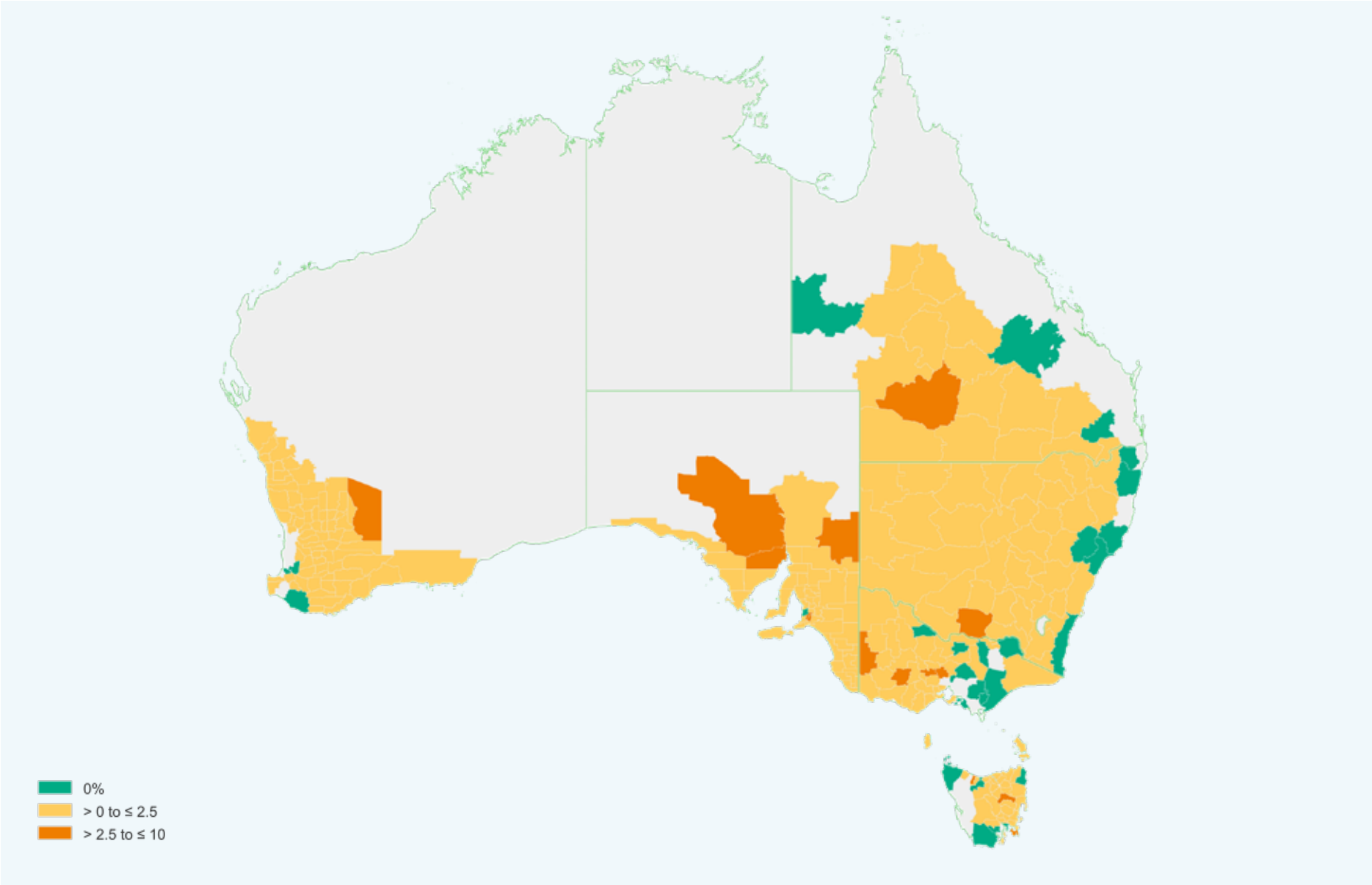


Figure 13: Percentage of sheep affected by cheesy gland in in each LGA in 2023-24

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.

The total number of sheep carcasses affected by grass seeds decreased in the 2023-24 financial year, declining by 0.1% compared to the previous year from 1.1 to 1% (Table 9).

Figure 14 shows a decrease in the total number of PICs affected by grass seeds in all states, except for Victoria and Queensland, which remained at 1% over the last two and three FYs, respectively. The number of affected PICs in New South Wales showed the largest decrease compared to the previous FY, dropping by 7%. The percentage of impacted PICs is relatively low compared to other conditions, which suggests that grass seeds tend to be concentrated in certain areas, rather than being widespread over many PICs throughout the state. The state with the highest proportion of sheep affected by grass seeds was South Australia, with 3.1% of inspected sheep having the condition. This is four times more than New South Wales, the state that follows. (Figure 15).

Table 9: The number of sheep inspected and affected by grass seeds during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	39,137 = 0.5%	103,455 = 1.1%	119,777 = 1.0%
Total <2yr animals affected	29,650 = 0.4%	79,743 = 1.4%	86,274 = 1.3%

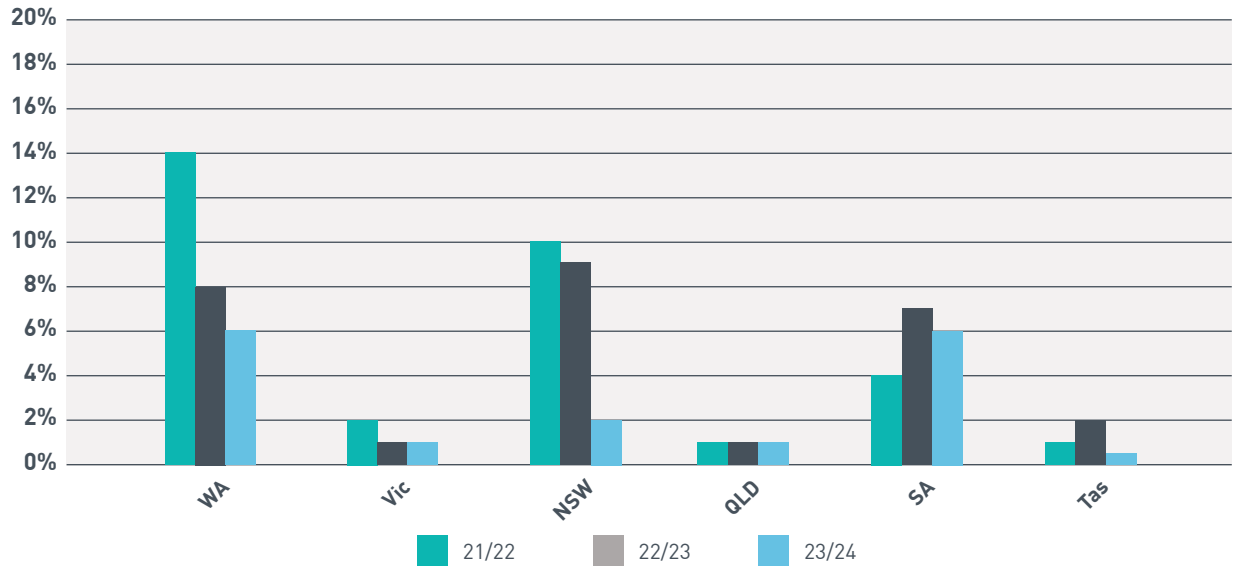


Figure 14: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

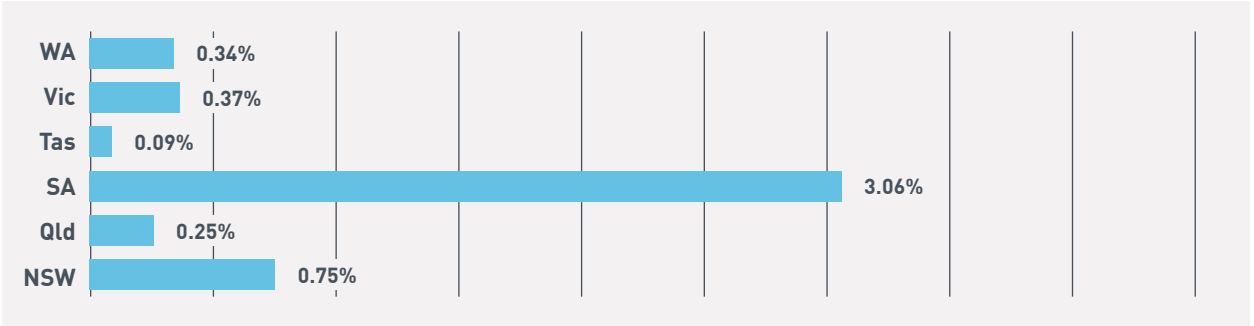


Figure 15: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

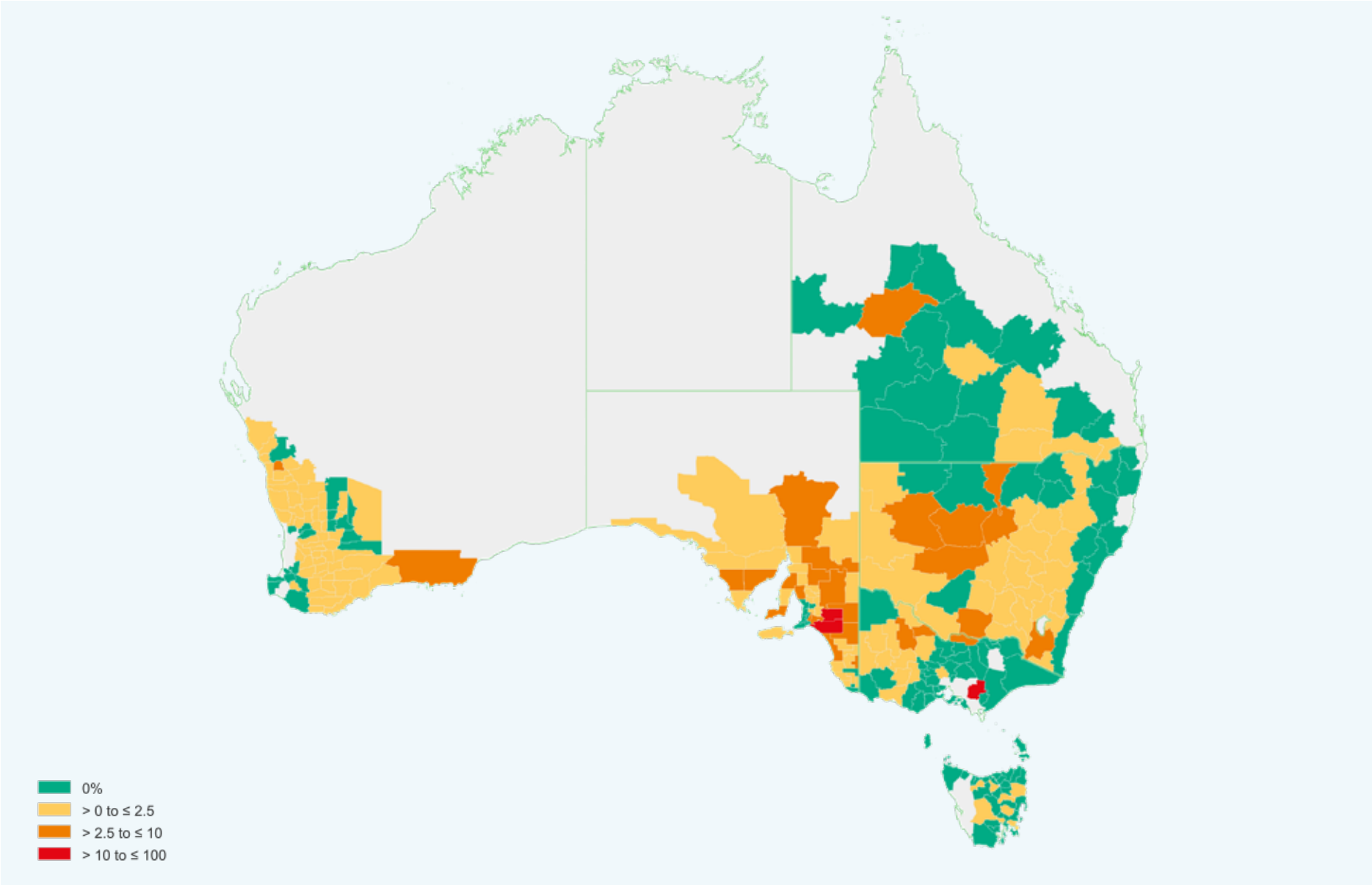


Figure 16: Percentage of sheep affected by grass seeds in each LGA in 2023-24

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. 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.

Affected intestines are unsuitable for sausage casings.

Knotty gut has increased by 0.1% during the 2023-24 period (Table 10). Knotty gut was only seen on a small number of PICs, the most being found in Queensland with 4% of PICs having at least one case of the condition during 2023-24, followed by South Australia with 3%. Knotty gut was present on less than 1% of PICs for Western Australia, Victoria, New South Wales and Tasmania (Figure 17). Queensland has the highest percentage of affected sheep with approx. 1.2% of animals having the condition (Figure 18).

Table 10: The number of sheep inspected and affected by knotty gut during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	8,165 = 0.1%	34,171 = 0.3%	46,068 = 0.4%
Total <2yr animals affected	3,200 = 0.04%	15,621 = 0.3%	23,201 = 0.3%

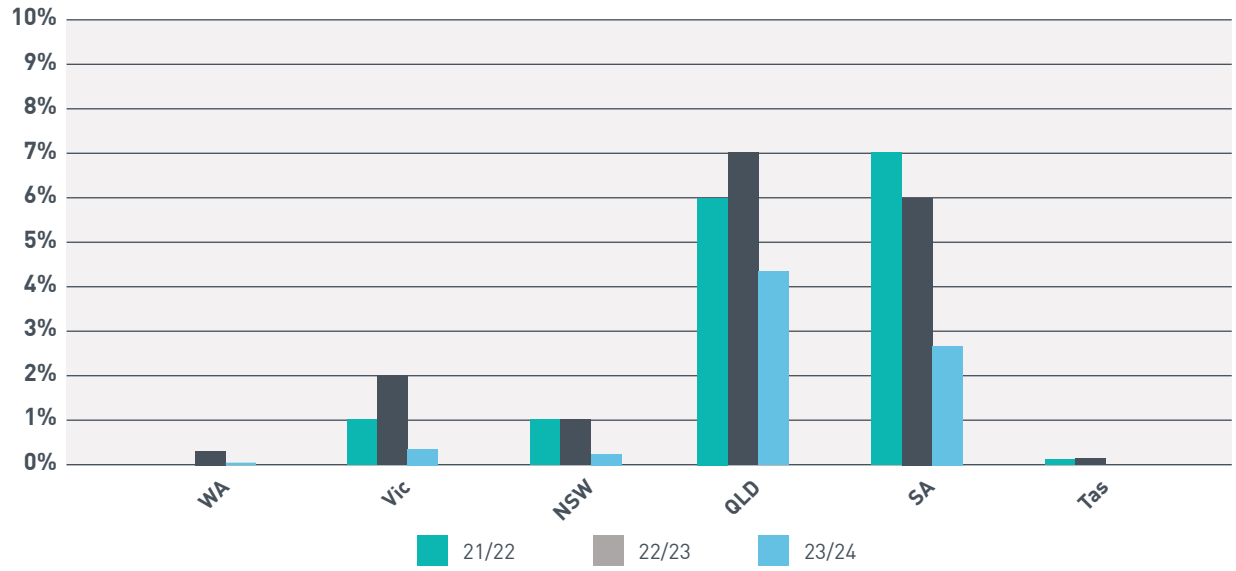


Figure 17: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

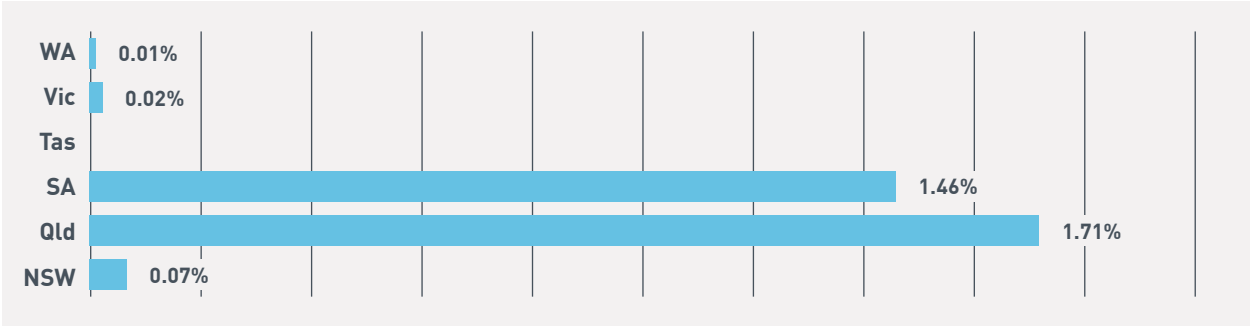


Figure 18: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

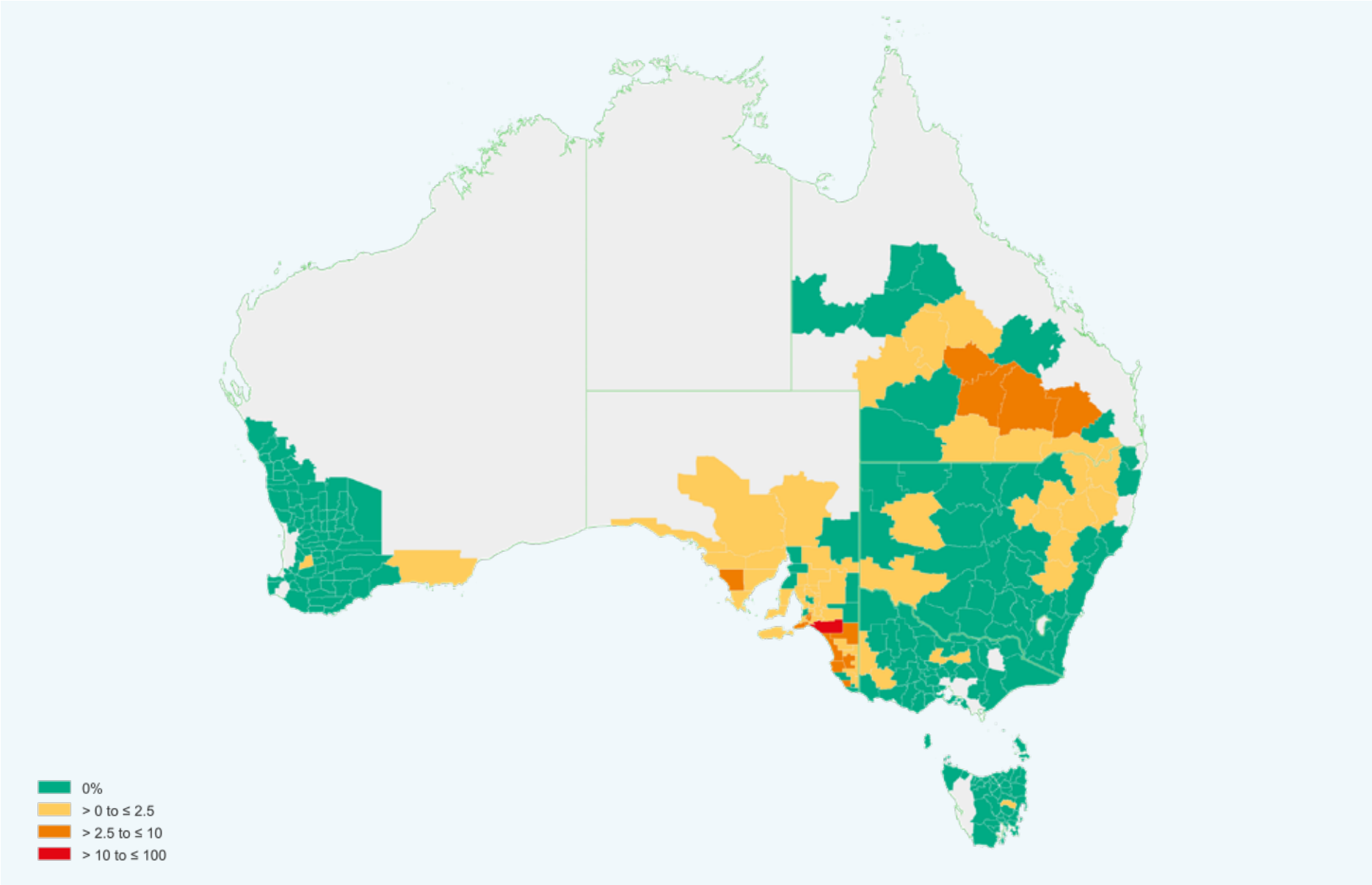


Figure 19: Percentage of sheep affected by knotty gut in each LGA in 2023-24

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 rare cases, whole carcases can be condemned.

The percentage of total inspected sheep with liver fluke has slightly increased by 0.4% over the last financial year, and by 0.8% for sheep <2 years (Table 11). Liver fluke was not identified in Western Australia and only a very small number of cases were identified in Victoria, South Australia and Queensland (Figure 20). In previous years, Tasmania had the highest percentage of affected PICs. However, for the last two FYs, this has consistently decreased and been surpassed by New South Wales during the same period (Figure 20).

New South Wales also had the largest percentage of total inspected sheep affected by liver fluke, with 2.2% of all sheep from direct lines in New South Wales having the condition (Figure 21).

Table 11: The number of sheep inspected and affected by liver fluke during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	44,130 = 0.6%	89,784 = 0.9%	115,529 = 1.0%
Total <2yr animals affected	33,936 = 0.4%	63,895 = 1.1%	85,217 = 1.2%

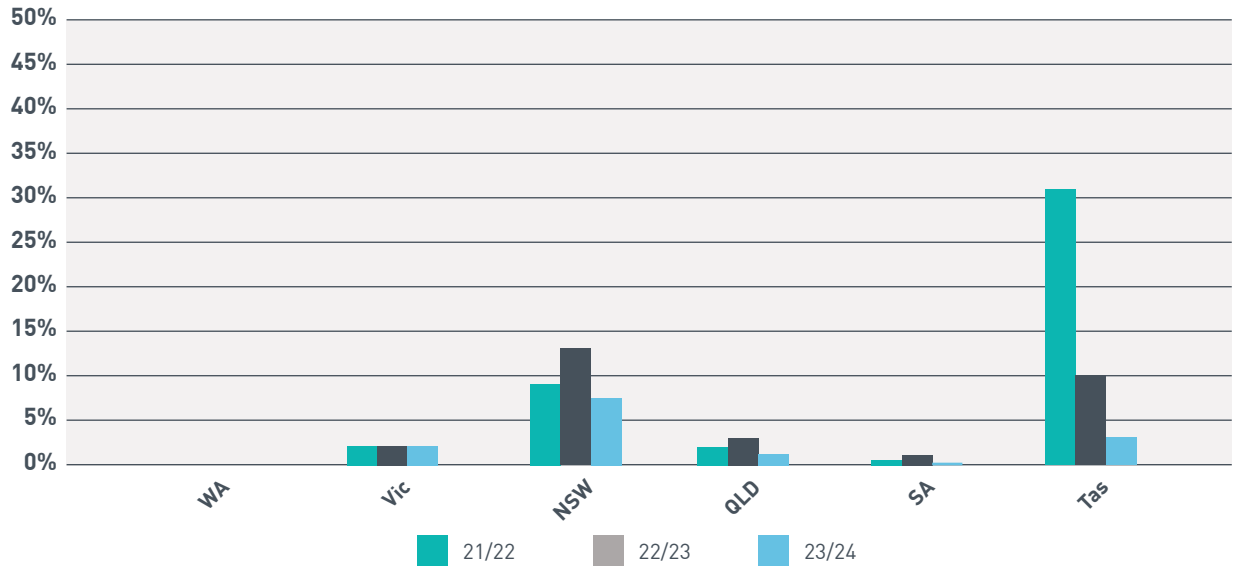


Figure 20: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

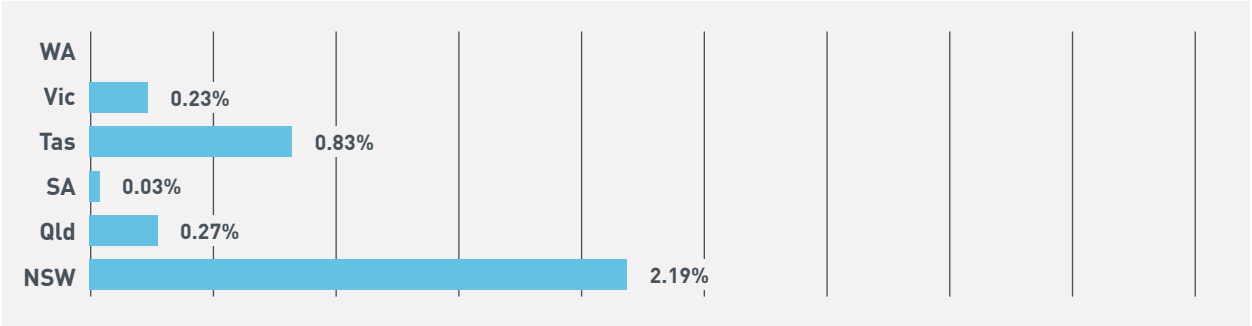


Figure 21: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

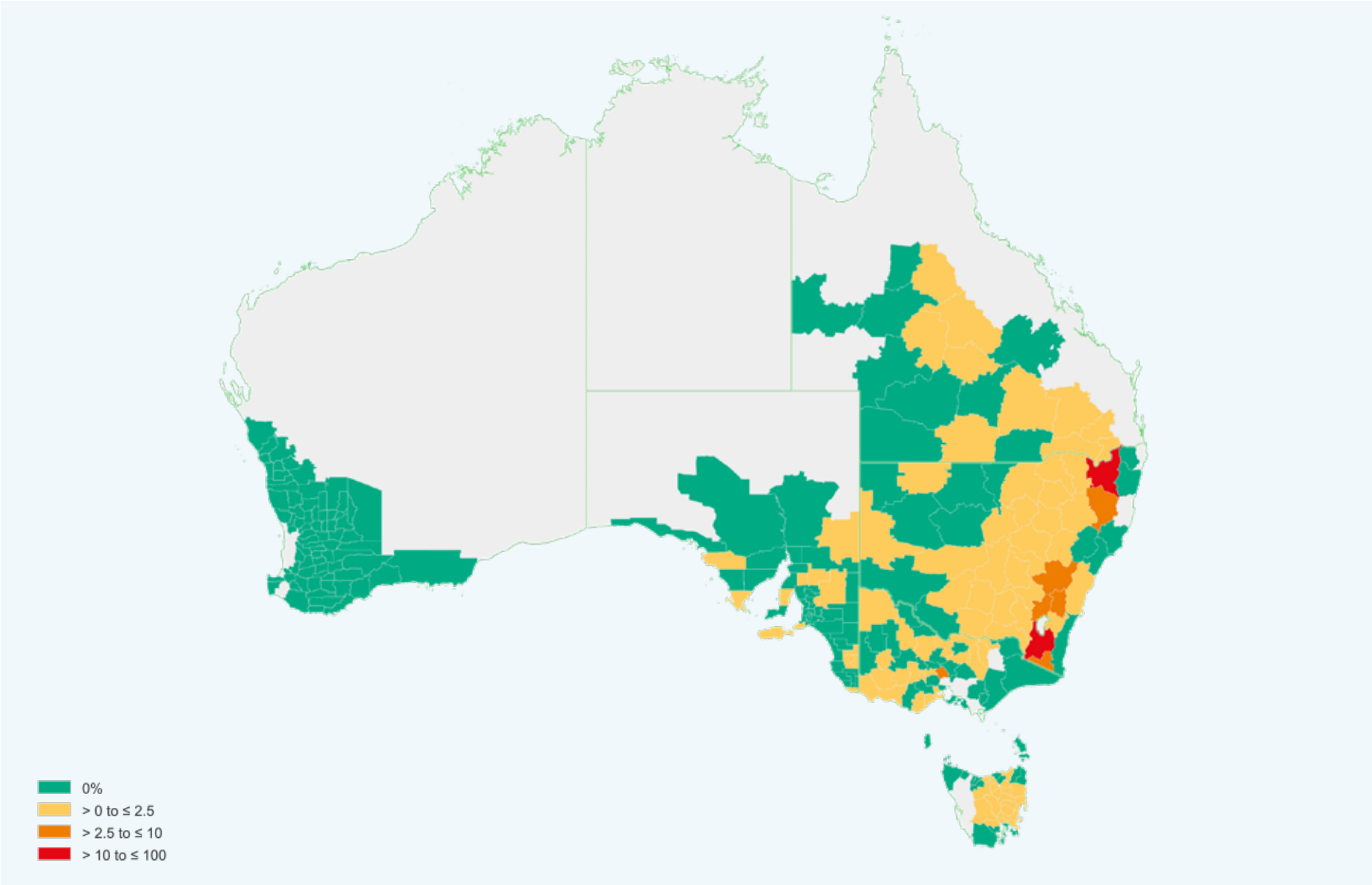


Figure 22: Percentage of sheep affected by liver fluke in each LGA in 2023-24

LUNGWORM

Lungworm is a condition caused by the ingestion of the lungworm, mulleurius 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 has no impact on sheep health or productivity.

At the abattoir, lungs of infected sheep are condemned.

There has been a consistent increase in the occurrence of lungworm during the three last FY reporting periods, with close to 1.2% of total animals inspected having the condition during 2023-24. There was also an increase in the proportion of lambs with lungworm, rising by 0.3% compared to the previous year (Table 12). South Australia reported the most PICs with the condition, with 13% of participating PICs having at least one case of lungworm (Figure 23) despite a notable decrease of 9% compared to the previous FY. South Australia also had the largest total number of sheep affected by lungworm, with 5.3% of inspected sheep found to have the condition (Figure 24).

Table 12: The number of sheep inspected and affected by lungworm during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	14,431 = 0.2%	86,002 = 0.9%	145,094 = 1.2%
Total <2yr animals affected	5,474 = 0.1%	35,630 = 0.6%	59,364 = 0.9%

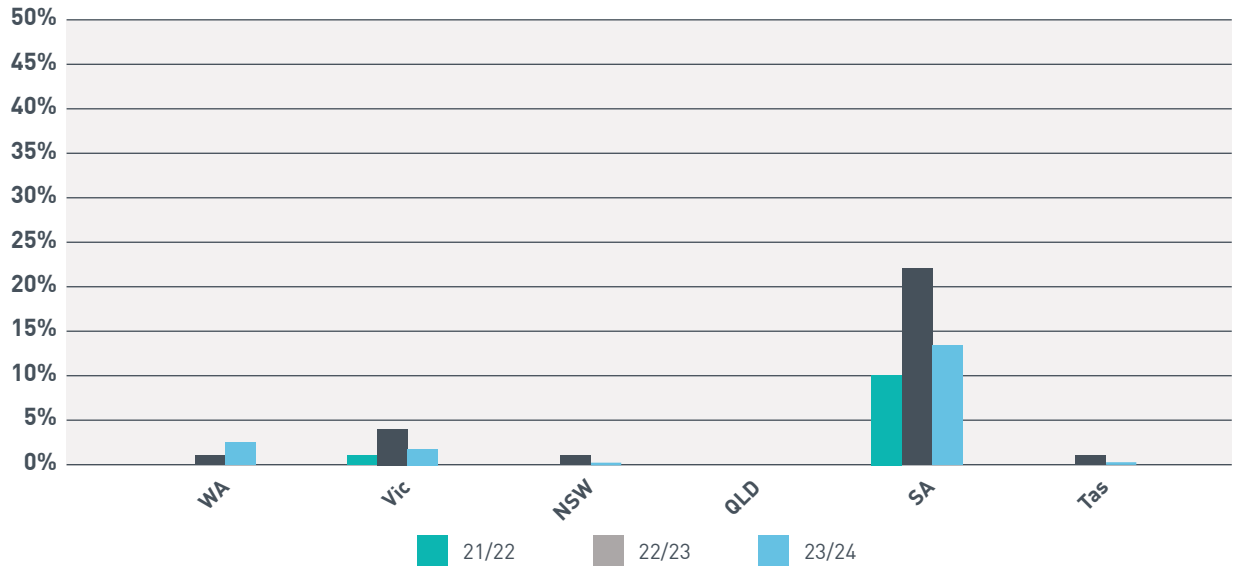


Figure 23: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

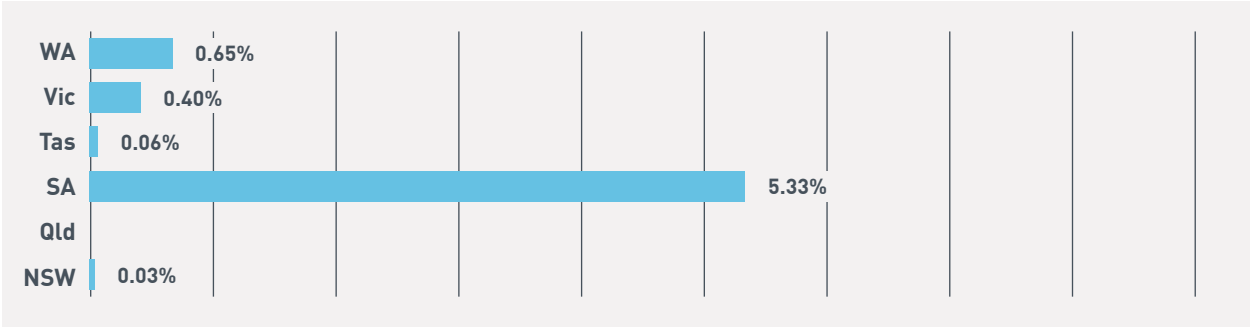


Figure 24: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

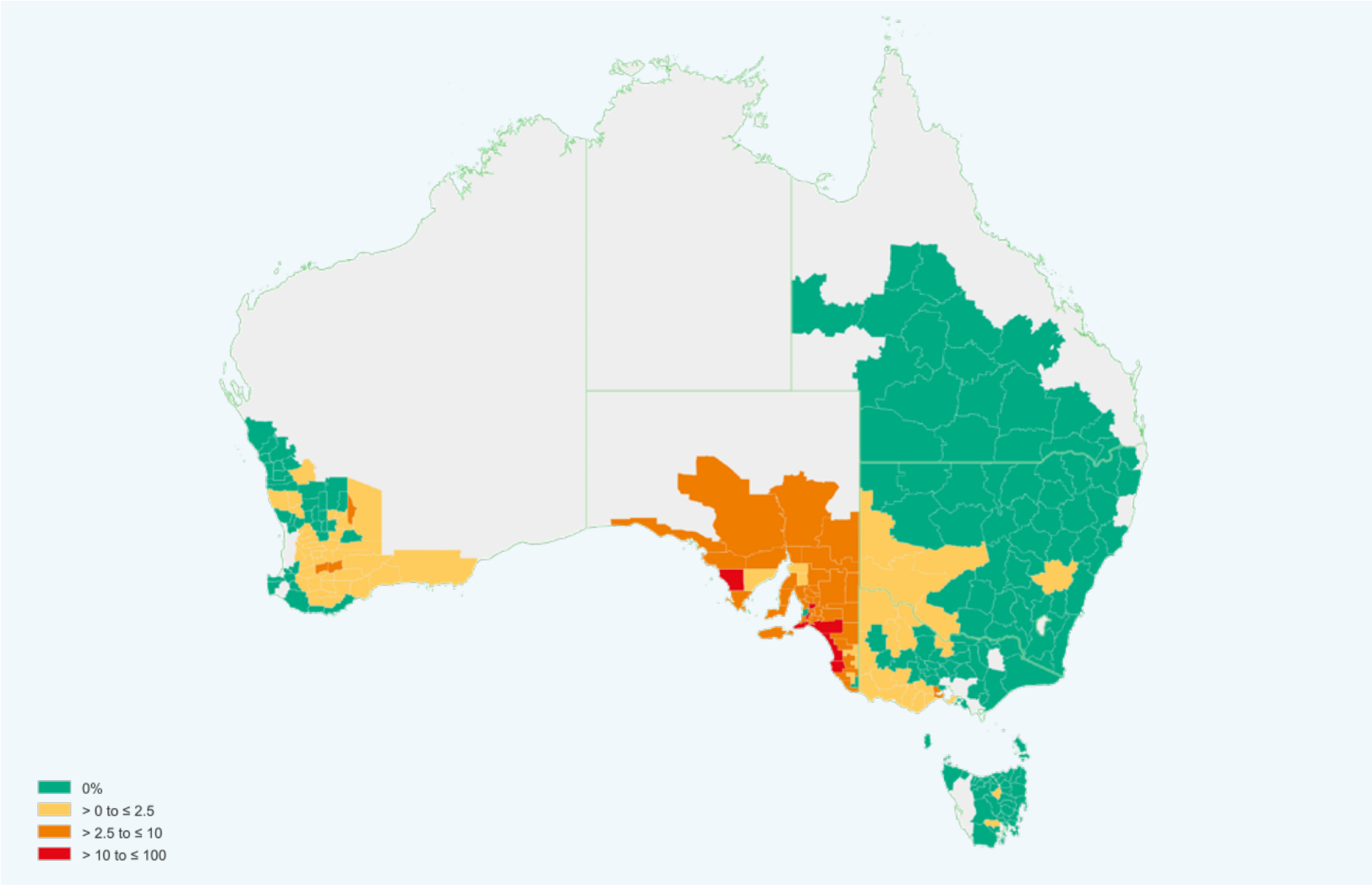


Figure 25: Percentage of sheep affected by lungworm in each LGA in 2023-24

NEPHRITIS

Nephritis means inflammation of the kidneys. This can be caused by different factors such as infections (viral or bacterial), plant compounds or toxins. It is more commonly reported in lambs and is not normally associated with any clinical signs, although can reduce the growth and performance of lambs.

Affected kidneys are condemned, and in rare severe cases where kidney failure has occurred, whole carcass condemnation may occur.

The occurrence of total inspected sheep with nephritis for this reporting period has slightly increased by 0.1% compared to the previous year, despite a steady decrease in the previous years. The percentage of PICs with at least one animal affected by nephritis continues to decrease in every state, most notably in Tasmania, where the percentage of PICs affected by nephritis dropped from 32% to near zero from 2021 to 2024 (Figure 26).

Figure 27 shows that the state with the highest percentage of total sheep with nephritis was Queensland (4.6%) and New South Wales (2.6%).

Table 13: The number of sheep inspected and affected by nephritis during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	173,038 = 2.2%	125,860 = 1.3%	169,361 = 1.4%
Total <2yr animals affected	159,948 = 2.1 %	106,779= 1.9%	148,969 = 2.2%

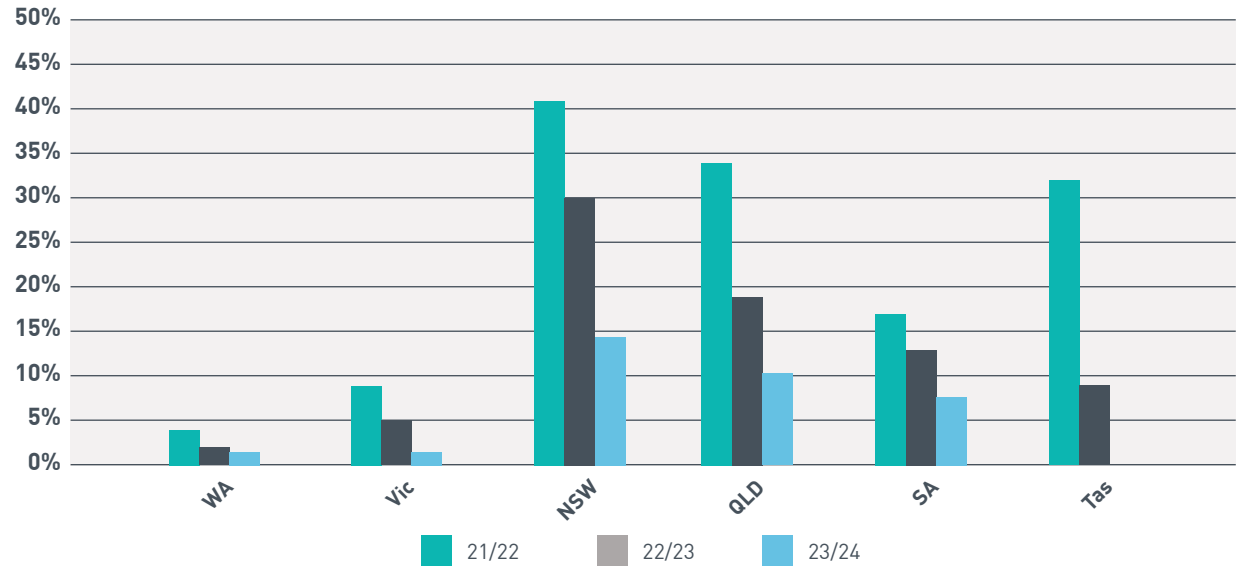


Figure 26: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

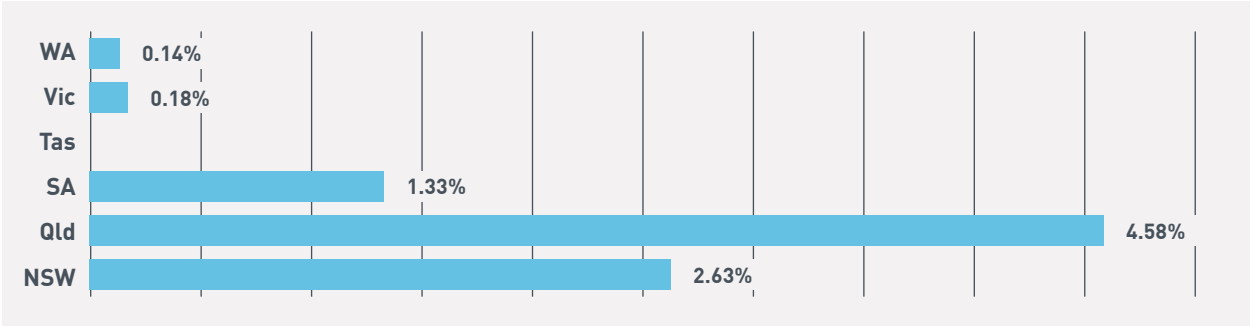


Figure 27: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

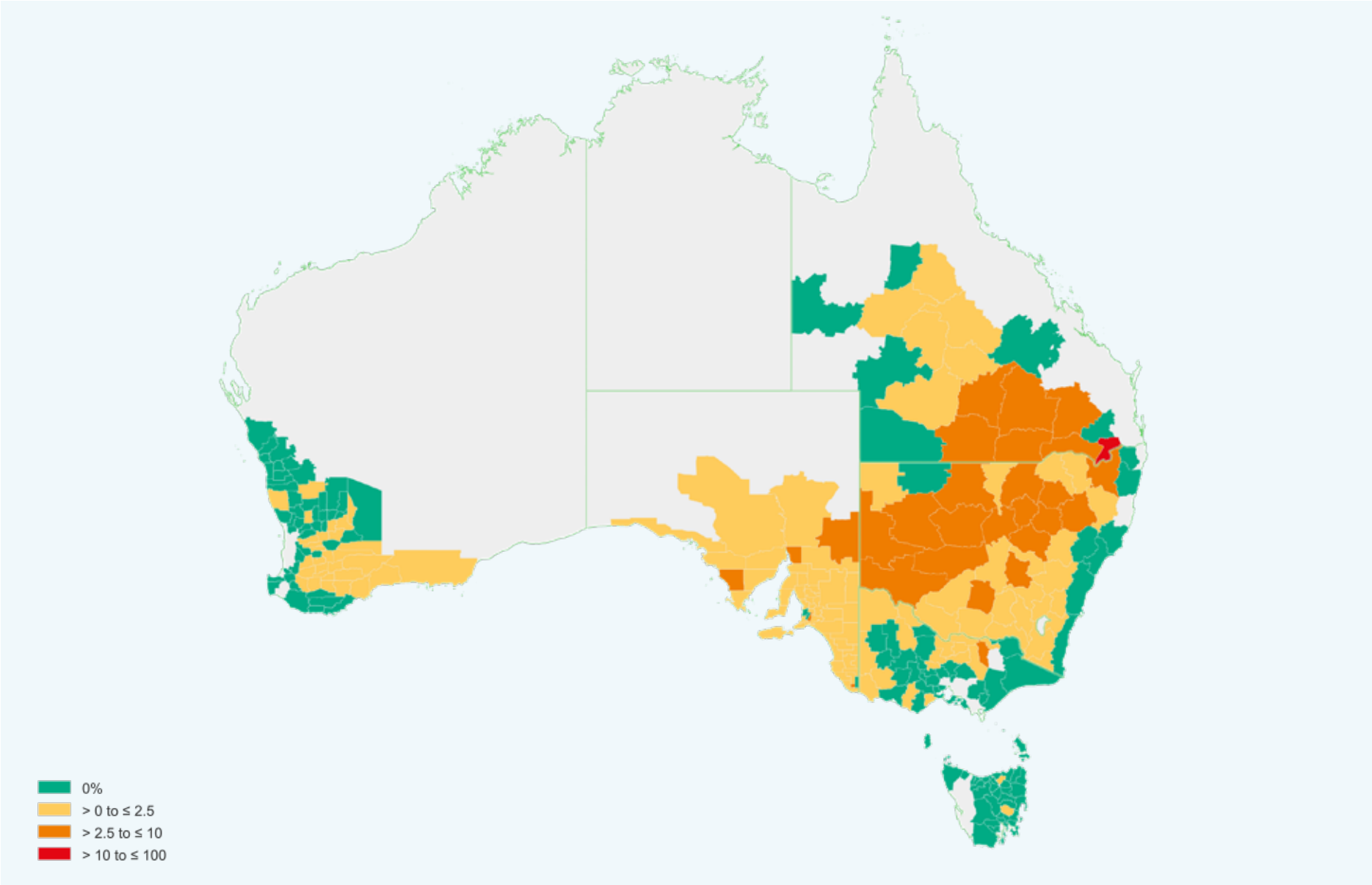


Figure 28: Percentage of sheep affected by nephritis in each LGA in 2023-24

PLEURISY

In severe cases of pneumonia, infection can extend to the outer layer of the lung, the pleura, causing a disease called pleurisy. This can cause adhesion of the lungs to the chest wall as the infection spreads in the sheep.

Affected carcasses will require additional trimming which can include damage to the valuable rib rack, significantly de-valuing the carcass.

Pleurisy was the second most reported condition after bladder worm, with 1.8% of total inspected sheep having the condition. This number has remained at 1% in sheep <2 years compared to the last FY, after doubling during the period between 2021-23. Pleurisy has occurred in a relatively high number of PICs in Victoria and Western Australia over the past three years. However, a decrease of approximately 10% has been observed in both states in the last FY (Figure 29).

Victoria has the highest percentage of affected animals at 3.3%, followed by South Australia and Queensland with 2.5% and 1.8%, respectively (Figure 30).

Table 14: The number of sheep inspected and affected by pleurisy during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	129,824 = 1.7%	181,697 = 1.8%	211,103 = 1.8%
Total <2yr animals affected	40,068 = 0.5%	59,054 = 1.0%	68,753 = 1.0%

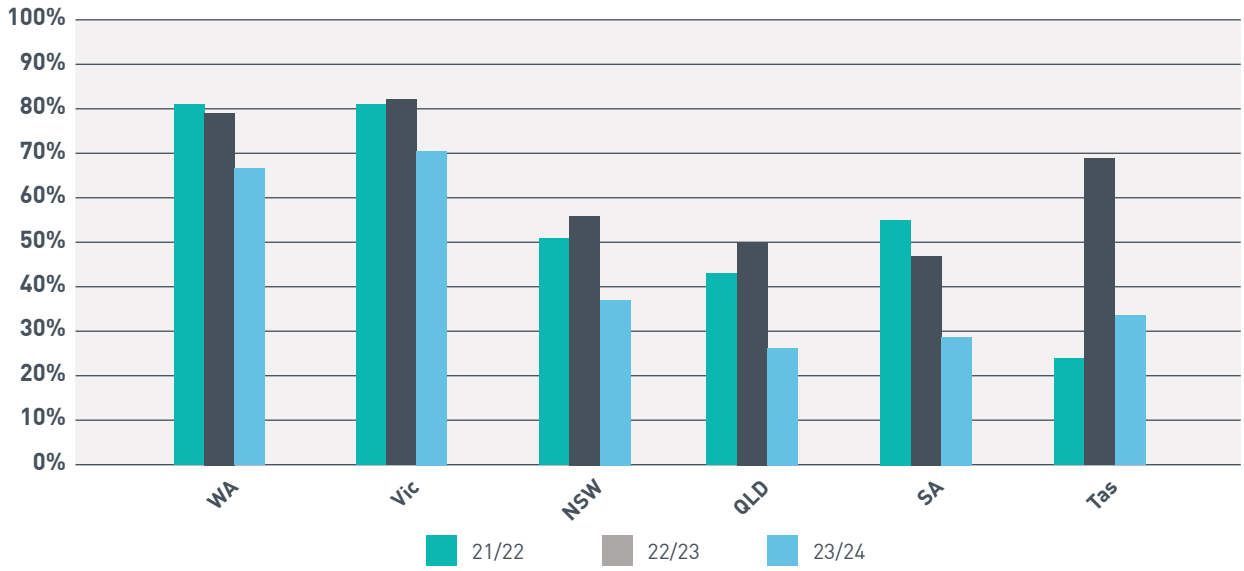


Figure 29: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

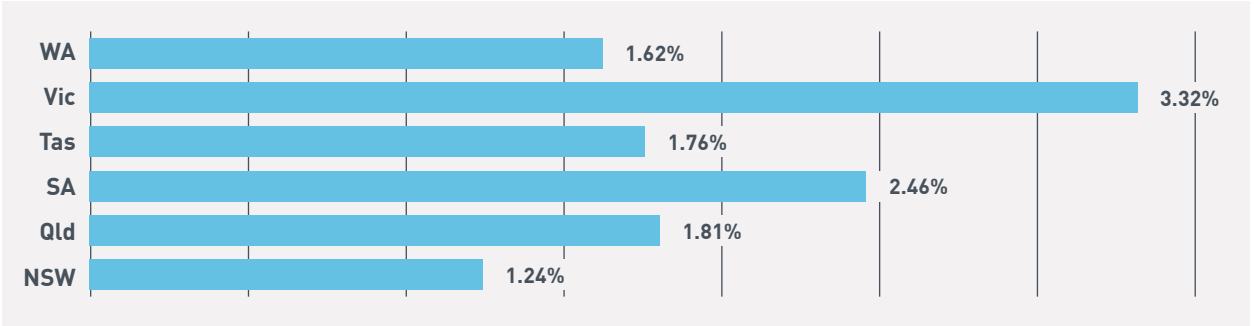


Figure 30: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

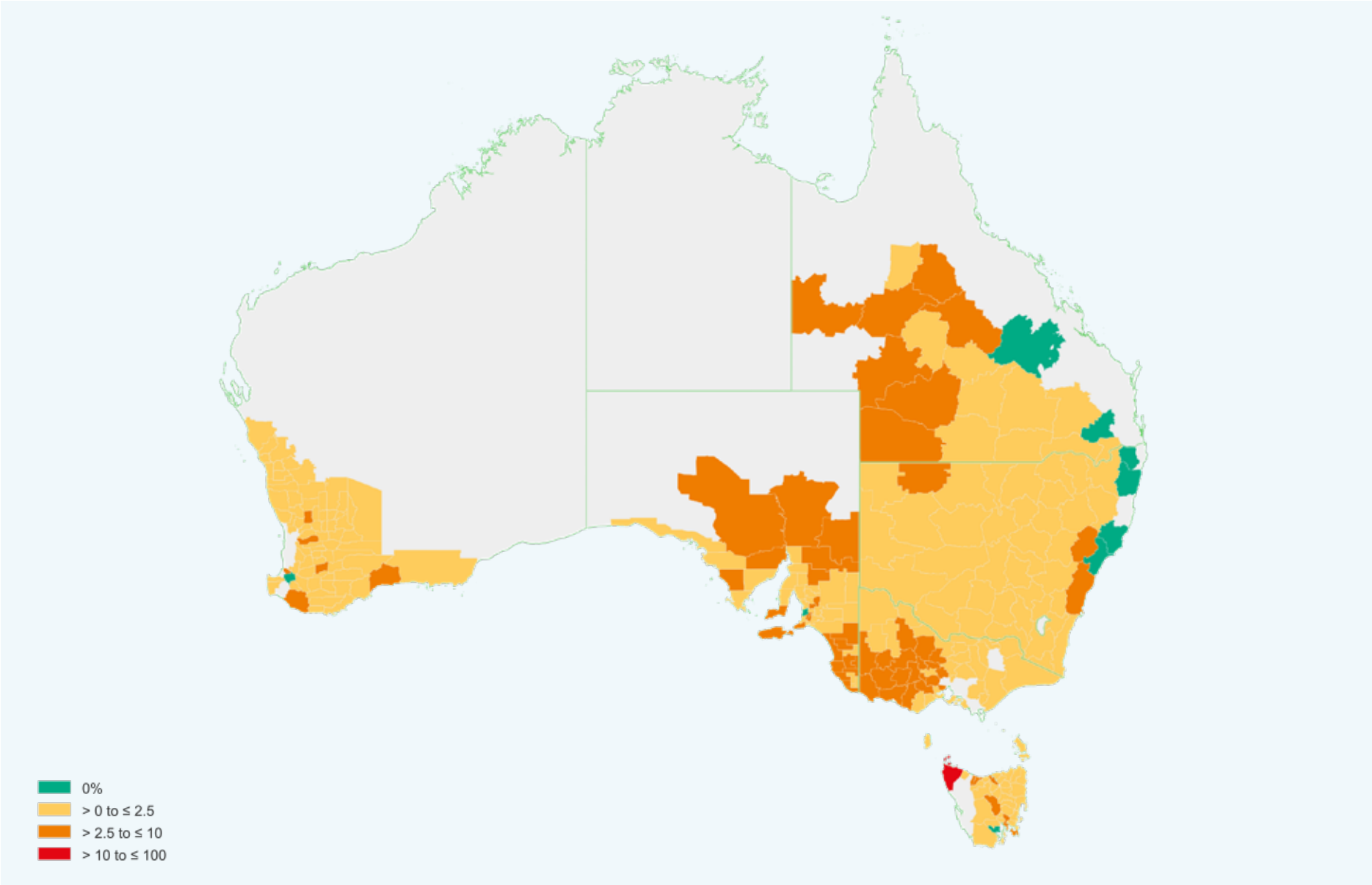


Figure 31: Percentage of sheep affected by pleurisy in each LGA in 2023-24

PNEUMONIA

Pneumonia in sheep is lung inflammation caused by infections, primarily with a bacterium (especially *Mycoplasma ovipneumoniae*), viruses, or occasionally lungworms with secondary bacterial invasion. The disease can be isolated or lead to outbreaks, often in weaners over summer, known as "summer pneumonia". Affected lambs can be 3 kg lighter, causing production losses.

Lungs will be condemned, and any surrounding affected tissue will be trimmed (see pleurisy).

The percentage of total inspected sheep with pneumonia has increased slightly by 0.1% from the previous year (Table 15). Additionally, the percentage of lambs affected by pneumonia has risen from 0.7% in 2022-23 to 0.9% in 2023-24. The condition is most widespread in Western Australia, with 28% of PICs reporting at least one case of the condition in 2023-24, increasing from 21% in the previous year (Figure 32). However, only a relatively small proportion of inspected sheep in Western Australia had pneumonia (0.4%), indicating that the affected animals are occurring in small quantities across a large number of PICs.

South Australia has the highest incidence of pneumonia, with 1.4% of sheep affected (Figure 33), followed by New South Wales and Victoria at 0.5%.

Table 15: The number of sheep inspected and affected by pneumonia during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	37,814 = 0.5%	51,585 = 0.5%	74,191 = 0.6%
Total <2yr animals affected	32,874 = 0.4%	41,563 = 0.7%	62,469 = 0.9%

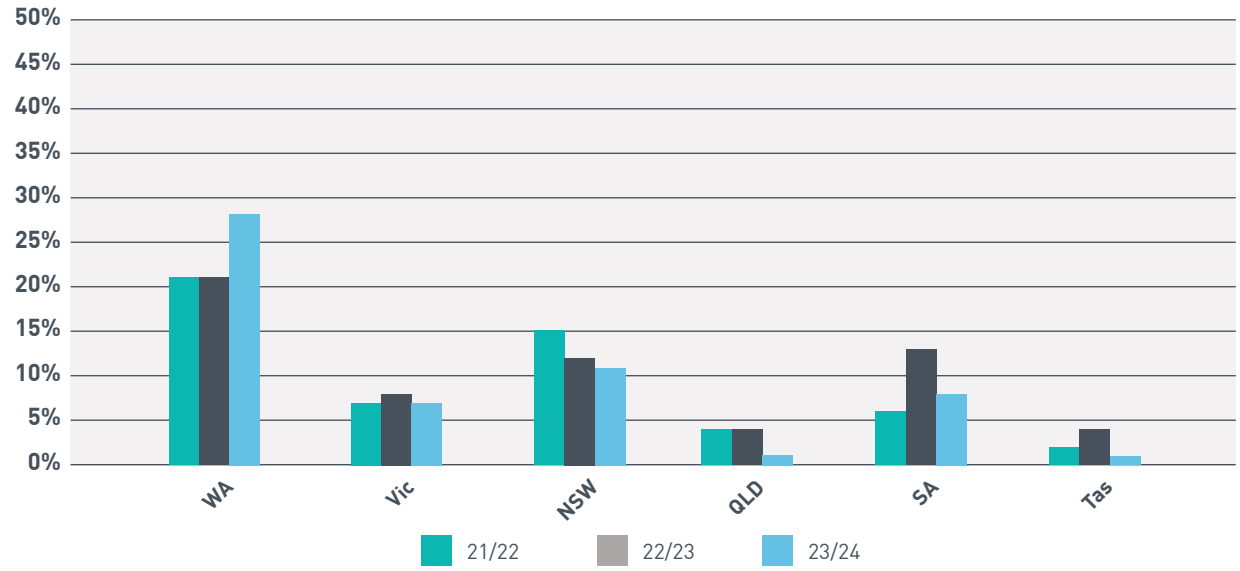


Figure 32: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

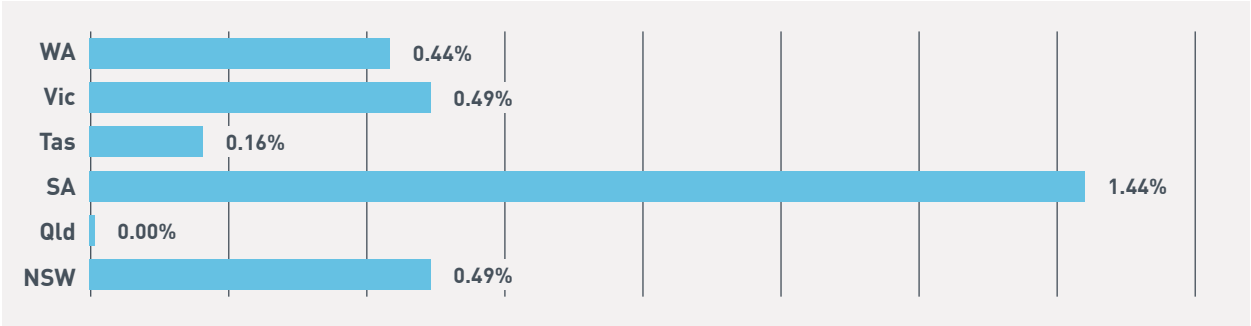


Figure 33: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

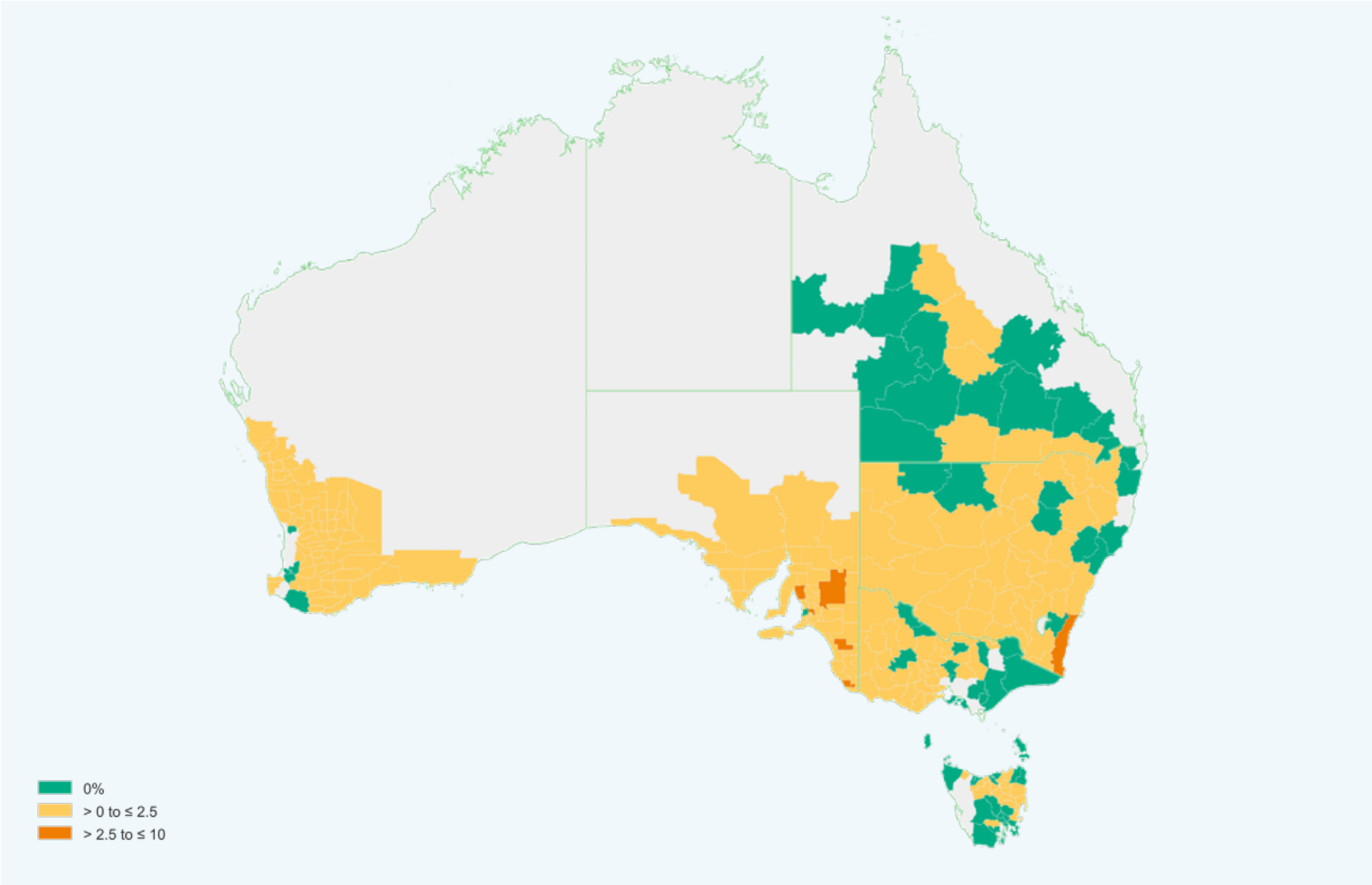


Figure 34: Percentage of sheep affected by pneumonia in each LGA in 2023-24

SARCOCYSTOSIS

Sarcocystosis is a disease caused by Sarcocystis, 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, affected carcases will undergo trimming.

The percentage of total inspected sheep with sarcocystis has remained unchanged at 0.2%, however, the percentage of affected lambs has increased slightly by 0.2% (Table 16). Tasmania showed the highest reduction, with a marked decrease from 15% to 3% in affected PICs reporting at least one animal with Sarcocystis. Both Tasmania and Western Australia reported 3% of PICs affected during 2023-24. (Figure 35).

South Australia has the highest percentage of affected sheep, with 1.1% of inspected sheep in this state having Sarcocystis. This was followed by Tasmania, with 0.6% of inspected sheep being affected (Figure 36).

Table 16: The number of sheep inspected and affected by sarcocystosis during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	15,245 =0.2%	23,837 = 0.2%	29,839 = 0.2%
Total <2yr animals affected	1,432 = 0.02%	5,739 = 0.1%	1,797 = 0.3%

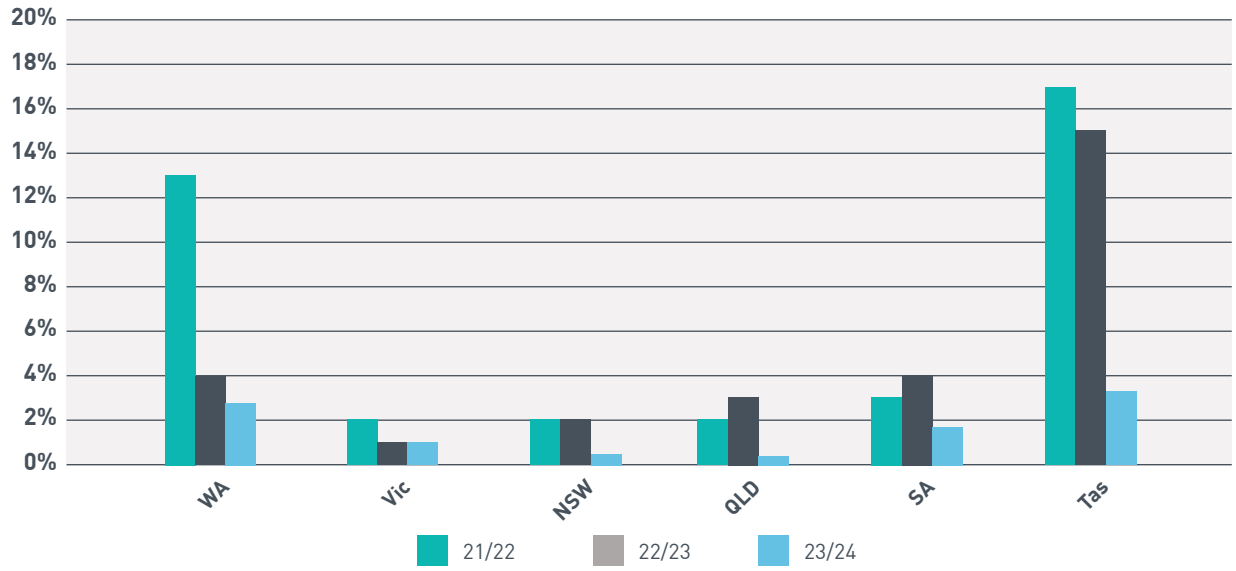


Figure 35: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

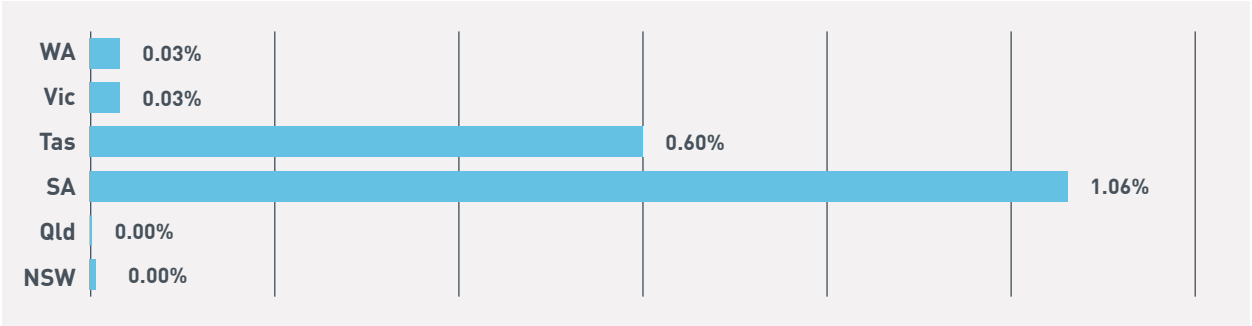


Figure 36: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

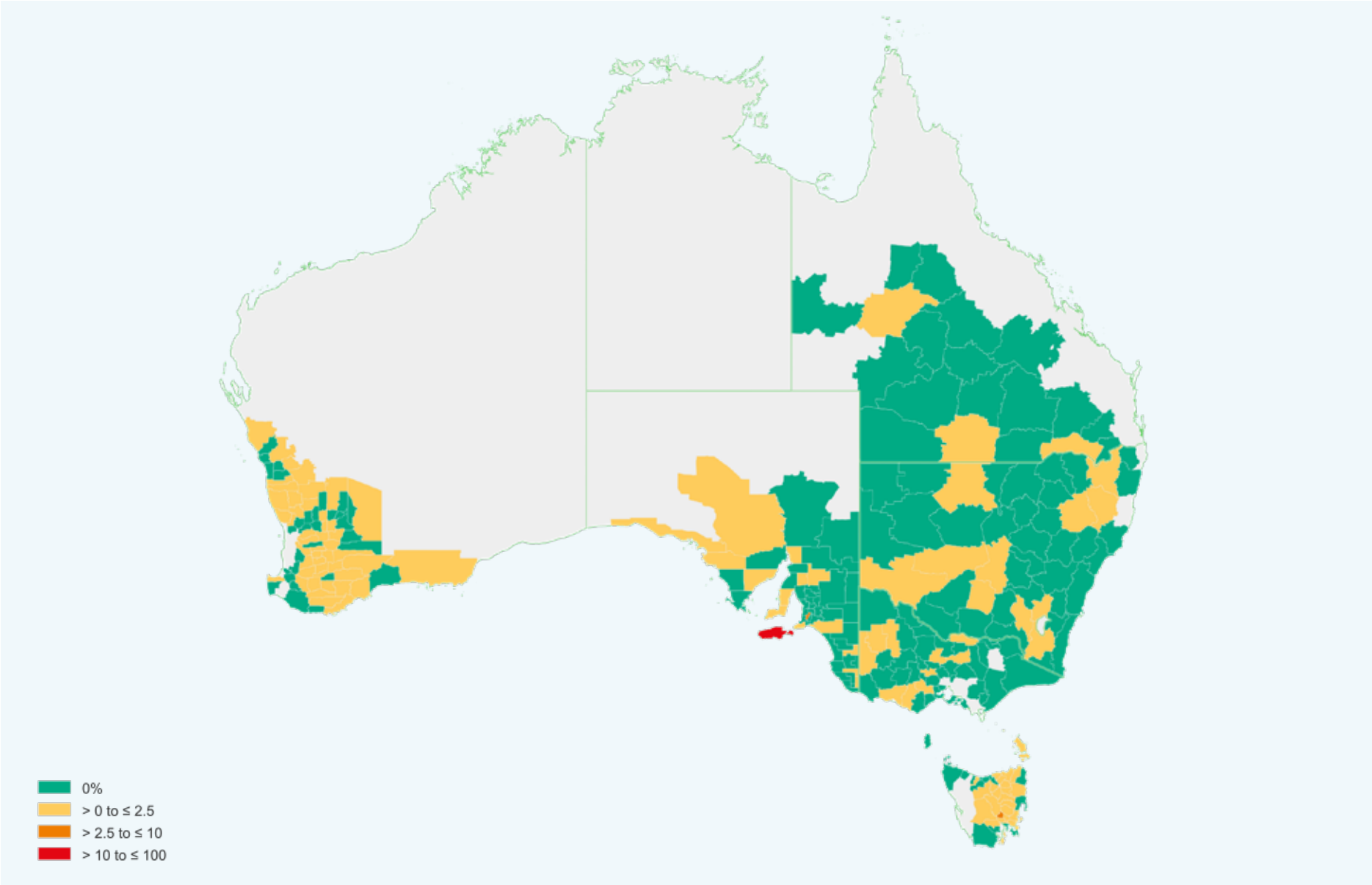


Figure 37: Percentage of sheep affected by sarcocystosis in each LGA in 2023-24

SHEEP MEASLES

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

At the abattoirs, infected carcases will undergo trimming while carcases with more than five cysts will be condemned.

The total proportion of inspected sheep with sheep measles in 2023-24 remained unchanged at 1.4%. However, the percentage of affected lambs increased by 0.1% (Table 17). Sheep measles is a fairly widespread condition and is seen on a relatively large number of properties. Western Australia has the highest proportion of affected PICs, with 57% of properties having at least one case of sheep measles. This was closely followed by Victoria, with 56% of affected PICs (Figure 38).

Tasmania also has the highest percentage of affected animals, with 2.1% of inspected animals in this state having sheep measles. This was followed by Victoria and South Australia, with 1.9% and 1.8% of inspected sheep affected with the condition, respectively (Figure 39).

Table 17: The number of sheep inspected and affected by sheep measles during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	120,455 = 1.6%	138,619 = 1.4%	163,862 = 1.4%
Total <2yr animals affected	50,109 = 0.6%	54,347 = 0.9%	66,814 = 1.0%

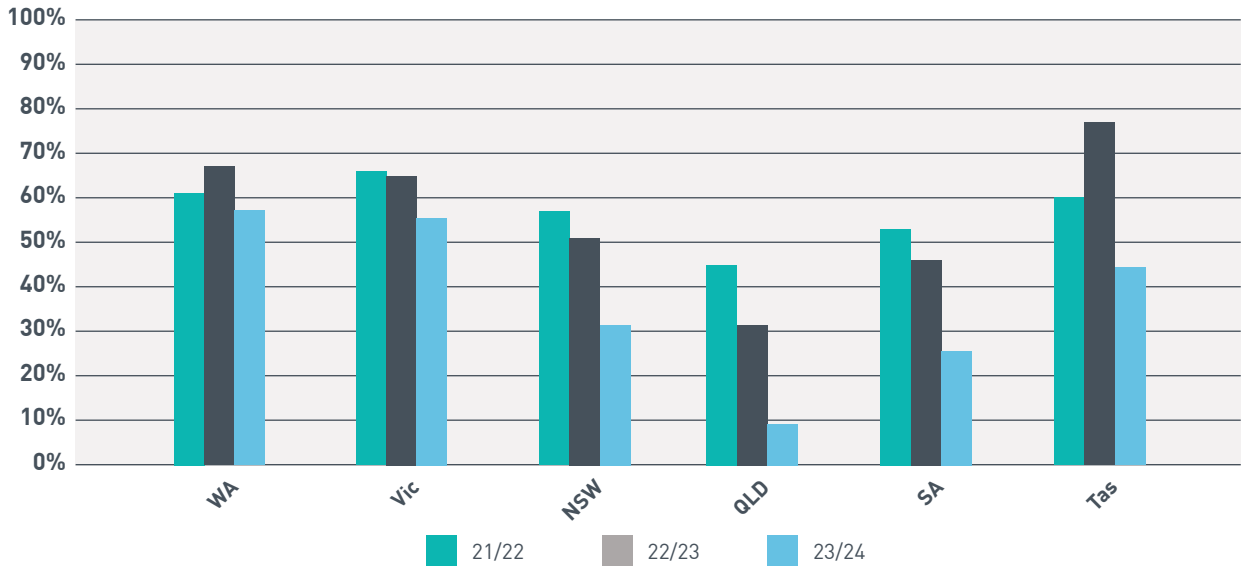


Figure 38: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

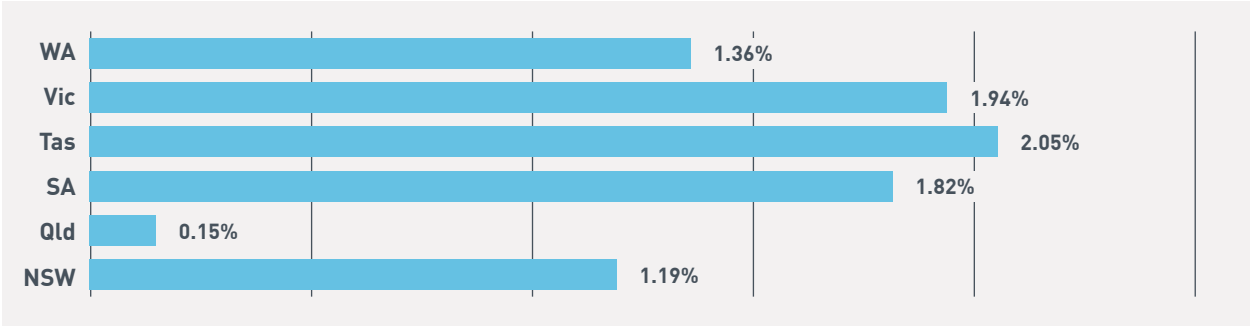


Figure 39: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

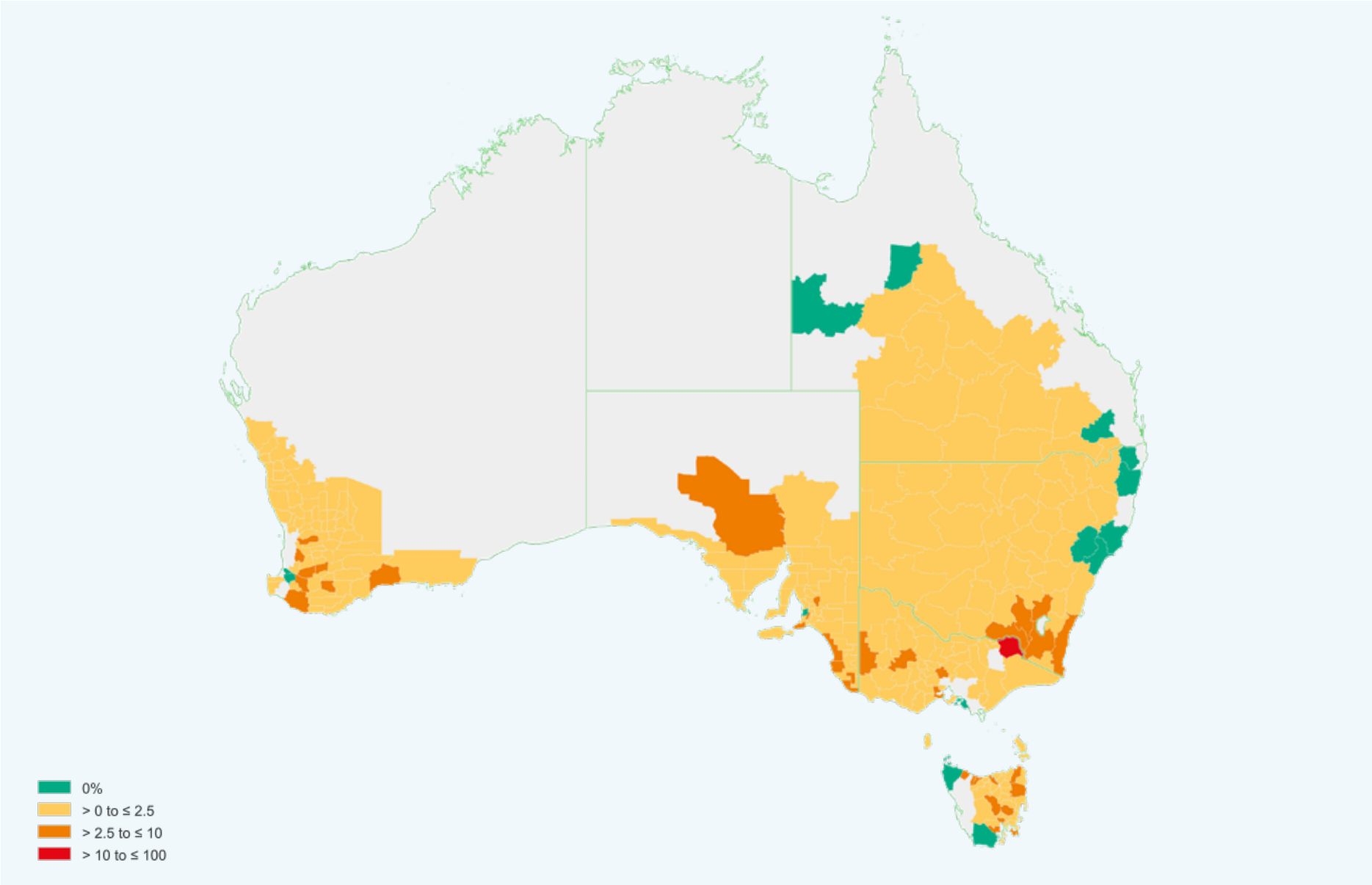


Figure 40: Percentage of sheep affected by sheep measles in each LGA in 2023-24

VACCINATION LESIONS

Vaccination lesions can be caused by improper technique, poor hygiene or using a contaminated vaccine. The accidental introduction 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.

The total number of sheep with vaccination lesions has decreased slightly from 1.2% to 1.1% compared to the previous year (Table 18). The proportion of lambs affected by vaccination lesions has decreased from 1.4% to 1.0%, after the previous increasing trend since 2020/21. The highest percentage of affected PICs remains in Victoria, with at least one affected animal occurring on 26% of PICs (Figure 41).

Victoria saw the highest percentage of total effected animals, with 2.5% of inspected sheep in this state having vaccination lesions. This was followed by South Australia with 2.1% (Figure 42).

Table 18: The number of sheep inspected and affected by vaccination lesions during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	111,319 = 1.4%	120,620 = 1.2%	134,465 = 1.1%
Total <2yr animals affected	59,109 = 0.8%	82,537 = 1.4%	66,959 = 1.0%

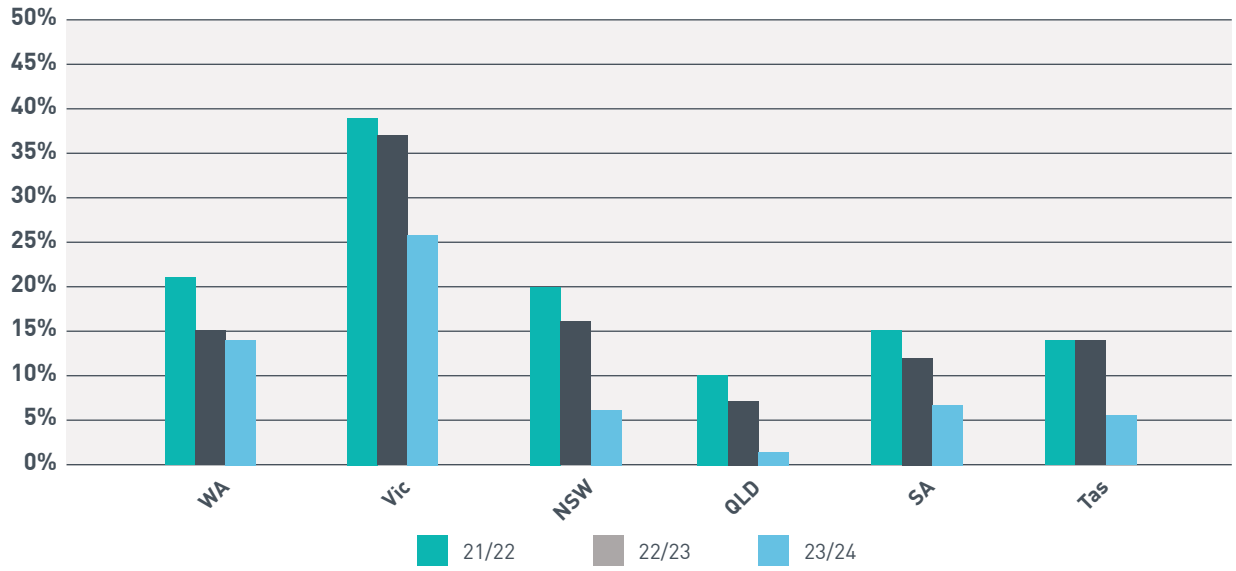


Figure 41: The percentage of PIC's inspected in each state that had at least one affected animal in 2021-24 (direct lines for 2022/23 and 2023/24)

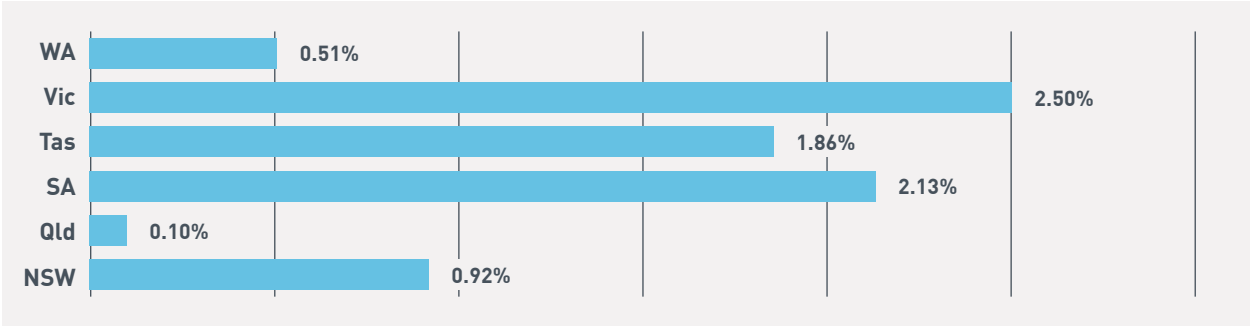


Figure 42: The percentage of animals inspected in each state that were affected in 2023-24 (direct lines only)

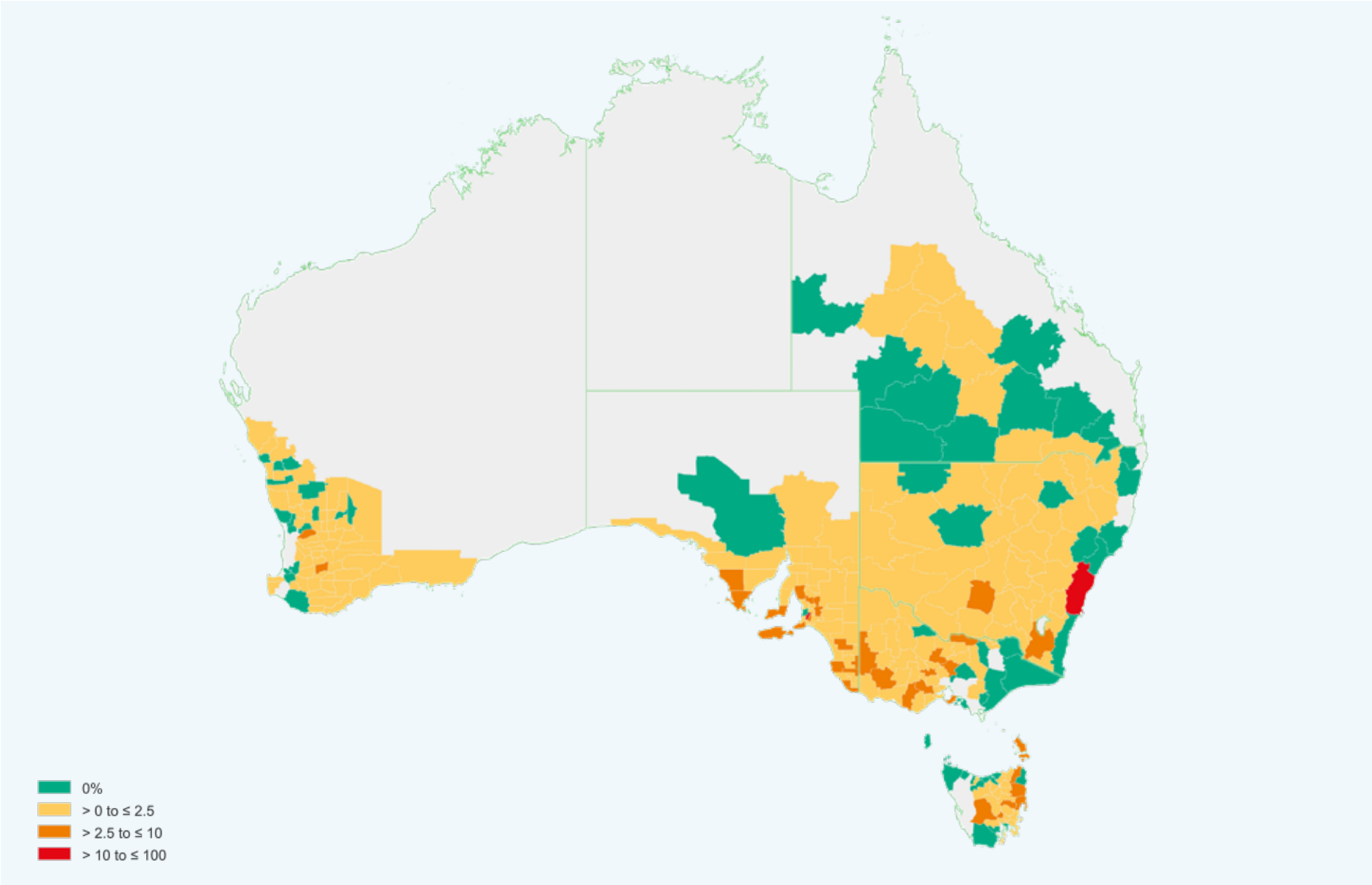


Figure 43: Percentage of sheep affected by vaccination lesions in each LGA in 2023-24

CONDITIONS WITH PREVELANCE < 0.1%

Cirrhosis

Cirrhosis is the chronic damage of liver tissue as a result of other diseases and conditions such as liver fluke. Sheep affected by cirrhosis may also have lost condition or show other signs of illness.

Affected livers are discarded at the abattoir.

Table 19: The number of sheep inspected and affected by cirrhosis during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	2,574 = 0.03%	7,370 = 0.08%	4,220 = 0.04%
Total <2yr animals affected	743 = 0.01%	1,987 = 0.03%	1,864 = 0.03%

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. Some may have occurred from previous wild dog attacks on farm. 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 carcases are condemned when wounds are infected, and the animal is showing evidence of septicaemia (blood poisoning).

Table 20: The number of sheep inspected and affected by dog bites during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	3,976 = 0.05%	4,053 = 0.04%	4,359 = 0.04%
Total <2yr animals affected	2,582 = 0.03%	2,555 = 0.04%	2,119 = 0.03%

Fever / Septicaemia

Fever or septicaemia are likely to be signs of other illness or infection somewhere in the body.

As septicaemia is an infection of the body, whole carcasses will be condemned.

The percentage of sheep affected with fever and / or septicaemia decreased from 0.04% to 0.01% in 2023-24, which is consistent with the results observed during the previous two years.

Table 21: The number of sheep inspected and affected by fever / septicaemia during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	1,159 = 0.01%	3,856 = 0.04%	1,559 = 0.01%
Total <2yr animals affected	698 = < 0.01%	1,695 = 0.03%	496 = < 0.01%

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 will be condemned at the abattoir.

Table 22: The number of sheep inspected and affected by hydatids during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	360 = < 0.01%	1,402 = 0.01%	959 = < 0.01%
Total <2yr animals affected	101 = <0.01%	457 = 0.01%	516 = < 0.01%

Rib fractures

Rib fractures can be caused by a number of factors and are likely linked to reduced bone density caused by nutritional deficiencies. Most cases occur in South Australia. Rib fractures can also be an indication of wider animal welfare problems. Safe handling practices and good nutrition (including correction of any mineral deficiencies) will help to prevent rib fractures.

Affected ribs and surrounding tissue is discarded, potentially impacting some of the high value meat cuts, reducing the value of the carcass.

Table 23: The number of sheep inspected and affected by rib fractures during 2021-24

	2021-22	2022-23	2023-24
Total animals inspected	7,758,372	9,822,174	11,950,208
Total animals affected	7,052 = 0.1%	13,333 = 0.1%	11,202 = 0.1%
Total <2yr animals affected	5,481 = 0.1%	8,821 = 0.2%	8,015 = 0.1%

STATE CONTACTS

STATE	NAME	ORGANISATION	EMAIL
NSW	Dr Amanda Walker	NSW Department of Primary Industries & Regional Development	amanda.walker@dpi.nsw.gov.au
SA	Dr Jemma Hassam	Department of Primary Industries and Regions	jemma.hassam@sa.gov.au
TAS	Veterinary Officer	Department of Natural Resources and Environment Tasmania	animaldisease.enquiries@nre.tas.gov.au
VIC	Dr Alison Lee	Department of Energy, Environment & Climate Action	alison.lee@agriculture.vic.gov.au
WA	Dr Anna Erickson	Department of Primary Industries and Regional Development	anna.erickson@dpird.wa.gov.au
QLD	Dr Donna Weber	Department of Agriculture and Fisheries	donna.weber@daf.qld.gov.au

INDUSTRY CONTACTS

INDUSTRY	EMAIL
Sheep Producers Australia	admin@sheepproducers.com.au
WoolProducers Australia	admin@woolproducers.com.au

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animalhealth AUSTRALIA

+61 2 6232 5522
aha@animalhealthaustralia.com.au
animalhealthaustralia.com.au