SHEEP SUSTAINABILITY FRAMEWORK

AUSTRALIAN SHEEP SUSTAINABILITY
FRAMEWORK

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1. Message from the Chair

The Australian sheep meat and wool industry, led by Sheep Producers Australia and WoolProducers Australia, is proud to deliver this Sheep Sustainability Framework.

The role of the Framework is to monitor, measure and report industry performance against sustainability priorities. The Framework will assist our industry to better understand its opportunities, challenges and impacts. It will also enable us to demonstrate sustainable practices, and identify areas for improvement.

Importantly, it will support better communication with stakeholders, improving transparency and providing evidence to our customers that the food and fibre they purchase has been produced responsibly.
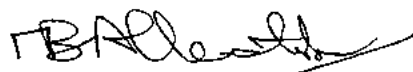
The Framework was developed by an industry Steering Group in close consultation with our stakeholders, including both those directly involved in the industry and those with a strong interest in it.

I sincerely thank the Steering Group for their efforts to date, together with the expert working groups who provided guidance on how best to measure our sustainability performance, and the Sheep Sustainability Board that has overseen the Framework's development.

I would also like to thank all stakeholders who have given their advice and perspectives. Their contribution has been fundamental to the Framework's development and their continued involvement is essential as implementation begins.

This will be a living document, subject to review and refinement so that it remains relevant and meets the expectations of all stakeholders.

I look forward to this ongoing commitment to transparency, continual improvement, and engagement to ensure the Australian sheep industry remains a strong and important industry both for its participants and its customers.

Professor Bruce Allworth
Chair, Sheep Sustainability Steering Group

SHEEP SUSTAINABILITY STEERING GROUP

— **Prof Bruce Allworth** (Chair), Director, Fred Morley Centre, Charles Sturt University, NSW

— **Will Barton** CEO, Gundagai Meat Processors, NSW

— **Dr Will Bignell** Producer, Thorpe Farm, TAS

— **Andrew Blanch** Managing Director, New England Wool, NSW

— **Michael Field** Producer, Jugiong, NSW

— **Johnny Gardner** Producer, Cavendish, VIC

— **Deanna Lush** Producer, Murray Plains, SA and Managing Director, AgCommunicators, SA

— **Emily Stretch** Producer, Kojonup, WA

— **Dr Paul Swan** Australian Wool Exchange

— **Mark Wootton** Producer, Jigsaw Farms, VIC

2. Framework snapshot

Vision

Our vision for a sustainable sheep meat and wool industry is:

Sustainably producing the world's best sheep meat and wool, now and into the future.

Definition

For the purposes of this Framework, sustainable sheep meat and wool production is defined as:

Producing sheep meat and wool by current and future generations in an ethical and environmentally, socially, and financially responsible manner.

Principles

1. Transparency
2. Accountability
3. Inclusivity
4. Credibility
5. Practicality
6. Relevance

Theme	Focus area	Priority	
Caring for our sheep			
	1 Animal care and handling	1.1	Reduce, refine and replace painful husbandry practices
		1.2	Implement best practice sheep management
		1.3	Ensure humane processing and on-farm euthanasia
	2 Animal health	2.1	Prevent and manage disease
Enhancing the environment and climate			
	3 Environment	3.1	Improve natural resource management
		3.2	Responsible environmental practices
		3.3	Encourage biodiversity
	4 Climate change	4.1	Reduce net greenhouse gas emissions
		4.2	Adapt to a changing climate, including extreme weather events
Looking after our people, our customers and the community			
	5 Health and safety	5.1	Improve industry safety culture
		5.2	Improve our people's health
	6 Capacity building	6.1	Support and grow workforce
		6.2	Encourage workforce diversity
	7 Contribution to community	7.1	Enhance community trust
		7.2	Deliver products that customers demand
Ensuring a financially resilient industry			
	8 Profitability, productivity and investment	8.1	Maintain or increase industry profitability
		8.2	Maintain or increase contribution to the Australian economy
		8.3	Increase productivity
		8.4	Encourage innovation
	9 Market access	9.1	Ensure positive market positioning and access
		9.2	Guarantee product integrity and safety

3. The Australian sheep industry

Australia is a major producer and exporter of sheep products. We are the largest exporter of sheep meat and premium quality fine wool, the second largest producer of lamb and mutton, and the largest producer of all wools by value and volume.[1,2]

Our diverse landscape

Australia's sheep industry is an extensive pasture-based industry, with an average flock size of 2,000 sheep. Sheep are produced in a wide range of climates—from the arid and semi-arid parts of the inland region, to the medium to high rainfall areas of New South Wales, Victoria, South Australia, Tasmania, Queensland and southern Western Australia. Sheep are grazed on pastures year-round, with supplementary feeding occurring when there are pasture shortages.

Commitment to our industry

The nature of Australia's unique landscape brings numerous challenges to farming. These have led to innovative methods of production. Investment in research, development and innovation through the levy scheme also ensures that our farming practices remain competitive.

The sheep industry has two Research and Development Corporations (RDCs) — Australian Wool Innovation (AWI) and Meat & Livestock Australia (MLA). Both RDCs invest producer levies and matched funds from the Australian Government in research, development, information and marketing.

Sustainable sheep production

Sheep producers work to preserve, protect and improve the natural resources and biodiversity on their farms and manage an estimated 65.8 million hectares of land. Sheep play an integral role in the ability of Australian farmers to sustainably manage the land. When managed well, sheep can regenerate the land on which they graze by: controlling and managing weed infestation, initiating the regeneration of pastures, and encouraging an increase in soil biota diversity. By protecting, supporting and encouraging biodiversity in the soil, vegetation, insect life and fauna, sheep producers are ensuring that the farm ecosystem can thrive.

Wool is a natural, renewable and a biodegradable fibre that grows constantly. Wool producing sheep are shorn at least once a year, and sheep are often retained by the same producer over their lifetime, maintaining genetics and bloodlines over many generations. Australia is the largest exporter of non-mulesed Merino wool in the world, and sheep producers are committed to responsible practices and animal welfare.

Integrity and quality systems

The sheep industry takes quality standards seriously — from establishing and anticipating customer specifications, to the demonstration and reporting of specific measures. Our sophisticated traceability systems guarantee the integrity of Australia's sheep meat and wool products to our customers.

The National Livestock Identification System (NLIS) provides identification and lifetime traceability of sheep.

The national Livestock Production Assurance (LPA) is an on-farm assurance program covering food safety, animal welfare, traceability and biosecurity. It provides evidence of livestock history and on-farm practices when transferring animals through the value chain. This integrity system protects the disease-free status of Australian sheep and underpins the reputation of our products as clean, safe and natural.

The Australian National Wool Declaration (NWD) and Classers' Specifications are the standardised mechanisms by which woolgrowers declare specific on-farm practices, wool quality and traceability. They assist Australia's wool clip to meet evolving customer requirements. Australian wool is bought and sold with an International Wool Textile Organisation (IWTO) test certificate that characterises all critical features of each bale of wool.

Increasingly, Australian wool producers have become involved in various sustainability certification schemes that provide more in-depth information regarding on-farm activities and attributes which are increasingly required by our customers.

The *Australian Animal Welfare Standards and Guidelines for Sheep* apply to all those responsible for the care and management of sheep. They are based on current scientific knowledge, recommended industry practice, and community expectations.

Australian sheep industry snapshot

65.7 million
head of sheep[3]

32,118
agricultural businesses
involved[4]

41 million
breeding ewes on hand,
77% Merino, 23% non-Merino[5]

Sheep meat

A$4.1 billion
value of sheep meat
exports[6]

731,281 tonnes cwt
lamb and mutton produced[7]

281,518 tonnes swt
Australian lamb exports[8]

183,833 tonnes swt
Australian mutton exports[9]

Wool

A$4.4 billion
value of greasy wool[10]

283 million kg
of greasy wool[11]

39%
of world greasy wool exports[12]

68.4 million
sheep shorn[13]

70%
of the world's apparel wool[14]

Sheep meat processing

21.6 million
lambs processed[15]

9.3 million
sheep processed[16]

23kg
average lamb carcase weight[17]

31,200
people employed by processors across
all species[18]

60
smallstock processing plants that
are members of Australian Meat
Processor Corporation[19]

4. Why is a Sustainability Framework needed?

Food and fibre production are at the centre of many of today's global sustainability challenges and opportunities.

Sustainability matters to the whole of the sheep meat and wool supply chain — producers, processors, customers and consumers. In Australia, a growing focus on sustainability is reflected in industry strategic plans — such as *Red Meat 2030*, and the *Meat & Livestock Australia Strategic Plan 2025* — in which sustainability is a key pillar.

The *National Wool Industry RD&E Strategy 2018–22* states that *"product quality, provenance and sustainability will assume increasing importance, as will high animal welfare and ethical production standards, which will be required to maintain the industry's social licence to operate"*.

The *Wool 2030 Strategy* is a 10-year plan for woolgrowers. The underlying principle of the plan is sustainability: in the careful management of animals and the land they occupy, and the wellbeing of woolgrowers and their customers, all of which are essential for sustained profitability.

The National Farmers' Federation (NFF) *2030 Roadmap for Industry Growth* also has a focus on sustainability. Pillar 2 of the roadmap is 'Growing Sustainably', with the aspiration that farmers continue to embrace sustainable farming methods as part of a coordinated national approach that drives productivity and profitability, while recognising and rewarding environmental stewardship.

A sheep industry materiality study has revealed sustainability topics that present both opportunities and challenges to our industry (see Appendix A). Stakeholders including customers, investors and retailers freely articulate how these topics are influencing their business decisions.

Opportunities created by the world's growing demand for sustainably produced food and fibre include increasing access to markets and investment; building confidence in the integrity of sheep meat and wool products; enhancing community trust; better rewarding industry people; and meeting demand for nutritious food and natural fibre.

However, our industry acknowledges that there are challenges linked to these opportunities such as: avoiding land degradation and biodiversity loss; managing climate risk and water scarcity; meeting expectations on animal welfare; protecting human rights in global supply chains; and ensuring businesses are financially sustainable.

Our customers want to be confident that the food and fibre they purchase has been produced responsibly. Demonstration of sustainable production of sheep meat and wool is critical in securing access to local and global customers and markets. Traceability is fundamental to this demonstration.

A focus on aligning animal welfare, environmental, economic and social practices with best practice and community expectations, while managing sheep profitably, will help ensure continued access to markets and capital for Australian sheep businesses. It will also support continuous improvement across the industry.

If production is sustainable, then people, businesses, animals and the environment all benefit.

5. About the Framework

Industry leaders initiated the Framework to demonstrate sustainable practices, identify areas for improvement, and better communicate with customers and consumers.

Sheep Producers Australia (SPA) and WoolProducers Australia (WPA) have led development of the Framework with Australian Wool Innovation (AWI) and Meat & Livestock Australia (MLA) providing funding, together with strategic and secretariat support. SPA and WPA appointed a Sheep Sustainability Steering Group to lead the process.

The Framework will assist industry to better understand its opportunities, challenges and impacts in key areas such as animal welfare, environment, economic resilience, and people and community. It will articulate our sustainability priorities and measure performance against them.

In doing this, the Framework will improve transparency, provide evidence to our stakeholders that Australian sheep meat and wool has been produced responsibly, and build their trust and confidence in the industry. It will demonstrate that Australia has a commitment to improvement where necessary.

The Framework takes an industry-wide perspective. It does not have specific requirements for producers. It does not impose reporting requirements. However, it may identify opportunities where practices can be improved, by both the industry and individuals. It may also inform industry investment in particular practices, policies, processes and programs.

Consultation with stakeholders is instrumental in developing and implementing a robust and credible Framework that works for our industry. Stakeholders are those who can influence the decisions our industry makes or are impacted by them, and encompass industry, as well as customers, retailers, special interest groups, government and investors.

The Framework contains the following elements:
- **Definition** — how sustainability is defined by the sheep meat and wool industry
- **Principles** — to guide development and implementation of the Framework
- **Themes** — four overarching themes
- **Focus areas** — nine areas where effort will be focussed
- **Priorities** — specific sustainability priorities identified by industry and stakeholders
- **Indicators** — measures of performance against the priorities
- **Metrics** — data for each indicator (where specific data is not available, proxies may be used)

Who benefits from the Framework?

The Framework will support sustainable sheep and wool production in Australia. When production is sustainable, then people, animals, the environment and businesses all benefit[20].

The Framework will provide a higher level of trust for customers in the products they access. Investors will face less risks and the potential for higher returns. Consumers will know the sheep meat and wool industry is a responsible source of food and fibre.

Our sheep meat and wool businesses will have access to the resources, customers, investment and markets they need to grow and prosper into the future.

6. Vision

Our vision for a sustainable sheep meat and wool industry is:

Sustainably producing the world's best sheep meat and wool, now and into the future.

7. Definition

For the purposes of this Framework, sustainable sheep production is defined as:

Producing sheep meat and wool by current and future generations in an ethical and environmentally, socially, and financially responsible manner.

8. Principles

A set of principles will guide development and implementation of the Framework:

1. **Transparency** — The industry will provide an open and honest picture of practice and performance (including improvement, no change or decline), using the most appropriate and robust data available.

2. **Accountability** — The industry is accountable for its practices and performance as demonstrated via the Framework, and is committed to continuous improvement.

3. **Inclusivity** — The constructive views and feedback from industry (including producers, processors and other value chain participants), customers, retailers, special interest groups, government and investors as to how industry can improve practice and performance are valued and considered.

4. **Credibility** — Decisions on Framework design will be made with consideration of topics identified as important or material by the industry and its stakeholders. Reporting against Framework priorities and indicators is based on robust evidence.

5. **Practicality** — The Framework works within the industry's scope of influence to make changes that encourage improvement and adoption of best practice. The indicators can or have the potential to be monitored and managed. The Framework should harmonise with other relevant industry strategies to avoid duplication or contradiction.

6. **Relevance** — The Framework's priorities and indicators are aligned with topics identified as important or material to the industry and its stakeholders, and are within the industry's scope of influence. The Framework will adapt over time to remain relevant. It will be useful and highlight areas for improvement.

9. Framework scope, boundary, life

Scope

The scope describes the Framework's role — what the Framework is (and is not) designed to do.

The role of the Framework is to monitor, measure and report industry performance against sustainability priorities. It will identify opportunities, challenges and impacts of sheep production. In turn, this will inform planning, investment, management and evaluation of activities at an industry level.

Data and trends gathered through the Framework may identify opportunities on farms and feedlots, and in transport and processing, where practices can be improved by both the industry and individuals.

In doing so, it can be used by industry to help protect and grow access to investment, finance, customers and markets by providing credible evidence of performance and improvement.

The Framework does not:

- Set industry policies, goals or targets
- Drive extension or adoption
- Audit or certify individual businesses
- Impose costs or reporting requirements on individual businesses

Individual businesses may use the Framework to understand the industry's material issues and consider these in their forward planning.

Boundary

The boundary indicates where along the value chain the Framework will focus. It defines what will and will not be measured or reported.

The Framework will initially cover on-farm (including feedlots), transport (including live sheep exports), saleyards and Australian sheep meat and wool processors. This is where data is readily available to measure, monitor and report performance and progress (see Figure 1). The majority of sheep meat sold is processed domestically. The Australian wool processing sector is very small with around 6% of wool processed domestically.

It should be noted that as this is an Australian framework, it will initially report on Australian practices.

It is intended that the boundary of the Framework will extend to cover the overseas processing sectors within the next three years.

Framework life

The Framework is considered by the sheep meat and wool industry as a living document — subject to a regular cycle of review and refresh. This is important to ensure the most relevant data available is included, and priorities remain relevant. A Materiality Review every three to five years is also expected to inform the review process.

INITIAL FRAMEWORK BOUNDARY

Farms and feedlots — Transport — Saleyards — Live export — Wool transport and auctions — Domestic processors — Overseas processors — Domestic & overseas customers
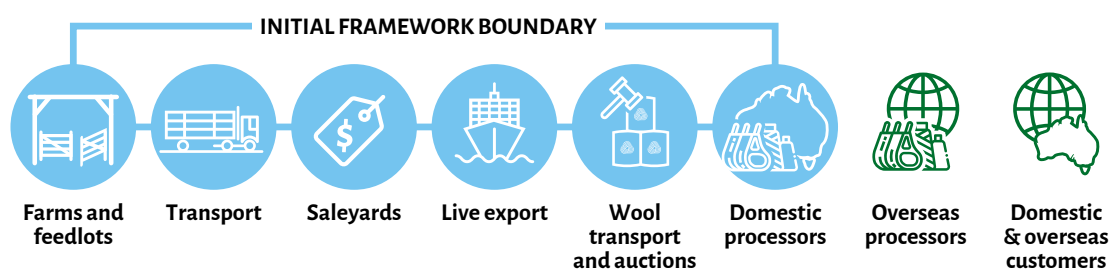
Figure 1. The sheep meat and wool value chain

10. Framework themes

The Framework has four themes:

1. **Caring for our sheep:** The health and wellbeing of our animals is fundamental to a sustainable industry and of critical importance to our stakeholders. Investment in research and adoption supports high standards of welfare and continuous improvement.

2. **Enhancing the environment and climate:** As an industry, we recognise our role as environmental stewards, seek to minimise impact on the natural environment and use natural resources wisely. We also seek to meet the challenge of a changing climate, and mitigate our own greenhouse gas (GHG) emissions.

3. **Looking after our people, our customers and the community:** A safe and healthy workforce, with the right skills to take the industry into the future, underpins our success. We make an important contribution to regional communities through our presence and business operations, and to the wider community through the provision of natural fibre and nutritious food.

4. **Ensuring a financially resilient industry:** The sheep industry makes a significant contribution to the Australian economy and supports regional employment. This contribution depends on the success of individual businesses which can withstand challenges that arise.

These themes are not in order of priority as all are important for a sustainable sheep meat and wool industry.

Figure 2. Framework themes

11. Focus areas and priorities

In order to monitor and report on the industry's performance in managing our material topics (see Appendix A), a set of focus areas and priorities has been developed, with indicators for measuring performance. Metrics have also been developed against the indicators (see Table 2).

Table 1. Focus areas and priorities

Theme: Caring for our sheep		
Focus area	**Priority**	**Rationale**
1 Animal care and handling	1.1 Reduce, refine and replace painful husbandry practices	Painful husbandry procedures can impact animal welfare. Mulesing is a high-profile issue in this area. Use of appropriate pain management is best practice for all painful husbandry procedures.
	1.2 Implement best practice sheep management	Implementing best practice sheep management will support health and wellbeing of animals and ensure industry meets customer and community expectations regarding animal welfare. Key considerations include lamb survival; minimising stress during handling including in shearing and transportation; and reducing the impact of predators.
	1.3 Ensure humane processing and on-farm euthanasia	On-farm euthanasia and processing are an integral part of sheep production. It is important that these procedures are done competently.
2 Animal health	2.1 Prevent and manage disease	The outbreak or spread of pests and diseases would have a severe impact on the sheep industry — on both individual businesses and access to markets. Vaccination is a key prevention mechanism. Appropriate treatment of disease reduces impact on individual animals. Biosecurity measures, including effective traceability, also mitigate risk of disease.

Table 1. Focus areas and priorities *(continued)*

Theme: Enhancing the environment and climate		
Focus area	**Priority**	**Rationale**
3 Environment	3.1 Improve natural resource management	Maintaining natural resources, including water, soil and vegetation, is fundamental to the success of the industry.
	3.2 Responsible environmental practices	Responsible environmental practices on farm include use of chemicals, and pest management including pest plants and animals. In processing, water use and waste minimisation are important issues. All of these elements must be managed appropriately to minimise harm to the environment.
	3.3 Encourage biodiversity	Biodiversity is increasingly highlighted by stakeholders as an important consideration.
4 Climate change	4.1 Reduce net greenhouse gas emissions	Greenhouse gas emissions (GHGs) contribute to climate change and climate variability, including extreme weather events. Under *Red Meat 2030* and *Wool 2030* sheep producers aim to be carbon neutral by 2030. Using renewable sources will help to reduce GHGs. Carbon sequestration and improving ewe reproductive rates will also play a role.
	4.2 Adapt to a changing climate, including extreme weather events	Climate change is increasing the incidence of extreme weather events such as droughts, heatwaves, floods and fires. Extreme weather events have significant implications for animal welfare (e.g. mortality, transport), environmental impact and profitability.

Focus areas and priorities *(continued)*

Table 1. Focus areas and priorities *(continued)*

Theme: Looking after our people, our customer and the community		
Focus area	**Priority**	**Rationale**
5 Health and safety	5.1 Improve industry safety culture	People, whether farmers, workers, customers or community members are agriculture's most important asset. Agriculture is one of the most dangerous industries to work in due to the combination of hazards[21]. The agriculture industry is identified as a national priority to reduce fatalities and serious claims under the *Australian Work Health and Safety Strategy 2012–22*. Safe and healthy workplaces and work processes protect people from injury and illness. Proactive focus and investment in safety is a foundation for cultural change.
	5.2 Improve our people's health	It is critical that the industry supports our people to look after their physical and mental health.
6 Capacity building	6.1 Support and grow workforce	To be sustainable, the sheep industry needs access to people with the right skills to manage and operate businesses, and to look after those people. Access to training and continuous improvement is required to upskill the workforce. Succession planning supports the future workforce.
	6.2 Encourage workforce diversity	A diverse workforce brings a range of skills and perspectives to the industry, and assists in attraction and retention of workers.
7 Contribution to community	7.1 Enhance community trust	Community trust in farmers is high[22] and is critical to maintain. Reputation underpins the industry's social licence. The sheep industry makes a significant contribution to Australian society — beyond its economic contribution. The Framework will help to demonstrate this.
	7.2 Deliver products that customers demand	Lean red meat is recommended in a healthy diet because it is an excellent source of protein, iron and zinc — essential nutrients important for good health. Demand for sheep meat is a key success factor for the industry. Wool is a natural, renewable and biodegradable fibre with numerous human health benefits. These qualities are integral in providing a sustainable fibre choice to consumers. Strong consumer demand for Australian sheep meat and wool is a key success factor for the industry.

Table 1. Focus areas and priorities *(continued)*

Theme: Ensuring a financially resilient industry			
Focus area	**Priority**		**Rationale**
8 Profitability, productivity and investment	8.1	Maintain or increase industry profitability	Profitability underpins the success of the sheep industry — as well as individual businesses.
	8.2	Maintain or increase contribution to the Australian economy	The industry seeks to demonstrate the value of the industry to stakeholders, including its contribution to the National Farmers' Federation (NFF) target of $100 billion by 2030.
	8.3	Increase productivity	Improving farm productivity contributes to profitability by allowing farmers to produce more output using fewer inputs.
	8.4	Encourage innovation	Innovation supports sheep businesses' ability to respond to challenges and opportunities. It can preserve or increase margins and foster competitive advantage.
9 Market access	9.1	Ensure positive market positioning and access	Market position underpins demand for Australian sheep meat and wool. Based on reputation, it links to market access and price.
	9.2	Guarantee product integrity and safety	Product integrity and safety are critical to meeting customers' expectations. These are underpinned by Australia's integrity systems for sheep meat and wool.

12. Performance indicators and metrics

Performance indicators have been developed to support priorities, with metrics to measure them.

Table 2. Performance indicators and metrics

Theme: Caring for our sheep			
Priority	**Indicator**	**Metrics**	**Data source**
1.1 Reduce, refine and replace painful husbandry practices	1.1.1 Level of mulesing in Australian flock	1.1.1a % total flock mulesed (Merino v non-Merino)	*Producer survey*
		1.1.1b % wool declared as non-mulesed/ceased mulesed (Merino v non-Merino)	*AWEX*
	1.1.2 Use of pain management associated with mulesing, castration and tail docking	1.1.2a % of producers who use pain management at mulesing	*Producer survey*
		1.1.2b % flock /producers where pain management is used for castration and tail docking	*Producer survey 2022*
1.2 Implement best practice sheep management	1.2.1 Lamb survival	1.2.1a % producers pregnancy scanning ewes for litter size	*Producer survey 2022*
	1.2.2 Adoption of best practice management	1.2.2a % producers who have completed Lifetime Ewe Management (LTEM) training	*AWI*
	1.2.3 Shearing welfare	1.2.3a Total number of days per year spent by shearing trainers in woolsheds nationally	*AWI*
	1.2.4 Wild predator management	1.2.4a % producers who use a wild predator management strategy	*Producer survey 2022*
	1.2.5 Transport of sheep within Australia to ensure welfare of sheep	1.2.5a % sheep transported in line with animal welfare standards (fit to load)	*TBD*
	1.2.6 Sheep welfare in saleyards	1.2.6a % sheep transacted through NSQA accredited saleyards	*ALSA/MLA*
	1.2.7 Wellbeing of live sheep during export	1.2.7a % mortality on ships	*DAWE*
1.3 Ensure humane processing and on-farm euthanasia	1.3.1 Humane on-farm euthanasia	1.3.1a % producers awareness of humane killing requirements in the *Australian Animal Welfare Standards & Guidelines for Sheep*	*TBD*
	1.3.2 Humane processing	1.3.2a % of sheep slaughtered through an establishment accredited under the Animal Welfare Certification System	*MLA*
2.1 Prevent and manage disease	2.1.1 Australia maintaining freedom from disease	2.1.1a Australia continues to be declared free from 12 major diseases	*DAWE*
	2.1.2 On-farm activity to prevent and treat disease	2.1.2a % flock vaccinated (any vaccine)	*Producer survey 2022*
		2.1.2b Genetic breeding values (worm egg count, breech wrinkle)	*MLA*
	2.1.3 Producers adhering to biosecurity requirements	2.1.3a % flock traceable via the National Livestock Identification System (NLIS)	*ISC*

Table 2. Performance indicators and metrics *(continued)*

Theme: Enhancing the environment and climate					
Priority		**Indicator**		**Metrics**	**Data source**
3.1	Improve natural resource management	3.1.1	Protecting soil resource	3.1.1a Fractional vegetation cover	*CIBO labs*
		3.1.2	Conservation practices	3.1.2a % sheep producing land identified for conservation or protection purposes	*ABARES*
3.2	Responsible environmental practices	3.2.1	Responsible chemical stewardship	3.2.1a % producers who have done Chemcert course or similar	*Producer survey 2022*
				3.2.1b % greasy wool sale lots exceeding EU Ecolabel criteria	*AWTA*
		3.2.2	Plant pest management	3.2.2a % producers who have a plant pest management plan	*Producer survey 2022*
		3.2.3	Efficient water use in processing	3.2.3a Kilolitres water used per tonne HSCW when processing sheep meat	*AMPC/MLA*
		3.2.4	Minimise waste in processing	3.2.4a Kilograms of solid waste per tonne HSCW when processing sheep meat	*AMPC/MLA*
3.3	Encourage biodiversity	3.3.1	Maintaining and increasing biodiversity	*Metric to be determined*	*TBD*
4.1	Reduce net greenhouse gas emissions	4.1.1	Contribution of sheep production to global warming/GHG emissions	4.1.1a Net emissions: Megatonnes (Mt) of CO_2e generated by sheep industry (farm and sheep meat processing)	*CSIRO*
				4.1.1b Emission intensity: Kilograms of CO_2e emitted per kg liveweight when raising sheep	*Wiedemann et al. (2016)[23]*
				4.1.1c Emission intensity: Kilograms of CO_2e emitted per tonne HSCW when processing sheep meat	*AMPC/MLA*
				4.1.1d Emission intensity: Kilograms of CO_2e emitted per kg greasy wool shorn	*Wiedemann et al. (2016)[24]*
		4.1.2	Renewable energy	*Metric to be determined*	*TBD*
4.2	Adapt to a changing climate, including extreme weather events	4.2.1	Response to a changing and variable climate	4.2.1a Climate adjusted average annual growth rate in Total Factor Productivity (TFP)	*ABARES*

Indicators and metrics *(continued)*

Table 2. Performance indicators and metrics *(continued)*

Theme: Looking after our people, our customers and the community				
Priority	**Indicator**		**Metrics**	**Data source**
5.1 Improve industry safety culture	5.1.1	Investment in health and safety prevention and training	5.1.1a Total A$ investment in health and safety prevention and management	*TBD*
	5.1.2	Number of deaths and serious injuries	5.1.2a Number of fatalities in the sheep industry	*Safe Work Australia*
			5.1.2b Number of serious injury workers' compensation claims in the sheep industry	*Safe Work Australia*
5.2 Improve our people's health	5.2.1	Status of physical and mental health	*Metric to be determined*	*TBD*
6.1 Support and grow workforce	6.1.1	Capacity of workforce	6.1.1a % of industry participants who have completed further education (including traineeships or other further education)	*TBD*
	6.1.2	Appropriate working conditions	6.1.2a Federal award rate ratio	*Fair Work Ombudsman*
	6.1.3	Availability of workforce	6.1.3a Level of availability of workforce amongst producers	*Producer survey 2022*
			6.1.3b Level of availability of workforce amongst processors	*Processor survey 2022*
	6.1.4	Extent of succession planning in the industry	6.1.4a % of farm businesses with succession/exit strategies	*Producer survey 2022*
6.2 Encourage workforce diversity	6.2.1	Extent of workforce diversity	6.2.1a Age/gender breakdown of the workforce	*Producer survey 2022*
			6.2.1b Cultural diversity in workforce, including % Indigenous	*Producer survey 2022*
7.1 Enhance community trust	7.1.1	Community perceptions of the sheep industry	7.1.1a % of Australians who believe that Australian lambs are farmed and raised in a humane manner	*MLA*
			7.1.1b % of global respondents who believe that Australian sheep are farmed and raised in a humane manner	*AWI*
7.2 Deliver products that customers demand	7.2.1	Community perceptions of product quality	7.2.1a % Australians who believe that Australian lamb is worth paying a bit more for	*MLA*
			7.2.1b Willingness to pay for 100% wool garments	*AWI*

Table 2. Performance indicators and metrics *(continued)*

Theme: Ensuring a financially resilient industry			
Priority	**Indicator**	**Metrics**	**Data source**
8.1 Maintain or increase industry profitability	8.1.1 Rate of return	8.1.1a Rate of return on capital, excluding capital appreciation, using a 3-year rolling average	*ABARES*
8.2 Maintain or increase contribution to the Australian economy	8.2.1 Contribution to the Australian economy	8.2.1a Gross value (A$) of agricultural production for sheep meat	*ABS*
		8.2.1b Gross value (A$) of agricultural production for wool	*ABS*
8.3 Increase productivity	8.3.1 Total factor productivity	8.3.1a Total factor productivity	*ABARES*
		8.3.1b Genetic breeding index for productivity	*MLA*
8.4 Encourage innovation	8.4.1 Investment in research, development and adoption (RDA) activities	8.4.1a A$ invested in RDA per year	*MLA and AWI*
9.1 Ensure positive market positioning and access	9.1.1 Value of product	9.1.1a A$ value share (%) of sheep meat exports	*MLA*
		9.1.1b A$ value share (%) of greasy wool exports	*AWI*
	9.1.2 Access to markets	9.1.2a The non-tariff barrier (NTB) impact on trade (sheep meat and offal) in A$	*MLA*
		9.1.2b % value share of Australian sheep meat, sheep offal and live sheep exports covered by one or more preferential trade agreements (PTA)	*MLA*
		9.1.2c % value share of Australian greasy wool exports covered by one or more preferential trade agreements (PTA)	*AWI*
9.2 Guarantee product integrity and safety	9.2.1 Compliance with product integrity and safety standards	9.2.1a % compliance with Livestock Global Assurance Program (LGAP)	*DAWE*
		9.2.1b Proportion (%) of the wool clip that is produced with a voluntary product integrity scheme	*AWEX*
		9.2.1c Compliance rates (%) for chemical residues in sheep meat	*DAWE*

13. Alignment with global goals

The United Nations Sustainable Development Goals (UN SDGs) were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030.

The UN SDGs consist of 17 goals, 169 targets and 232 unique indicators. National governments, including Australia, are expected to contribute to and report on all 17 goals through the UN process.

The sheep industry supports Australia's contribution to the UN SDGs. Using a robust methodology based on consideration of each goal's targets and indicators[25], the Sheep Sustainability Framework demonstrates alignment with 10 of the 17 goals (see Figure 3) including both leading and supporting contributions or impacts.

The Framework is most closely aligned with Goal 2 — *Zero hunger* against Priority Target 2.4 — *By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality.*

■ Priority or leading contribution/impact
■ Supporting contribution/impact

Figure 3. Alignment of Sheep Sustainability Framework to the United Nations Sustainable Development Goals

14. Governance

The Framework is led by Sheep Producers Australia (SPA) and WoolProducers Australia (WPA).

Australian Wool Innovation (AWI) and Meat & Livestock Australia (MLA) provide funding, together with strategic and secretariat support.

A Sheep Sustainability Steering Group was formed to identify priority issues related to Australian sheep meat and wool production with strong representation across regions, and the wool and meat value chain.

There will be ongoing input from industry representatives and stakeholders, including customers, government, interest groups, technical experts and investors. It is anticipated that a Consultative Committee made up of representatives from these groups will be established to provide ongoing input to the Framework.

Expert working groups will also be convened when necessary. The industry will report its progress against the Framework annually. Note that separate performance indicators will be included for the sheep meat and wool sectors as relevant, and where data exists.

The governance structure is outlined in Figure 4.

APPROVE	Sheep Sustainability Board (Sheep Producers Australia and WoolProducers Australia)	To make top level decisions and to approve the Framework
LEAD	Sustainability Steering Group	To develop, build and deliver the Framework
PERSPECTIVES	Consultative Committee Expert working groups	To be established following Framework consultation. Made up of industry and other stakeholders
SUPPORT	Australian Wool Innovation and Meat & Livestock Australia	To provide strategic and secretariat support

Figure 4. Governance structure for the Sheep Sustainability Framework

15. Material topics

A materiality assessment was undertaken by independent experts STR Consulting to identify topics material to the Australian sheep industry. This informed development of the Framework, including establishing the sustainability priorities.

The assessment involved a desktop review and testing topics with industry stakeholders. Further testing occurred as part of the Stage 3 consultation to confirm topics, scopes and ranking, which were subsequently validated by the Sheep Sustainability Steering Group.

Each topic was ranked, based on the industry's economic, environmental and social impact (positive or negative), and the topic's influence on stakeholders' decisions in relation to the industry. Topics are ranked as highly material, material or important in the materiality matrix (Figure 5). The full list of topics and their scopes is provided in Appendix A.

The highly material topics are:
- Animal husbandry and handling
- Animal wellbeing and welfare
- Biodiversity
- Water security
- Greenhouse gas emissions
- Soil health and pasture management
- Water quality
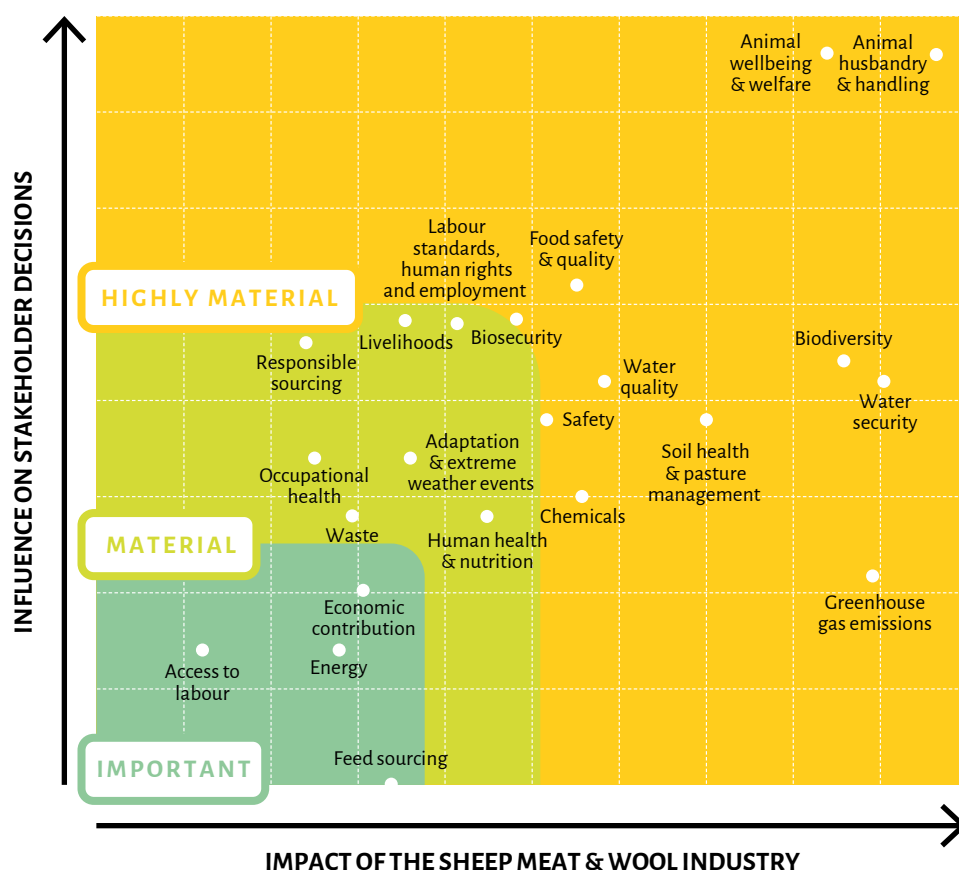- Chemicals
- Safety
- Biosecurity
- Food safety and quality

Figure 5. 2021 materiality matrix for the Australian sheep industry

16. Stakeholder engagement

Stakeholders from across the sheep meat and wool industry value chain were consulted by the Sheep Sustainability Steering Group to develop this Framework.

Comprehensive engagement with stakeholders was required to help build a Sheep Sustainability Framework that is widely supported by stakeholders and fit for purpose. The consultation approach was based on the principles of the International Association of Public Participation (IAP2). The approach was further informed by the AA1000 Stakeholder Engagement Standard (AA1000SES). This is a broad framework used in the assessment, design, implementation and communication of quality stakeholder engagement.

Stage 1 of consultation (Develop) involved taking draft elements of the Framework to key industry stakeholders, including policy groups, advocacy groups and service providers, as well as the Department of Agriculture, Water and the Environment. This stage was completed in March and early April 2020 and its findings were used to shape the First Draft Sheep Sustainability Framework. In general, stakeholders were very supportive of the initiative and generously gave their time to provide perspectives and insights.

Stage 2 (Design) involved taking the First Draft Framework to both industry and external stakeholders. They were given the opportunity to provide feedback at a consultation forum or online. Additional meetings were held with members of the wool value chain and technical experts from Australian Wool Innovation and Meat & Livestock Australia. The consultation provided substantial input which was used to develop the Second Draft Framework.

In Stage 3 (Decide), the Second Draft was taken to public consultation conducted online via **http://sheepframeworkyoursay.com.au**. The input from this stage, together with input from technical experts on the indicators and metrics was used to create this final Sheep Sustainability Framework. For a full list of participating organisations, see Appendix C.

Stakeholder engagement will continue to be a priority as the Framework is implemented.

Appendix A: Material topics and scopes

Material topics reflect a sector's significant economic, environmental and social impacts, or substantively influence the assessments and decisions of stakeholders. The topics and scopes below were identified and ranked during an independent materiality assessment undertaken to inform development of the Framework. They form the basis of the Australian sheep industry's materiality matrix (see Figure 5).

Table A1. Sheep industry material topics and scopes

Priority	Topic	Scope
Highly material	Animal husbandry and handling	Animal management and handling practices including shearing, mulesing, lamb marking, use of pain relief and antimicrobials, euthanasia on farm and slaughter practices at processing. Treatment and compliance with regulations and industry guidance on farm, in transit and at destination.
	Animal wellbeing and welfare	Animal welfare including access to food and water, provision of shelter and space, management of disease, and lamb survivability on farm, in transit and at destination.
	Biodiversity	Vegetation and land clearing, forestation and carbon sequestration, management of invasive species, the protection of native plant and animal species, genetic diversity, natural ecosystems and ecosystem services.
	Water security	Water withdrawal (extraction) and consumption, and responses to water scarcity.
	Greenhouse gas emissions	Scope 1, 2 and 3 emissions and mitigation of emissions in the medium and longer term.
	Soil health and pasture management	Soil nutrient and sediment loss, erosion and pasture management, soil carbon.
	Water quality	Water, water stewardship, waterway management, water re-use, wastewater treatment and discharges to watercourses.
	Chemicals	Use of fertilisers, herbicides and pesticides on farm, including withholding periods and the management of restricted substances and hazardous chemicals on farm and in processing.
	Safety	A safe work environment for workers including farm owners, direct employees, seasonal workers and contractors.
	Biosecurity	Managing the risk of transmission of infectious diseases, invasive pests or weeds.
	Food safety and quality	All aspects of food safety, quality, product integrity and compliance with standards.
Material	Labour standards, human rights and employment	Labour practices and decent work for all workers including freedom of association and freedom from modern slavery. Protection of human rights across the workforce including non-discrimination, diversity and indigenous employment.
	Human health and nutrition	Nutrition and food security including access to safe, sufficient and nutritious food.
	Livelihoods	Productivity, profitability, market access, critical mass in processing, and equitable creation of value across the industry value chain.
	Adaptation and extreme weather events	Responding to and preparing for extreme weather and events such as droughts, floods and fires — expected to increase with climate change.
	Waste	Circular management of multiple solid and liquid waste streams including fibre recovery, food waste, packaging and trade waste.
	Occupational health	Healthy working conditions for all workers and farm owners including mental health, occupational illnesses and exposure to chemicals.
	Responsible sourcing	Sourcing of raw materials, including traceability and certifications and compliance with accepted standards, including sustainability-related standards and verification.
Important	Economic contribution	Industry contribution to national and regional development through export income and employment.
	Energy	Energy consumption, resource efficiency and the use of renewable energy.
	Feed sourcing	Sourcing of animal feed and associated impacts of feed production (e.g. water stress, vegetation removal or labour standards).
	Access to labour	Access to people with the appropriate skills, knowledge, training and experience to perform the activities needed to run sheep industry businesses, including modernisation skills.

Appendix B: Sustainability priorities and material topics

Development of sustainability priorities for the Framework have been informed by material topics. Priorities also address areas considered by industry appropriate to include in the Framework, even if there is no direct correlation with a specific material topic.

Table A2. Sheep industry sustainability priorities and material topics

Theme	Focus area		Priority		Material topic
Caring for our sheep	1	Animal care and handling	1.1	Reduce, refine and replace painful husbandry practices	Animal husbandry and handling
			1.2	Implement best practice sheep management	Animal wellbeing and welfare
			1.3	Ensure humane processing and on-farm euthanasia	Animal husbandry and handling
	2	Animal health	2.1	Prevent and manage disease	Animal wellbeing and welfare, biosecurity
Enhancing the environment and climate	3	Environment	3.1	Improve natural resource management	Soil health and pasture management, water quality, water security, waste
			3.2	Responsible environmental practices	Chemicals
			3.3	Encourage biodiversity	Biodiversity, feed sourcing
	4	Climate change	4.1	Reduce net greenhouse gas emissions	Greenhouse gas emissions, energy, feed sourcing
			4.2	Adapt to a changing climate, including extreme weather events	Adaptation and extreme weather events
Looking after our people, our customers, communities	5	Health and safety	5.1	Improve industry safety culture	Safety
			5.2	Improve our people's health	Safety, occupational health
	6	Capacity building	6.1	Support and grow workforce	Access to labour
			6.2	Encourage workforce diversity	Labour standards, human rights and employment
	7	Contribution to community	7.1	Enhance community trust	N/A
			7.2	Deliver products that customers demand	Human health and nutrition
Ensuring a financially resilient industry	8	Profitability, productivity and investment	8.1	Maintain or increase industry profitability	Livelihoods
			8.2	Maintain or increase contribution to the Australian economy	Economic contribution
			8.3	Increase productivity	Livelihoods
			8.4	Encourage innovation	Livelihoods
	9	Market access	9.1	Ensure positive market positioning and access	Livelihoods
			9.2	Guarantee product integrity and safety	Food safety and quality, responsible sourcing

Appendix C: Participating stakeholders

The Sheep Sustainability Steering Group consulted widely to develop the Framework. A wide range of stakeholder organisations was invited to participate in stages 1, 2 and/or 3 of the consultation. The following organisations participated, together with a number of individual producers.

Table A3. Stakeholders

Organisation

Agforce	Country Road	Primary Industries and Regions SA
AM & MJ Darlington	CSIRO Agriculture and Food	PrimeSafe
Animal Health Australia	Dairy Australia	Queensland Farmers Federation
Animal Medicines Australia	Deakin University	RA & AE Morris
ANZ Banking Group	Department of Agriculture, Water and the Environment (DAWE)	Rabobank
Ardmeen Farms Pty Ltd		Red Meat Advisory Council (RMAC)
Australia Rural Bank	Eco-Age	Reda SpA
Australian Council of Wool Exporters and Processors (ACWEP)	Elders	Rembrandt
	Fernleigh Park Pastoral	Rennylea Pastoral Company
Australian Livestock & Property Agents Association (ALPA)	Fletcher International Exports	RSPCA Australia
	Forest Practices Authority	Rural Safety & Health Alliance
Australian Livestock Exporters' Council (ALEC)	Gostwyck/Henry and Grace	Shearing Contractors Association of Australia (SCAA)
Australian Livestock Markets Association (ALMA)	Gundamain Pastoral	
	Humane Society International	Sheep Producers Australia (SPA)
Australian Livestock Saleyards Association (ALSA)	Integrity Systems Company (ISC), MLA	SL & LM Harrison
Australian Meat Industry Council (AMIC)	JBS Australia	Soils for Life
Australian Meat Processor Corporation (AMPC)	KA & MA Gregory Partnership	Stock Feed Manufacturers' Council of Australia (SFMCA)
Australian Pesticides and Veterinary Medicines Authority (AMPVA)	Kmart	
	Kunmallup Pastoral Co	STR Consulting
Australian Stud Sheep Breeders Association (ASSBA)	Landacarte	Suedwolle Group
	Leahcim Farming	Tasmania Farmers and Graziers Association (TFGA)
Australian Veterinary Association	LiveCorp	
Australian Wool Exchange (AWEX)	Livestock SA	Tenalba
Australian Wool Growers Association (AWGA)	Meat & Livestock Australia (MLA)	The Biodiversity Consultancy
Australian Wool Innovation (AWI)	MH Premium Farms	The Woolmark Company
Australian Wool Testing Authority Ltd (AWTA)	Michell Wool	Tuloona Pastoral
Avington Merino	Minona Farms	Victorian Farmers Federation (VFF)
AXIchain	National Centre for Farmer Health	Vitale Barberis Canonico SpA
Beyond Zero Emissions	National Council of Wool Selling Brokers of Australia (NCWSBA)	WAFarmers Federation (WAFF)
Bush Heritage Australia		Wass Holdings
Cashmere Connections	National Farmers' Federation (NFF)	Wellard Ltd
Central West Genetics	NSW Farmers	Wool Industries Australia (WIA)
Charles Sturt University	Pantex SpA	WoolProducers Australia (WPA)
Cibo Labs Pty Ltd	Pastoralists and Graziers Association of Western Australia (PGA WA)	WWF Australia
Clear Creek Pastoral Co		World Animal Protection Australia
Coles		

Appendix D: Baseline data

The Australian sheep industry is committed to reporting regularly against the Framework indicators. Below we include baseline data available at the time of publication. Some metrics are not yet fully developed and some data is not yet available. The Framework is a living document which will continue to be reviewed and refreshed as required.

Table A4. Indicators, metrics and data

Caring for our sheep						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
1.1 Reduce, refine and replace painful husbandry practices	1.1.1 Level of mulesing in Australian flock	1.1.1a % total flock mulesed (Merino v non-Merino)	Merino: ~67% Non-Merino: no data	2017	*Producer survey*	In 2017, AWI reported 70% Merino ewe lambs, and 63% of Merino wether lambs as mulesed[26]. (In 2019, AWI reported 63% of Merino ewe lambs and 54% of Merino wether lambs as mulesed[27], however these figures are lower due to drought conditions.) The 2017 figures give a more accurate representation of baseline data.
		1.1.1b % wool declared as non-mulesed/ceased mulesed (Merino v non-Merino)	Merino: 13.5% (76% declared) Non-Merino: 37% (66% declared)	FY2020	*AWEX*	Percentage of bales of wool offered with National Wool Declaration (NWD) of either non-mulesed or ceased mulesed (with declaration rate in brackets). Wool declarations are likely to underestimate the level of non-mulesing.
	1.1.2 Use of pain management associated with mulesing, castration and tail docking	1.1.2a % producers who use pain management at mulesing	Merino: ~86% Non-Merino: (no data)	2019	*Producer survey*	AWI reported that 86% of Merino ewe lambs and 87 % of Merino wether lambs were given pain relief at mulesing during 2019[28].
		1.1.2b % flock/producers where/who use pain relief is used for castration and tail docking	No data to report		*Producer survey 2022*	Surveying producers directly will give the most accurate data on the use of pain relief.

Table A4. Indicators, metrics and data *(continued)*

Caring for our sheep						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
1.2 Implement best practice sheep management	1.2.1 Lamb survival	1.2.1a % producers pregnancy scanning ewes for litter size	No data to report		*Producer survey 2022*	Pregnancy scanning ewes for litter size enables producers to differentially manage ewes to optimise birthweight and lamb survival. Surveying producers directly will give the most accurate data.
	1.2.2 Adoption of best practice management	1.2.2a % producers who have completed Lifetime Ewe Management (LTEM) training	7.52%	FY2020	*AWI*	Participation in best practice management programs indicates the likelihood of best practice adoption. The Lifetime Ewe Management training involves six days of training.
	1.2.3 Shearing welfare	1.2.3a Total number of days per year spent by shearing trainers in woolsheds nationally	1064 days	FY2020	*AWI*	Targeted training reinforces best practice with new shearers, and upskills existing shearers. Practical coaching is a key strategy to develop highly skilled shearers and optimise sheep welfare during shearing. 2683 shearers were upskilled and 634 novices were trained in FY2020.
	1.2.4 Wild predator management	1.2.4a % producers who use a wild predator management strategy	No data to report		*Producer survey 2022*	Producer adoption of wild predator management strategies is considered a good indicator of effective predator control. Surveying producers directly will give the most accurate data.
	1.2.5 Transport of sheep within Australia to ensure welfare of sheep	1.2.5a % sheep transported in line with animal welfare standards (fit to load)	No data to report		*TBD*	The best method of data collection for this metric is under consideration.
	1.2.6 Sheep welfare in saleyards	1.2.6a % sheep transacted through NSQA saleyards	44%	2020	*ALSA/MLA*	The National Saleyard Quality Assurance (NSQA) program provides a measurable level of assurance. NSQA is an audited program, with 27 of the 52 active sheep selling centres being accredited. A total of 14,273,224 sheep were transacted in FY2020. Saleyards operating their own QA systems outside NSQA have not been included in this figure of 44%.
	1.2.7 Wellbeing of live sheep during export	1.2.7a % mortality on ships	0.23%	2020	*DAWE*	Data on mortality as reported to Parliament. Total of 775,606 sheep were exported by sea. Note: new welfare measures are being recorded from November 2020, and will be included in the next report. There was a 99.88% compliance with Exporter Supply Chain Assurance System (ESCAS).
1.3 Ensure humane processing and on-farm euthanasia	1.3.1 Humane on-farm euthanasia	1.3.1a % producers awareness of humane killing requirements in the *Australian Animal Welfare Standards & Guidelines for Sheep*	No data to report		*TBD*	The best method of data collection for this metric is under consideration.
	1.3.2 Humane processing	1.3.2a % of sheep slaughtered through an establishment accredited under the Animal Welfare Certification System	80.5%	2020	*MLA*	The Animal Welfare Certification System (AAWCS) is an independently audited certification used by Australian livestock processors to demonstrate compliance with best practice animal welfare standards.

Table A4. Indicators, metrics and data *(continued)*

Caring for our sheep						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
2.1 Prevent and manage disease	2.1.1 Australia maintaining freedom from disease	2.1.1a Australia continues to be declared free from 12 major diseases	YES	2020	*DAWE*	Australia remains free from 12 major sheep diseases[1]. Australia is in a fortunate position to be free of many of the more serious diseases affecting sheep worldwide. This includes Foot and Mouth Disease and Peste des petits ruminants — two of the six disease recognised by OIE (World Organisation for Animal Health) with an official disease status.
	2.1.2 On-farm activity to prevent and treat disease	2.1.2a % flock vaccinated (any vaccine)	No data to report		*Producer survey 2022*	Vaccination is an important and highly effective means to protect sheep from disease. The incidence of vaccine use is a good indicator of Australia's commitment to disease prevention. Surveying producers directly will give the most accurate data.
		2.1.2b Genetic breeding values (worm egg count, breech wrinkle)	Worm egg count: Merino -6.64; Breech wrinkle: Merino -0.20	2019	*MLA*	Genetic improvement is a key means to prevent disease. Tracking breeding values over time provides insight to changes in disease resistance, with worms and breech flystrike being two important challenges. The lower the breeding values, the higher the genetic value for each trait. The data refers to lambs born in 2019.
	2.1.3 Producers adhering to biosecurity requirements	2.1.3a % flock traceable via National Livestock Identification System	No data to report		*ISC*	Data is currently unavailable for reporting on a national level.

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1   Major diseases include Foot and Mouth Disease (FMD), Classical Scrapie, *Brucella melitenisis*, *Chlamydophila abortus* (enzootic abortion of ewes, ovine chlamydiosis), Nairobi sheep disease virus, Peste des petits ruminants (PPR), *Psoroptes ovis* (sheep scab), Salmonella abortus-ovis (salmonellosis), Sheep pox, Wesselsbron, Maedi-visna, Pulmonary adenomatosis (Jaagsiekte)

Table A4. Indicators, metrics and data *(continued)*

Enhancing the environment and climate						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
3.1 Improve natural resource management	3.1.1 Protecting soil resource	3.1.1a Fractional vegetation cover	No data to report		*CIBO 2022*	Fractional vegetation cover is a good proxy for risk of soil erosion, degree of biodiversity and magnitude of atmospheric carbon dioxide uptake and storage. Data will be accessed from the Fractional Vegetation Dashboard (satellite mapping and regional analysis technology) used for the Australian Beef Sustainability Framework. Sheep grazing areas will be identified by ABARES/NRM.
	3.1.2 Conservation practices	3.1.2a % sheep producing land identified for conservation or protection purposes	2.8%	2017	*ABARES*	Using data published by ABS in *Land Management and Farming in Australia — 2016–17*, the figures for 'land mainly used for grazing' were identified, with figures for regions where there are few sheep then subtracted.
3.2 Responsible environmental practices	3.2.1 Responsible chemical stewardship	3.2.1a % producers who have done Chemcert course or similar	No data to report		*Producer survey 2022*	Independent accreditation of producers on the safe and effective use of agricultural chemicals (e.g. Chemcert) is an important step in responsible chemical stewardship. Surveying producers directly will give the most accurate data.
		3.2.1b % greasy wool sale lots exceeding EU Ecolabel criteria	No data to report		AWTA	The National Residue Survey (NRS) will provide an annual overview of the chemical residues present in Australian greasy wool. Data will be available for the 2022 report.
	3.2.2 Plant pest management	3.2.2a % producers who have a plant pest management plan	No data to report		*Producer survey 2022*	A plant pest management plan demonstrates a commitment to best practice plant pest management. Surveying producers directly will give the most accurate data.
	3.2.3 Efficient water use in processing	3.2.3a Kilolitres water used per tonne HSCW when processing sheep meat	No data to report		AMPC/MLA	This metric provides a measure of water usage in the Australian sheep meat processing sector. The Australian Meat Processor Corporation (AMPC) reports water use from processing in its five-yearly Environmental Performance Review. At this time, there is no data for sheep rates of water use. This metric will be expanded to initially include the Australian wool processing sector and, given most Australian wool is processed overseas, overseas wool processing, as the data becomes available.
	3.2.4 Minimise waste in processing	3.2.4a Kilograms of solid waste per tonne HSCW when processing sheep meat	No data to report		AMPC/MLA	This metric provides a measure of solid waste in the Australian sheep processing sector. The Australian Meat Processor Corporation (AMPC) reports waste from processing in its five-yearly Environmental Performance Review. At this time, there is no data for sheep rates of waste. This metric will be expanded to initially include the Australian wool processing sector and, given most Australian wool is processed overseas, overseas wool processing, as the data becomes available.

Table A4. Indicators, metrics and data *(continued)*

Enhancing the environment and climate						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
3.3 Encourage biodiversity	3.3.1 Maintaining and increasing biodiversity	*Metric to be determined*	No data to report		*TBD*	The value and magnitude of Australia's biodiversity is difficult to measure, but biodiversity is a key part of Australia's national identity. Many groups in Australia and world are working to find representative measurements. When a suitable and robust methodology and metrics are developed, the Sheep Sustainability Framework will report on relevant biodiversity data.
4.1 Reduce net greenhouse gas emissions	4.1.1 Contribution of sheep production to global warming/ GHG emissions	4.1.1a Net emissions: Megatonnes (Mt) of CO_2e generated by sheep industry (farm and sheep meat processing)	9.39Mt CO_2e	2018	*CSIRO*	The reported figure is calculated using data from Australia's National Greenhouse Gas Inventory of national emissions. As the majority of Australian wool is processed overseas, wool processing has not been included.
		4.1.1b Emission intensity: Kilograms of CO_2e emitted per kg liveweight when raising sheep	6.9kg	2020	*Wiedemann et al. (2016)[29]*	This is the result of a Life Cycle Assessment (LCA) conducted in 2016 on Australian lamb focused enterprises. It is the mean of three location results that are not significantly different. LCAs are a globally accepted environmental measure that assess all emissions associated with grazing activities of sheep meat and wool production up to the point of processing.
		4.1.1c Emission intensity: Kilograms of CO_2e emitted per tonne HSCW when processing sheep meat	No data to report		*AMPC/MLA*	The Australian sheep meat processing industry adopts a number of emissions reduction initiatives. The Australian Meat Processor Corporation (AMPC) reports CO_2e processing emissions in its five-yearly Environmental Performance Review. At this time, there is no data for sheep-specific intensity.
		4.1.1d Emission intensity: Kilograms of CO_2e emitted per kg greasy wool shorn	20.5kg		*Wiedemann et al. (2016)[30]*	This is the result of a Life Cycle Assessment (LCA) conducted in 2016 on Merino enterprises. It is the mean of three location results that are not significantly different. LCAs are a globally accepted environmental measure that assess all emissions associated with grazing activities of sheep meat and wool production up to the point of processing.
	4.1.2 Renewable energy	*Metric to be determined*	No data to report		*TBD*	The best method of data collection for this metric is under consideration.
4.2 Adapt to a changing climate, including extreme weather events	4.2.1 Response to a changing and variable climate	4.2.1a Climate adjusted average annual growth rate in Total Factor Productivity (TFP)	15.10%	1999–2000 to 2017–18	*ABARES*	TFP is expressed as average % growth over a given period of time and is relative to change from the base year. In this case, it takes climatic activity into account and, year on year, the Framework will evaluate the change in productivity and profitability due to extreme climate events.

Looking after our people, our customers and the community						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
5.1 Improve industry safety culture	5.1.1 Investment in health and safety prevention and training	5.1.1a Total A$ investment in health and safety prevention and management	No data to report		*TBD*	The most accurate measurement of health and safety prevention and management for the sheep industry is yet to be determined.
	5.1.2 Number of deaths and serious injuries	5.1.2a Number of fatalities in the sheep industry	33	2015–19	*Safe Work Australia*	Safe Work Australia's National Data Set for Compensation-based Statistics and Work-related Traumatic Injury Fatalities. This figure currently includes fatalities attributable to specialised sheep farming and sheep-beef cattle farming. Fatality data includes all persons who were traumatically fatally injured, and whose injuries resulted from work activity or exposures, and whose injuries occurred in an incident that took place in Australian territories or territorial waters. Processing will be included as a national data set becomes available.
		5.1.2b Number of serious injury workers' compensation claims in the sheep industry	No data to report		*Safe Work Australia*	Safe Work Australia's National Data Set for Compensation-based Statistics and Work-related Traumatic Injury Fatalities. This figure currently includes claims attributable to specialised sheep farming and sheep-beef cattle farming. Processing will be included as a national data set becomes available.
5.2 Improve our people's health	5.2.1 Status of physical and mental health	*Metric to be determined*			*TBD*	The most accurate measurement of physical and mental health status for the sheep industry is yet to be determined.
6.1 Support and grow workforce	6.1.1 Capacity of workforce	6.1.1a % of industry participants who have completed further education (including traineeships or other further education)	No data to report		*TBD*	
	6.1.2 Appropriate working conditions	6.1.2a Federal award rate ratio	1.24:1	FY2021	*Fair Work Ombudsman*	A ratio comparing the shed hand casual rate with the minimum casual rate is reported. The shed hand rate is as per the Federal Pastoral Award. The shed hand rate is considered the most utilised on-farm payment rate.
	6.1.3 Availability of workforce	6.1.3a Level of availability of workforce amongst producers	No data to report		*Producer survey 2022*	Surveying producers directly will give the most accurate data.
		6.1.3b Level of availability of workforce amongst processors	No data to report		*Processor survey 2022*	Surveying processors directly will give the most accurate data. Only meat processors will be included. Wool processing is very small in Australia.
	6.1.4 Extent of succession planning in the industry	6.1.4a % of farm businesses with succession/exit strategies	No data to report		*Producer survey 2022*	Surveying producers directly will give the most accurate data.

Table A4. Indicators, metrics and data *(continued)*

Priority		Indicator		Metric		Data	Date	Source	Note
	Looking after our people, our customers and the community								
6.2	Encourage workforce diversity	6.2.1	Extent of workforce diversity	6.2.1a	Age/gender breakdown of the workforce	No data to report		*Producer survey 2022*	Surveying producers and processors directly will give the most accurate data.
				6.2.1b	Cultural diversity in workforce, including % Indigenous	No data to report		*Producer survey 2022*	This important metric is still under development and is planned for inclusion in the 2022 report.
7.1	Enhance community trust	7.1.1	Community perceptions of the sheep industry	7.1.1a	% of Australians who believe that Australian lambs are farmed and raised in a humane manner	56%	2020	*MLA*	The MLA Consumer Sentiment Research is conducted by Pollinate. The 2020 study surveyed N=1501 nationally representative respondents.
				7.1.1b	% of global respondents who believe that Australian sheep are farmed and raised in a humane manner	No data to report		*AWI*	To be included in the AWI Global Tracker in 2021.
7.2	Deliver products that customers demand	7.2.1	Community perceptions of product quality	7.2.1a	% Australians who believe that Australian lamb is worth paying a bit more for	26%	2020	*MLA*	The MLA Domestic Tracker is conducted by Kantar. The reported figure is the Moving Annual Total (MAT) for N=100 nationally representative respondents surveyed weekly over 12 months.
				7.2.1b	Willingness to pay for 100% wool garments	80%	2018	*AWI*	The AWI Global Fabric Tracker Study is conducted by Nielsen. The northern winter 2018 study surveyed N = 7,200 respondents split across 12 countries. The figure reports those who are willing to pay a bit more, more, a lot more or whatever it costs for each fabric type. Also surveyed are Merino = 82% and Wool blends = 68%.

Table A4. Indicators, metrics and data *(continued)*

Ensuring a financially resilient industry						
Priority	**Indicator**	**Metric**	**Data**	**Date**	**Source**	**Note**
8.1 Maintain or increase industry profitability	8.1.1 Rate of return	8.1.1a Rate of return on capital, excluding capital appreciation, using a three-year rolling average	0.9%	2017–18 to 2019–20	ABARES	Calculated using data obtained from the annual Australian Agricultural and Grazing Industries Survey (AAGIS). The figures provided represent the average per farm.
8.2 Maintain or increase contribution to the Australian economy	8.2.1 Contribution to the Australian economy	8.2.1a Gross value (A$) of agricultural production for sheep meat	$4,177M	FY2019	ABS	A standard reporting figure from Australian agricultural commodities data.
		8.2.1b Gross value (A$) of agricultural production for wool	$4,390M	FY2019		
8.3 Increase productivity	8.3.1 Total factor productivity	8.3.1a Total Factor Productivity	0.03	1999–2000 to 2017–18	ABARES	Total Factor Productivity (TFP) is expressed as average percentage growth over a given period of time. It is calculated from AAGIS data.
		8.3.1b Genetic breeding index for productivity	Dual purpose Merino: 147	2019	MLA	Indexes incorporate economically important traits, so that genetic gain in one trait is not made in isolation from other traits. Increasing index values show animals will be more profitable in that production system. The data refers to lambs born in 2019.
8.4 Encourage innovation	8.4.1 Investment in research, development and adoption (RDA)	8.4.1a A$ invested in RDA per year	$171.9M (sheep meat) $34.9M (wool)	FY2020	MLA and AWI	A sum of levies and matched funds directed to Australian sheep meat and wool Research and Development Corporations.
9.1 Ensure positive market positioning and access	9.1.1 Value of product	9.1.1a A$ value share (%) of sheep meat exports	44%	2020	MLA	A value based expression of Australia's share of global exports.
		9.1.1b A$ value share (%) of greasy wool exports	64%	FY2019	AWI	
	9.1.2 Access to markets	9.1.2a The non-tariff barrier (NTB) impact on trade (sheep meat and offal) in A$	$903.5M	2020	MLA	NTBs are trade barriers that unnecessarily restrict exports through mechanisms other than the simple imposition of tariffs (such as import licences and onerous sanitary regulations). The indicator is expressed in terms of the economic impact NTBs have on export value.
		9.1.2b % value share of Australian sheep meat, sheep offal and live sheep exports covered by one or more preferential trade agreements (PTA)	69.6%	2020	MLA	PTAs are international treaties (such as free trade agreements and regional trade agreements) that remove or reduce tariffs and quotas, beyond those agreed via the World Trade Organisation.
		9.1.2c % value share of Australian greasy wool exports covered by one or more preferential trade agreements (PTA)	87.2%	2020	AWI	

Table A4. Indicators, metrics and data *(continued)*

Ensuring a financially resilient industry

Priority		Indicator		Metric	Data	Date	Source	Note
9.2	Guarantee product integrity and safety	9.2.1	Compliance with product integrity and safety standards	9.2.1a % compliance with Livestock Global Assurance Program (LGAP)	No data to report		*DAWE*	LGAP is a program designed to ensure the welfare of exported livestock from discharge in-market up to and including the point of slaughter. The program is only recently rolled out and compliance data will be reported as it becomes available.
				9.2.1b Proportion (%) of the wool clip that is produced with a voluntary product integrity scheme	10.5%	FY2020	*AWEX*	Voluntary product integrity schemes include Authentico, Better Choices, RWS, EU-Ecolabel and SustainaWOOL and others.
				9.2.1c Compliance rates (%) for chemical residues in sheep meat	99.7%	FY2019	*DAWE*	The National Residue Survey (NRS) within the Department of Agriculture, monitors residues in animal products through various random and targeted testing programs.

Notes

1   *MLA Fast Facts Australia's Sheep Meat Industry 2019* (pg. 1)
2   WoolProducers Australia
3   2018–19, *MLA State of the Industry Report 2020* (pg. 6)
4   2018–19, Australian Bureau of Statistics, Agricultural Commodities Australia
5   2020, *MLA and AWI Wool and Sheep Meat Survey Report* — Sheep Meat August 2020 (pg. 3)
6   *2018–19 Australian Bureau of Statistics*
7   2018–19, *MLA State of the Industry Report 2020* (pg. 6)
8   2018–19, *MLA State of the Industry Report 2020* (pg. 22)
9   2018–19, *MLA State of the Industry Report 2020* (pg. 22)
10 2018–19, Australian Bureau of Statistics
11 *Final Estimate Australian Wool Production Forecast Report August 2020*
12 *2018 IWTO Market Information, Edition 15* (pg. 96)
13 *Final Estimate Australian Wool Production Forecast Report August 2020*
14 Reference is Wool 2030 strategy (pg. 12)

15 2018–19, *MLA State of the Industry Report 2020* (pg. 21)
16 2018–19, *MLA State of the Industry Report 2020* (pg. 21)
17 2018–19, *MLA State of the Industry Report 2020* (pg. 21)
18 *AMPC Annual Report 2019–20* (pg. 8)
19 *AMPC Annual Report 2019–20* (pg. 9)
20 Adapted from the Lowell Center for Sustainable Production
21 Source: Safe Work Australia
22 ANU Study 2018 — Most rated by Australians as contributing alot to society were scientists, doctors and farmers
23 Wiedemann, SG, Yan, M-J, & Murphy, CM 2016, 'Resource use and environmental impacts from Australian export lamb production: a life cycle assessment' *Animal Production Science*, vol. 56, no. 7, p. 1070.
24 Wiedemann, S., Yan, M-J, Henry, B., & Murphy, C. 2016, 'Resource use and greenhouse gas emissions from three wool production regions in Australia' *Journal of Cleaner Production*, vol. 122, pp. 121–132.

25 Review conducted by STR Consulting, August 2020. Available upon request.
26 2018 Breech Flystrike RD&E Technical UpPdate: Survey Husbandry Practices, Bob Sloane, Kynetec, 2018.
27 AWI Wool Industry Profile, May 2020 (pg. 22)
28 AWI Wool Industry Profile, May 2020 (pg. 7)
29 Wiedemann, SG, Yan, M-J, & Murphy, CM 2016, 'Resource use and environmental impacts from Australian export lamb production: a life cycle assessment' *Animal Production Science*, vol. 56, no. 7, p. 1070.
30 Wiedemann, S., Yan, M-J, Henry, B., & Murphy, C. 2016, 'Resource use and greenhouse gas emissions from three wool production regions in Australia' *Journal of Cleaner Production*, vol. 122, pp. 121–132.

List of acronyms

A$ – Australian dollars

AAGIS – Australian Agricultural and Grazing Industries Survey

AAWCS – Australian Livestock Processing Industry Animal Welfare Certification System

ABARES – Australian Bureau of Agricultural and Resource Economics

AHA – Animal Health Australia

ALSA – Australian Livestock Saleyards Association

AMIC – Australian Meat Industry Council

AMPC – Australian Meat Processor Corporation

AWEX – Australian Wool Exchange

AWI – Australian Wool Innovation

AWTA – Australian Wool Testing Authority

CSIRO – Commonwealth Scientific and Industrial Research Organisation

CWT – carcase weight

DAWE – Department of Agriculture, Water and the Environment

GHG – greenhouse gas

HSCW – Hot standard carcase weight

ISC – Integrity Systems Company

IWTO – International Wool Textile Organisation

LCA – Life Cycle Assessment

LPA – Livestock Production Assurance

MLA – Meat & Livestock Australia

NLIS – National Livestock Identification System

NSQA – National Saleyard Quality Assurance program

NWD – Australian National Wool Declaration

NRS – National Residue Survey

RDA – research, development and adoption

RDCs – Research and Development Corporations

SDGs – Sustainable Development Goals

SPA – Sheep Producers Australia

TBD – To be determined

WPA – WoolProducers Australia

SHEEP SUSTAINABILITY FRAMEWORK

SHEEP PRODUCERS AUSTRALIA

WOOLPRODUCERS AUSTRALIA